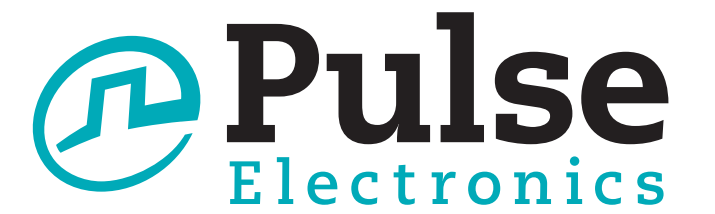




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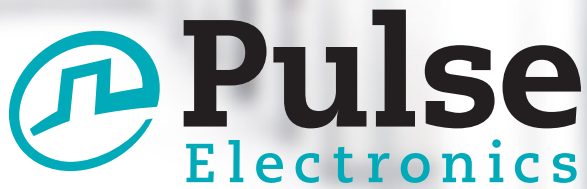
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Intelligent Solutions

Pulse Product Catalog

Antennas | Automotive Products
Connectors | Ethernet Magnetics
Military/Aerospace Products
Power Magnetics | RF Components



Pulse Electronics is the electronic components partner that helps customers build the next great product by providing the needed technical solutions. Pulse has a long operating history of innovation in magnetics, antennas and connectors, as well as the ability to ramp quickly into high-quality, high-volume production. Pulse collaborates with customers to leverage its design and manufacturing expertise of innovative products to ensure products are delivered on time and on budget. Working closely with third-party manufacturers around the world, Pulse ensures the quality and performance of the latest technology used in its products.

Pulse supports a multinational customer base with local design centers in North America, Europe and Asia. Strategically located support centers enable Pulse's design, marketing, and sales teams to better understand and more readily serve customers' requirements. Product diversity and individual product line growth positions Pulse as one of the largest resources for catalog and custom components, subassembly design, and manufacturing for electronic OEMs, contract manufacturers, and ODMs.

The Company has multiple product lines, ranging from passive components that cover power and signal products used in computing, networking and communications, power conversion, defense, aerospace, automotive, and consumer electronics, home networking; and, antennas for wireless electronic devices, automobiles, and security equipment.

Other products include antennas for mobile devices, discrete connectors, couplers, delay lines, power transformers and inductors for automobiles, as well as for value-added custom assemblies. These products support an array of technical applications and platforms such as Ethernet to 10GBase-T, DSL/HPN/Cable, PoE, VoIP, RF, MIL-STD-1553, AC/DC and DC/DC Power Conversion, wireless telecommunications, Fibre Channel, T1, T3, ISDN, IPTV, CCTV and mobile TV. Pulse markets products through component distributors, regional sales representatives and direct sales managers.

Pulse actively participates in industry standards organizations and alliances such as IEEE, IFF, OIF, CommNexus, MoCA, HD BaseT, MGBase-T and NBase-T. Through ongoing research and development, Pulse continues to receive patents for new and innovative products as well as unique manufacturing processes.

This publication contains an overview of our extensive collection of various catalog products. Help with creating custom and semi-custom designs for all product lines is also available. To help you easily find the parts you need, Pulse offers a Parts Index Search feature and "Application Based Product Selection" on the home page. Access to catalog datasheets, product overviews, and selection guides are available by visiting the Pulse website: www.PulseElectronics.com.

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ANTENNAS

Pulse/Larsen is a leading global antenna and wireless solution supplier. As the demand for wireless connectivity flourishes Pulse/Larsen is here with the needed solutions. We offer a unique far-reaching understanding of antenna and RF technology and have become the partner of choice for leading industry innovators. Pulse offers excellent value and outstanding quality products delivered from our high-volume production facilities. We offer a wide array of antennas covering 2G/3G/4G LTE, WLAN (WiFi), Zigbee, Bluetooth, GPS/Glonass/Compass, ISM, VHF/UHF, satellite radios, DECT, NFC and other custom applications.

You can rely on Pulse/Larsen to be your trusted antenna partner. We have been in the antenna business over 50 years and have exceeded over 2 Billion antennas shipped during that time. We supply consistent high-quality products by owning and fully controlling our own factories in both China and the United States. On the following pages you will find a sampling of our more popular antennas. For a complete view of our offering visit our website at www.pulseelectronics.com/products/antennas or contact us for a copy of our Antenna Sourcebook catalog.

ANTENNAS FOR EXTERNAL APPLICATIONS



- Radome included - cosmetics may matter.
- Not for outdoor weatherproof environments
- Technology: Dipoles, blades, external patches.
- Cable assemblies or connector options.
- Frequencies: WLAN, 3G/4G LTE, ISM, GPS, Multi-bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

Pulse's new line of wireless access point antennas offers flexible and economical solutions for wireless device OEMs. These antennas offer superior transmission and reception between wireless access points. They are compatible with IEEE 802.11a/b/g/n/ac, Bluetooth, 3G/4G LTE, ZigBee and ISM frequency band applications. All wireless access point antennas are RoHS compliant. For high-volume orders, Pulse can custom design antennas for OEMs. This includes alternative frequencies and a variety of cable and connector options for antenna assemblies. Pulse also manufactures build-to-print internal antennas that feature a variety of stamped metal and PCB configurations.

WiFi (WLAN) Antennas ^{1,2}				
Part Number	Frequency	Max Gain (dBI)	Length (inches/mm)	Application/Standard
W1063	900 MHz	3.0	6.65 /169	ISM 868 & 915 MHz
W1010³	2.4 GHz	2.0	3.3/83	802.11b/g/n, Bluetooth, ZigBee
W1030	2.4 GHz	2.0	3.25/82.5	802.11b/g/n, Bluetooth, ZigBee
W1037	2.4 GHz	3.2	6.65/169	802.11b/g/n, Bluetooth, ZigBee
W1038	2.4 GHz	4.9	6.65/169	802.11b/g/n, Bluetooth, ZigBee
W1027	2.4 GHz	3.2	4.88/124	802.11b/g/n, Bluetooth, ZigBee
SB24003	2.4 GHz	2.14	2.5/132	802.11b/g/n, Bluetooth, ZigBee
W1043	2.4 & 5.8 GHz	2.0	4.59/117	802.11b/g/n, Bluetooth, ZigBee
W1028B	5.15 & 5.85 GHz	2.0	4.88/124	802.11a/b/g/n/ac, ISM 5.8 GHz
SPDA17RP2400/5900	2.4 & 4.9 GHz	1.6/5	7/182	ISM 5.8 GHz, Public Safety, 4.9 GHz, 802.11a/b/g/n/ac

1. Antennas come standard with R-SMA male connectors, unless otherwise specified.

2. These part numbers are lead-free and RoHS compliant. No additional suffix or identifier is required.

3. SMA male connector

*Antennas for External Applications table is continued on next page

ANTENNAS

ANTENNAS FOR EXTERNAL APPLICATIONS *(continued)*

Single-Band External Antennas with I-PEX				
Part Number	Frequency	Mechanical Length	Cable Length ²	Application/Standard
W1049B030	2.4GHz	3.25/82.5	3/76	802.11b/g/n, Bluetooth, ZigBee
W1049B050	2.4GHz	3.25/82.5	5/127	802.11b/g/n, Bluetooth, ZigBee
W1049B090	2.4GHz	3.25/82.5	9/229	802.11b/g/n, Bluetooth, ZigBee
W1049B120	2.4GHz	3.25/82.5	12/305	802.11b/g/n, Bluetooth, ZigBee

1. **These** part numbers are lead-free and RoHS compliant. No additional suffix or identifier is required.

2. **Inches**/millimeters

3. **Max** Gain (2dBi)

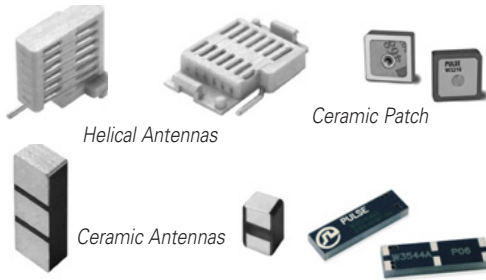


Pulse offers a wide variety of alternative wireless solutions for applications including machine-to-machine, public safety, hand-held radios, and telematics.

3G/4G LTE, ISM, UHF, VHF, GPS						
Part Number	Frequency (MHz)	Gain (dBi)	Description	Length (in/mm)	Coax	Connector
SPDA24918	863-973	0	Swivel Mount Dipole	8 / 202	N/A	SMA Male
W1900; W1902	824-960/ 1710-1990/ 1920-2170	1 / 2 / 2.5	Penta Rt Angle Stubby	2.1 / 49.5	N/A	SMA Male / RP-SMA Male
W1910; W1911	824-960/ 1710-1990 / 1920-2170	1 / 2 / 2.5	Penta Band Stubby	2 / 49	N/A	SMA Male / RP-SMA Male
W4000G197	1.574 GHz	1.5 dBic / 26dB LNA	GPS Ultra Thin	n/a	200 / 5meter	SMA Male
SPDA17RP2400/5900	2400-2500/4900-5900	1.6/5	Swivel Mount Dipole	7/182	N/A	RPTNC
SB450FME3	450-470	2.14	Stealth Blade	10/254	3' RG-174	FME
SB8003	806-896	2.14	Stealth Blade	2.5/132	3' RG-174	No Conn
SB9003	890-960	2.14	Stealth Blade	2.5/132	3' RG-174	No Conn
SPDA24850/1900	824-894/1850-1990	0/1.2	Swivel Mount Dipole	6.75/171	N/A	SMA
SPDA24700/2700	698-960 / 1710-2710 / 2500-2700	.6/1.5/3.4	LTE Swivel Mount Dipole	9 / 228	N/A	SMA Male
SPWB23150	136-174	-4.5	Wideband	6.75/171	N/A	SMA F T3
SPWH23832	782-882	0	Whip, Standard, ¼ Wave	3/76	N/A	SMA F T3
SPHS24832	800-864	0	Helical, Standard, ¼ Wave	3/76	N/A	SMA F T2
SPDA17806/2170LAR	806-960/1710-2170	.5/1.5	Pentaband Swivel Mount Dipole	7.5/190.5	N/A	TNC Male
W1920G0915	806-960/1710-2170	1.5	Stealth Blade	4.3/110	3' RG-174	SMA Male
W1920G3658	806-960/1710-2170	1.5	Stealth Blade	4.3/110	9' RG-174	SMA Male

1. UHF and VHF portable/terminal antennas also available. See full-line Antenna SourceBook Catalog.

Embedded onto / soldered to PCB



- Antenna Technology: Ceramic monopoles, ceramic PIFA, ceramic patch, helical; stamped metal, composite.
- Frequencies: WLAN(Wi-Fi), Zigbee, Bluetooth, ISM, GPS, 3G/4G LTE, Multi bands.
- Applications: OEM equipment, medical devices, security systems, tracking and monitoring devices, handhelds, meter reading, smart devices, sensors, wearables, fitness, beacons, and more.

Pulse offers a wide range of surface mount antennas (SMD) for wireless device applications. Pulse ceramic technology results in robust antenna designs that have outstanding performance. These antennas have an inherent immunity to surrounding antenna signals and hand-effect, which makes them exceptionally suitable solutions for small hand-held or wall-mount devices with multiple antennas. Pulse helical antenna technology provides high-performance antennas in a small package that can be easily deployed. Our composite antennas offer the most frequency bands per embedded technology. These ceramic, helical, and composite antennas require minimal ground plane removal for operation, which means saved board space and economical implementation. The SMD compatibility of Pulse's antenna products makes them simple and easy to mount.

CERAMIC								
Application	Part No.	Size ⁴ (mm)/ Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain ⁵ (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
Zigbee, ISM Monopole	W3001 ⁵	10x3.2x4mm Ceramic	SMD, GC 10.8x6.25	2400 and other	N/A	1.5 (peak)	75/-1.25	-6
WLAN Dualband	W3006	10.0x3.2x1.5 Ceramic	SMD, GC area 11.60x6.00	2400–2483.5 5150–5850	N/A	3,2 (peak) 4,2 (peak)	70/-1,55 (peak) 80/-0,95 (peak)	-8 -10
Bluetooth/ WLAN/WiFi	W3008C	3.2x1.6x1.1 Ceramic	SMD, GC area 4.00x6.25	2400–2483.5	N/A	2,2 (peak)	75/-1,3 (peak)	-11
GPS	W3009	10.0x3.2x4.0 Ceramic	SMD, GC area 10.80x6.25	1575.42 ±10	0.7 (peak) 0.3 (band edges)	3 (peak)	80/-1,25 (peak)	-10
ISM	W3013	10x3.2x4 / Ceramic	GC area 10.8x8.25	868-870	–	1.5	65	-11
WiFi & GPS	W3056	10x3.2x1.5 / Ceramic	GC area 10.8x6.25 (Notch)	2400-2483.5 / 1575.42	–	3.2 / 2.5	80 / 75	-8 / -10
WiFi & GPS	W3064C	10x3.2x1.5 / Ceramic	GC area 10.8x6.4 (Divided)	2400-2483.5 / 1575.42	–	-0.7 / -1	80 / 70	-11 / -15
GPS	W3213	13x13x4 / Patch	--	1575.42	-1.5	--	--	-13
GPS	W3216	13x13x5 / Patch	--	1575.42	-2	--	60	-7
GPS	W3099	25x25x4/ Patch	--	1575.42	3.5	--	--	-14

1. All antennas are RoHS Compliant 2. Impedance 50 Ω, operating temperature -40°C to +85°C 3. GC = Ground Clearance, mm 4. Millimeters (mm)
5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information

ANTENNAS

ANTENNAS FOR EMBEDDED SURFACE MOUNTING APPLICATIONS (continued)

CERAMIC (continued)

Application	Part No.	Size (mm)/ Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
GPS/ Glonass & Beidou	W3062A	7X1.6X1.6 / Ceramic	GC area 7.8x5.25	1559-1591 & 1598-1610	0	2.5	80 / -1	-10
Dual Band (EU)	W3070	10x3.2x2/ Ceramic	GC area 40x10	880-960 / 1710-1880	--	1.2 / 2.5	65 / 60	-5.1 / -5.7
Dual WiFi	W3078	3.2x1.6x1.1 / ceramic	GC area 11.15x6.4	2400-2483.5 / 4950-5850	--	1.7 / 4.3	65 / 80	-10 / -6
WiFi & GPS	W3095	10x3.2x1.5 / Ceramic	GC area 17.8x6.45	2400-2483.5 / 4950-5850 / 1559-1610.5	--	2.7/3.7/1.7	85/53/62	-10/-6/-8
ISM, or GPS, or GPS/ Glonass/BD	W3000 ⁵	7x1.6x1.6 / tuneable monopole	See datasheet	868-870; 1559-1591 & 1598-1610; 1575.4	See datasheet	See datasheet	See datasheet	See datasheet
GPS	W3010	10.0x3.2x2.0 Ceramic	SMD, GC area 10.80x6.25	1575.42 ±10	-0,2 (peak)	2,8 (peak)	75/-1,25 (peak)	-18
GPS	W3011/A	3.2x1.6x1.1 Ceramic	SMD 4x4.25/6.25	1575.42 ±10	0.85 (peak)	3.4 (peak)	85/-0.7 (peak)	-12
ISM 900	W3012	10x3.2x4 Ceramic	SMD GC area 10.80x8.25	868-870	N/A	2 (peak)	70/- 1.55 (peak)	-6
ISM 900 Monopole	W3014 ⁵	10x3.2x1.5 Ceramic	SMD GC area 40x16	868-870	N/A	1.55 (peak)	45/- 4.5 (peak)	-6
Zigbee, ISM Monopole	W3043 ⁵	3.2x1.6x1.1 Ceramic	SMD GC area, 17x20	2400, 1575 and other	N/A	4 (peak)	70/-1.55 (peak)	-12

HELICAL

Application	Part No.	Size (mm)/ Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
WiFi	W3108	5.0x2.5x5.5 Helical	SMD, GC area 7.50x5.50	2400–2483.5	N/A	1.5	50/-3	-8
GPS	W3110	5.0x2.5x5.5 Helical	SMD, GC area 7.50x5.50	1575.42 ±10	-2,1 (peak) -2,4 (band edges)	1,3 (peak) 0,7 (band edges)	47/-3,3 (peak) 43/-3,7 (band edges)	-16
ISM	W3112A	2.5x8.0x8.0 Helical	SMD, GC area 6.00x11.00	902–928	N/A	0.9 (peak) -0.3 (band edges)	67/-1.7 (peak) 50/-3 (band edges)	-10
ISM	W3113	12.4x8.0x2.5 Helical	SMD, GC area 8.00x40.00	902–928	N/A	0.8 (peak) -0.3 (band edges)	66 /-1.8 (peak) 51/-2.9(band edges)	-10
ISM (315)	W3126	35.35x9.90 / Helical	GC area 8x40	315	N/A	-5	--	-10
ISM (433)	W3127	35.35x9.90 / Helical	GC area 8x40	433-435	N/A	-2.9	--	-15

COMPOSITE

Application	Part No.	Size (mm)/ Type	Mount Type ³ (mm)	Frequency Range (MHz)	RHCP Gain (dBic)	Max Gain (dBi)	Efficiency (%/dB)	Return Loss (dB MIN)
2G/3G	W3544A/B	26x7.65x3 Composite	SMD	824-960/1710-2170	N/A	-1	50%	-6 ave
2G/3G	W3073	10x3.2x4 Composite	SMD	824-894/1710-2170 or 880-960/1710-2170	N/A	2.9	50%	-6 ave
3G / 4G LTE	W3796	40 x 7 x 3	GC area 15 x 40	698 - 2700	N/A	1.5 / 2/ 5.5	55 / 70	-6

1. All antennas are RoHS Compliant

2. Impedance 50 Ω, operating temperature -40°C to +85°C

3. GC = Ground Clearance, mm

4. Millimeters (mm)

5. Monopole antenna performance is linked to different tuning circuit recommendations for the variety of applications. Consult the data sheet for more information

ANTENNAS

ANTENNAS FOR INTERNAL APPLICATIONS



- Located inside the device.
- Often connected by a short cable assembly to customer PCB.
- Technology: Flexible printed circuit (FPC), PCB, patch.
- Frequencies: WLAN, Bluetooth, Zigbee, ISM, GPS, 3G/4G LTE, Multi bands.
- Typical applications: Access points, industrial controls, utilities, Internet of Things, M2M, telemedicine, handheld devices, point-of-sale equipment, sensors, lighting, transportation and other devices.

Printed Circuit Board Antenna Solutions

Application	Frequency	Part Number	Mechanical Dimensions (in/mm)	Cable Length (mm) /Connector Type	Gain (dBi)	Efficiency (%/B)
2G / 3G	850/900/1800/1900	W3501	0.98 x 3.43 x .008 25 x 87 x 0.2	56/ I-PEX Connector	1.5 / 1.5 / 3.5 / 3.5	50 to 55 %
2G / 3G	850/900/1800/1901	W3502	1.69 x 0.67 x 0.02 43 x 17 x 0.5	27.5/ I-PEX Connector	2 / 1 / 1 / 2	40 to 60 %
WiFi	2.4 GHz	W3525Bxxx	0.42 x 1.88 x .031 10.7 x 47.7 x 0.8	Various cable lengths/ I-PEX Connector	2	70%
WiFi	2.4 & 5 GHz	W3513	0.63 x 2.76 x 0.04 16 x 70 x 0.9	250/ I-PEXConnector	2	50 to 72 %
WiFi	2.4 & 5 GHz	W3315B0100	0.23 x 1.8in / 6x45 mm	100, IPEX, MHF Series	-3.5 / -2.5	70
3G 4G LTE	698-960 / 1710-2710 / 2300-2700	W3554B0140	120 x 30 x 0.2	143 / IPX	2.5	60%
5 GHz Dipole	4900-5850	W3593B0100	45 x 7 x 0.8	109mm / IPX	2	50%

Antennas for Near Field Communications

Frequency (MHz)*	Part Number	Impedance (Ω)*	Read Distance (mm)*	Size (mm)	SRF (MHz)**	Inductance (μH)**	Resistance (Ω)**	Q **	Matched Q ***
13.56	W3579	50 / 80	40	35 x 50 x 0.30	42	1.6	3.6	37.8	5-30
13.56	W7001	51 / 80	40	25 x 25 x 0.12	100	0.9	1.55	49	5-30
13.56	W7002	52 / 80	40	94.6 x 56.8 x 3.65	89	0.65	0.95	57	5-30
13.56	W7013	53 / 80	20	25 x 30 x 0.23	-	-	-	-	-

* With Matching Network

** Coil Without Matching Network

*** With Matching Network (adjustable range)

ANTENNAS

DAS PRODUCTS



PIMinator™ Product Family

Ultra-Thin Clear Ceiling Antennas	Pulse Part Number	Freq. (MHz)	PIM Rating, dBc	Connector / Cable
Clarity Family	DASUTCC500NF	608-960/1695-2200/2300-2700MHz, Antenna Only	-155	N Female / 500mm
Clarity Family	DASUTCCR500NF	608-960/1695-2200/2300-2700MHz, with Reflector	-155	N Female / 500mm
Clarity Family	DASUTCC500MD	608-960/1695-2200/2300-2700MHz, Antenna Only	-155	4.1-9.5 Mini-Din Female / 500mm
Clarity Family	DASUTCCR500MD	608-960/1695-2200/2300-2700MHz, with Reflector	-155	4.1-9.5 Mini-Din Female / 500mm
Clarity Family	DASUTCC5004310	608-960/1695-2200/2300-2700MHz, Antenna Only	-155	4.3 -10 Female / 500mm
Clarity Family	DASUTCCR5004310	608-960/1695-2200/2300-2700MHz, with Reflector	-155	4.3 -10 Female / 500mm
Clarity Family	DASUTCCACC1	Reflector	N/A	N/A



PIMinator™ Product Family

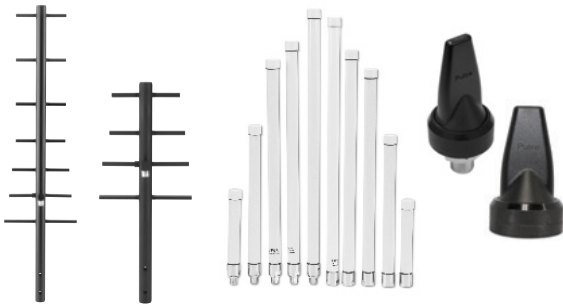
Antennas	Pulse Part Number	Freq. (MHz)	PIM Rating (dBc)	Connector / Cable
MIMO Ceiling Mount	DASLTE500NFMIMO	698-960/1710-2170/2300-2700/4900-5900	-155	N Female / 500mm (2x)
MIMO Ceiling Mount	DAS500MDMIMO	698-960/1710-2170/2300-2700/4900-5900	-155	4.1-9.5 Mini-Din Female / 500mm
SISO Ceiling Mount	DASLTE500NF	698-960/1710-2170/2300-2700/4900-5900	-155	N Female / 500mm
SISO Ceiling Mount	DASLTENF	698-960/1710-2170/2300-2700/4900-5900	-155	N Female / 500mm
SISO Ceiling Mount	DASLTEMINIDIN	698-960/1710-2170/2300-2700/4900-5900	-155	4.1-9.5 Mini-Din Female / 500mm
SISO Ceiling Mount	DASLTEDIN	698-960/1710-2170/2300-2700/4900-5900	-155	DIN 7-16



RF Splitters	Pulse Part Number	Freq. (MHz)	PIM Rating (dBc)	Connector
Power Splitter, 2-Way, 300W	DASSPLIT2WDIN	698-2700	-155	DIN
Power Splitter, 2-Way, 300W	DASSPLIT2WNF	698-2700	-155	N Female
Power Splitter, 3-Way, 300W	DASSPLIT3WNF	698-2700	-155	N Female
Power Splitter, 4-Way, 300W	DASSPLIT4WNF	698-2700	-155	N Female

ANTENNAS

ANTENNAS FOR OUTDOOR APPLICATIONS



- Weatherproof (IP65/67)
- Technology: radome omni, monopole, dipole, Yagi, base station, panel.
- Different mounting options.
- Optional cable assemblies.
- Frequencies: WLAN, ISM, GPS, 3G, 4G, LTE, UHF/VHF, Multi bands.
- Applications: Mesh networks, security smart devices, utilities, tracking, wireless communication, oil & gas exploration, transportation, railroad, and vending.

Pulse offers some of most reliable antennas on the market today. Pulse antennas combine premium materials with high-efficiency designs to deliver antennas with superior mechanical durability and electrical performance. UV, chemical and impact resistant plastic resins help ensure the highest performance for all your mobile applications. "Traditional-style" mobile antennas are available from 27 MHz to 5.9 GHz, as well as many "multi-band" designs. Whether you need communication interoperability, radio communication, data transmission, increased 3G / 4G LTE coverage or GPS tracking, these antennas are the solution.

Infrastructure Solutions						
Application	Frequency (MHz)	Part Number	Gain (dBi)	Description	Length (in/mm)	Connector ¹
Cellular/ISM	890 - 960	YA6900W		Fully welded four element Yagi	17.5/444.5	N Female
WiFi	2400 - 2500	RO2408NM	8	Radome Omni	20/508	N Male
Public Safety	4940 - 4990	RO4910NF	10	Radome Omni	18/457	N Female
Upper WiFi ; Amateur Radio	5725 - 5875	RO5810NM	10	Radome Omni	16.5/419	N Male
Upper WiFi; Amateur Radio	5725 - 5875	RO5810NF	10	Radome Omni	16.5/419	N Female
Various	740-806	YA5740W	9 / 11	Fully welded seven element Yagi	32.75 / 831.85	N Female
Various	806-866	YA5800W	9 / 11	Fully welded seven element Yagi	32.75 / 831.85	N Female
2G / 3G	806-960 / 1710-2170	RO8063 / 21704NM	3/4.5	Radome Omni	16.5 / 419.1	Male
2G / 3G	2400-2500 / 4900-5900	SLPT2400 / 5900DMN	4.3 / 5.5	Direct Mount Antenna	3 / 76.2	N Female
2G/3G; WiFi	698-960 / 1710-2170 / 2400-2700	SLPT698 / 2170DMN	4.5 / 5.6 / 4	Mount Antenna	3 / 76.2	N Female
WiFi	2.4 GHz	W5001	1.5	IP65 , Fixed Right Angle Dipole	5.04 / 128	RP-SMA (male)
WiFi	2.4 GHz	W5010	1.5	IP65 , Straight Dipole	5.1 / 130	RP-SMA (male)
WiFi	2.4 GHz	W5011	1.5	IP65 , Straight Dipole	5.1 / 130	SMA (male)
WiFi	2.4 GHz, 5.x Ghz	W5028	2.7 / 3.0	IP65, Fixed Right Angle, Dipole	5.04 / 128	RP-SMA (male)
WiFi	2.4 GHz, 5.x Ghz	W5030	4 / 6	Radome Omni	6.8 / 173	N Male
ISM, 868/915, SRD860	868 - 928 MHz	W5012	2	IP65, Straight Dipole	7.0 / 179	RP-SMA (male)
ISM, 868/915, SRD860	868 - 928 MHz	W5017	2	IP65, Straight Dipole	7.0 / 179	SMA (male)

1. Variety of Coax available. Order separately.

* Table for Infrastructure Solutions, continued on next page. →

ANTENNAS

ANTENNAS FOR OUTDOOR APPLICATIONS *(continued)*

Infrastructure Solutions						
Application	Frequency (MHz)	Part Number	Gain (dBi)	Description	Length (in/mm)	Connector ¹
ISM	433, 868-930 MHz	RO3ISMNM	2.0 / 2.5	Radome Omni	21 / 540	N Male
GPS	1.574 GHz	GPSDM02	5 dBic / 28dB LNA	GPS direct feed; 5/8 inch hole	200 / 5 meter	MCX
GPS (Magnet Mt)	1.574 GHz	GPS0010	5 dBic / 26dB LNA	GPS with Magnet Mount	200 / 5 meter	SMA
2G / 3G	1710 - 2170 MHz	RO17102NM	2	Radome Omni	4.5 / 115	N Male
GPS 2G/3G	806-960/1710-2170/1574	W4120GG3000	2.5 / 2.5 / 2	GPS 2G/3G Blade	118 / 3 meter	SMA Male

1. **Variety** of Coax available. Order separately.



Vehicular Antenna Solutions¹

Part Number	Frequency (MHz)	Gain (dBi)	Description	Length (in/mm)	Coax ²	Connector ³
NMOWB150C	135-174	2	NMO Wide Band	51.75 / 1314	N/A	NMO
NMO450C	450-750	5.6	NMO UHF Field Tunable	33/838	N/A	NMO
LP800NMO	806-960	2	NMO Low Profile	1.25/32	N/A	NMO
GPSNMO	1575.4	5 dBic	GPS NMO Mount	2.9 dia/73.66	N/A	NMO
EF2405NMO	2400-2500	5	NMO Mount Elevated Feed	13/260.4	N/A	NMO
EF4905NMO	4900-5000	5	NMO Mount Elevated Feed	10/254	N/A	NMO
NMO5E2400B	2400-2500	5	NMO Whip	8.54/ 217	N/A	NMO
GPSGMSMA	1575.42	26	Active GPS Glass Mount Antenna	1.18/30	16' 4" RG-174	SMA Male
SLPT698/960NMO	698-960	4.5	LTE External Vehicle or Enclosure NMO Mounted Antenna	3/7.62	N/A	NMO
SLPT2400NMOHF	2400-2500	4.3	2.4 GHz LTE External Vehicle or Enclosure NMOHF Mount Antenna	3/7.62	N/A	NMO
SLPT2400DMN	2400-2500	4.3	2.4 GHz LTE External Vehicle or Enclosure Direct Mount Antenna	3/7.62	N/A	N - Female

1. **Antennas** available in multiple frequencies and mounting options.

2. **Variety** of coax available. Order separately.

3. **Variety** of connectors available. Order separately.

4. **All** NMO antennas require an NMO mount for installation.

ANTENNAS FOR OUTDOOR APPLICATIONS (continued)



Vehicular Antenna Solutions

Part Number	Frequency (MHz)	Gain (dBi)	Description	Length (in/mm)	Coax ²	Connector ³
GPSDM700/5800SSS	698-960 / 1710-2170 / 2300-2700 / 1575	3 / 6	LTE Multi-band, WiFi, Active GPS	3.5 / 88	17 ft RG58; 17 ft RG58; 17 ft RG174	SMA, SMA, SMA
GPSMB501	Multi-band (See Datasheet)	5 / 5 / 1.5 (31dB LNA)	"MIMO LTE, MIMO WIFI, GPS/Glonass"	"6.0 x 6.5 x 3 inch 152 x 165 x 76 mm"	RG58, RG58, RG174	SMA (see datasheet)
GPSMBMM	N/A	N/A	Mag Mount for GPSMB501	N/A	N/A	N/A
NMO150/450/800	50-165/450-470/806-940	-7/0/1	NMO Tri Band ⁴	16.5/419	N/A	N/A
MMC/P3EFME	824-960/1850-1990	4/4	Dual Band Magnetic Mount	5/127	RG-58 Low Loss Dual Shield	FME
NMOC/P3E	824-960/1850-1990	4/4	Dual Band NMO Mount ⁴	4.7/119	N/A	N/A
GPSCW1502	136-174/1575.4	2.14/5 dBic	Direct Feed Dual Band VHF/GPS Combi Whip	22/558.8	RG-174	SMA/SMB
GPSCW4501/GPWCW4502	406-512/1575.4	2.14/5 dBic	Direct Feed Dual Band UHF/GPS Combi Whip	6.5/165.1	RG-174	SMA/SMA SMA/SMB
GPSCW3E800	806-896/175.4	5/5 dBic	Direct Feed Dual Band GSM/GPS Combi Whip	11.5/292.1	RG-174	N/A
GPSCPXX	824-960/1710-2170/1575.42	2/2/5 dBic	Direct Feed GPS Tri Band	7.6/193	RG-174	Various
GPSCWCPXX	824-960/1710-2170/1575.42	2/2/5 dBic	Roof Mount GPS Tri Band	3.9/99	RG-174	Various
NMOHFGPSXXX	Any NMO mount antenna plus GPS	Dependent on antenna/5dBic	Direct Feed NMO Mount with GPS	202/5130.8	RG-58/RG-174 (GPS)	Various
GPSDM700/2500FFS	698-960/1710-2170/2300-2700/1575.72	3/6	LTE Multi Band/Active GPS Roof Mount Antenna	3.5/88.3	17'RG-58/17'RG-58 /17R-174	FME Female/ FME Female/SMA Male (GPS)
WA700/2700XXX	700-960/1710-1990/2110-2170/2500-2700	2.5/3.5	Omnidirectional Wireless LTE/MIMO Antenna	5.85/149	19.7'RG-174	Various
SLPT698/2170NMOHF	698-906/1710-2170/2400-2700	4.5/5.6/4	LTE Multi Band External Vehicle or Enclosure NMOHF Mount Antenna	3/76.2	N/A	N/A
SLPT2400/5900NMOHF	2400-2500/4900-5900	4.3/5.5	2.4/4.9 GHz Multi Ban External Vehicle or Enclosure NMOHF Mount Antenna	3/76.2	N/A	N/A
SLPT698/2170DMN	698-960/1710-2170/2400-2700	4.5/5.6/4	LTE Multi Band External Vehicle or Enclosure Direct Mount Antenna	3/76.2	N/A	N Female
SLPT2400/5900DMN	2400-2500/4900-5900	4.3/5.5	2.4/4.9 GHz Multi Band External Vehicle or Enclosure Direct Mount Antenna	3/76.2	N/A	N Female

1. Antennas available in multiple frequencies and mounting options.

2. Variety of coax available. Order separately.

3. Variety of connectors available. Order separately.

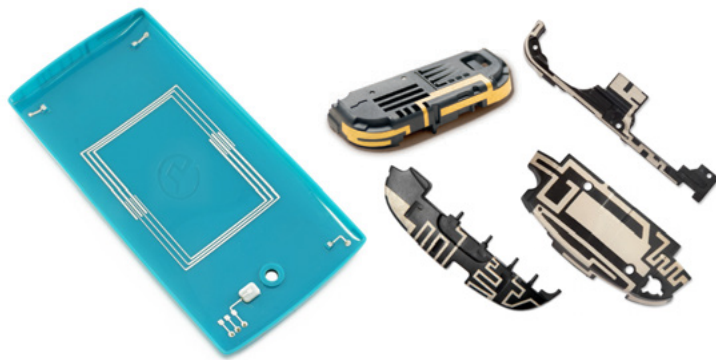
4. All NMO antennas require an NMO mount for installation



NMO Mounting

Part Number	Description	Cable Length	Coax Type	Connector
NMOKHFUD	NMO Low/High Frequency Mount	175.18	RG-58,U Dual Shield, Low Loss Cablew	NO CONN
NMOKHFUDTHK	NMO Low/High Frequency Thick Mount	175.18	RG-58,U Dual Shield, Low Loss Cable	NO CONN
NMOMMRNOCONN	NMO Low/High Frequency Magnetic Mount	123.66	RG-58 A,U cable	NO CONN
NMOHFGPSNOCONN	Any NMO mount antenna plus GPS	202/5130.8	RG-58 ,RG-174(GPS)	NO CONN

1. All NMO mounting kits are available with a variety of cables and connectors.



Pulse Mobile Device Antennas Delight End Users

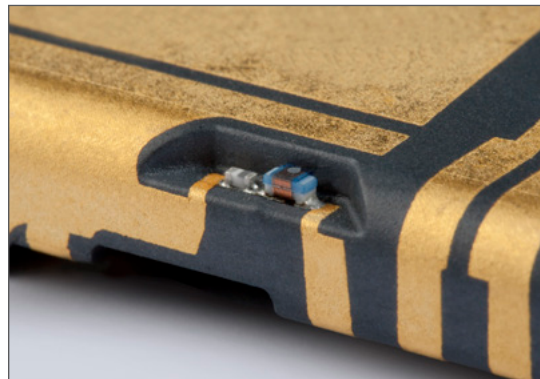
Pulse Electronics boosts appealing mobile devices by providing intelligent antenna design and manufacturing solutions for handsets, tablets, laptops and wearable devices.

Our aim is to optimize antenna radiator and mechanics designs for complex multi-radio environments under all circumstances without limiting the industrial design. The carefully developed Pulse solutions truly delight end users.

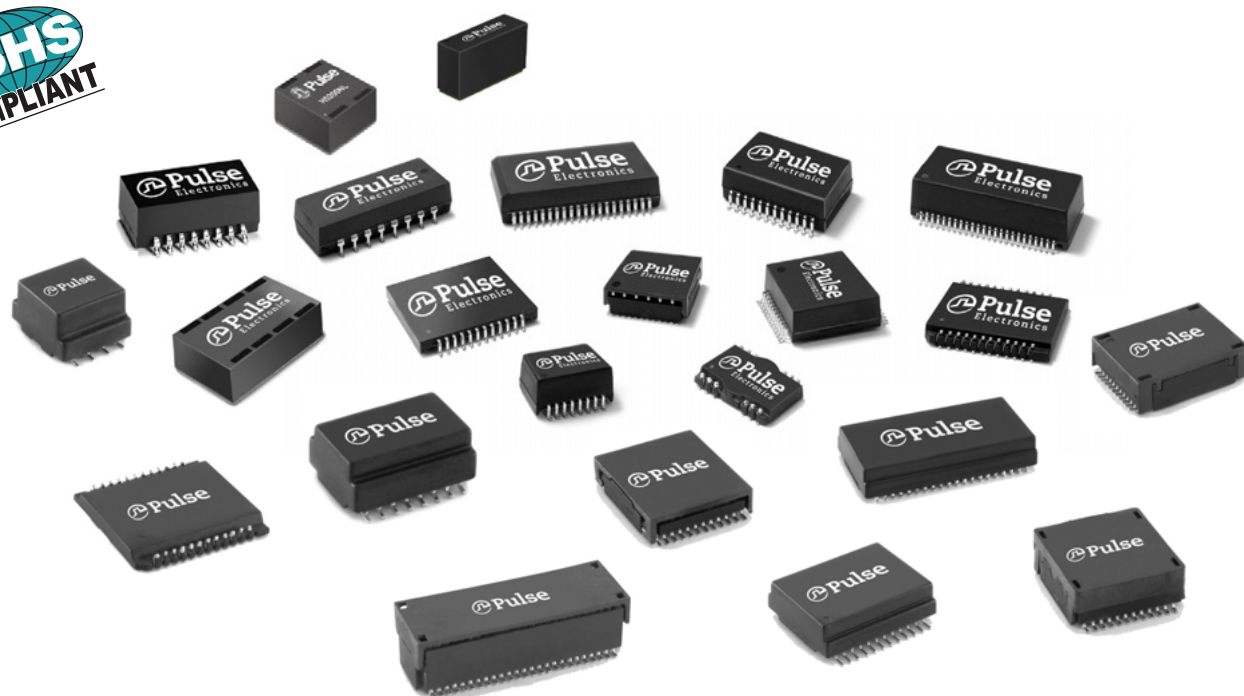
Pulse has track-record of delivering antenna solutions to all mobile device segments and categories. Pulse understands fully customers' specific needs and is capable to offer the most suitable total solution to each customized design.

Our wide product range covers standalone antennas, standalone antenna modules and antenna integration to structural and visual mechanics. Pulse utilizes manufacturing technologies such as Printing on 3D, LDS, Flex, Sheet Metal and Ceramics.

More information: http://www.pulseelectronics.com/products/mobile_device_antennas



ETHERNET MAGNETIC MODULES



Pulse Ethernet Magnetic Modules

Pulse offers comprehensive line of Ethernet Magnetic Modules. Pulse 100/1000/10GBASE-T Modules are optimized for all major LAN transceivers. All modules provide electrical circuit isolation that meets IEEE 802.3, while maintaining signal integrity needed for the most demanding applications. These products are qualified at major PHY suppliers. Pulse manufactures the broadest selection of packaging options, from through hole (THT) SIL devices to the smallest available surface mount (SMT) solution at .078" (1.98 mm). Pulse offers full line of RoHS compliant products.

NOTE: This catalog section serves as an overview to the LAN discrete modules. For detailed data sheets, IC Cross Reference and a complete list of LAN discrete modules, go to the Pulse website home page at www.pulseelectronics.com/product/lan

ETHERNET MAGNETIC MODULES

DISCRETE SMT TRANSFORMER MODULES										
Number of Ports	Single				Dual			Quad		
Data Rate	100Base-TX	1GBase-T	HDBaseT	10GBase-T	100Base-TX	1GBase-T	10GBase-T	100Base-TX	1GBase-T	10GBase-T
	H0013NL (LP)	H5004NL	HD8004FNL (PoH 60W)	H7008NL (4C)	H1174NL	H5012NL	***	H1060NL	H5400NL (BGA)	***
	H0068ANL (LP)	H5007ENL	HD8005FNL (PoH 100W)	H7018NL (4C)	H1200NL	H5014NL		H1062NL	H5401NL (BGA)	
	H1012NL	H5007NL		H7019NL (4C)	H1270NL	H5020NL		H1164NL	H6400NL (PoE+, BGA)	
	H1081NL	H5008NL		H7028NL	H2009NL (PoE)	H5089NL		H1259NL	HX5400NL (X, BGA)	
	H1100NL	H5015NL		H7029NL (4C)	H2305NL (PoE)	H5200NL (PoE, BGA)		H1664NL	HX5401NL (X, BGA)	
	H1102NL	H5019EFNL (LP)		H7137NL (5C)	H6096NL (PoE+)	H5201NL (BGA)		HX1234NL (X)		
	H1112NL	H5062NL			H6600NL (PoE+, BGA)	H6080NL (PoE)		HX1259NL (X)		
	H1197NL	H5084NL			HX1294NL (X)	H6101FNL (PoE+)				
	H1260NL	H5120NL (LP)			HX1305NL (X)	HX5012NL (X)				
	H1302NL	H5143NL			HX2305NL (X, PoE)	HX5014NL (X)				
	H2019NL (PoE)	H5149NL			HX6096NL (X, PoE+)	HX5020NL (X)				
	H2260NL (PoE)	H5578NL			HX6098NL (X, PoE+)	HX5200NL (X, PoE, BGA)				
	HM1188NL (X, AE)	H5610NL (BGA)				HX5201NL (X, PoE)				
	HM1225NL (X, AE)	H6062NL (PoE)				HX6080NL (X, PoE)				
	HX0068ANL (LP)	H6096NL (PoE+)				HX6101NL (X, PoE+)				
	HX1098NL (X)	H6600NL (PoE+, BGA)								
	HX1148NL (X)	HX5004NL (X)								
	HX1188NL (X)	HX5008NL (X)								
	HX1198NL (X)	HX5009NL (X)								
	HX1217NL (X, IP)	HX5019FNL (X, LP)								
	HX1224NL (X, 4KV)	HX5062NL (X)								
	HX1260NL (X)	HX5084NL (X)								
	HX1302NL (X)	HX5120NL (X, LP)								
	HX1324NL (X)	HX5149NL (X)								
	HX2019NL (X, PoE)	HX5610NL (X, BGA)								
	HX2260NL (X, PoE)	HX6062NL (X, PoE)								
	HX2326NL (X, PoE+)	HX6096NL (X, PoE+)								
		HX5181NL (X)								
		HX5224NL (X, 4KV)								

Abbreviations: LP = Low Profile, X = Extended Temperature, PoE = Power over Ethernet, PoE+ = Power over Ethernet Plus, 4C = 4Channel, 5C = 5Channel, BGA = Bump Grid Array
 IP = Industrial Protocol, AE = AEC-Q200 Qualified, PoH = Power over HDBaseT, HD = HDBaseT

*** Contact Pulse for availability

RJ45 INTEGRATED CONNECTOR MODULES (ICM)



PulseJack® Integrated Connector Modules

Pulse offers a broad selection of PulseJack RJ45 filtered connectors that integrate ethernet magnetics into RJ45 connectors. In addition to connectivity, they provide signal conditioning, signal isolation, and EMI suppression. All ICM's are designed to meet IEEE 802.3 specification and are qualified at major PHY suppliers. The PulseJack connectors offer a complete family of single and multi-port solutions for high-speed applications, including 100/1000/10GBASE-T, PoE, PoE+ and 4P PoE. Pulse offers full line of RoHS compliant products.

NOTE: This catalog section serves as an overview to the PulseJack Integrated Connector Modules. For detailed data sheets, IC Cross Reference and a complete list of PulseJack ICM's, go to the Pulse website at www.pulseelectronics.com/product/lan.

RJ45 INTEGRATED CONNECTOR MODULES (ICM)

RJ45 Filtered Connectors								
Number of Ports	1x1							
Locking Taps (Up/Down)	Up				Down			
PCB Mounting Type	SMT	THT			SMT	THT		
Data Rate	100Base-TX	100Base-TX	1GBase-T	10GBase-T	100Base-TX	100Base-TX	1GBase-T	10GBase-T
Part Numbers	J3011G21DNL (LED, BST, EMI)	J0G-0007NL (LED, BST, EMI)	J0G-0001NL (LED, BST, EMI)	JT7-1104NL (5C, LED, BST, EMI, 4P PoE)	J0C-0003NL	J00-0014NL (BST)	JKM-0001NL (LED, BST, EMI)	JT3-1101NL (5C, LED, BST, EMI)
	J3026G01DNL (LED, BST)	J1006F01PNL (LED)	J0G-0003NL (LED, BST)	JT7-1115NL (5C, LED, BST, EMI, 4P PoE)	J0C-0004NL (EMI)	J00-0045NL (LED, BST)	JKM-0003NL (BST, EMI)	JT3-1125NL (5C, LED, BST, EMI)
	J3026G21DNL (LED, BST, EMI)	J1006F21NL (EMI)	J0G-0009NL (LED, BST, EMI)		J0C-0005NL (BST)	J00-0061NL (BST, EMI)	JKM-0004NL (LED, BST, EMI)	JT4-1108HL (5C, LED, BST, EMI)
	JX30-0005DNL (LED, BST, EMI)	J1011F01PNL (LED)	J1L-0103NL (0, LED, BST, EMI)		J0C-0006NL (BST, EMI)	J00-0065NL (LED, BST, EMI)	JKM-0004NL (X, LED, BST, EMI)	JT4-1109HL (5C, LED, BST, EMI)
		J1011F21PNL (LED, EMI)	JD1-0001NL (LED, BST, EMI)		JV006121NL (EMI)	J00-0213NL (LED, BST, EMI)	JKM-0013NL (LED, BST, EMI)	JT4-1120HL (4C, LED, BST, EMI)
		J1012F01CNL (LED)	JD1-0002NL (LED, BST, EMI)		JV01121NL (BST, EMI)	JKM-0008NL (LED, BST, EMI)	JKM-0013NL (X, LED, BST, EMI)	JT4-1121HL (4C, LED, BST, EMI)
		J1012F21CNL (LED, EMI)	JKO-0114NL (LED, EMI)		JV026121NL (BST, EMI)	JKM-0009NL (LED, BST)	JT4-1121HL (LED, BST, EMI)	JT4-1173HL (4C, LED, BST, EMI)
		J1012F21KNL (LED, EMI)	JKO-0116NL (LED, EMI)			JKM-0010NL (BST, EMI)		JTH-0020NL (LED, BST, EMI)
		J1012F21RNL (LED, EMI)	JKO-0117NL (BST, EMI)			JKM-0011NL (BST)		JTH-0024NL (LED, BST, EMI)
		J1026F01NL (LED)	JKO-0133NL (BST, EMI, PoE)			JKM-0200NL (LED, BST, EMI, PoE+)		
		J1026F01PNL (LED, EMI)	JKO-0136NL (LED, BST, EMI)			JKM-0201NL (LED, BST, EMI, 4P PoE+)		
		J1026F21CNL (LED, EMI)	JKO-0145NL (LED, BST, EMI, PoE)			JX0011D21B1NL (X, LED, BST, EMI)		
		JD1-0003NL (BST)	JKO-0161NL (BST, EMI, PoE)			JX0011D21NL (X, BST, EMI)		
		JD1-0004NL (LED, BST, EMI)	JKO-0177NL (LED, BST, EMI, PoE+)			JX0026D21B1NL (LED, BST, EMI)		
		JKO-0120NL (LED, EMI)	JKO-0187NL (LED, BST, EMI)			JX0026D21NL (X, BST, EMI)		
		JKO-0125NL (LED, EMI, PoE)	JKO-0193NL (LED, BST, EMI, PoE)			JXRO-0001NL (BST, EMI)*		
		JKO-0144B1NL (EMI, PoE)	JXD1-0001NL (X, LED, BST, EMI)			JXRO-0005NL (BST)*		
		JKO-0144NL (LED, EMI, PoE)	JXD1-0002NL (X, LED, BST, EMI)			JXRO-0011NL (LED, BST, EMI)*		
		JX10-0045NL (X, LED, BST, EMI)	JXKO-0136NL (LED, BST, EMI)			JXRO-0015NL (LED, BST)*		
		JXD1-0005NL (X, BST, EMI, PoE)	JXKO-0190NL (LED, BST, EMI, PoE+)					
		JXRT-0001NL (EMI)*						
		JXRT-0005NL*						
		JXRT-0011NL (LED, EMI)*						
		JXRT-0015NL (LED)*						

Abbreviations: LED = Light-Emitting Diode, BST = Bob Smith Termination, EMI = Electromagnetic Interference Shield Tabs, X = Extended Temperature, PoE = Power over Ethernet, PoE+ = Power over Ethernet Plus, LP = Light-Pipe, 4C = 4Channel, 5C = 5Channel, 4P PoE = 4-Pair Power over Ethernet, 0 = offset, SC = Shield Collar

* Pin-in-Past Capable

RJ45 INTEGRATED CONNECTOR MODULES (ICM)

RJ45 Filtered Connectors		
Number of Ports	1X1	
PCB Mounting Angle	Vertical Mount (Top Entry)	
PCB Mounting Type	THT	
Data Rate	100Base-TX	1GBase-T
Part Numbers	JD2-0010NL (LED, BST)	JD3-0001NL
	JD2-0011NL (LED, BST)	JD3-0002NL (LED)
	JXD2-0010NL (X, LED, BST)	JXD3-0001NL (X)
	JXD2-0011NL (X, LED, BST)	JXD3-0002NL (X, LED)
	JXD3-0003NL (X, BST, PoE)	
	JXD3-0004NL (X, PoE)	

RJ45 Filtered Connectors						
Number of Ports	1xN (2, 4, 6, 8)					
Locking Taps (Up/Down)	Up			Down		
PCB Mounting Type	THT			THT		
Data Rate	100Base-TX	1GBase-T	10GBase-T	100Base-TX	1GBase-T	10GBase-T
Part Numbers	JIN-0011NL (1x4, PoE, BST, EMI)	JIN-0003NL (1x4, PoE+, LED, BST, EMI)	JTG-1473NL (1x4, 4C, LED, BST, EMI)	J8064D628ANL (1x2, LED, BST, EMI)	JON-0011NL (1x4, LED, EMI)	Contact Pulse for availability
	JIN-0012NL (1x4, EMI)	JIN-0004NL (1x4, PoE+, BST, EMI)	JTG-1480NL (1x4, 4C, 4P PoE, LED, BST, EMI)	J8064D648ANL (1x4, LED, BST, EMI)	JON-0012NL (1x4, LED, PoE, EMI)	
	JIN-0013NL (1x4, LED, BST, EMI)	JIN-0005NL (1x4, PoE+, BST, EMI)		J8064D668ANL (1x6, X, LED, BST, EMI)	JON-0015NL (1x4, LED, PoE+, EMI)	
	JGO-0031NL (1x2, PoE, LED, BST, EMI)	JIN-0006NL (1x4, BST, EMI)		J8064D688ANL (1x8, LED, BST, EMI)		
	JGO-0032NL (1x4, PoE, LED, BST, EMI)	JIN-0007NL (1x4, PoE, BST, EMI)		J8064E62NL (1x2, BST, EMI)		
		JIN-0008NL (1x4, PoE, LED, BST, EMI)		J8064E64NL (1x4, BST, EMI)		
		JGO-0023NL (1x2, LED, EMI)		J8064E66NL (1x6, BST, EMI)		
		JGO-0024NL (1x2, LED, EMI)		J8064E68NL (1x8, BST, EMI)		
		JGO-0025NL (1x4, LED, EMI)		JX80-0019NL (1x2, LED, BST, EMI)		
		JGO-0026NL (1x4, LED, EMI)		JX80-0022NL (1x4, X, LED, BST, EMI)		
		JGO-0027NL (1x6, LED, EMI)		JX8064D668ANL (1x6, X, LED, BST, EMI)		
		JGO-0028NL (1x8, LED, EMI)		JX8064D688ANL (1x8, X, LED, BST, EMI)		
		JGO-0035NL (1x4, LED, BST, EMI)				
		JGO-0098NL (1x4, LED, BST, EMI)				
		JGL-0001NL (1x2, LED, BST, EMI)				
		JGL-0004NL (1x2, LED, BST, EMI)				
		JXIN-0033NL (1x4, X, PoE+, LED, BST, EMI)				
		JXGO-0098NL (1x4, X, LED, BST, EMI)				
		JXGO-0129NL (1x2, X, LED, BST, EMI)				

Abbreviations: LED = Light-Emitting Diode, BST = Bob Smith Termination, EMI = Electromagnetic Interference Shield Tabs, X = Extended Temperature, PoE = Power over Ethernet, PoE+ = Power over Ethernet Plus, LP = Light-Pipe, 4C = 4Channel, 5C = 5Channel, 4P PoE = 4-Pair Power over Ethernet, O = offset, SC = Shield Collar

* Pin-in-Past Capable

RJ45 INTEGRATED CONNECTOR MODULES (ICM)

RJ45 Filtered Connectors					
Number of Ports	2xN (1, 2, 4, 6, 8)				
Locking Taps (Up/Down)	Up/Down			Up/Down	
PCB Mounting Type	THT			PF	
Data Rate	100Base-TX & BST	1GBase-T & BST	10GBase-T	1GBase-T	10GBase-T
Part Numbers	J20-0013NL (2x2, LED, EMI)	J0B-0364NL (2x4, PoE)	JT5-2270NL (2x2, 4c, LP, SC)	Contact Pulse for availability	JT5-2210NL (2x2, 4c, LP, SC)
	J20-0114NL (2x4, LED, EMI)	J0B-0366NL (2x4, PoE)	JT5-2470NL (2x4, 4c, LP, SC)		JT5-2410NL (2x4, 4c, LP, SC)
	J20-0115NL (2x6, LED, EMI)	J0B-0368NL (2x4, PoE)	JT5-2670NL (2x6, 4c, LP, SC)		JT5-2610CNL (2x6, 4c, LP, SC)
	J20-0116NL (2x8, LED, EMI)	J0B-0384NL (2x4, PoE+)	JT5-2853NL (2x8, 5c, LP, SC)		JT5-2801NL (2x8, 5c, LP, SC)
	J0B-0479NL (2x4, PoE, EMI)	J0B-0386NL (2x6, PoE+)	JT5-2870NL (2x8, 4c, LP, SC)		JT5-2810NL (2x8, 4c, LP, SC)
	J0B-3561NL (2x2, PoE, EMI)	J0B-0388NL (2x8, PoE+)			
	JX20-0037NL (2x2, X, LED, EMI)	JCO-0131NL (2x4)			
	JX20-0114NL (2x4, X, LED, EMI)	JCO-0132NL (2x6)			
	JX20-0115NL (2x6, X, LED, EMI)	JCO-0133NL (2x8)			
	JX20-0116NL (2x8, X, LED, EMI)	JCO-0351NL (2x2, LED)			
		JCO-1011NL (2x1, LED)			
		JCO-1015NL (2x1)			
		JXB-3041NL (2x4, X, PoE+, LED, EMI)			
		JXCO-0182NL (2x4, X, LED, EMI)			
		JXCO-0351NL (2x2, X, LED, EMI)			
		JXCO-1011NL (2x1, X, LED, EMI)			
		JXCO-1015NL (2x1, X, EMI)			

Abbreviations: LED = Light-Emitting Diode, BST = Bob Smith Termination, EMI = Electromagnetic Interference Shield Tabs, X = Extended Temperature, PoE = Power over Ethernet, PoE+ = Power over Ethernet Plus, LP = Light-Pipe, 4C = 4Channel, 5C = 5Channel, 4P PoE = 4-Pair Power over Ethernet, O = offset, SC = Shield Collar

* Pin-in-Past Capable

CONNECTOR PRODUCTS

Pulse Connectors

Pulse is a leader in the design and manufacturing of RJ45, RJ11 and CAT5e connectors. Pulse offers an extensive range of connectors that support a wide variety of applications: networking (SFP+ and SFP cage and connector), server and PC (PCIe, USB, thunderbolt connectors).

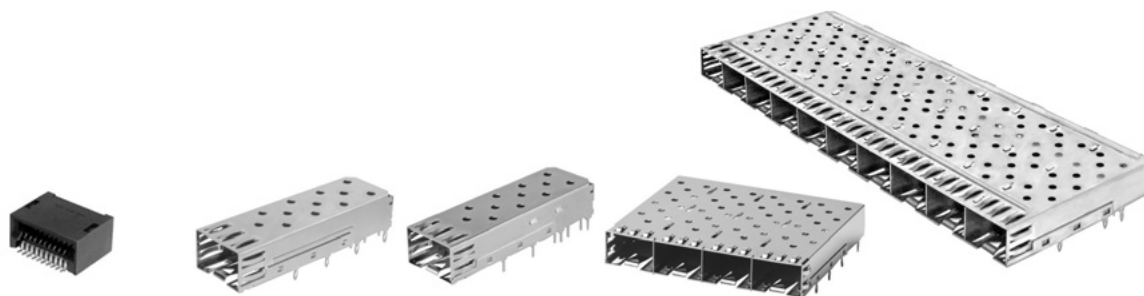
Pulse offers design support for OEM and ODM customers which reduces development time and ensures seamless integration of design, development, production, and time-to-market. With manufacturing sites throughout Asia and a global network of sales offices. Pulse understands the importance of performance and time-to-market and provides excellent worldwide logistics and technical support for local and international customers.

For more information and detailed product data sheets, go to the Pulse website at <http://www.pulseelectronics.com/connectors> or contact your local Pulse sales representative.



SFP+ Cage

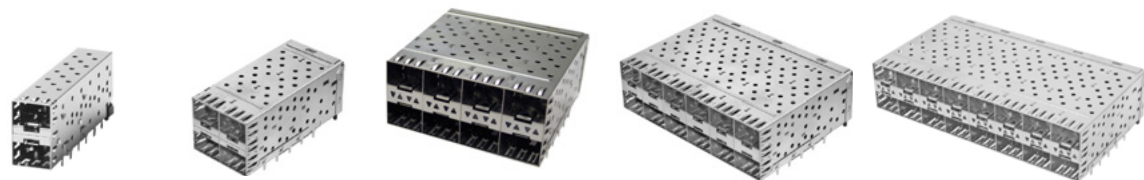
Part Number	SFPP-1130-L	SFPP-1110-L	SFPLP001-L
Number of Ports	1X1	1X1	1X1
Connector Type	SFP+ Cage	SFP+ Cage	Light Pipe for SFP+/SFP Cage
Package	Through Hole	Press Fit	—
For PCI (1° tilt) Option	For PCI	For PCI	Not for PCI



SFP Single and Ganged Cages and SFP Connector

Part Number	SFPC-2000-L	SFP0-1000-L	SFP0-1010-L	E81M0-WCYJEB-L	SFPCAGE006-L
Number of Ports	1X1	1X1	1X1	1X4	1X10
Connector Type	SFP Connector	SFP Cage	SFP Cage	SFP Cage	SFP Cage
Package	SMT	Press Fit	THT	Press Fit	Press Fit
Solder Temperature	255°C to 265°C 5-10 Seconds	—	255°C to 265°C 5-10 Seconds	—	—
Contact Mating Area Plating	Gold 15 µ"	—	—	—	—

CONNECTOR PRODUCTS

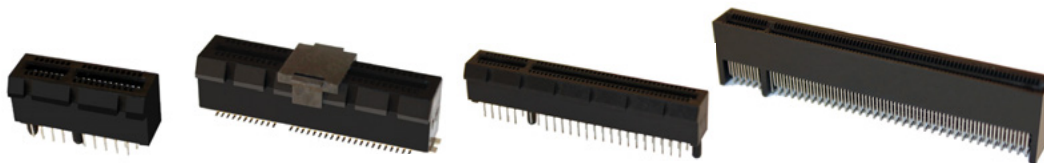


SFP 2XN Stacked					
Part Number	SFP0-3047-L	SFP0-3033-L	SFP0-3020-L	SFP0-3013-L	SFP0-3000-L
Number of Ports	2X1	2X2	2X4	2X6	2X8
Connector Type	SFP Cage & Connector	SFP Cage & Connector	SFP Cage & Connector	SFP Cage & Connector	SFP Cage & Connector
Package	Press Fit	Press Fit	Press Fit	Press Fit	Press Fit
Light Pipe Option	Without Light Pipes	Without Light Pipes	With Light Pipes	Without Light Pipes	With Light Pipes



SFP+ 2XN Stacked					
Part Number	SFPP-3140-L	SFPP-3131-L	SFPP-3120-L	SFPP-3110-L	SFPP-3100-L
Number of Ports	2X1	2X2	2X4	2X6	2X8
Connector Type	SFP+ Cage & Connector	SFP+ Cage & Connector	SFP+ Cage & Connector	SFP+ Cage & Connector	SFP+ Cage & Connector
Package	Press Fit	Press Fit	Press Fit	Press Fit	Press Fit
Light Pipe Option	With Light Pipes	With Inner Light Pipes	With Light Pipes	With Light Pipes	With Light Pipes

CONNECTOR PRODUCTS



PCI Express

Part Number	E9001-001-01	E9002-002-01	E9001-003-01	E9003-004-02
Number of Pins	36	64	98	164
Package	THT	SMT	THT	THT
PCB Mount Angle	Vertical	Vertical	Vertical	Right Angle



USB 3.0

Part Number	E8199-002-01	E8199-030-01	E8110-001-01	E8110-032-01
Connector Type	A Type	B Type	Micro-AB	Micro-B
Package	THT	THT	SMT	SMT
PCB Mount Angle	Vertical	Right Angle	Right Angle	Vertical



USB 3.1 Type C Receptical

Part Number	E8124-001-01	E8124-010-01	E8124-011-01	E8124-015-01
Data Rate	10G	5G	10G	10G
Mid or Top Mount	Mid-Mount	Mid-Mount	Mid-Mount	Top-Mount
Package	SMT	SMT + THT	SMT + THT	SMT + THT
PCB Mount Angle	Right-Angle	Right-Angle	Right-Angle	Right-Angle



RJ Connectors, Single Port, Top Entry, No Shield

Part Number	E5266-000032-L	E5288-300042-L	E5288-P00B74-L	E5288-7007S2-L
Number of Positions	6	8	8	8
Number of Contacts	6	8	8	8
Package	THT	THT	SMT	SMT
Panel Stop	YES	NO	NO	YES
Contact Mating Area Plating	Gold 6 μ"	Gold 6 μ"	Gold 30 μ"	Gold 6 μ"
Solder Temperature	230°C to 240°C 5-10 Seconds	230°C to 240°C 5-10 Seconds	255°C to 265°C 5-10 Seconds	255°C to 265°C 5-10 Seconds

CONNECTOR PRODUCTS



RJ Connectors, Shielded, Top Entry

Part Number	E5288-320044-L	E5288-32G145-L	E5288-YCCB01-L
Number of Positions	8	8	8
Number of Contacts	8	8	8
Number of Ports	1X1	1X8	2X4
Package	THT	THT	THT
Contact Mating Area Plating	Gold 30 μ "	Gold 50 μ "	Gold 3 μ "
Solder Temperature	230° C to 240° C 5-10 Seconds	230° C to 240° C 5-10 Seconds	230° C to 240° C 5-10 Seconds



RJ Connectors, Single Port, Side Entry, Surface Mount (SMT)

Part Number	E5344-002-03-L	E5366-FH05Y4-L	E5388-EH05Y2-L
Number of Positions	4	6	8
Number of Contacts	4	6	8
Tab	Down	Down	Down
Shield Option	No Shield	No Shield	No Shield
Contact Mating Area Plating	Gold 30 μ "	Gold 30 μ "	Gold 6 μ "
Solder Temperature	255°C to 265°C 5-10 Seconds	255°C to 265°C 5-10 Second	255°C to 265°C 5-10 Seconds



RJ Connectors, Multi-Port, 1XN, Side Entry, Through Hole (THT)

Part Number	E5608-00C062-L	E5608-25C345-L	E5908-15A2J4-L
Number of Positions	10	10	10
Number of Contacts	8	8	8
Number of Ports	1X4	1X4	1X2
Tab	Down	Down	Down
Shield Option	No Shield	Nickel Shield	Nickel Shield
Contact Mating Area Plating	Gold 6 μ "	Gold 50 μ "	Gold 30 μ "
Solder Temperature	230°C to 240°C 5-10 Seconds	230°C to 240°C 5-10 Seconds	230°C to 240°C 5-10 Seconds

CONNECTOR PRODUCTS



RJ Connectors, Multi-Port, 2XN, Side Entry, Through Hole (THT)

Part Number	E5908-0T0343-L	E5908-1VA143-L	E5908-0TG3U4-L
Number of Positions	10	10	10
Number of Contacts	8	8	8
Number of Ports	2X1	2X2	2X8
Shield Option	No Shield	Nickel Shield	No Shield
Contact Mating Area Plating	Gold 15 μ "	Gold 15 μ "	Gold 30 μ "
Solder Temperature	255°C to 265°C 5-10 Seconds	230°C to 240°C 5-10 Seconds	255°C to 265°C 5-10 Seconds



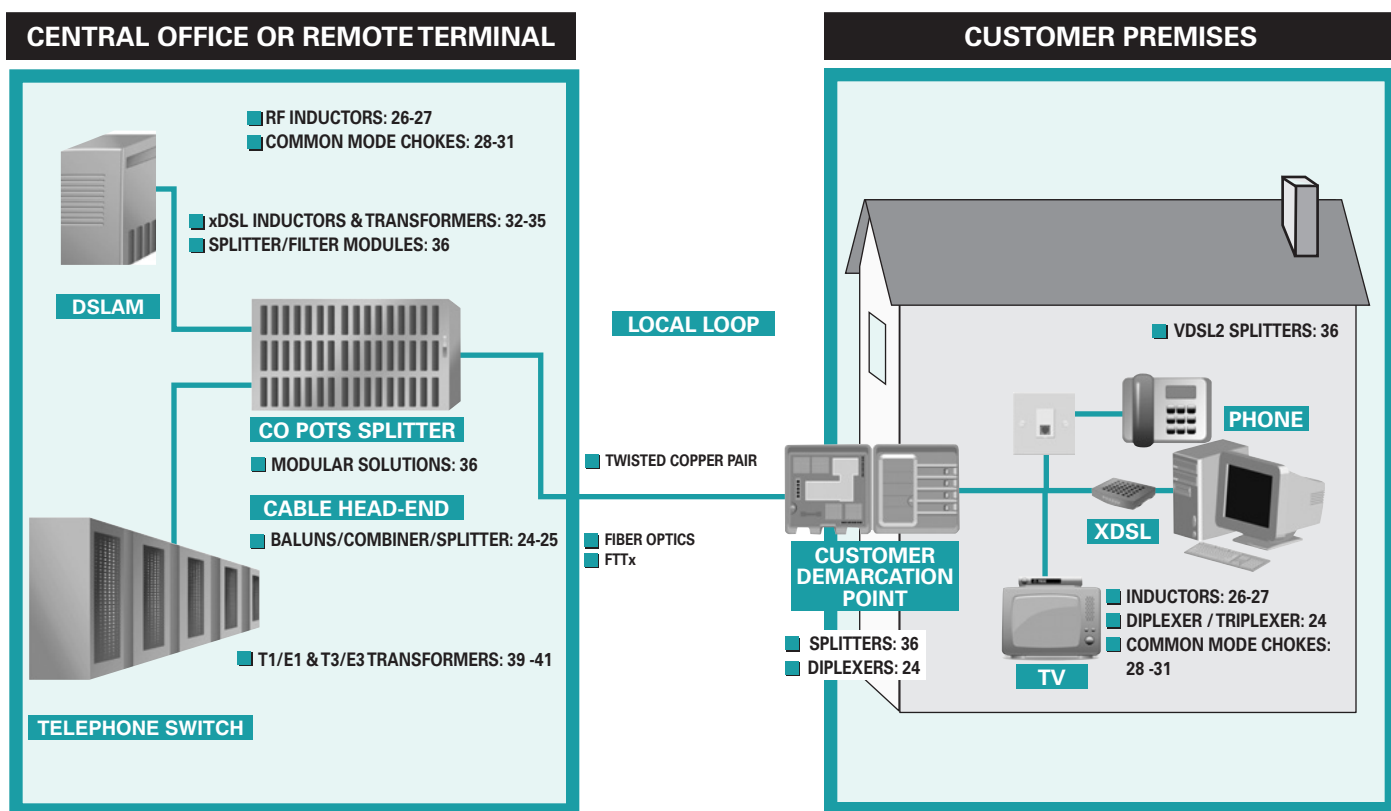
RJ Connectors, Side Entry with LEDs, Through Hole (THT)

Part Number	E5J88-34L022-L	E5J88-44AJ22-L	E5J88-14CJD2-L	E5J88-A4LJB4-L	E5J88-C4C2B2-L
Number of Positions	8	8	8	8	8
Number of Contacts	8	8	8	8	8
Number of Ports	1X1	1X2	1X4	2X1	2X1
LED Option	Green & Yellow	Green/Yellow & Green/Yellow	Yellow & Green	Green & Green	Green & Yellow
Tab	Up	Up	Up	—	—
Shield Option	Nickel Shield	Nickel Shield	Nickel Shield	Nickel Shield	Nickel Shield
Contact Mating Area Plating	Gold 6 μ "	Gold 6 μ "	Gold 6 μ "	Gold 30 μ "	Gold 6 μ "
Solder Temperature	230°C to 240°C 5-10 Seconds	255°C to 265°C 5-10 Seconds	255°C to 265°C 5-10 Seconds	255°C to 265°C 5-10 Seconds	230°C to 240°C 5-10 Seconds



RJ Connectors, CAT. 5, Through Hole (THT)

Part Number	E6588-200124-L	E6588-600P22-L	E6588-WA0B44-L	E6588-G5P124-L	E6588-A79124-L
Number of Positions	8	8	8	8	8
Number of Contacts	8	8	8	8	8
Number of Ports	1X1	1X1	1X1	2X2	2X4
LED Option	No LEDs	Green & Yellow	Green/Yellow & Green	No LEDs	No LEDs
Shield Option	No Shield	No Shield	Nickel Shield	Nickel Shield	Nickel Shield
Contact Mating Area Plating	Gold 30 μ "	Gold 6 μ "	Gold 30 μ "	Gold 30 μ "	Gold 30 μ "
Solder Temperature	230°C to 240°C 5-10 Seconds	230°C to 240°C 5-10 Seconds	230°C to 240°C 5-10 Seconds	255°C to 265°C 5-10 Seconds	255°C to 265°C 5-10 Seconds

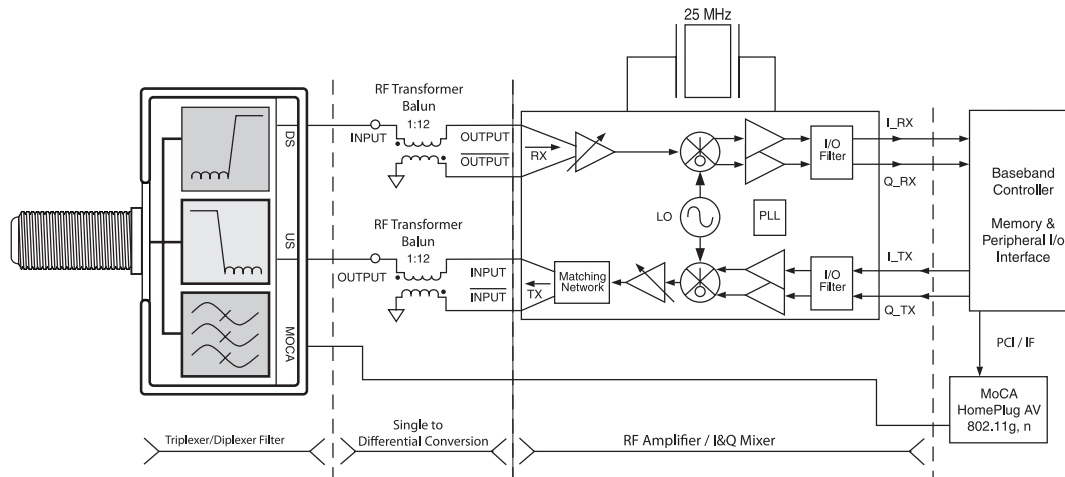


RF COMPONENTS



Pulse offers a comprehensive line of RF magnetic components for use in CATV/ Hybrid Fiber Coax applications for set-top boxes and gateway devices, for TELCO TV in gateway devices, and FTTP ONT (optical network termination) units as well as emerging in-home networking products. RF components are also used in medical and industrial devices and equipment.

Platforms consist of filters that can also include integrated F-connectors, transformers/baluns, single-stage filters, directional couplers and RF splitter/ combiners. Pulse provides both surface mount and through hole components that have minimal insertion loss and excellent return loss to ease the development and manufacturing of today's RF network equipment.



RF, BROADBAND, CATV, TELCO TV APPLICATIONS

DIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	High Pass (MHz)	Data Sheet
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DOCSIS System



C6036NL	10-55	90-770	C236
C6086NL	5-65	108-860	C236

MoCA IC Cross Reference

IC House	RF Front End	Baseband Controller	Triplexer	Diplexer	RF Transformer Balun
Entropic	EN1010	EN2x10 EN2x11 EN3x30 EN3x11	C6113NL	C6058NL CX6155NL C6131SNL	CX2163LNL

Pulse has been a participating member



DIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	High Pass (MHz)	Data Sheet
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MoCA Application



C6131SNL	5-1002	1125-1525	C250
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C6058NL	975-1025	1125-1525	C252
C6141NL	975-1025	1125-1525	C252
C6262NL	5-1002	1125-1675	C6262NL



CX6155NL	5-870	975-1525	C253
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TRIPLEX FILTERS with Integrated F-Connectors

Part Number	Low Pass (MHz)	Band Pass (MHz)	High Pass (MHz)	Data Sheet
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C6113NL	5-42		1125-1675	C257
C6224NL	5-42		1125-1675	C6224NL

RF COMPONENTS

RF, BROADBAND, CATV, TELCO TV APPLICATIONS

Diplexer Filters

Part Number	Frequency ¹ (MHz)	Insertion Loss (dB)	Return Loss (dB)	Package Style	Data Sheet
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CX6020NL	5-42/54-864	1.5	14/9	SMT	C248
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RF Splitter/Combiners: 2-Way, 0°

Part Number	Frequency (MHz)	Isolation (dB TYP)	Return Loss (TYP)	Insertion Loss (dB TYP)	Data Sheet
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C4036NL	5-1000	25	31	0.48	C241
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RF Transformers/Baluns

Part Number	Impedance Ratio	Bandwidth (MHz TYP)			Data Sheet
		3 dB	2 dB	1 dB	



CX2163LNL	1:1	800-1900	—	900-1400	C203
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C2139NL	1:1	—	—	5-1000	C244
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Directional Couplers

Part Number	Frequency (MHz)	Z (Ω)	Coupling Nom. (dB ±0.5)	Mainline Loss (dB TYP)	Data Sheet
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A5807LNL	5-900	75	10.0	1.1	A102
A5808LNL	5-900	75	7.5	1.6	A102
A5809LNL	5-900	75	12.0	0.9	A102
A5816LNL	5-900	75	16.0	0.8	



C3027NL	5-900	75	16.0	0.6	C207
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Fibre Channel (SAN), Dual Serial Data Interface Transformers

Part Number	Turns Ratio	Style ¹	Package L/W/H (in.) *	Data Sheet
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A6801NL ²	1CT:1CT	16-pin SOIC	.500/.295/.220	A100
A6802NL	1:1	16-pin SOIC	.500/.295/.220	A100
C2267NL	1:1	16-pin SOIC	.500/.270/.220	C2267NL
C2268NL	1:1	16-pin SOIC	.500/.270/.220	C2268NL

1. SOIC = 50 mil pitch lead spacing

2. NL = Lead-free

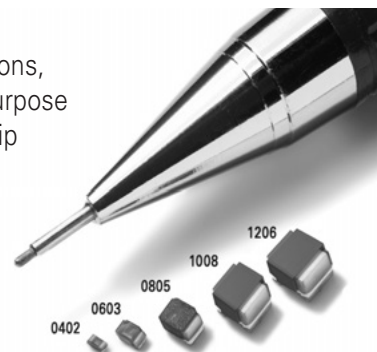


RF Chip Inductors

Miniature, Wirewound Components

Pulse RF chip inductors provide high-quality filtering in mobile phones, wireless applications, digital cameras, disk drives and audio equipment. The inductors are also used in multi-purpose RF modules for telecom, automotive and consumer electronic applications. These RF chip inductors use wirewound technology with ceramic or ferrite cores in industry standard sizes and footprints.

From the ultra-small, low-profile 0402 series, which helps high-density layouts, to the 1206 series with up to 68 μH inductance, Pulse is able to meet all your needs in a wide range of applications. These series are matched in performance to industry competition with full compatibility and operating frequency ranges.



SELECTION GUIDE

Electrical Specifications											
Part Number	Size	Construction	Inductance (nH)	1	10	100	1	10	100	100	100
0402CD	0402	Wirewound	1.0 to 120	█							
0603CD	0603	Wirewound	1.6 to 390	█	█						
0805CD	0805	Wirewound	2.8 to 1500		█	█					
0805CM	0805	Wirewound	3.3 to 820		█	█					
0805FT	0805	Wirewound	1000 to 68000				█	█	█		
1008CD	1008	Wirewound	9.7 to 8200		█	█					
1008CM	1008	Wirewound	10 to 4700		█	█					
1008CQ	1008	Wirewound	4.1 to 390		█	█					
1206CD	1206	Wirewound	3.3 to 1200		█	█					

CD Series: Standard 100% compatible with other market leaders.

CM Series: Offers improved electrical performance or alternative inductance values to Pulse CD series.

CQ Series: Offers high Q and high Idc series.

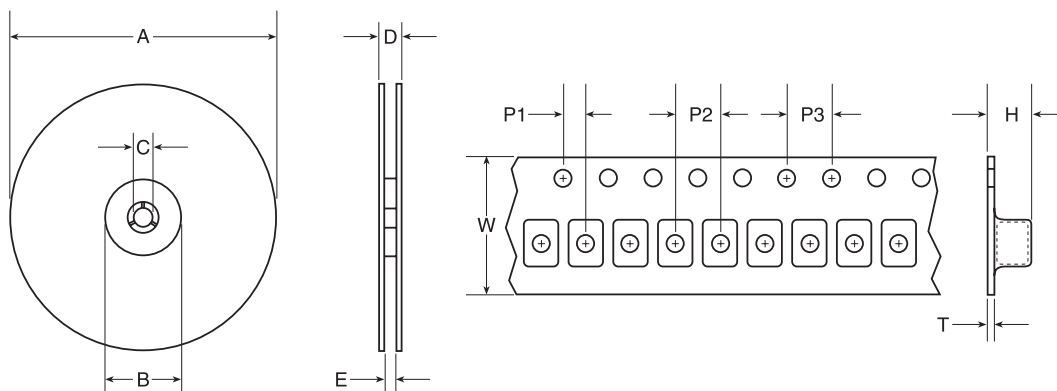
FT Series: Ferrite core offers higher inductance values.

PART NUMBER ORDERING GUIDE

PE — 0805 CD		121 K T T*												
PACKAGE STYLE (0402, 0603, 0805, 1008, 1210 or 1206)	INDUCTANCE (nH) Representative of the inductance value	* TERMINATION T = Tin or Gold Plating G = Gold plating only												
CORE MATERIAL C = Ceramic (Alumina) CD = Standard Range CM = High Side Metallization CQ = High Q F = Ferrite	TOLERANCE G = ±2% J = ±5% K = ±10% M = ±20%	PACKAGING T = Tape & Reel (7" or 13" reel)												
		<table><tr><td>Size</td><td>0402</td><td>0603</td><td>0805</td><td>1008</td><td>1206</td></tr><tr><td>PCs/Reel</td><td>3000</td><td>2000</td><td>2000</td><td>1600</td><td>3000</td></tr></table>	Size	0402	0603	0805	1008	1206	PCs/Reel	3000	2000	2000	1600	3000
Size	0402	0603	0805	1008	1206									
PCs/Reel	3000	2000	2000	1600	3000									

- To** order directly from Pulse, there are local Pulse addresses and telephone numbers listed on the web at <http://www.pulseelectronics.com/index.php?415>.
- Find** a Pulse authorized distributor or representative in your area on the Pulse website at: <http://www.pulseelectronics.com/index.php?415>.
- Part** numbers shown in this section are RoHS compliant. No additional suffix or identifier is required.

Tape and Reel Specifications



Electrical Specifications @ 25°C - Operating Temperature -40°C to +125°C

Series	Parts per Reel	Reels Dimensions (mm)					Tape Dimensions (mm)					
		A	B	C	D	E	W	P1	P2	P3	H	T
0402CD	3000	178	50	13	14.4	8.4	8	2	4	4	1.1	0.3
0603CD	2000	178	50	13	14.4	8.4	8	2	4	4	1.7	0.3
0805CD	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
0805CM	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
0805FT	2000	178	50	13	14.4	8.4	8	2	4	4	2.1	0.3
1008CD	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1008CM	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1008CQ	1600	178	50	13	14.4	8.4	8	2	4	4	2.6	0.3
1206CD	3000	330	101	13	18.4	12.4	12	2	4	4	2.0	0.4

Notes: P1, P2 and P3 are same for all chip inductor series. Keeping the same dimensions for guide hole and pocket pitch (P1), pocket pitch (P2), guide hold pitch (P3) and tape width (8mm) for all series, enables the packaging machine to maintain the same settings while changing models. The only difference between the series are the parts per reel which contributes to a different length of tapes/reel per model.



ChipChoke™ CCMC Series for USB and LVDS

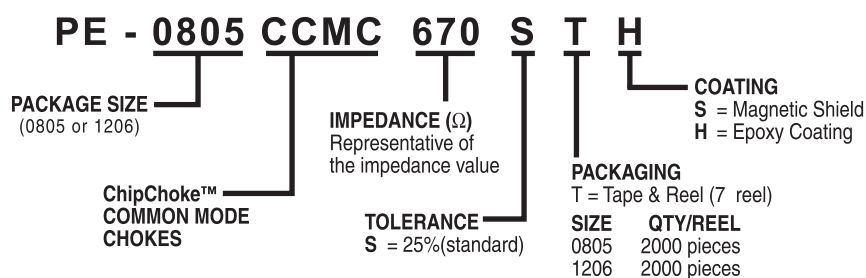
Pulse ChipChokes are designed to eliminate virtually all common mode noise in high-speed, differential mode signal transmission applications such as USB 2.0, IEEE1394 and LVDS (Low Voltage Differential Signaling).

These dual-wound ChipChokes have an industry standard footprint and low DC resistance. They are available in nine impedance values to meet your specific requirements.

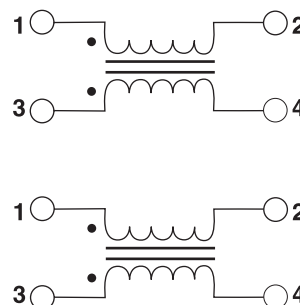
To select the appropriate common mode choke (ChipChokes) for your application, "2-Line Chip-type Common Mode Chokes" data sheet, W712, is available at <http://www.pulseelectronics.com/index.php?848>. Then choose the title "RF Inductors" and a list will appear below it. Locate the W712 link and the PDF will download.



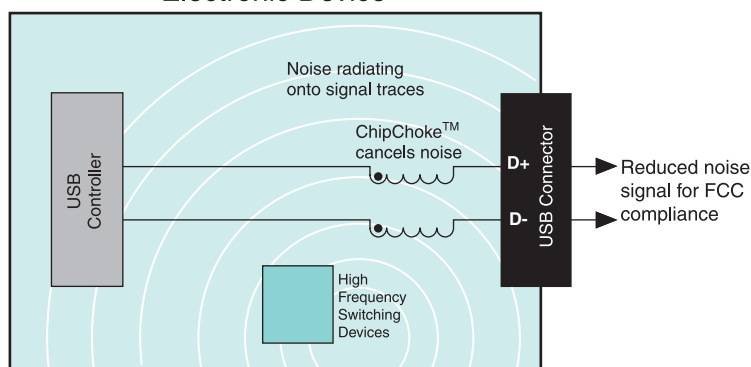
Part Number Legend



Schematic



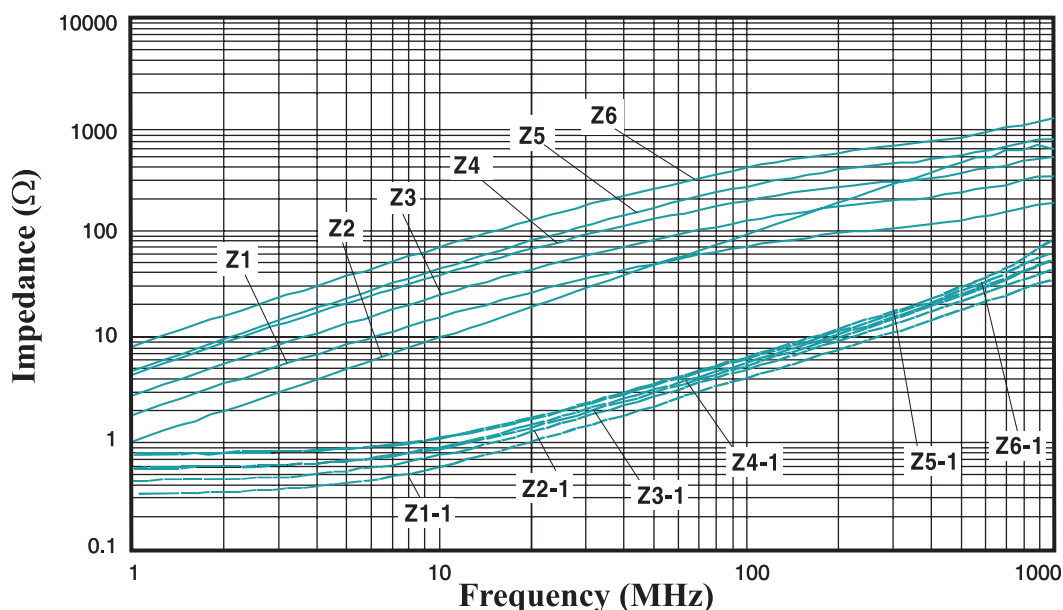
Electronic Device





PE-0805CCMCXXXSTS

Impedance vs Frequency



Common Mode	
ITEM	PART NUMBER
Z-1	PE-0805CCMC670STS
Z-2	PE-0805CCMC900STS
Z-3	PE-0805CCMC121STS
Z-4	PE-0805CCMC181STS
Z-5	PE-0805CCMC261STS
Z-6	PE-0805CCMC361STS

Differential Mode	
ITEM	PART NUMBER
Z-1-1	PE-0805CCMC670STS
Z-2-1	PE-0805CCMC900STS
Z-3-1	PE-0805CCMC121STS
Z-4-1	PE-0805CCMC181STS
Z-5-1	PE-0805CCMC261STS
Z-6-1	PE-0805CCMC361STS

ChipChokes CCMC SERIES FOR USB and LVDS (Low Voltage Differential Signaling)

Part Number ^{1, 2} Standard Tolerance (25%)	Common Mode Impedance @ 100 MHz (Ω)	DC Resistance (Ω MAX)	Rated Voltage (V _{DC})	Rated Current (mA MAX)	Withstanding Voltage (V _{DC})	Insulation Resistance (MΩ MIN)
0805CCMCXXXSTS - Magnetic Shield - 0805 Size						
PE-0805CCMC670STS	67	0.25	50	400	125	10
PE-0805CCMC900STS	90	0.35	50	330	125	10
PE-0805CCMC121STS	120	0.30	50	370	125	10
PE-0805CCMC181STS	180	0.35	50	330	125	10
PE-0805CCMC261STS	260	0.40	50	300	125	10
PE-0805CCMC361STS	360	0.45	50	280	125	10

1. ChipChoke part numbers are RoHS compliant. No additional suffix or identifier is required.

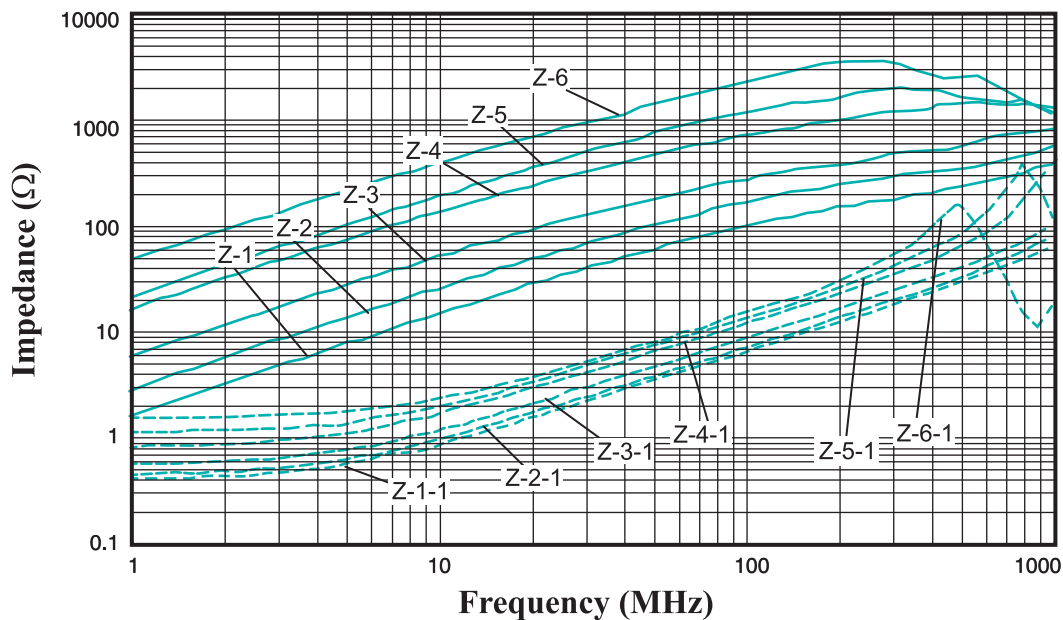
2. These parts are found on data sheet W712 on the Pulse website: www.pulseelectronics.com. Locate the data sheet link on the home page.

Surface Mount

*NOTE: Referenced part is Standard Tolerance, 10% (K). To order parts with optional tolerances, see the Part Number Ordering Guide on the first page of this section.



Impedance vs Frequency



Common Mode	
ITEM	PART NUMBER
Z-1	PE-1206CCMC900STS
Z-2	PE-1206CCMC161STS
Z-3	PE-1206CCMC261STS
Z-4	PE-1206CCMC601STS
Z-5	PE-1206CCMC102STS
Z-6	PE-1206CCMC222STS

Differential Mode	
ITEM	PART NUMBER
Z-1-1	PE-1206CCMC900STS
Z-2-1	PE-1206CCMC161STS
Z-3-1	PE-1206CCMC261STS
Z-4-1	PE-1206CCMC601STS
Z-5-1	PE-1206CCMC102STS
Z-6-1	PE-1206CCMC222STS

ChipChokes CCMC SERIES FOR USB and LVDS (Low Voltage Differential Signaling)

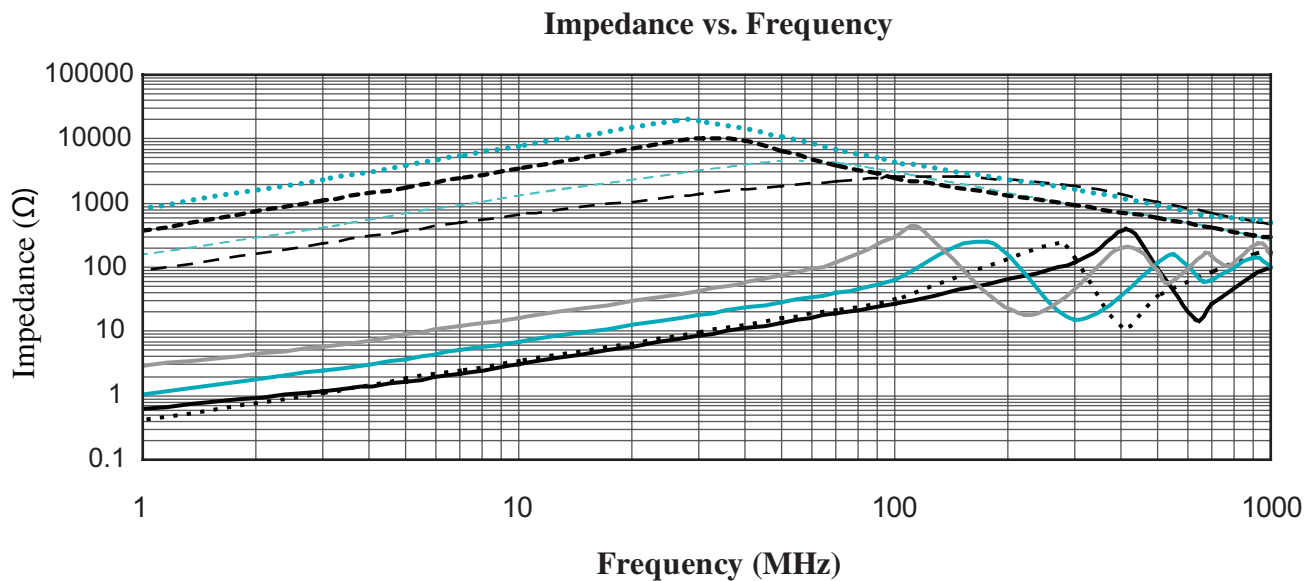
Part Number ^{1, 2} Standard Tolerance (25%)	Common Mode Impedance @ 100 MHz (Ω)	DC Resistance (Ω MAX)	Rated Voltage (V _{DC})	Rated Current (mA MAX)	Withstanding Voltage (V _{DC})	Insulation Resistance (MW MIN)
1206CCMCXTS - Magnetic Shield - 1206 Size						
PE-1206CCMC900STS	90	0.30	50	370	125	10
PE-1206CCMC161STS	160	0.40	50	340	125	10
PE-1206CCMC261STS	260	0.50	50	310	125	10
PE-1206CCMC601STS	600	0.80	50	260	125	10
PE-1206CCMC102STS	1000	1.00	50	230	125	10
PE-1206CCMC222STS	2200	1.20	50	200	125	10

1. All ChipChoke part numbers are RoHS compliant. No additional suffix or identifier is required.

2. These parts are found on data sheet W712 on the Pulse website: www.pulseelectronics.com. Locate the data sheet link on the home page.

Surface Mount

*NOTE: Referenced part is Standard Tolerance, 10% (K). To order parts with optional tolerances, see the Part Number Ordering Guide on the first page of this section.



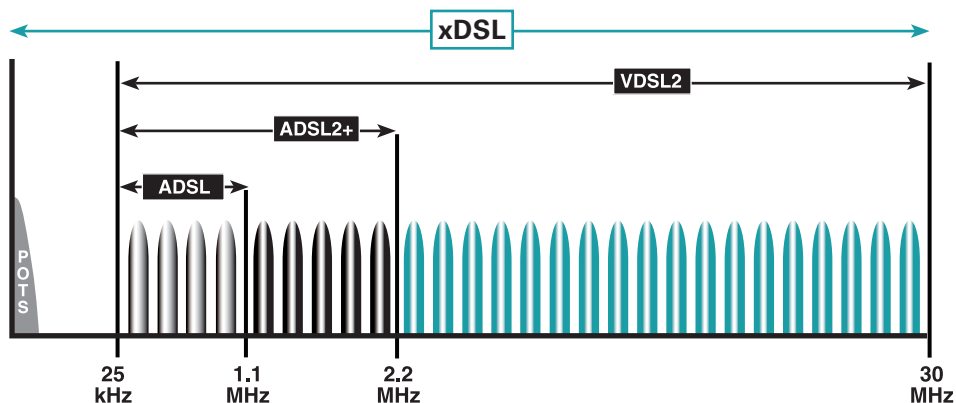
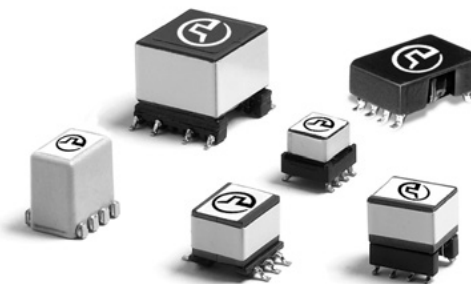
--- PE-1812ACC220STS Common Mode PE-1812ACC220STS Differential Mode
-- PE-1812ACC110STS Common Mode — PE-1812ACC110STS Differential Mode
--- PE-1812ACC510STS Common Mode — PE-1812ACC510STS Differential Mode
..... PE-1812ACC101STS Common Mode — PE-1812ACC101STS Differential Mode

ChipChokes ACC Series For CAN BUS application						
Part Number	Common mode Impedance (10MHZ)		Inductance (uH)	Standard Tolerance	RDC (Ω Max)	IDC (mA MAX)
	Min	Typ				
PE-1812ACC110STS	300	600	11	+50/-30%	0.5	0.36
PE-1812ACC220STS	600	1200	22	+50/-30%	0.6	0.31
PE-1812ACC510STS	1500	3500	51	+50/-30%	1.0	0.23
PE-1812ACC101STS	3000	7500	100	+50/-30%	2.0	0.20

xDSL & HPN PRODUCTS

Broadband has come a long way in the past few years. Pulse continues to lead the way with a broad range of components that enable twisted-pair copper, fiber and coaxial cable to deliver high-speed services to homes and businesses. Pulse components are also used in cable modems and the consumer electronics that provide home networking services.

Our high-performance transformers, inductors and splitter filter modules support ADSL, VDSL, Vectored VDSL, GFast, VoIP, CO/CPE splitters, and home phoneline and power line networks. These transformers are designed to exceed ANSI and ETSI standards, and have excellent THD performance and small footprints. Surface mount models are available upon request. Our splitter/filter modules are part of the SMART™ family, offering convenient and cost effective design solutions.



ADSL uses frequencies up to 1.1 MHz. But, later variations ADSL2+ and VDSL2 make use of a wider frequency band in order to achieve higher data rates. Use of these higher frequencies requires higher performance components.

VDSL2 Vectoring technology will easily provide speeds of 75-100Mbps. G.Fast technology targets speeds of 150Mbps to 1Gbps, dependent on loop length.

HOME NETWORKING PRODUCTS

Filters

Part Number	Primary Application	Secondary Application	Isolation Voltage	Data Sheet
CopperGate HPNA3 Chipset				
B6104NL	HPNA	—	1500	B891
B6105NL	HPNA	—	1500	B891
B6106NL	HPNA	—	1500	B891
Entropic: c.LINK™				
C6039	MoCA®	—	—	C250

Transformers

Part Number	Application	Turns Ratio	Inductance (μH MIN)	Isolation Voltage (V)	Data Sheet
PE-68629	UPA/PLC	1:1	40	3000	T606
B6080	HomePlug	1:1	250	2000	B805

COMMON MODE CHOKES

For ADSL/VDSL¹

Part Number	Common Mode Attenuation (dB TYP)			Isolation Voltage (V _{RMS})	Data Sheet
	500 kHz	1 MHz	10 MHz		
B2005NL	45	47	43	1500	B902
B2013NL	45	47	43	1500	B902
BX8213NL	45	47	43	500	B829
B4001NL ¹	45	49	35	1500	B912
B4003NL ¹	45	49	35	1500	B912
BX4053NL ²	45	49	35	1500	B912
PE-65885NL	40	51	38	500	T626
	30 kHz	1 MHz	2 MHz		
BX8191NL	30	51	45	1500	B824
BX8192NL ²	30	51	45	1500	B824

1. To reduce common mode noise from AM or HAM radio

2. Dual

VDSL TRANSFORMERS

VDSL Hybrid Transformers

Part Number	Insertion Loss (dB MAX)	Isolation Voltage (V _{RMS})	Impedance (Ω)	Data Sheet
	100 kHz - 20 MHz	300 kHz - 30 MHz	TX RX	
Broadcom: BCM 6010 Chipset				
B4008	—	0.50	2000	2:1 1:1 B925

VDSL Line Transformers & Chipsets

Part Number	Inductance (μH ±10%)	Isolation Voltage (V _{RMS})	Turns Ratio TX RX	Data Sheet
General Use				
B4004	—	1500	1CT:1CS	— B975
B4006	—	3000	1:1	— B975
B4023	—	3000	1:1CT	— B975
Broadcom: BCM 6315 Chipset				
B4020	190	3000	1CT:1CT	— B981
B4021	190	1500	1CT:1CT	— B981
BX4055	190	1500	1:1	— B981
BX4056	190	1500	1:1.16	— B981
Broadcom: VDSL2 BCM 6505 Chipset				
BX4157L	420	1500	1:2	— B894
BX4167L	100	1500	1:2	— B894
Conexant: VDSL2 Accelity Chipset				
BX4131W	800	1500	2:1	— B877
BX4120L	800	1500	1.1:1	— B877
Ikanos: SmartLeap Chipset				
BX4052W ¹	1.30	1500	3:1	— B831
BX4082W ¹	1.30	1500	3:1	— B831

1. BX4052W supplementary insulation; BX4082W operational insulation per IEC 950 250 V_{RMS}

SMT - Surface Mount Package

THT - Through Hole Package

xDSL & HPN PRODUCTS

VDSL TRANSFORMERS (continued)

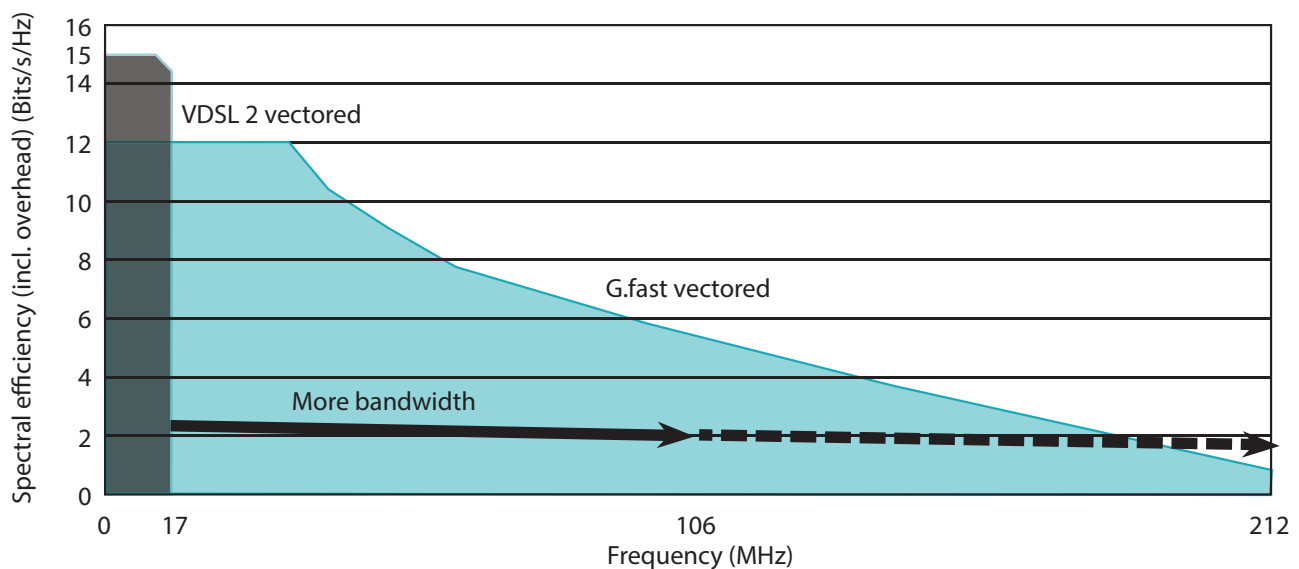
VDSL Line Transformers & Chipsets					
Part Number	Inductance ($\mu\text{H} \pm 10\%$)	Isolation Voltage (V_{RMS})	Turns Ratio TX RX		Data Sheet
Ikanos: VDSL Chipset					
BX4154L	340	1500	1.5:1	—	B887
BX4185L	340	1500	1.86:1	—	B887
BX4187L	100	1500	1.86:1	—	B887
BX4197L	470	1500	1.86:1	—	B887
Infineon: VDSL5000i and 6000i CO/CPE* Chipsets					
BX4102W	2000	1500	4:3	—	B874
BX4104V	770	1500	1:1.16	—	B875
BX4107	800	1500	4:3	—	B876
Infineon: VDSL2 Chipsets					
BX4175VNL	270	1500	4:3	—	B875
Metalink: VDSL Chipset					
B4033	1000	1500	1:3	2:3	B998
B4034	1600	1500	1:3.5	2:3.5	B998
Metalink: MTV9141 Chipset					
B4064	1130	1500	1:3.6	2:3.6	B846
Metalink: MTV9142 Chipset					
BX4081W	280	1500	1:3	2:3.6	B846
Texas Instruments TNETD8000 Chipset					
B4020	190	3000	1CT:1CT	—	B981
B4021	190	1500	1CT:1CT	—	B981

VDSL Filter Solutions					
Part Number	Passband Frequency (dB MAX)	Insertion Loss (dB MIN)	Return Loss TX	Impedance (Ω) RX	Data Sheet
Quadport CO Filter Modules for 2-band, 10Base-S Infineon Chipsets²					
BX4037 ¹	1 MHz–7.9 MHz	1.5	12	40 270	B809
BX4038 ¹	1 MHz–7.9 MHz	1.5	12	40 270	B809
Single Port CPE Filter Modules for PEB22811/12/22 Infineon Chipsets³					
BX4039 ⁴	1 MHz–7.9 MHz	1.0	12	40 270	B819
BX4040 ⁴	1 MHz–7.9 MHz	1.0	12	40 270	B819
Quadport CO Filter Modules for 4-band Plan 998 Infineon Chipsets¹					
BX4041A	0.9 MHz–11.9 MHz	—	12	40 270	B832
BX4044	0.9 MHz–11.9 MHz	—	12	40 270	B832
Single Port CPE Filter Modules for 4-band Plan 998 Infineon Chipsets²					
BX4042	0.13 MHz–11.9 MHz	—	12	40 270	B833
BX4045	0.13 MHz–11.9 MHz	—	12	40 270	B833

1. **BX4037** for ADSL over ISDN, **BX4038** for Smartphone applications
2. **Including** HPF splitter, hybrid transformer, TX & RX separation filters and common mode chokes
3. **Including** HPF splitter, hybrid transformer, TX & RX separation filters
4. **BX4039** for over ISDN, **BX4040** for Smartphone applications

VECTORED VDSL TRANSFORMERS					
Vectored VDSL Transformers & Chipsets					
Part Number	Application	Isolation Voltage (V_{RMS})	Turns Ratio Chip-Line	Inductance ($\mu\text{H} \pm 10\%$)	Data Sheet
Broadcom: BCM65x00 Chipset family					
BX4285LNL	CO	1500	1.4:1	430	T696
BX4286LNL	CO	1500	1.4:1	100	T696
Lantiq: Vinax V3 Chipset Class AB Line Driver					
BX4290LNL	CO	1500	1.25:1	470	T697
Lantiq: Vinax V3 Chipset Class H Line Driver					
BX4289LNL	CO	1500	1.4:1	470	T698

G.FAST TRANSFORMERS					
G.Fast Transformers & Chipsets					
Part Number	Application	Isolation Voltage (V_{RMS})	Turns Ratio Chip-Line	Inductance (μH)	Data Sheet
Skipio: SCK1001/DFE, SCK1002/AFE					
BX4503NL	CPE	1500	1.25:1	60 Min	B1010
BX4504NL	CPE	1500	1.25:1	60 Min	B1010
Broadcom: BCM652xx, BCM659xx, And Microsemi Le8728 Chipsets					
BX4500LNL	CO	1500	1:1	10 +/-10%	T709



ADSL TRANSFORMERS

ADSL Transformers & Chipsets					
Part Number	Application*	Isolation Voltage (V _{RMS})	Turns Ratio Chip-Line	Inductance (μH ±10%)	Data Sheet
Analog Devices: AD20msp910/AD20msp918 ADSL Chipsets					
B2031	CO/CPE	1500	1:1	5000	B906
B2032	CO/CPE	1500	1:1	5000	B906
B2104	CO/CPE	1500	1:1.27	2000	B950
B2105	CO/CPE	1500	1:1.27	2000	B950
Analog Devices: AD20msp930 ADSL Chipset					
B2136	CO	1500	1:1.1	1750	B955
B2137 ¹	CO	1500	1:1.1	1750	B955
B2162 ¹	CO	1500	1:1.1	1750	B957
B2168 ¹	ADSL/ISDN CO	1500	1:1	100	B955
B2188	ADSL/ISDN CO	1500	1:1	100	B955
Analog Devices: Eagle I & Eagle II					
BX2506J ¹	CPE	1500	1:2.29	1200	B840
Broadcom: BCM6410/20 - ADSL Bladerunner Chipsets					
BX2303WA ¹	ADSL/ISDN CO	1500	1:1.41	100	B811
BX2302WA ¹	CO	1500	1:1.41	410	B811
BX2619W ¹	CO	1500	1:2	420	B811
BX2644L ¹	CO	1599	1:2	420	B811
Broadcom: BCM6335 and BCM6345					
BX2483W ¹	CPE	1500	1:2	410	B847
Broadcom: BCM6335 and BCM6338					
BX2542L ¹	CPE	1500	1:4.25/1:1	400	B848
BX2606LNL ¹	ADSL/ISDN CPE	1500	1:4.25/1:1	100	B848
Centillium: CT-L50SC04/CT-L50ST81, CT-L21SC08/CT-L41SC04 ADSL Chipsets					
B2178 ¹	CO	1500	1:1	450	B979
B2189 ¹	CO/CPE	1500	1:1.8	450	B979
Centillium: CT-L21ST30, CT-L22Sx15/30, CT-L4xSx15/30, CT-L5/L6xSx81 ADSL Chipsets					
BX2353 ¹	CPE	1500	1:2.13	5000	B999
BX2358 ¹	CPE	1500	1:1	5000	B999
BX2511L ¹	CO	1500	1:0.9	1000	B862
BX2512J ¹	CO	1500	1:0.9	1000	B862

1. When ordering Tape & Reel on SMT parts, add a "T" suffix to the part number.
3. Alternative footprint options are on the data sheet.

ADSL Transformers & Chipsets					
Part Number	Application*	Isolation Voltage (V _{RMS})	Turns Ratio Chip-Line	Inductance (μH ±10%)	Data Sheet
Centillium: Palladia CPT73X01 CPE ADSL Chipsets					
BX2460 ¹	CPE	1500	1:2.5	5000	B828
BX2462 ¹	CPE	1500	1:1	5000	B828
Centillium: CT-L53/63/73SC08 ADSL Chipsets					
BX2347	CO	1500	1:1	850	B994
BX2348 ¹	CO	1500	1:1	850	B994
BX2380	CO	1500	1:1.8	850	B994
BX2349 ¹	CO	1500	1:1.8	850	B994
Centillium: MAXIMUS ADSL Chipsets					
BX2349 ¹	CO	1500	1:1.8	850	B994
BX2538L ¹	CO	1500	1:1.2	850	B839
Conexant: ADSL G7000 DMT Chipset					
BX2564W ¹	CO	1500	1:0.92	850	B867
B2139	CPE	1875	1:1	407	B958
Conexant: Titanium Forte ADSL Chipsets					
BX2367 ¹	CO	1500	1:2	474	B997
BX2369JB/WA ^{1,3}	CO	1500	1:1.41	474	B991
BX2372JB/WA ^{1,3}	CO	1500	1:1.15	474	B991
Conexant: Jupiter, Saturn G16, G18, Octane ADSL Chipsets					
B2414JB ^{1,3}	CO	1500	1:0.95	750	B991
Conexant: Octane, G24 ADSL Chipsets with Intersil Drivers					
B2517JB ¹	CO	1500	1:0.95	760	B836
BX2485L ¹	CO	1500	1:0.9	1000	B836
BX2575L ¹	CO	1500	1:0.9	1000	B864
Conexant: Octane Plus ADSL Chipsets with Intersil Drivers					
BX2511L ¹	CO	1500	1:0.9	1000	B862
BX2512J ¹	CO	1500	1:0.9	1000	B862

1. When ordering Tape & Reel on SMT parts, add a "T" suffix to the part number.

Continued on next page

*CO - Central Office, CPE - Customer Premises Equipment

SMT - Surface Mount Package

THT - Through Hole Package

xDSL & HPN PRODUCTS

ADSL TRANSFORMERS *(continued)*

ADSL Transformers & Chipsets *(continued)*

Part Number	Application*	Isolation Voltage (V _{RMS})	Turns Ratio Chip-Line	Inductance (μH ±10%)	Data Sheet
Conexant: Octane, G24 ADSL Chipsets with Legerity Drivers					
BX2510W ¹	CO	1500	1:0.408	750	B855
BX2516W ¹	CO	1500	1:0.408	1100	B855
BX2572W ¹	ADSL/ISDN CO	1500	1:0.408	100	B854
Conexant: Viking and Café CPE ADSL Chipsets					
BX2577L ¹	CPE	1500	1:4/1:2	700	B841
Infinion: PEB22716 - GEMINAX ADSL Chipset					
BX2274J ¹	CO	1500	1.33:1	1400	B812
BX2569L ¹	CO	1500	1.31:1	1400	B895
Infinion: Amazon ADSL Chipset					
BX2913LNL ¹	CPE	1500	1:4.2/1:2	1400	B889
BX2917LNL ¹	ADSL/ISDN CPE	1500	1:3/6/1:1.85	200	B889
Texas Instruments: TNETD4000C ADSL Chipset					
B2132 ¹	CO	1500	1:1.95	1500	B954
Texas Instruments: TNETD4500x ADSL Chipset					
B2243 ¹	CO	1500	1:2	400	B823
B2133 ¹	ADSL/ISDN CO	1500	1:2	75	B823
Texas Instruments: AC5, AC6 Chipset					
B2205 ¹	CO	1500	1:1.9	400 ²	B985
BX2375 ¹	ADSL/ISDN CO	1500	1:1.9	92.5	B985
Texas Instruments: AC7 CO Chipset					
BX2513W ¹	CO	1500	1:1.11	400 ²	B873
Texas Instruments: AP5, AR5, and AU5 Chipsets					
BX2361 ¹	CPE	1500	1:2	1500 ²	B988
BT2361 ¹	CPE	1500	1:2	1500 ²	B806
BX2382 ¹	CPE	1500	1:2	1500 ²	B988
Texas Instruments: AP7, AR7, and AU7 Chipsets					
BX2479H	CPE	1500	1:2	1500	B834
BX2479W ¹	CPE	1500	1:2	1500	B834
BX2243H	ADSL/ISDN CPE	1500	1:2	400	B834

1. When ordering Tape & Reel on SMT parts, add a "T" suffix to the part number.
2. ±5%
3. Alternative footprint options are on the data sheet.

HDSL2/G.SHDSL

Transformers

Part Number	Matched to:	Turns Ratio Chip-Line (±3%)	Inductance Line Side	Data Sheet
Infinion Chipsets				
B1093	PEB22622 PEF22623/24622 PEB22622	3.2:1:1	3.00	B993
B1063	PEF22623/24622	3.2:1:1	3.00	B993
BX1196L	Socrates	4.5:1	3.00	B888
BX1194W	PEB22622 PEF22623/24622	3.2:1:1	3.00	B835
Conexant Chipsets				
B1074B	Orion	1:5.4	3.00	B803



Figure 1: ADSL Inductor

Figure 2: ADSL Inductor

Figure 3: ADSL Inductor

Figure 4: ADSL Inductor

Figure 5: ADSL Inductor

Figure 6: ADSL Inductor

Figure 7: ADSL Inductor

Figure 8: ADSL Inductor

Figure 9: ADSL Inductor

Figure 10: ADSL Inductor

Figure 11: ADSL Inductor

Figure 12: ADSL Inductor

Figure 13: ADSL Inductor

Figure 14: ADSL Inductor

Figure 15: ADSL Inductor

Figure 16: ADSL Inductor

Figure 17: ADSL Inductor

Figure 18: ADSL Inductor

Figure 19: ADSL Inductor

Figure 20: ADSL Inductor

Figure 21: ADSL Inductor

Figure 22: ADSL Inductor

Figure 23: ADSL Inductor

Figure 24: ADSL Inductor

Figure 25: ADSL Inductor

Figure 26: ADSL Inductor

Figure 27: ADSL Inductor

Figure 28: ADSL Inductor

Figure 29: ADSL Inductor

Figure 30: ADSL Inductor

Figure 31: ADSL Inductor

Figure 32: ADSL Inductor

Figure 33: ADSL Inductor

Figure 34: ADSL Inductor

Figure 35: ADSL Inductor

Figure 36: ADSL Inductor

Figure 37: ADSL Inductor

Figure 38: ADSL Inductor

Figure 39: ADSL Inductor

Figure 40: ADSL Inductor

Figure 41: ADSL Inductor

Figure 42: ADSL Inductor

Figure 43: ADSL Inductor

Figure 44: ADSL Inductor

Figure 45: ADSL Inductor

Figure 46: ADSL Inductor

Figure 47: ADSL Inductor

Figure 48: ADSL Inductor

Figure 49: ADSL Inductor

Figure 50: ADSL Inductor

Figure 51: ADSL Inductor

Figure 52: ADSL Inductor

Figure 53: ADSL Inductor

Figure 54: ADSL Inductor

Figure 55: ADSL Inductor

Figure 56: ADSL Inductor

Figure 57: ADSL Inductor

Figure 58: ADSL Inductor

Figure 59: ADSL Inductor

Figure 60: ADSL Inductor

Figure 61: ADSL Inductor

Figure 62: ADSL Inductor

Figure 63: ADSL Inductor

Figure 64: ADSL Inductor

Figure 65: ADSL Inductor

Figure 66: ADSL Inductor

Figure 67: ADSL Inductor

Figure 68: ADSL Inductor

Figure 69: ADSL Inductor

Figure 70: ADSL Inductor

Figure 71: ADSL Inductor

Figure 72: ADSL Inductor

Figure 73: ADSL Inductor

Figure 74: ADSL Inductor

Figure 75: ADSL Inductor

Figure 76: ADSL Inductor

Figure 77: ADSL Inductor

Figure 78: ADSL Inductor

Figure 79: ADSL Inductor

Figure 80: ADSL Inductor

Figure 81: ADSL Inductor

Figure 82: ADSL Inductor

Figure 83: ADSL Inductor

Figure 84: ADSL Inductor

Figure 85: ADSL Inductor

Figure 86: ADSL Inductor

Figure 87: ADSL Inductor

Figure 88: ADSL Inductor

Figure 89: ADSL Inductor

Figure 90: ADSL Inductor

Figure 91: ADSL Inductor

Figure 92: ADSL Inductor

Figure 93: ADSL Inductor

Figure 94: ADSL Inductor

Figure 95: ADSL Inductor

Figure 96: ADSL Inductor

Figure 97: ADSL Inductor

Figure 98: ADSL Inductor

Figure 99: ADSL Inductor

Figure 100: ADSL Inductor

Figure 101: ADSL Inductor

Figure 102: ADSL Inductor

Figure 103: ADSL Inductor

Figure 104: ADSL Inductor

Figure 105: ADSL Inductor

Figure 106: ADSL Inductor

Figure 107: ADSL Inductor

Figure 108: ADSL Inductor

Figure 109: ADSL Inductor

Figure 110: ADSL Inductor

Figure 111: ADSL Inductor

Figure 112: ADSL Inductor

Figure 113: ADSL Inductor

Figure 114: ADSL Inductor

Figure 115: ADSL Inductor

Figure 116: ADSL Inductor

Figure 117: ADSL Inductor

Figure 118: ADSL Inductor

Figure 119: ADSL Inductor

Figure 120: ADSL Inductor

Figure 121: ADSL Inductor

Figure 122: ADSL Inductor

Figure 123: ADSL Inductor

Figure 124: ADSL Inductor

Figure 125: ADSL Inductor

Figure 126: ADSL Inductor

Figure 127: ADSL Inductor

Figure 128: ADSL Inductor

Figure 129: ADSL Inductor

Figure 130: ADSL Inductor

Figure 131: ADSL Inductor

Figure 132: ADSL Inductor

Figure 133: ADSL Inductor

Figure 134: ADSL Inductor

Figure 135: ADSL Inductor

Figure 136: ADSL Inductor

Figure 137: ADSL Inductor

Figure 138: ADSL Inductor

Figure 139: ADSL Inductor

Figure 140: ADSL Inductor

Figure 141: ADSL Inductor

Figure 142: ADSL Inductor

Figure 143: ADSL Inductor

Figure 144: ADSL Inductor

Figure 145: ADSL Inductor

Figure 146: ADSL Inductor

Figure 147: ADSL Inductor

Figure 148: ADSL Inductor

Figure 149: ADSL Inductor

Figure 150: ADSL Inductor

Figure 151: ADSL Inductor

Figure 152: ADSL Inductor

Figure 153: ADSL Inductor

Figure 154: ADSL Inductor

Figure 155: ADSL Inductor

Figure 156: ADSL Inductor

Figure 157: ADSL Inductor

Figure 158: ADSL Inductor

Figure 159: ADSL Inductor

Figure 160: ADSL Inductor

Figure 161: ADSL Inductor

Figure 162: ADSL Inductor

Figure 163: ADSL Inductor

Figure 164: ADSL Inductor

Figure 165: ADSL Inductor

Figure 166: ADSL Inductor

Figure 167: ADSL Inductor

Figure 168: ADSL Inductor

Figure 169: ADSL Inductor

Figure 170: ADSL Inductor

Figure 171: ADSL Inductor

Figure 172: ADSL Inductor

Figure 173: ADSL Inductor

Figure 174: ADSL Inductor

Figure 175: ADSL Inductor

Figure 176: ADSL Inductor

Figure 177: ADSL Inductor

Figure 178: ADSL Inductor

Figure 179: ADSL Inductor

Figure 180: ADSL Inductor

Figure 181: ADSL Inductor

Figure 182: ADSL Inductor

Figure 183: ADSL Inductor

Figure 184: ADSL Inductor

Figure 185: ADSL Inductor

Figure 186: ADSL Inductor

Figure 187: ADSL Inductor

Figure 188: ADSL Inductor

Figure 189: ADSL Inductor

Figure 190: ADSL Inductor

Figure 191: ADSL Inductor

Figure 192: ADSL Inductor

Figure 193: ADSL Inductor

Figure 194: ADSL Inductor

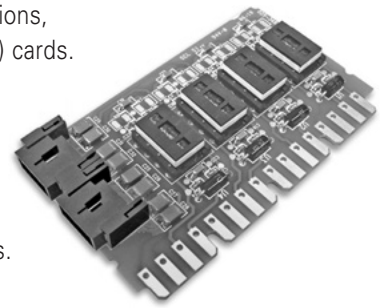
Figure 195: ADSL Inductor

CO & CPE Products

CENTRAL OFFICE (CO*) DSL SPLITTER CIRCUITS FOR TELECOM APPLICATIONS

Our comprehensive line of CO splitter designs can be customized for various types of installations, including DSLAMs, rack-mount cards, cross-connect blocks, and main distribution frame (MDF) cards.

- Innovative, high-density designs, like the SmartER series, result in components that are one third the size of a typical design for this application.
- Delivers more channels on smaller cards.
- Scalable capacity from single-line to 96-lines.
- Customized solutions can be developed quickly, saving OEMs time and development costs.
- VDSL2 designs support TelcoTV and IPTV applications.



For assistance with a custom design, e-mail Pulse's Telecom Division at: prodinfo_telecom@pulseelectronics.com

CO* & CPE* SPLITTER FILTER MODULES

SmartER™ xDSL High-density, Low Pass, Splitter/Filter Modules



- Common pinout 12mm x 11mm (0.472" x 0.433")
- Surface Mount available
- Integrated Protection available
- Contact Pulse for custom CO Splitter Modules or Single/Multichannel MDF boards.

SmartER™ Series: ADSL, ADSL2+, VDSL, VDSL2 Low Pass Filter Modules for CO and CPE*				
RoHS Part Number ¹	Standard/Applications	Note/Comment	Data Sheet	
B8802NL	XDSL/POTS ATIS TRQ.10.2009 Type A & C	CO short loop and CPE	B703	
B8813NL	XDSL/POTS ATIS TRQ.10.2009 Type A	CO short and long loops	B706	
B8817NL	XDSL/POTS China MII YD/T1187	relaxed spec	B704	
B8841NL	XDSL/POTS 600 R ETSI A&B	12KHz, 16KHz billing tone	B898	
B8842NL	XDSL/ISDN 2B1Q/4B3T	—	B705	
B8845NL	XDSL/ISDN 4B3T + POTS DT complex	—	B708	
B8846NL	XDSL/POTS ETSI B complex and BT SIN-346 complex	—	B899	
B8849NL	XDSL/POTS ETSI A complex	—	B893	
B8859NL	XDSL/POTS ETSI A complex	12 kHz billing tone	B701	
B8891NL	ADSL2+/POTS China MII YD/T1187	—	B709	
B8887NL	XDSL/POTS China MII	—	B900	

1. Contact Pulse for custom CO splitter or MDF boards.

SMART™ Series: xDSL, Low Pass, Filter Modules¹ for CO and CPE*

Part Number	RoHS	Standard/Applications ²	Note/Comment	Data Sheet
—	B8041NL	ETSI 600 W-ADSL/POTS	—	B881
—	B8042NL	ETSI Ann B-ADSL/ISDN 2B1Q	—	B815
—	B88046NL	UK Complex BT SIN-346-ADSL/POTS	relaxed spec*	B810
—	B8049NL	ETSI Complex option A-ADSL/POTS	compliant	B826
B8049E	B8049ENL	ETSI Complex option A-ADSL/POTS	compliant/low profile	B882
B8120	—	ANSI-ADSL/POTS	—	B827
B8120A	—	ANSI-ADSL/POTS	w/signature circuit	B827
B8216	B8216NL	UK Complex BT SIN-346-ADSL/POTS	w/protections (K20 basic)	B883
B8245	B8245NL	ETSI Ann B - ADSL/POTS/ISDN 4B3T	compliant	B879
B8546	—	—	—	—
B8546E	B8546ENL	UK Complex BT SIN-346-ADSL/POTS	compliant/low profile	B707
BX8214	BX8214NL	ANSI-ADSL/POTS	low profile	B878
BX8214V	BX8214VNL	ANSI-ADSL/VDSL2/POTS	VDSL2 compliant/low profile	B886
—	BX8270NL	ITU G992.1-ADSL/POTS + VoIP	CPE for Korea/Asia	B872
—	BX8296NL	ANSI-ADSL/POTS + VoIP	CPE for North America	B871

SMART™ xDSL, Low Pass, Splitter/Filter Modules



Common pinout 44.70mm x 10mm (1.760" x 0.394")

CPE PRODUCTS

Pulse provides high-quality DSL filters, splitters, and accessories for broadband Internet access over conventional telephone lines. Customers include DSL end-users, telephone companies, equipment providers, and Internet service providers worldwide. Various splitter and filter types, such as inline, wall-mount, dual-line, tri-jack, dynamic and even alarm panel filters, meet the demanding ETSI, ITU and ANSI specifications.

For years Pulse has been providing innovative DSL splitters, filter transformers, and inductors for customer premises (CPE) and central office (CO) applications worldwide. Now our CPE product line has expanded to offer video-grade splitters for error-free performance on TelcoTV networks.

- Error-free and jitter-free performance that maintains high-quality signals in the customer premises
- VDSL2 versions support TelcoTV and IPTV applications
- On-site system testing for xDSL environments, from DSLAM's to customer premises

Contact Pulse for custom Central/Master splitter solutions.



ADSL and ADSL2+ Micro Filters



Part Number:	CP-V413WT	Z-401TJ11	CP-V501TJ	CP-V503TJ	CP-404TJ45	CP-421SE
Filter Type:	Distributed DSL Filters					
wConnector	Screw	RJ11			RJ45	Swedish
Region	—	Europe				Sweden
Specification	ANSI T1.413	ETSI 952-1-1	ETSI 952-2-1	ETSI 952-2-3	ETSI 952-1-4	ANSI T1.421
Certification	FCC Part 68, UL 60950	CE				
Surge Protection	ITU K.21					

ADSL and ADSL2+ Micro Filters



Part Number:	Z-321NF	Z-321NFW	Z-301LS	Z-230PJ	Z-330P2J	Z-330TJA	Z-321P2J	Z-A431PJ31X-A	Z-A431EU
Filter Type:	Distributed DSL Filters								
Connector	RJ11							RJ31X	Screw
Impedance	600 Ω								
Region	Asia & Europe			North America					UK
Specification	—			—	ANSI T1.421				—
Certification	CE			CE, FCC Part 68			UL 60950		CE

CPE PRODUCTS

ADSL2+ and VDSL2 Video Grade Splitters



Part Number:	CP-V413WT	Z-401TJ11	CP-V501TJ	CP-V503TJ	CP-404TJ45	CP-421SE
Filter Type:	Distributed DSL Filters					
Connector	Screw	RJ11			RJ45	Swedish
Region	—	Europe				Sweden
Specification	ANSI T1.413	ETSI 952-1-1	ETSI 952-2-1	ETSI 952-2-3	ETSI 952-1-4	ANSI T1.421
Certification	FCC Part 68, UL 60950	CE				
Surge Protection	ITU K.21					

MDU Products



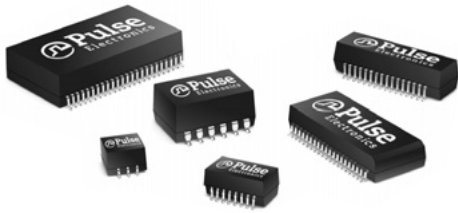
Part Number:	KHZ-023-6625FF		Z-D250P2J	Z-D250CWA	CP-V413WT
Filter Type:	Central/Master Splitters				
Connector	Punch-down	RJ11			Screw
Impedence	600 Ω				
Mounting Style	66 Punch-down Block	Wall Mount			
Ports	24	1			
Certification	FCC Part 68, UL 60950				

HPNA Products



Part Number:	BZ-H175S	BZ-H175S-44
Filter Type:	In-Line Balun with HPN Band Pass Filter	
Connector	Twisted Pair (RJ11) to Coaxial	
Impedance	100 Ω to 75 Ω balun	600 Ω
HPN Frequency	12 MHz - 28 MHz	12 MHz - 44 MHz
Certification	FCC Part 68, UL 60950	

TELECOMMUNICATIONS PRODUCTS



Pulse is a leading provider of magnetics for telecom infrastructure equipment, customer premises equipment, and audio interface applications. Our broad portfolio of transformers and integrated transformer modules support T1/E1/ISDN-PRI, T3/E3/STS-1, ISDN-S, ISDN-U, Digital Audio, and DDS.

Package options include surface mount, through hole, single, dual, quad and octal, covering standard and extended temperature ranges. Many parts meet ANSI, ITU, and ETSI requirements, and many are recognized by UL, TUV, Austel and/or CSA. Numerous models incorporate our Interlock Base construction, ensuring high reliability. The Datasheets are available at www.PulseElectronics.com

SINGLE, DUAL TRANSFORMERS

T1/E1/CEPT/ISDN-Pri—SINGLE, DUAL

Part Number	Turns Ratio	Package L/W/H (in.)*	Data Sheet	Part Number	Turns Ratio	Package L/W/H (in.)*	Data Sheet
SINGLE TRANSFORMERS				1.5 kV Isolation, Standard Temperature Range, BH Package, SMT			
1.5 kV Isolation, Standard Temperature Range, THT				PE-65861NL	1CT:2CT & 1CT:2CT	.505/.375/.245	T608
PE-64931NL	1:1:1 (1:2CS)	.350/.500/.250	T608	PE-65866NL	1:1/1.26 & 1CT:2CT	.505/.375/.245	T608
PE-64934NL	1:1	.350/.500/.250	T608	PE-65870NL	1CT:1.15CT & 1CT:1.15CT	.505/.375/.245	T608
PE-64936NL	1CT:1	.350/.500/.250	T608	PE-68678NL	1CT:1CT & 1CT:2CT	.505/.375/.245	T608
PE-64937NL	1:1.36	.350/.500/.250	T608	PE-68786NL	1CT:1.41CT & 1CT:1.41CT	.505/.375/.245	T608
PE-65351NL	1:2CT	.350/.500/.250	T608	T1023NL	1CT:1.41CT & 1CT:1.41CT	.505/.375/.245	T608
PE-65363NL	1:4CT	.350/.500/.250	T608	T1137NL	1CT:2.42CT & 1CT: 2.42CT	.505/.375/.245	T651
PE-65388NL	1:1.15CT	.350/.500/.250	T608	T1021NL	2CT:1/1.26 & 2CT:1/1.26	.505/.375/.245	T637
PE-65389NL	1:1:1.266	.350/.500/.250	T608	T1090NL	1CT:2CT & 1CT:2CT	.505/.375/.245	T608
PE-65415NL	1CT:2CT	.350/.500/.250	T608	T1091NL	1CT:2CT & 1:1.36CT	.505/.375/.245	T608
1.5 kV Isolation, Extended Temperature Range, THT				T1076NL	1:1.15CT & 1CT:2CT	.505/.375/.245	T608
PE-65770NL	1:1.15CT	.350/.500/.250	T608	TT1094NL	1CT:1CT & 1CT:2CT	.505/.375/.245	T608
PE-65771NL	1CT:2CT	.350/.500/.250	T608	T1144NL	1CT:1CT & 1CT:2.4CT	.505/.375/.245	T608
PE-65778NL	1CT:1CT	.350/.500/.250	T608	T1096NL	1CT:1.41CT & 1CT:1.41CT	.505/.375/.245	T608
TX1252NL	1CT:1	.350/.500/.250	T608	T1146NL	1:2/2.4 & 1:0.79/1	.505/.375/.245	T608
1.5 kV Isolation, Extended Temperature Range, SMT				TX1089NL	1CT:1CT & 1CT:1CT	.505/.375/.245	T608
TX1281	1CT:1	.220/.305/.200	T669	TX1099NL	1CT:1:0.8 & 1CT:1:0.8	.505/.375/.245	T608
TX1315NL	1CT:1CT	.300/.390/.250	T678	TX1287NL	1CT:2.42CT & 1CT: 2.42CT	.505/.375/.245	T608
3.0 kV – Reinforced Insulation per IEC 950, THT				TX1188NL	1CT:2CT & 1CT:2CT	.505/.375/.245	T608
PE-65832NL	1:1.36CT	.558/.558/.400	T608	TX1467NL	1CT:1:1 & 1CT:1:1	.505/.375/.245	T608
PE-65833NL	1CT:2CT	.558/.558/.400	T608	1.5 kV Isolation, Standard Temperature Range, ANTE Package, SMT			
PE-65834NL	1:1	.558/.558/.400	T608	PE-68864NL	1CT:2CT & 1:1	.675/.600/.340	T608
PE-65835NL	1CT:2CT	.558/.558/.400	T608	PE-68836NL	1:1/1.26 & 1:1/1.26	.675/.600/.340	T608
PE-65839NL	1:1:1.266	.558/.558/.400	T608	PE-68822NL	1CT:2CT & 1:1.36CT	.675/.600/.340	T608
				PE-68826NL	1:1/1.26 & 1:2CT	.675/.600/.340	T608
				PE-68828NL	1CT:1CT & 1CT:1CT	.675/.600/.340	T608
				PE-68841NL	1CT:2CT & 1CT:2CT	.675/.600/.340	T608
				PE-68877NL	1CT:1CT & 1CT:2CT	.675/.600/.340	T608

*L/W/H is measured on surface mount parts tip to tip (height includes wash area).

SMT - Surface Mount Package

THT - Through Hole Package

TELECOMMUNICATIONS PRODUCTS

TRANSFORMERS DUAL, QUAD, OCTAL, TRANSFORMER/CHOKE INTERFACE MODULES

T1/E1/CEPT/ISDN-Pri—DUAL, QUAD, OCTAL

Part Number	Turns Ratio	Package L/W/H (in.)*	Data Sheet
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DUAL TRANSFORMER/CHOKE INTERFACE MODULES

1.5 kV Isolation, Extended Temperature Range, SMT

T1212NL	1CT:1CT & 1CT:2CT	.675/.600/.340	T660
T1215NL	1CT:1.41CT & 1CT:1.41CT	.675/.600/.340	T660
T1217NL	1CT:2.42CT & 1CT:2.42CT	.675/.600/.340	T660
T1219NL	1CT:2.4CT & 1CT:1CT	.675/.600/.340	T660

QUAD TRANSFORMER/CHOKE INTERFACE MODULES

1.5 kV Isolation, Extended Temperature Range, SMT

T1176NL	1CT:2.4CT & 1CT:1CT	.690/.630/.225	T662
TX1193NL	1CT:2CT & 1CT:1CT	.690/.630/.225	T662

QUAD TRANSFORMERS (four transformers per package)

1.5 kV Isolation, Extended Temperature Range, SMT

TX1323NL	1CT:2CT & 1CT:1CT	.690/.630/.225	T662
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Part Number	Turns Ratio TX	Turns Ratio RX	Package L/W/H (in.)*	Data Sheet
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1.5 kV Isolation, Standard Temperature Range, SMT

T1064NL	1:1.14	1:1.14CT	1.125/.640/.230	T622
T1065NL	1:2CT	1:2CT	1.125/.640/.230	T622
T1068NL	1:2CT	1:1CT	1.125/.640/.230	T622
T1073NL	1:2	1:2	1.125/.640/.230	T622
T1124NL	1:2CT	1CT:2	1.125/.640/.230	T622
T1142NL	1:2.4	1:1	1.125/.640/.230	T622
T1145NL	1:2/2.4	1:0.79/1	1.125/.640/.230	T622

1.5 kV Isolation, Extended Temperature Range, SMT

T1108NL	1:2CT	1:1CT	1.125/.640/.230	T622
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Part Number	Turns Ratio TX	Turns Ratio RX	Package L/W/H (in.)*	Data Sheet
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OCTAL TRANSFORMERS (eight transformers per package) (continued)

1.5 kV Isolation, Standard Temperature Range, SMT

T1114NL	1:2CT	1CT:2	1.125/.640/.230	T622
T1231NL	1:2.4	1:1	1.125/.640/.230	T622
TX1262NL	1:2	1:2	1.125/.640/.230	T622
TX1266NL	1:2	1:1	1.125/.640/.230	T622
TX1344NL	1:1	1:2	1.000/.425/.295	T671
TX1470NL	1:1.41	1:1.41	1.000/.425/.295	T671
TX1472NL	1: 2.4	1:1	1.000/.425/.295	T671
TX1473NL	1:2	1:1	1.000/.425/.295	T671
TX1471NL	1:1	1:1	1.000/.425/.295	T671

OCTAL TRANSFORMER/CHOKE INTERFACE MODULES

1.5 kV Isolation, Extended Temperature Range, SMT

TX1263NL	1:2	1:2	1.125/.640/.285	T682
TX1267NL	1:2	1:1	1.125/.640/.285	T682

16 CHANNEL T1/E1 TRANSFORMER BGA INTERFACE MODULES

1.5 kV Isolation, Extended Temperature Range

TX1680NL	1:2CT	1CT:2	1.125/.680/.440	T695
TX1681NL	1:1CT	1CT:1	1.125/.680/.440	T695
TX1682NL	1:2CT	1CT:2	1.125/.680/.440	T695

SONET/SDH (STM-1/E4/CMI)

Part Number	Turn Ratio	Primary Inductance OCL (μH MIN)	Package L/W/H (in.)*	Data Sheet
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DUAL, SMT

ST6200QNL	1CT:CT	28	.455/.375/.225	ST6200QNL
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1. **SOIC** = 50 mil pitch leads. Length and width are MAX package dimensions. Height dimensions include the wash area.

*L/W/H is measured on surface mount parts tip to tip (height includes wash area).

SMT - Surface Mount Package

THT - Through Hole Package

TELECOMMUNICATIONS PRODUCTS

TRANSFORMERS, TRANSFORMER MODULES - SINGLE, DUAL, OCTAL, TWELVE

T1/E1 Protection Modules

Part Number	Turns Ratio TX RX	Primary Inductance OCL (μH MIN)	Package L/W/H (in.)*	Data Sheet
OCTAL TRANSFORMER MODULES, 1.5 kV Isolation				
Extended Temperature Range, Line Side Protection, SMT				
T9030NL	1CT:2 1CT:1	1.2	1.255/.852/.305	T656
IC Side Protection, SMT				
TX9025NL	1:2CT 1:2	1.2	1.125/.640/.285	T686

ISDN S-Interface — Single, Dual

Part Number	Turns Ratio	Primary Inductance OCL (mH MIN)	Package L/W/H (in.)*	Data Sheet
SINGLE TRANSFORMERS, 2.0 kV ISOLATION THT				
PE-64995NL	1:2	22	.560/.560/.400	T604
SMT				
PE-65793ANL	1:1 & 1:1	22	.950/.720/.390	T604
Low Profile, SMT				
T5008NL	1:1 & 1:1	22	.950/.720/.295	T613

T3/DS3/E3/STS-1 — Single, Dual, Triple, Quad, Six Port

Part Number	Turns Ratio	Primary Inductance OCL (μH MIN)	Package L/W/H (in.)*	Data Sheet
SINGLE TRANSFORMERS, THT				
PE-68629NL	1:1	40	.350/.500/.250	T606
PE-65966NL	1:1	40	.300/.280/.250	T606
PE-65969NL	1:2CT	19	.300/.280/.250	T606
PE-65779NL	1:4CT	200	.300/.400/.250	T606
SMT				
PE-65967NL	1:1	40	.300/.390/.250	T606
PE-65968NL	1:2CT	19	.300/.390/.250	T606
Extended Temperature Range, SMT				
T3001NL	1:1	100	.300/.390/.250	T619
T3002NL	1:2CT	40	.300/.390/.250	T619
T3011NL	1:1	100	.300/.390/.250	T619
T3012NL	1:2CT	40	.300/.390/.250	T619
T3027NL	1CT:1CT	40	.300/.390/.250	T619
T3029NL	1:1.15CT	40	.300/.390/.250	T619
DUAL TRANSFORMERS, Extended Temperature Range, SMT,				
T3020NL	1:2CT & 1:1	40 & 100	.505/.375/.245	T655
T3023NL	1:1 & 1:1	40 & 40	.505/.375/.245	T655
TWELVE TRANSFORMERS (Six Port) Extended Temperature Range, SMT				
TX3051NL	1:1	60	1.120/.630/.280	T668

TRANSFORMERS, TRANSFORMER/CHOKE MODULES

Digital Audio, Single

Part Number	Turn Ratio	Primary Inductance OCL (μH MIN)	Package L/W/H (in.)*	Data Sheet
THT				
PE-65612NL	1:1	2.5	.350/.500/.250	T601
SMT				
PE-65512NL	1:1	2.5	.480/.600/.340	PE-65512NL

*L/W/H is measured on surface mount parts tip to tip (height includes wash area).

SMT - Surface Mount Package

THT - Through Hole Package

POWER MAGNETICS



Pulse offers a complete range of magnetics for both high-frequency switching power supply applications, as well as 50/60Hz current sense applications. The switching power magnetics include power inductors, power transformers, current sense magnetics, gate drive transformers and common mode chokes. For complete product information, visit www.pulseelectronics.com/power

Pulse also designs and manufactures a wide array of custom and application specific magnetics. Contact Pulse Power Business Unit for more information.

In the Americas: Proinfo_power@pulseelectronics.com

In Europe and Africa: Power-Apps-Europe@pulseelectronics.com

In Asia: Power-Apps-Asia@pulseelectronics.com

NOTE: For additional listings of Pulse Power magnetics, locate other Power data sheets at this URL: <http://www.pulseelectronics.com/power>

OVERVIEW: PULSE POWER MAGNETICS



Power Inductors

Surface Mount (SMT)

- Unshielded Drum Core Inductors (up to 30 A)
- Shielded Drum Core Inductors (up to 17 A)
- Power Bead Inductors (up to 71 A)
- Molded Powder Inductors (up to 55 A)
- Flat Coil Inductors (up to 40 A)
- Planar and Round Wire Coil Inductors (up to 73 A)
- Toroid Inductors (up to 40 A)

Through Hole (THT)

- Toroid Inductors (up to 48 A)
- Power Cube Inductors (up to 50 A)
- Power Bead Inductors (up to 80 Apk)



High-Frequency Switch Mode Transformers

Surface Mount (SMT)

- Planar Transformers (30 W, 75 W, 150 W, 300 W)
- Wirewound Transformers (Up to 200 W)
- High Isolation Transformers (up to 5kVrms)
- Custom transformers available upon request

Through Hole (THT)

- Wirewound Transformers (Up to 500 W)
- Custom transformers available upon request



Gate Drive Transformers

Surface Mount (SMT)

- Operational and Basic Insulation for DC/DC applications >1500 VRMS

Through Hole (THT)

- Reinforced Insulation for AC/DC applications (3000 VRMS)



Current Sense Magnetics

Surface Mount (SMT)

- Operational Insulation (500 VRMS)
- Five platforms (4 A, 10 A, 15 A, 20 A, 35 A)

Through Hole (THT)

- Reinforced Insulation (3000 VRMS)
- Multiple platforms (up to 30 A)

50/60Hz AC Current Sensing

- Sidewinder Product Line (1000A+)



Common Mode Chokes

Surface Mount (SMT)

- Up to 14 A
- 500 VRMS and 1500 VRMS Isolation
- Over 10 package sizes available
- Customer designs available upon request

Through Hole (THT)

- Up to 23 A
- 3000 VRMS Isolation
- Multiple package sizes available

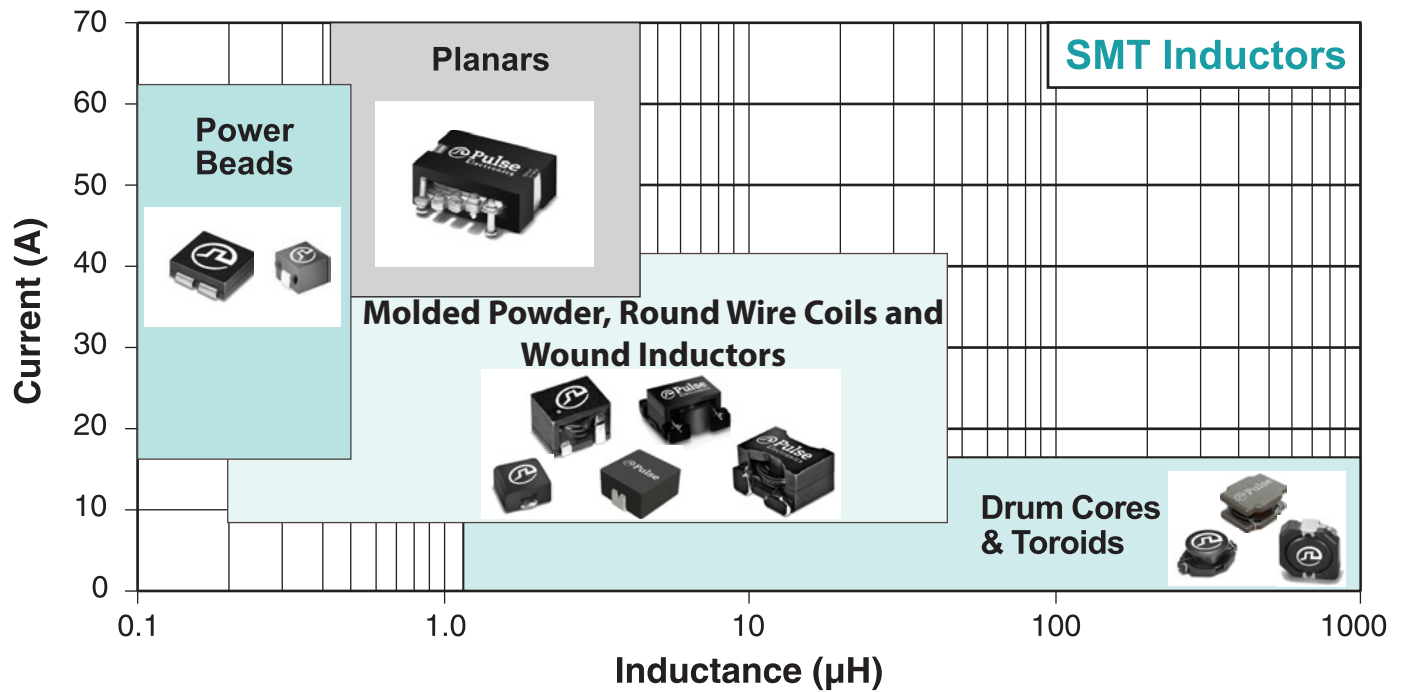
Application Information, Modelling and Reliability Data

- Visit the Pulse Electronics website to view a wide range of technical papers
- Spice Models, 3D Step Files, Qualification Data and Reliability Numbers are all available upon request

POWER MAGNETICS

PRODUCT OVERVIEW: SMT POWER INDUCTORS

Power Inductor Selection Charts, Surface Mount and Through-Hole



Unshielded Drum Core Inductors - typically for lower current application and less efficiency sensitive designs

Shielded Drum Core Inductors - typically for lower current applications, shielded designs helps with EMI

Toroid Inductors - versatile multi-use platforms for single and dual winding applications

Wire-wound Inductors - high-inductance (>5 µH) - mid to high current (15-40 A) applications

Molded Powder Inductors - mid-inductance (0.2 to 20 µH), wide current (5-55A), high saturation

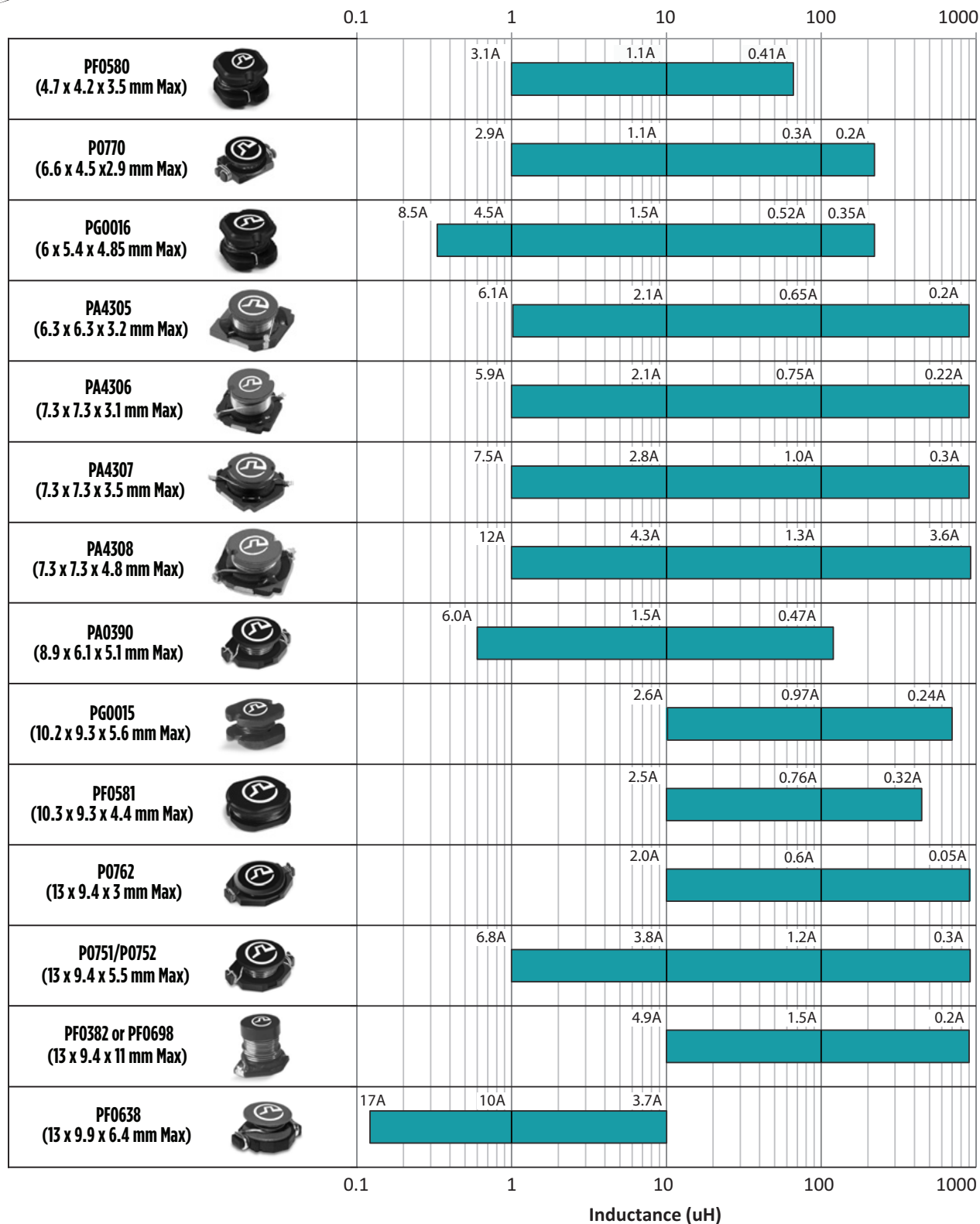
Round Wire Coil Inductors - mid-inductance, high-efficiency inductors (0.4 to 20µH) up to 40A

Power Bead Inductors - low-inductance (<0.5µH), high current (>25A) applications for single and multi-phase applications

Planar Inductors - mid-inductance (0.5 to 4µH), high current (>25A) applications

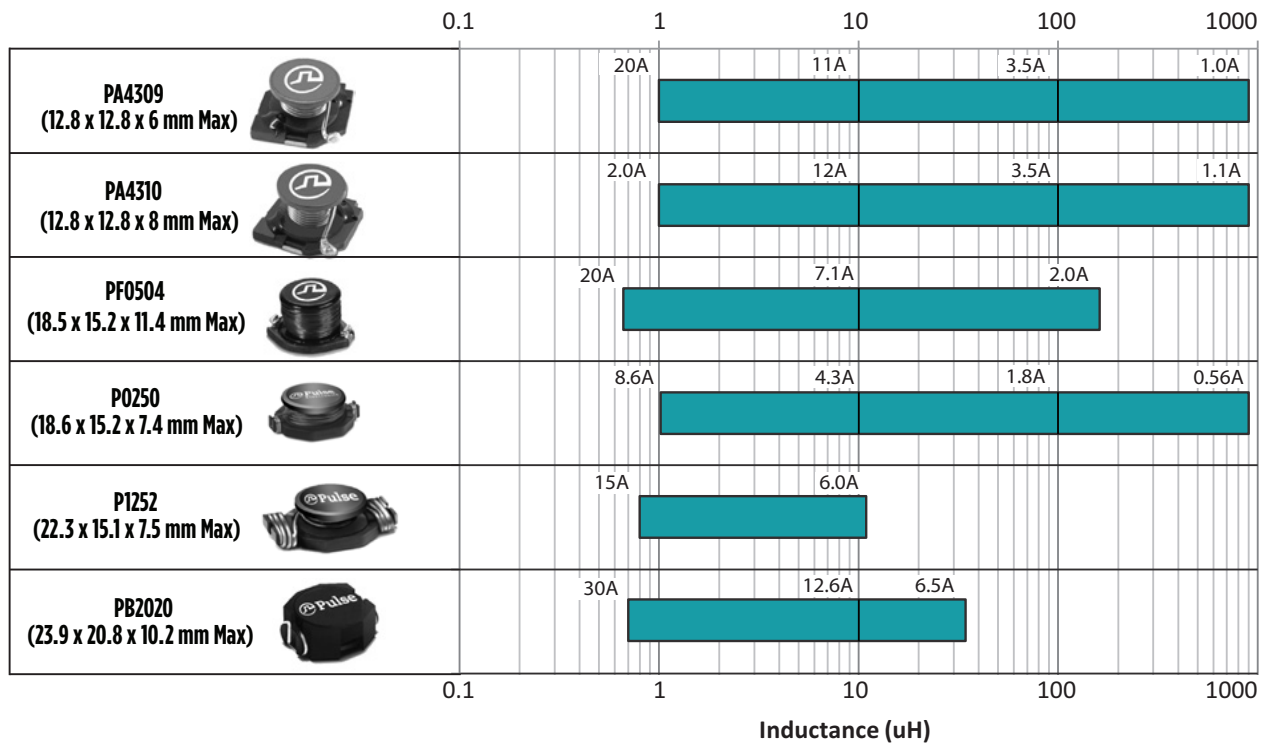
POWER MAGNETICS

PRODUCT OVERVIEW: SMT UNSHIELDED DRUM CORE INDUCTORS

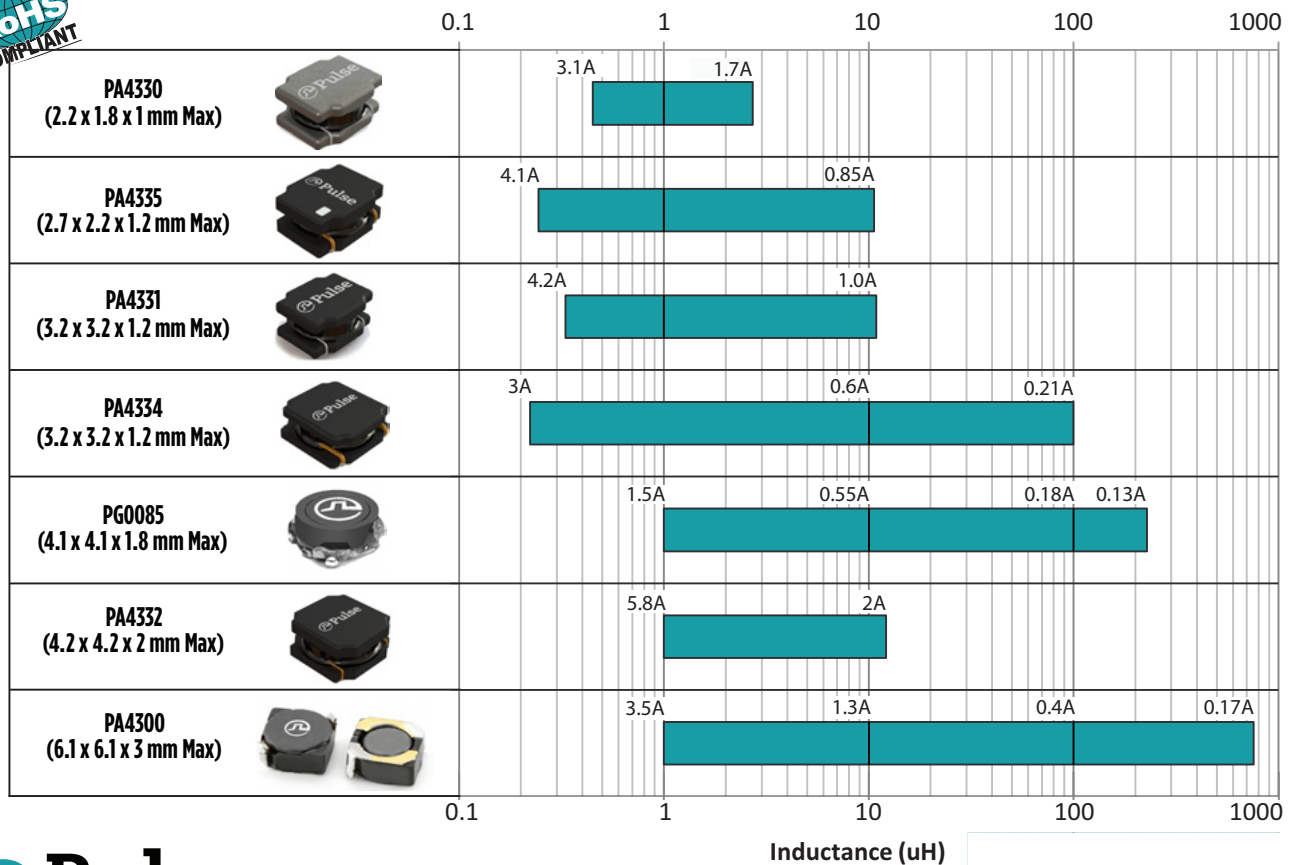


POWER MAGNETICS

PRODUCT OVERVIEW: SMT UNSHIELDED DRUM CORE INDUCTORS

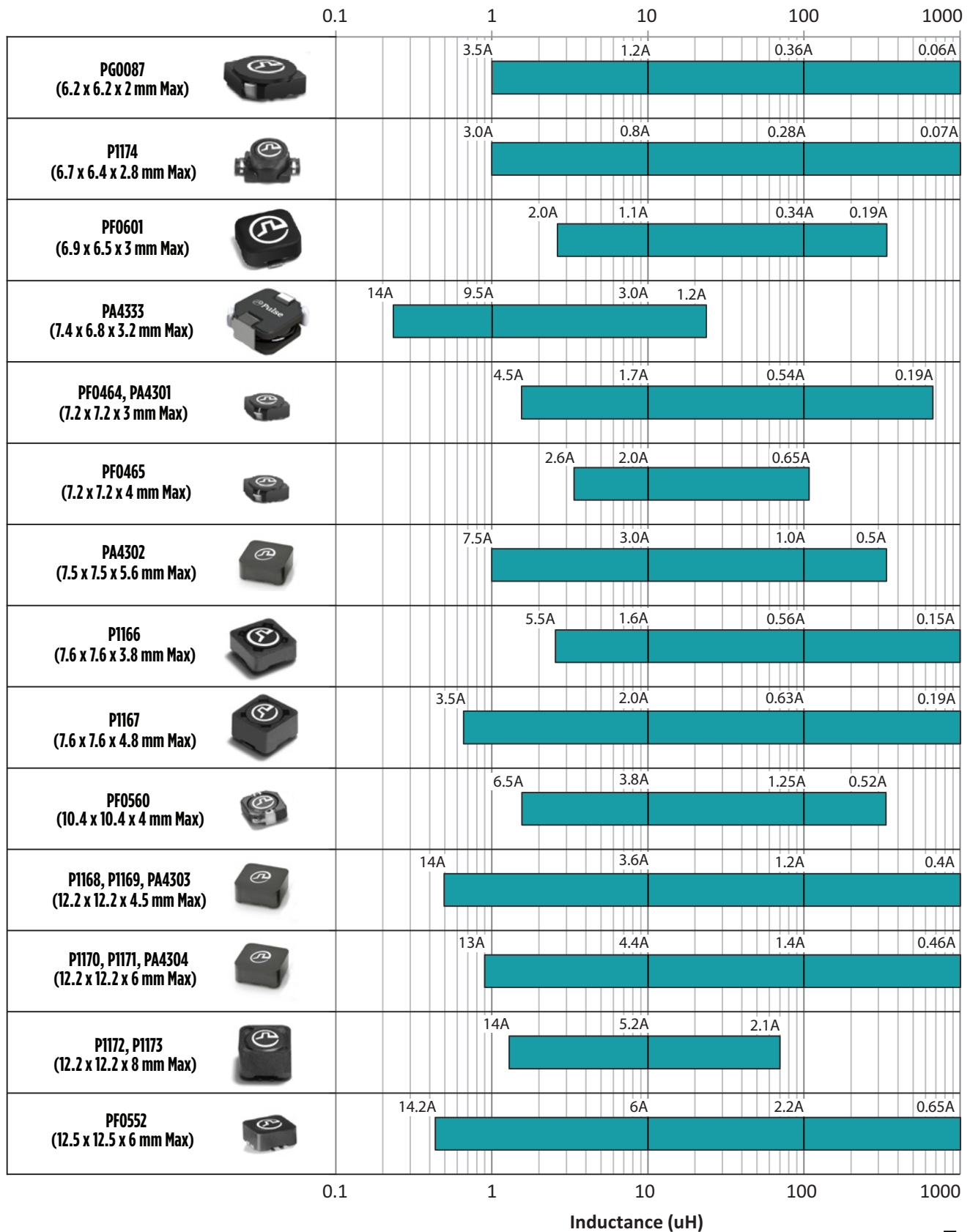


PRODUCT OVERVIEW: SMT SHIELDED DRUM CORE INDUCTORS



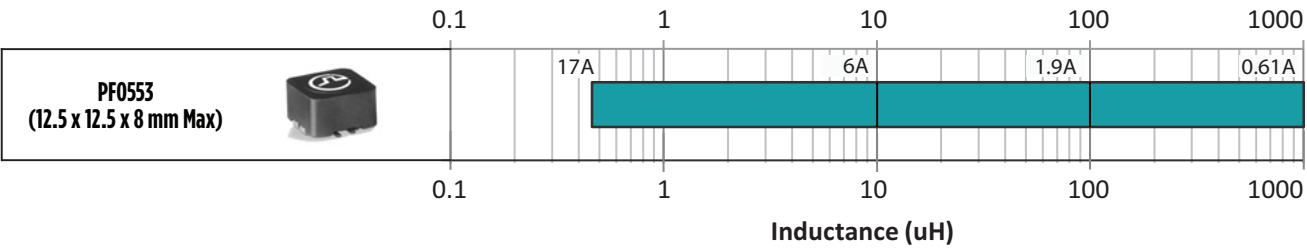
POWER MAGNETICS

PRODUCT OVERVIEW: SMT SHIELDED DRUM CORE INDUCTORS (CON'T)

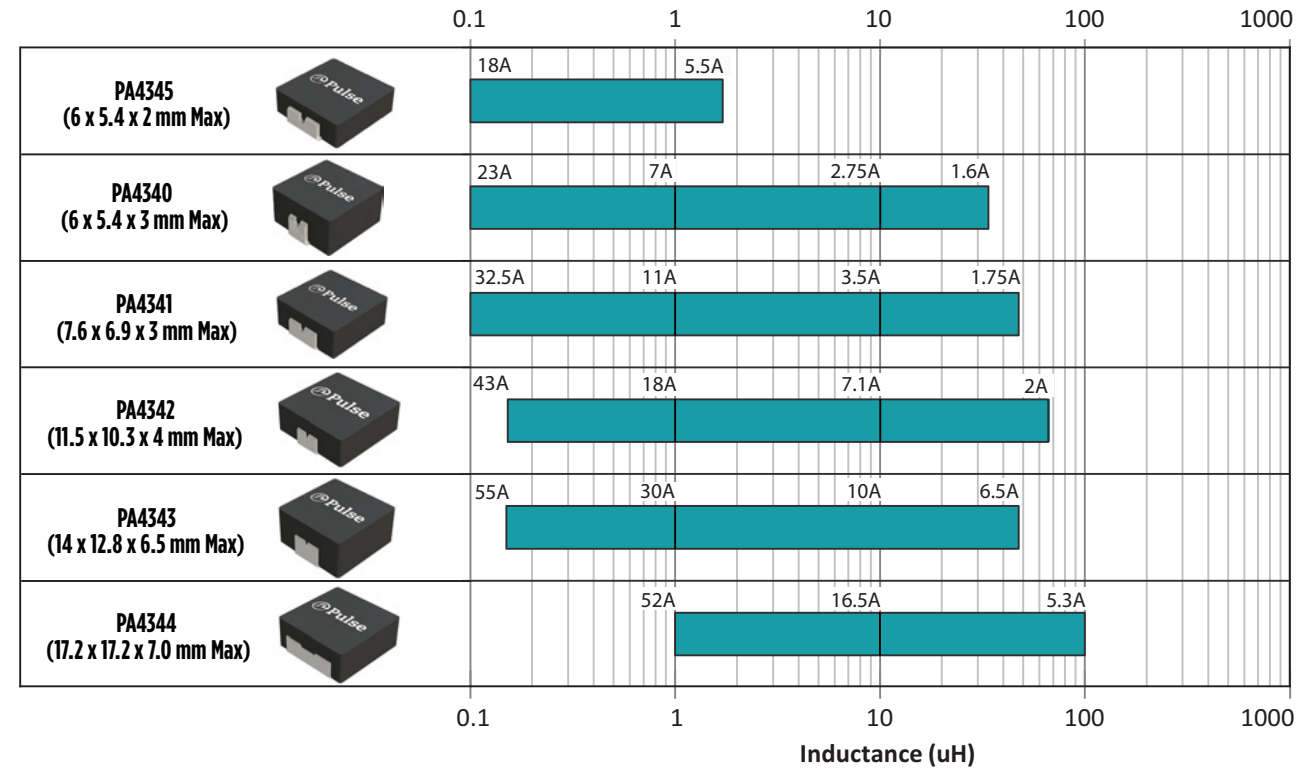


POWER MAGNETICS

PRODUCT OVERVIEW: SMT SHIELDED DRUM CORE INDUCTORS (CON'T)

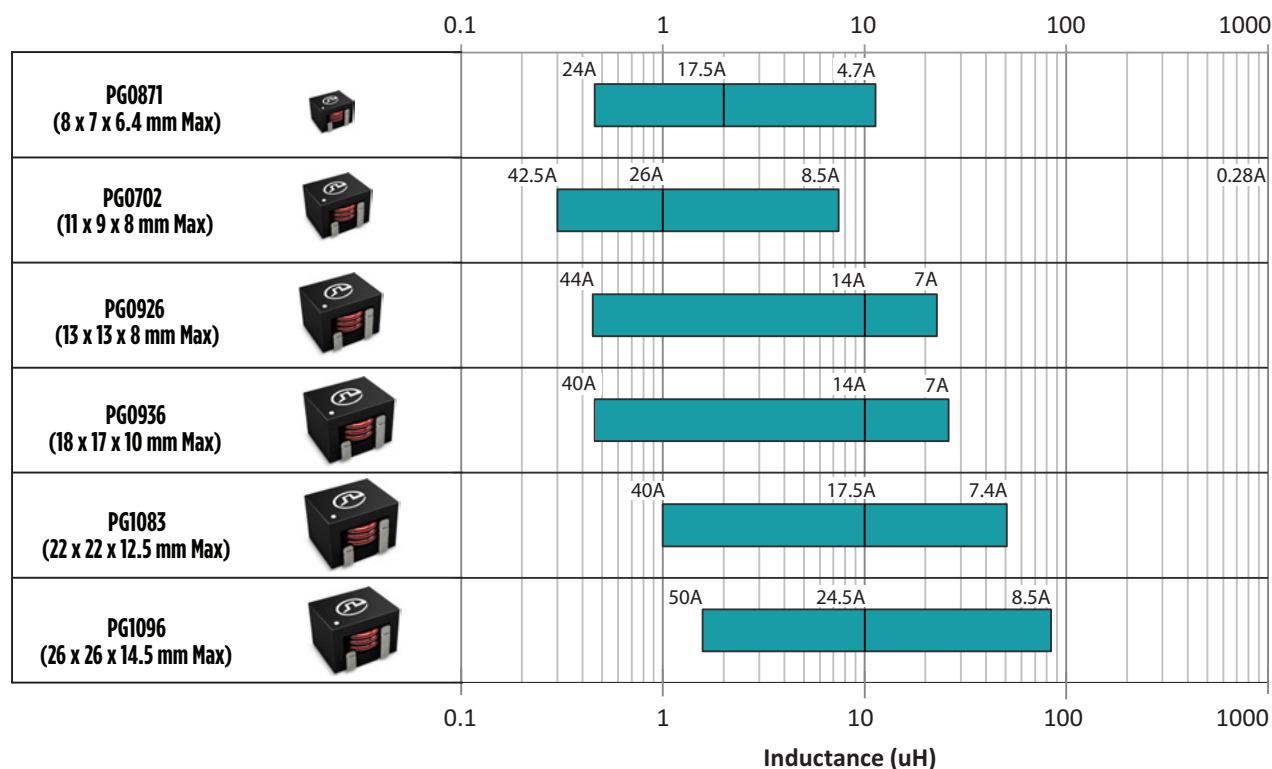


PRODUCT OVERVIEW: SMT MOLDED POWDER INDUCTORS

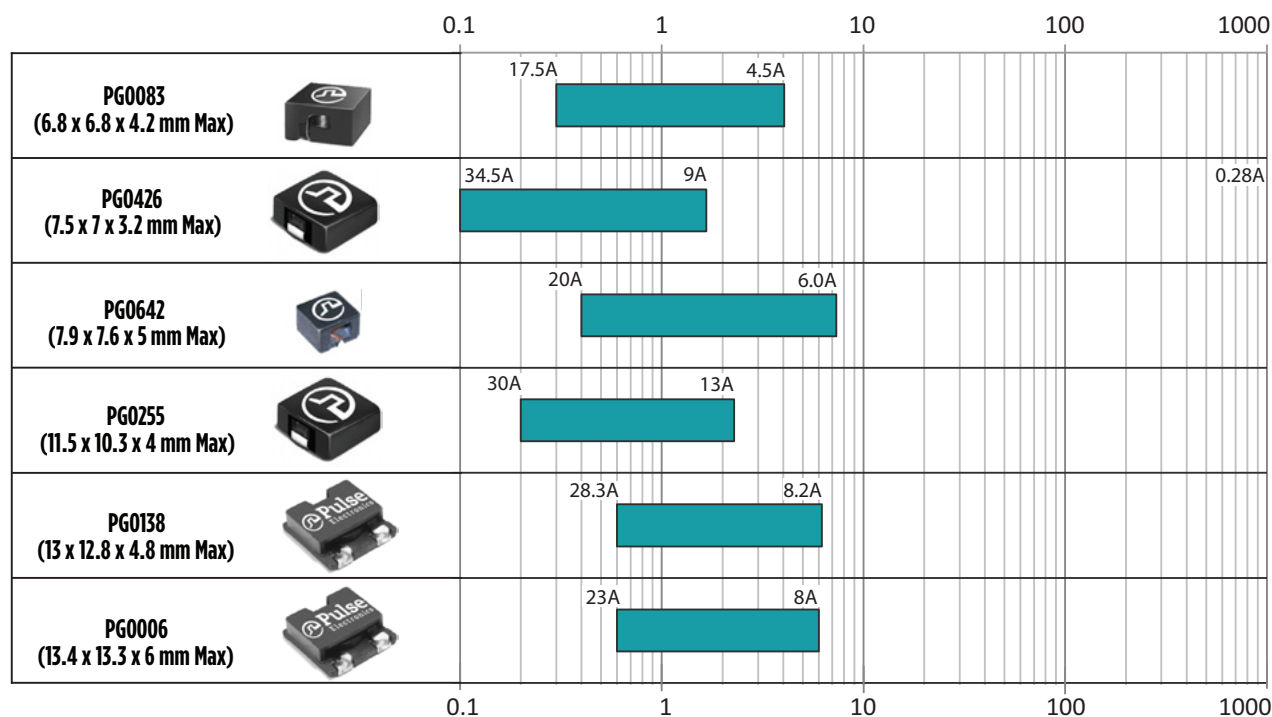


POWER MAGNETICS

PRODUCT OVERVIEW: SMT ROUND WIRE COIL INDUCTORS

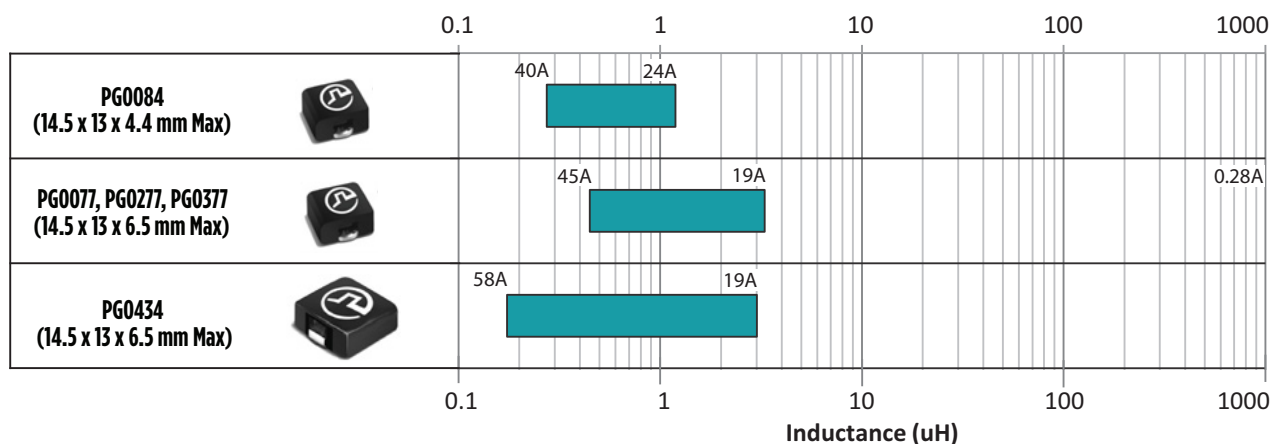


PRODUCT OVERVIEW: SMT FLAT COIL INDUCTORS

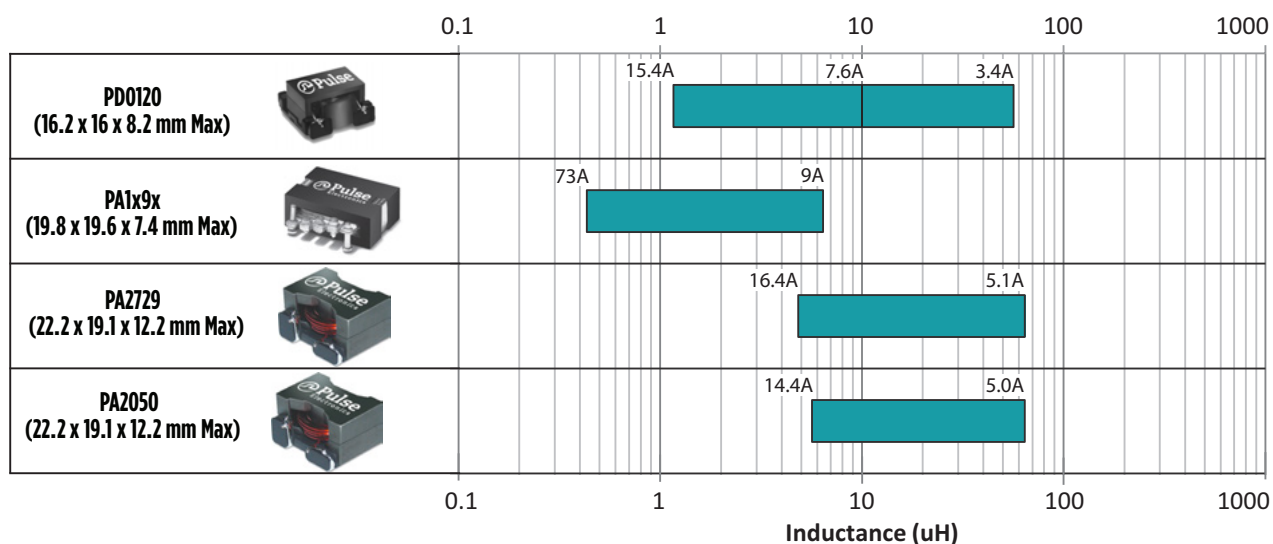


POWER MAGNETICS

PRODUCT OVERVIEW: SMT FLAT WIRE COIL INDUCTORS (CON'T)

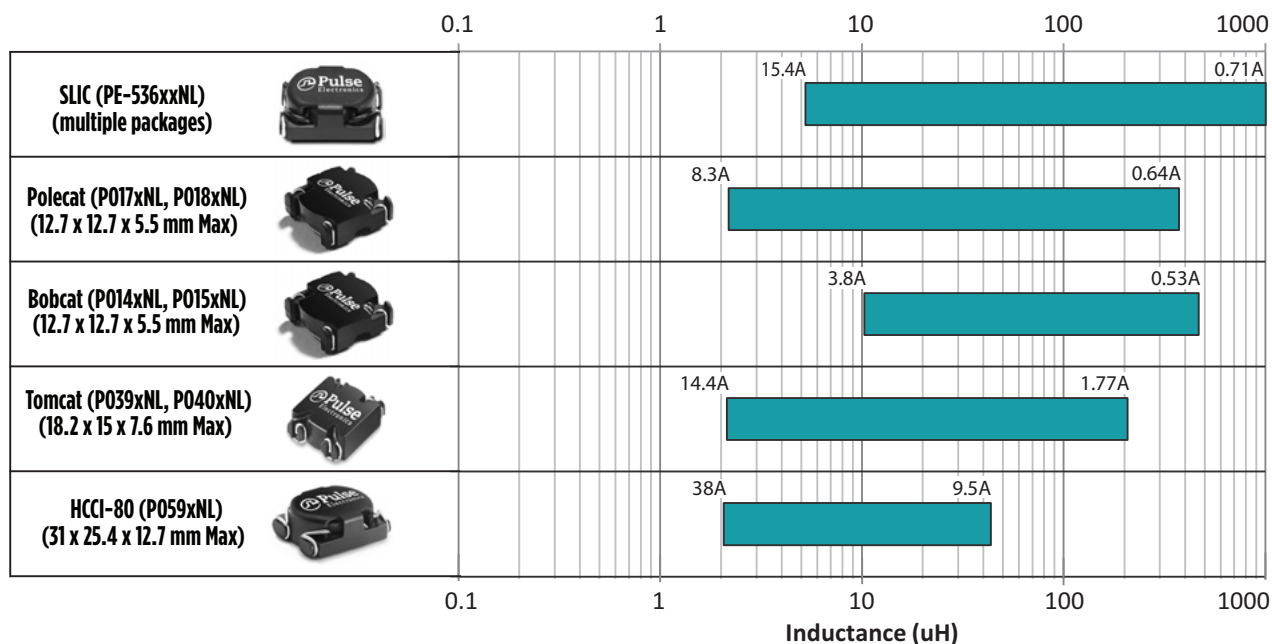


PRODUCT OVERVIEW: SMT PLANAR AND WIRE WOUND COIL INDUCTORS

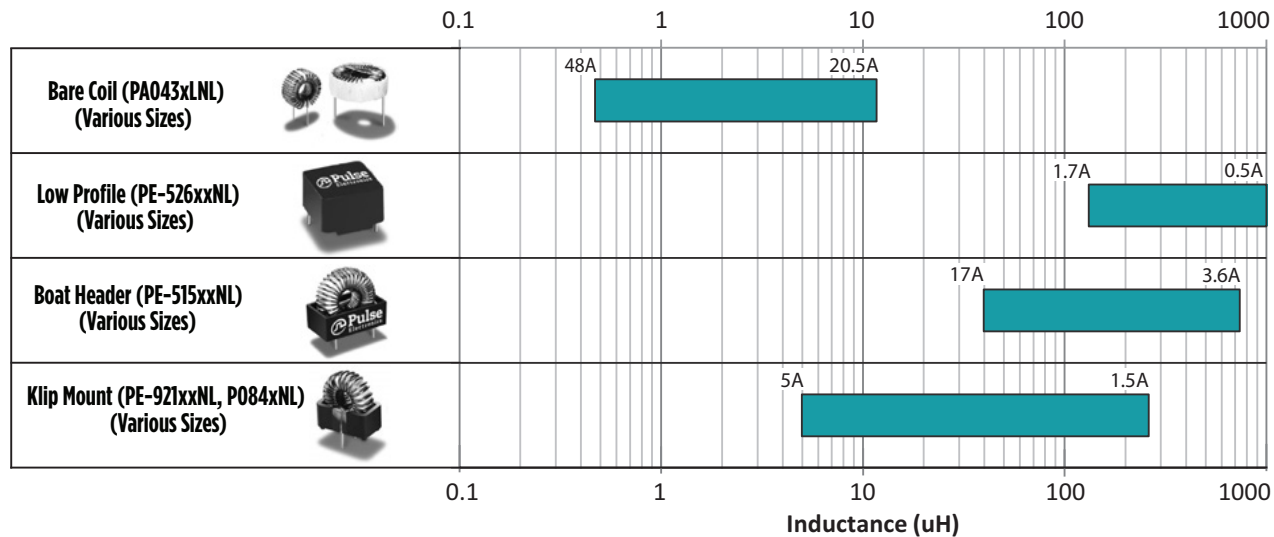


POWER MAGNETICS

PRODUCT OVERVIEW: SMT TOROID INDUCTORS

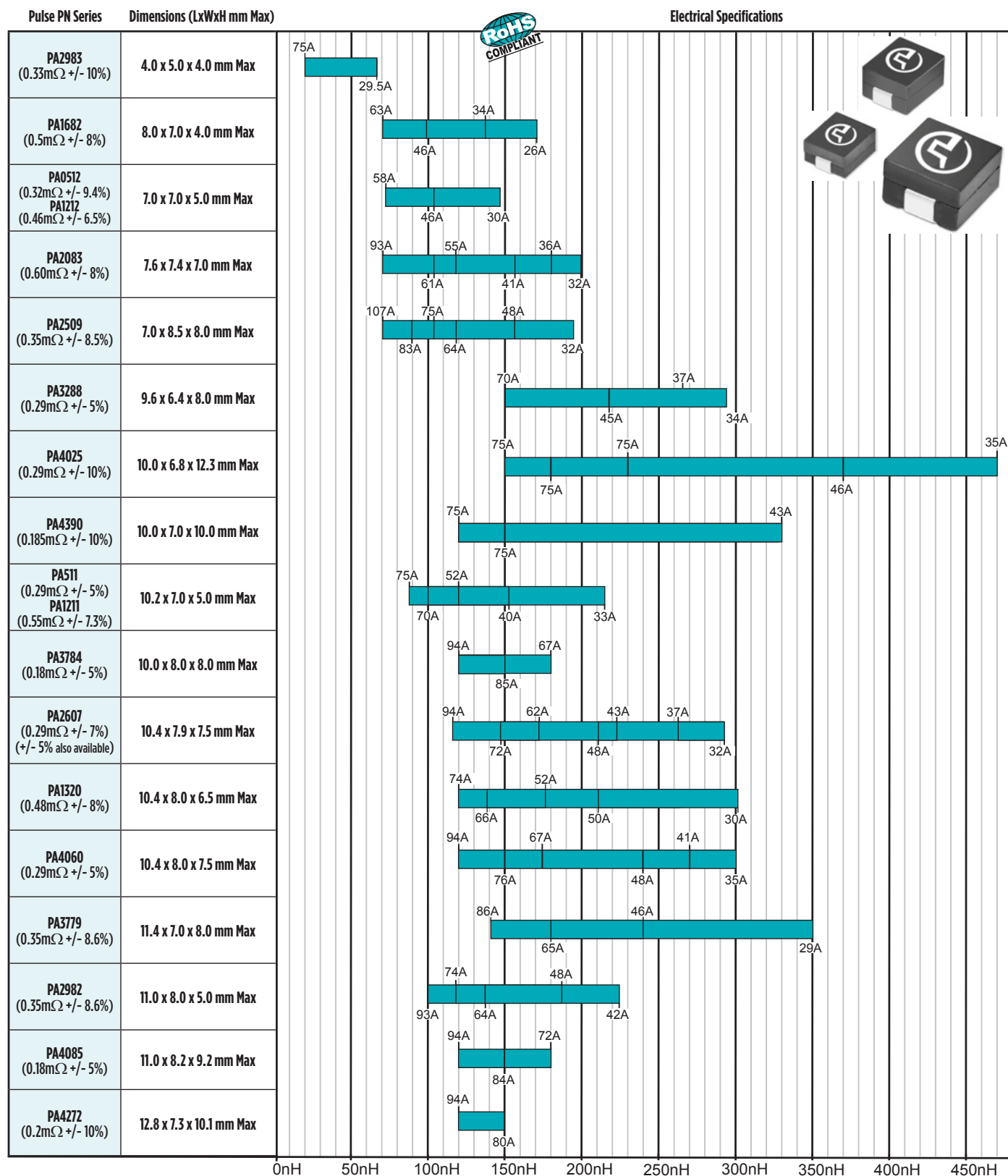


PRODUCT OVERVIEW: SMT THT INDUCTORS



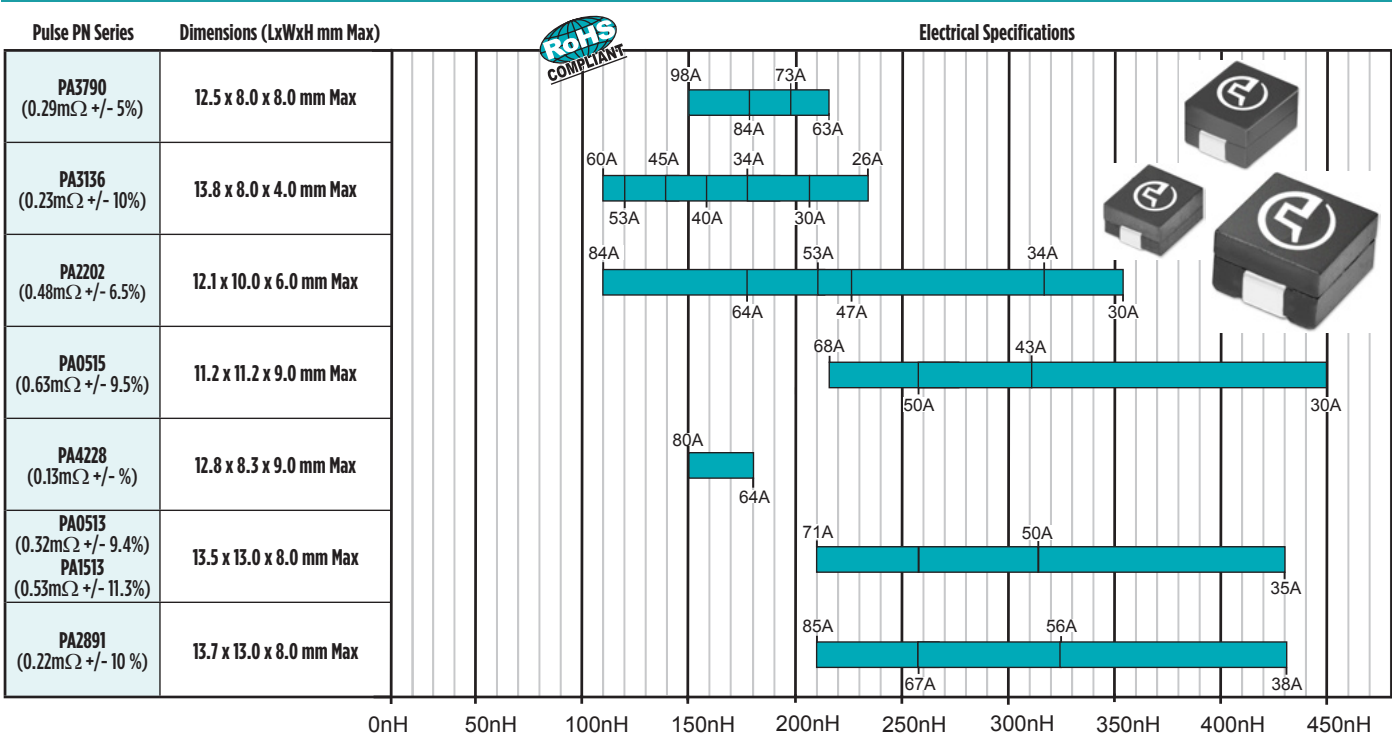
POWER MAGNETICS

PRODUCT OVERVIEW: SMT POWER BEAD INDUCTORS



POWER MAGNETICS

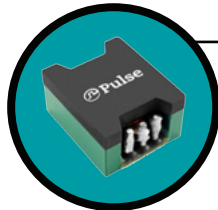
PRODUCT OVERVIEW: SMT POWER BEAD INDUCTORS (CON'T)



POWER MAGNETICS

PRODUCT OVERVIEW: SMT POWER & ISOLATION TRANSFORMERS

Pulse offers custom transformer designs using standard cores and bobbins on the following SMT platforms. Refer to datasheets for below listed parts on Pulse website for further details. 10Kpcs annual demand typically required for custom development. Please contact the Pulse Power Business Unit for your specific needs where we can also offer a wide range of high efficiency magnetics for computing, data-communications and industrial applications.

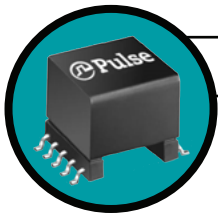
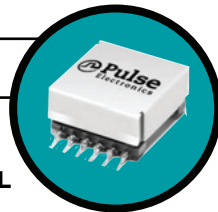


Planar Platforms - ER19, ER25 and ER25 Plus

- ➔ Up to 800W Forward and Full Bridge
- ➔ 1500Vdc Galvanic Isolation
- ➔ PH0801NL, PH0910.003CNL, PH9278NL

EFD Platforms - EFD15, EFD20, EFD25 and EFD30

- ➔ Up to 150W Forward and Flyback
- ➔ Functional and Basic Insulation
- ➔ PA1646NL, PA2398NL, PA2459NL, PA3524NL

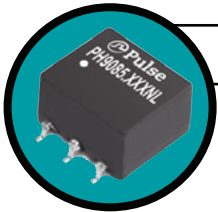
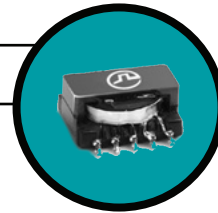


EP Platforms - EP7, EP10, EP13 and EP13 Plus

- ➔ Up to 70W Forward and Flyback
- ➔ Functional and Basic Insulation
- ➔ PA1130NL, PA1133NL, P1136NL, PA3855

ER Platforms - ER9.5, ER11 and ER14.5

- ➔ Up to 10W Push-Pull and Flyback
- ➔ Functional Insulation
- ➔ PA0663NL, PA1032NL, PA1026NL

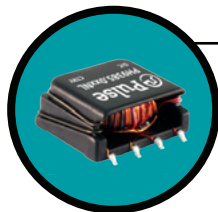
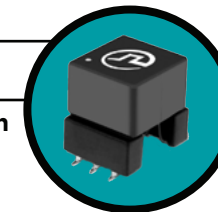


Functional Insulation Toroid Isolation Platform

- ➔ 2500Vrms Isolation, Class B insulation
- ➔ Communications interface applications
- ➔ PH9085

Reinforced Insulation EP7 Isolation Platform

- ➔ TUV Certified to EN60950, Class F insulation
- ➔ 8mm creepage/5000Vrms Isolation
- ➔ PH9185



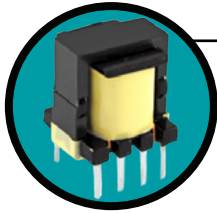
Extended Creepage Sidecar Isolation Platform

- ➔ 12mm Creepage in 7mm and 14mm heights
- ➔ 5000Vrms Isolation
- ➔ PH9385 and PA3965

POWER MAGNETICS

PLATFORM OVERVIEW: THROUGH-HOLE POWER TRANSFORMERS

Pulse offers custom transformer designs using standard cores and bobbins on the following THT platforms. Refer to datasheets for below listed parts on Pulse website for further details.

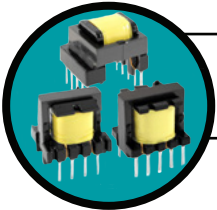
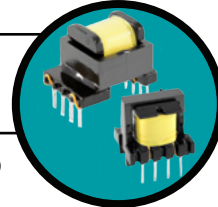


EE10 Platform - 8 Pins, THT, Vertical

- ➔ Typical Power Level: 5W (100kHz, Flyback)
- ➔ Size: 11.0 x 11.0 x 12.0 mm Max
- ➔ Custom part numbers available

EE13 Platform - 9 Pins, THT, Horizontal, Offset - 10 Pins, THT, Vertical, Offset

- ➔ Typical Power Level: 10W (100kHz, Flyback)
- ➔ Size: 19.5 x 13.5 x 15.0 mm Max
- ➔ PA2718NL

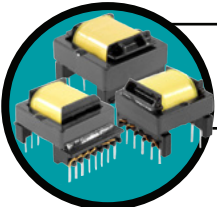
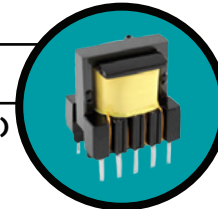


EE16 Platform - 10 Pins, THT, Horizontal, Offset - 10 Pins, THT, Vertical

- ➔ Typical Power Level: 15W (100kHz, Flyback)
- ➔ Size: 18.2 x 13.8 x 17.5 mm Max
- ➔ PA3050NL, PA2621NL

EE19 Platform - 10 Pins, THT, Vertical

- ➔ Typical Power Level: 20W (100kHz, Flyback)
- ➔ Size: 21.0 x 16.50 x 24.0 mm Max
- ➔ Custom part numbers available

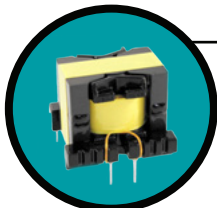
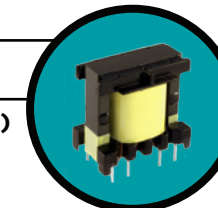


EF20 Platform - 8 Pins and 10 Pins, THT, Horizontal - 14 Pins, THT, Horizontal, Offset

- ➔ Typical Power Level: 25W (100kHz, Flyback)
- ➔ Size: 21.6 x 21.6 x 15.8 mm Max
- ➔ PA2872NL, PA2959NL, PA2979NL

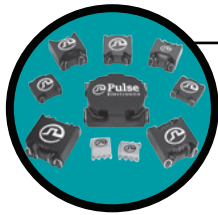
EF25 Platform - 10 Pins, THT, Vertical

- ➔ Typical Power Level: 40W (100kHz, Flyback)
- ➔ Size: 28.5 x 18.8 x 30.5 mm Max
- ➔ PA2380NL, PA2942NL



PQ2016 Platform - 14 Pins, THT, Vertical

- ➔ Typical Power Level: 40W (100kHz, Flyback)
- ➔ Size: 23.5 x 23.5 x 18.7 mm Max
- ➔ Custom part numbers available

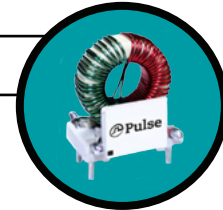


SMT Common Mode Chokes

- 9.1 x 8.9 x 3.8 mm to 31.0 x 25.4 x 12.7 mm Max
- 0.5Arms (13.2mH) to 14Arms (0.20mH)
- Hi-pot Voltage: 1500Vrms
- P0502NL, PA2741NL, PE-53912NL

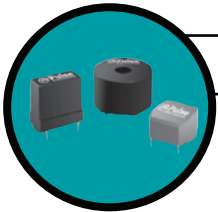
THT PA3747.xxxNL Series

- 19.3x18.2x22.9 mm Max
- 0.75A to 5.0A
- Hi-pot Voltage: 1500Vrms
- PA3747.105NL



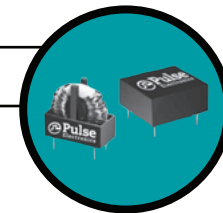
THT PE-961xxNL Series

- 33.0x18.3x34.0 mm to 43.2x43.2x26.2 mm Max
- 0.5Arms (33mH) to 15Arms(1mH)
- Hi-pot Voltage: 2500Vrms
- PE-96161NL



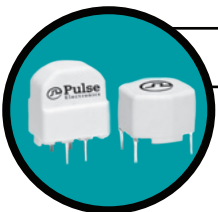
THT PE-62xxxNL Series

- 29.2x14.2x10.2 mm to 38.1x20.3x32.5 mm Max
- 1.8Arms (10mH) to 7.5Arms (2mH)
- Hi-pot Voltage: 2500Vrms
- PE-62891NL



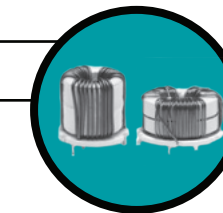
THT FE 2X Series

- 17.9x17.9x12.9 mm to 43.4x42.4x25.4 mm Max
- 0.4Arms (47mH) to 8Arms (3.3mH)
- Hi-pot Voltage: 1500Vrms
- FE2X03-3-2NL



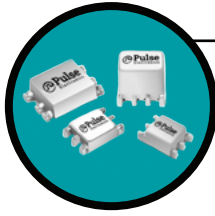
THT FE 3X Series

- 17.9x17.9x12.9 mm to 43.4x42.4x25.4 mm Max
- 0.4Arms (47mH) to 8Arms (3.3mH)
- Hi-pot Voltage: 1500Vrms
- FE3X050-10-7NL



POWER MAGNETICS

PLATFORM OVERVIEW: SMT AND THT GATE DRIVE TRANSFORMERS

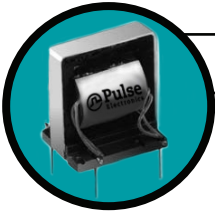
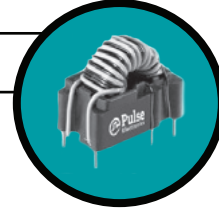


SMT Gate Drive Transformers

- ➔ 8.6mm x 6.7x2.5mm to 11.8mm x 8.8x4.0mm Max
- ➔ Functional and Basic Insulation
- ➔ Multiple Winding Configurations and Sizes
- ➔ Hi-pot Voltage: 1500Vrms
- ➔ PE-68386NL, PA2001NL

THT P058xxNL Series

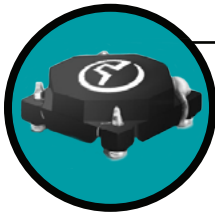
- ➔ 20.6mm x 12.2mm x 19.1 mm Max
- ➔ UL, C-UL, and TUV Approved Components
- ➔ Turns Ratio: 1:1:1 and 1:1:1:1
- ➔ Hi-pot Voltage: 4250Vrms
- ➔ P0584NL



THT PE-6388xxNL Series

- ➔ 27.7mm x 27.4mm x 30.5mm Max
- ➔ VDE Approved
- ➔ Multiple Winding Configurations
- ➔ Hi-pot Voltage: 3750Vrms
- ➔ PE-63885NL

PLATFORM OVERVIEW: SMT CURRENT SENSE MAGNETICS (FOR SWITCHING POWER SUPPLIES)

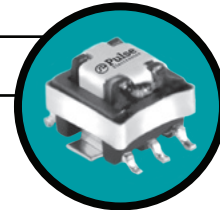


SMT PA0368.xxxNL Series

- ➔ 8.4mm x 8.4mm x 3.3mm Max
- ➔ Turns Ratio: 1:50 up to 1:125
- ➔ RMS current: 4Arms
- ➔ Hi-pot Voltage: 500Vrms

SMT PA1005.xxxNL Series

- ➔ 8.4mm x 7.2mm x 5.1mm Max
- ➔ Turns Ratio: 1:20 up to 1:125
- ➔ RMS current: 20Arms
- ➔ Hi-pot Voltage: 500Vrms
(higher current version of P82xNL series)

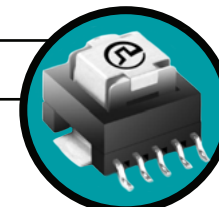


SMT PE-68xxxNL Series

- ➔ 18.2mm x 15.0mm x 7.6mm Max
- ➔ Turns Ratio: 1:1:50 up to 1:1:200
- ➔ RMS current: 15Arms
- ➔ Hi-pot Voltage: 500Vrms

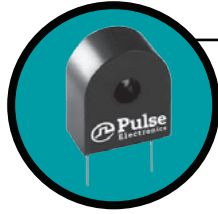
SMT PB002xNL Series

- ➔ 19.9mm x 14.5mm x 10.0mm Max
- ➔ Turns Ratio: 1:50 up to 1:200
- ➔ RMS current: 35Arms
- ➔ Hi-pot Voltage: 500Vrms



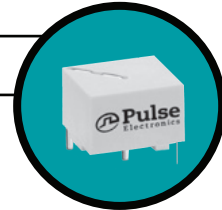
POWER MAGNETICS

PLATFORM OVERVIEW: THT CURRENT SENSE MAGNETICS (FOR SWITCHING POWER SUPPLIES)



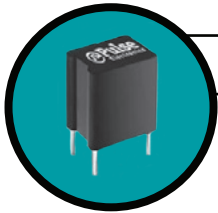
THT PE-51xxxNL Series

- 17.1mm x 9.9mm x 20.4mm Max
- VDE recognized component
- Turns Ratio: 50T to 200T CT
- RMS current: 20Arms
- Hi-pot Voltage: 3000Vrms
(available also as FIS1x1 Series)
- PE-51688NL, FIS101NL



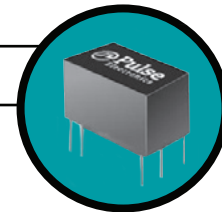
THT FIS 1x5NL Series

- 17.6mm x 15.0mm x 12.0mm Max
- Turns Ratio: 1:50 up to 1:500
- RMS current: 25Arms
- Hi-pot Voltage: 4000Vrms
- FIS105NL



THT PE-67xxxNL Series

- 19.1mm x 14.4mm x 19.1mm Max
- Turns Ratio: 1:50 up to 1:300
- RMS current: 35Arms
- Hi-pot Voltage: 500Vrms
- PE-67050NL



THT PE-6xxxxNL Series

- 22.9mm x 17.8mm x 17.8mm Max
- VDE Approved
- Turns Ratio: 1:50 up to 1:300
- RMS current: 20Arms
- Hi-pot Voltage: 3000Vrms
- PE-63586NL



THT P058xNL Series

- 20.6mm x 14.7mm x 19.1mm Max
- UL/C-UL recognized component
- Turns Ratio: 1:1:50 up to 1:1:200
- RMS current: 35Arms
- Hi-pot Voltage: 3000Vrms
- P0581NL

POWER MAGNETICS

PRODUCT OVERVIEW: CURRENT SENSE MAGNETICS (SIDEWINDER FOR 50/60HZ AC)

The Pulse Sidewinder® products are the ultimate evolution of the Rogowski Coil principle for AC current sensing applications. Pulse' patent pending winding technique has been engineered to provide highly linear output voltage over a very wide dynamic range from 1.0 to 1000 Amperes (A), making them especially suited for applications such as distributed power generation, renewable energy and storage, load balancing, power monitoring, advanced metering infrastructure (AMI), circuit breaker panels, and smart meters.



PA3202NL

PA3206NL

PA3207NL

PA3208NL

PA3209NL

PA3828NL



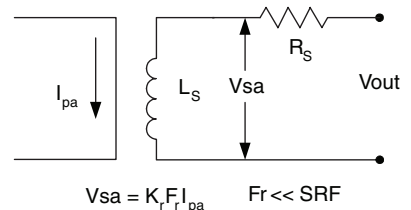
- 50/60 Hz, Single Phase, AC Current Sensor
- Dynamic Range from 0.1 to 1000 Amps
- For ANSI C12.20 Smart Meters
- For IEC 62053-22 Smart Meters
- Phase error < 0.05 degree
- Bandwidth 300KHz
- Immune to external AC magnetic fields
- Immune to DC current & DC magnetic field
- Very low temperature coefficient
- Patent pending

Go to www.pulseelectronics.com/SIDEWINDER

For more information, including product data sheets, Sidewinder Overview, Sidewinder Reliability Report, IC Cross Reference List, and Metering Application Notes.

Electrical Specifications at 25°C Temp Range -40°C to 130°C			Actual Secondary Output Voltage (Vsa)	
Part Number	Accuracy Class ³	Kr ⁴ (μΩ/Hz typ)	@ 60 Hz (μV/A) ¹	Current Range
PA3202NL	0.2	8.33	500	200
PA3206NL	0.2	7.66	460	100
PA3207NL	0.2	7.66	460	200
PA3208NL	0.2	7.66	460	100
PA3209NL	0.2	7.66	460	1000
PA3828NL	1.0	6.12	372	100

Low Frequency Equivalent Circuit



AUTOMOTIVE PRODUCTS

Pulse's Automotive Division has designed, developed, and manufactured coils and ignition transformers for the automotive industry for more than ten years. Pulse meets or beats the challenges of the stringent requirements of the international automotive industry with mature quality procedures, savvy research and development, the latest in production technology, and competitive pricing. This results in products that are "intelligent solutions" at competitive market prices.

Worldwide automotive teams manage customer projects with detailed attention to defined standards and procedures. Engineering teams work together to resolve customer problems, develop concepts, and manage research and development. Once developed and ready for manufacturing, products are manufactured in some of the most technologically advanced production facilities in the world.



OVERVIEW: PULSE AUTOMOTIVE PRODUCTS

Ignition Coils



Ignition coils from Pulse are designed, developed, and sold to several automotive OEMs (original equipment manufacturers) and the IAM (international after-market).

Benefits:

- Experienced product development
- Technologically advanced development centers
- Customer-specified designs
- Superior process capability
- State-of-the-art production facilities

Coils



Fine-wire coils are found in automotive parts and coil assemblies. They are used in various applications that increasingly include safety and comfort devices for the automobile.

Benefits:

- Custom designs
- Superior process capability
- High-quality materials
- A mature "quality" system
- State-of-the-art production facilities

COILS



Custom coils, developed by Pulse, are wound on state-of-the-art, semi- and fully-automatic machines. A selection of fine wires, from 0.028mm to 0.095mm and standard wires, up to 0.75mm, are used. A variety of plastics, such as thermoplastics, duroplastics, and specialty plastics, designed for use in high-temperature applications in an engine compartment, can be selected for use as the coil body, depending on electrical, temperature and mechanical specifications.

AUTOMOTIVE COILS

Target Applications	Operating Principles	Product Benefits
Sensor Coils for:		
Shock Absorber	Measures the stroke so the data can be used to regulate the characteristics of the shock absorber	Highly-integrated assembly consisting of an over-molded coil combined with the cable and connector
Positioning Sensor	A magneto-strictive displacement sensor used in various applications	Highly-robust, wear-and-tear resistant
Actuator Coils for:		
Climate Control Systems	Steers the hatches within the system	A very robust coil, sheathed in a metal frame
Automatic Gearbox	Controls hydraulic valves in an automatic transmission	Highly integrated assembly, heat-resistant coil with metal housing
Antenna Coils for:		
Body and Security System (immobilizer)	Active communication between key and vehicle	Flexible cabling approach a variety of options: over-molded assembly for robustness, tight tolerances on inductance, and DC resistance

COIL ASSEMBLIES

Target Applications	Operating Principles	Product Benefits
Toothbrush Charging Unit	An inductive charging unit for electric toothbrushes	Heat-resistant plastic, highly-integrated coil
Manufacturing Technology	Directional control valve within a pneumatic application	Highly robust, wear-and-tear resistant

AUTOMOTIVE PRODUCTS

IGNITION COILS



Pulse is a leading manufacturer of ignition transformers for use in passenger cars and motor sports. The ignition is the heart of the engine. For over 70 years, Pulse's developers (formerly part of BREMI) have been involved in producing products that address every aspect of ignition technology. The invention of the pencil-ignition transformer is a technology breakthrough in modern ignition concepts.

AUTOMOTIVE/MOTORCYCLE

Pencil Coils

Pulse's ignition coils, for both automobiles and motorcycles, are well known for reliability, as well as being a perfect fit for each customer's engine application. Custom coils are designed and manufactured by Pulse's rigorous design processes and production lines that are scalable to any required volume, high or low. Pulse uses accumulated knowledge and long-term practical experience with design and material selection to address specifications for thermal, mechanical, electrical and chemical ambient conditions.

Essential Features

- Lock-in-place for spark plugs with SAE-adaptor
- Plug-in assembly spark plug shaft
- Integrated semiconductor power switch (IGBT)
- Soft shut-down
- TTL - Level control input
- Integrated EMC
- High-ignition energy and voltage capability
- Over-voltage protection
- Coil over-current limiting
- Active ECU-interface

THE FUTURE OF IGNITION

The **OBD Spark** is a new development in the field of ignition. It's a diagnostic-capable, inductive, high-energy, rod-ignition transformer with wideband sensing.

Product Highlights

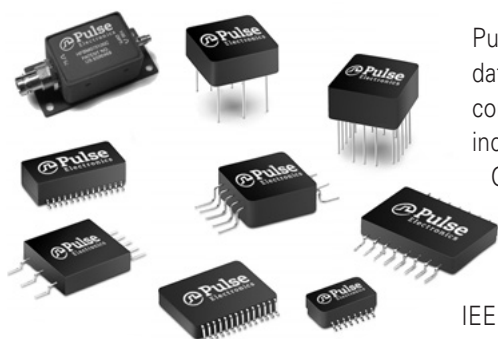
- Diagnostic capability through ion sensing
- Spark and combustion diagnostics
- Knock detection
- Active spark control
- Misfire detection

The **Transformer Plug Unit** is a combination of an ignition transformer and a spark plug. The unit is a smaller part. Thus, it reduces the component count.

Product Highlights

- Fewer components
- Adjustable abrasion resistance
- Water-resistant
- Age-resistant bobbin

MILITARY/AEROSPACE PRODUCTS



Pulse is one of the leading manufacturers of magnetic interface transformers, data bus couplers, delay lines, ethernet transformers, and custom electronic components for Military/Aerospace applications. Both catalog and custom designs include a comprehensive range of high-performance solutions and packaging for QPL and non-QPL MIL-STD-1553 interface transformers, various MIL-STD-1553 Data Bus Couplers and QPL and non-QPL active and passive delay lines. In addition, Copperhead transformers and transceivers support a variety of high-speed applications that includes Fibre Channel, Gigabit Ethernet, SONET, HDTV, IEEE1394B, SMTPE, Ethernet and AFDX buses.

Pulse's Military/Aerospace products are designed to meet the most demanding requirements for military, aerospace and industrial applications. For catalog and/or custom designed products, contact Pulse's Military/Aerospace Division at 215-781-6400 or find an authorized distributor or representative on the Pulse website: www.pulseelectronics.com.

Copperhead™ Series Transceiver Line Interface Modules

Ordering Information¹

High Speed Data and Communications over 100+ Meters of Copper

- Withstands infrared and vapor phase soldering
- Military temperature range -55°C to +125°C
- Low transmit/receive jitter
- Low power dissipation; 450 mW typical
- ECL logic interface
- Surface mount – pick-and-place compatible
- 1800V Isolation Voltage

Applications: Fibre Channel, Gigabit Ethernet, SONET, HDTV, IEEE 1394B, SMTPE

TM	531	D	S	A	1	(XX)
						(XX) – Customer product designator
					blank	– No transmit driver
					1	– 1100 mV output transmit driver and military temperature range
					2	– 1100 mV output transmit driver and industrial temperature range
					5	– Active cable equalizer circuit
				A		– 5.00 Volt
				B		– 3.30 Volt
			S			– Impedance matched for STP and Twinax (150 Ω)
			U			– Impedance matched for Unshielded Twisted Pair (100 Ω)
			V			– Impedance matched for Video and Mini-Coax (75 Ω)
			C			– Impedance matched for Coax (50 Ω)
		D				– Gull wing, DIP, 28-pin package: 0.800"L x 0.400"W x 0.200"H
		F				– Gull wing, flatpack, 28-pin package: 0.760"L x 0.610"W x 0.125"H
		H				– Gull wing, half-DIP, 16-pin package: 0.300"L x 0.500"W x 0.250"H
	133					– 132.8125 Mbaud version, 1/8 Speed Fibre Channel/ATM
	266					– 265.625 Mbaud version, 1/4 Speed Fibre Channel
	531					– 531.25 Mbaud version, 1/2 Speed Fibre Channel
	1062					– 1.0625 Gbaud version, Full Speed Fibre Channel
	1250					– 1.250 Gbaud version, Gigabit Ethernet (both short haul and long haul)
	1485					– 1.485 Gbaud version, SMPTE
	2125					– 2.125 Gbaud Double Speed Fiber Channel

Copperhead™ High Speed Dual Transformers

Part Number	Package L/W/H	Turns Ratio (±5%)	Primary Inductance (μH MIN)	Rise Time (ps MAX @ 20-80%)	DC Resistance (Ω MAX)	Hipot (VRMS MIN)	Insertion Loss (dB MAX)	Application Nominal Bit Rate (Mbaud)
T-330SCT	.500/.435/.180	1CT:1CT	26.0 @ 1.0 VRMS, 100 kHz	350	0.2	1500	-1.5 (15-165 MHz)	265.625 (quarter speed)
T-531SCT	.500/.435/.180	1CT:1CT	7.5 @ 1.0 VRMS, 100 kHz	325	0.2	1500	-2.0 (50-265 MHz)	531 (half speed)
T-1062SCT	.500/.435/.180	1CT:1CT	3.75 @ 1.0 VRMS, 100 kHz	280	0.2	1500	-2.0 (100-625 MHz)	1062.50 (full speed)
T-1250SCT	.500/.435/.180	1CT:1CT	3.75	280	0.2	1500	-2.0	1250
T-1485SCT	.500/.435/.180	1CT:1CT	3.75	280	0.2	1500	-2.0	1485 (SMPTE)
T-3200SCT	.500/.375/.235	1:1	0.70	200	0.2	1500	-4.50	3200

1. **Web:** <http://www.pulseelectronics.com> home page, click on "DATA SHEETS." Then select Military Aerospace, "CopperHead™ High Speed Dual Transformers" (M105.pdf).

2. **Dual Transformers** designed specifically for Point-to-Point Coupling to 150 Ω Twinax Cable: **Withstands** infrared and vapor phase soldering; **Military Temp Range** = -55°C to +125°C; **Weight** = 1.0 grams; **Surface Mount** = pick-and-place compatible. **Applications:** Fibre Channel, Gigabit Ethernet, SONET, HDTV, IEEE 1394B, SMTPE.

3. **Parts** can be ordered RoHS by adding a suffix **NL** to the part number (i.e. T-330SCTNL).

4. **Tape&Reel** packaging is available by adding a suffix **T** to the part number (i.e. T-330SCTT)

Application Notes: These isolation transformers protect the station from static charges that may develop on the cable and prevent ground loop currents from being transferred between stations. They have also been designed to provide common mode rejection within the transmission band, reducing EMI.

SM = Surface Mount

MILITARY/AEROSPACE PRODUCTS

IEEE 1394B FIREWIRE 1.062GB TRANSCEIVER LINE

Part Number	Transmit/Receive Data Rate (Mb/s)		Transmit Differential Signal Level - Vout			Total Power Dissipation (mW)	Receive Turns Ratio	Receive Primary Inductance - Lm (uH)	Receive Insertion Loss (dB)	Transmit/Receive Return Loss (dB)	Package L/W/H (in.)	Data Sheet
	MIN	MAX	MIN	TYP	MAX							
TM1062TXDUA	246	1062	1200	1300	1500	232	1:1	4.5	-2 MAX	-12 MIN	.800 / .400 / .200	M103
TM1062TXHUA	246	1062	1200	1300	1500	232	1:1	4.5	-2 MAX	-12 MIN	.510 / .300 / .140	M103
TM1062TX3DUA	246	1062	1200	1300	1500	700	1:1	4.5	-2 MAX	-12 MIN	.800 / .400 / .185	M103
TM125TXHUA	98	246	1200	1300	1500	232	1:1	40	-2 MAX	-12 MIN	.510 / .300 / .140	M186
TM1062DUXB	246	1062	1200	1300	1500	232	1:1	4.5	-2 MAX	-12 MIN	.800 / .400 / .200	M186
TM1062HUXB	246	1062	1200	1300	1500	232	1:1	4.5	-2 MAX	-12 MIN	.510 / .300 / .140	M186

Note: Parts listed on datasheet M103 are manufactured in the United States; Datasheet M186 contains part manufactured in China.

Part Number	Impedance Unbalanced	Impedance Balanced	Insertion Loss dB MAX 1.485GBs	Jitter Dj pSec. MAX 1.485GBs, P7	Datasheet
HFBM075100C*	75	100	-2.0	110.0	M147
HFB075100A	75	100	-2.0	110.0	M146
HFB075100B	75	100	-2.0	110.0	M146

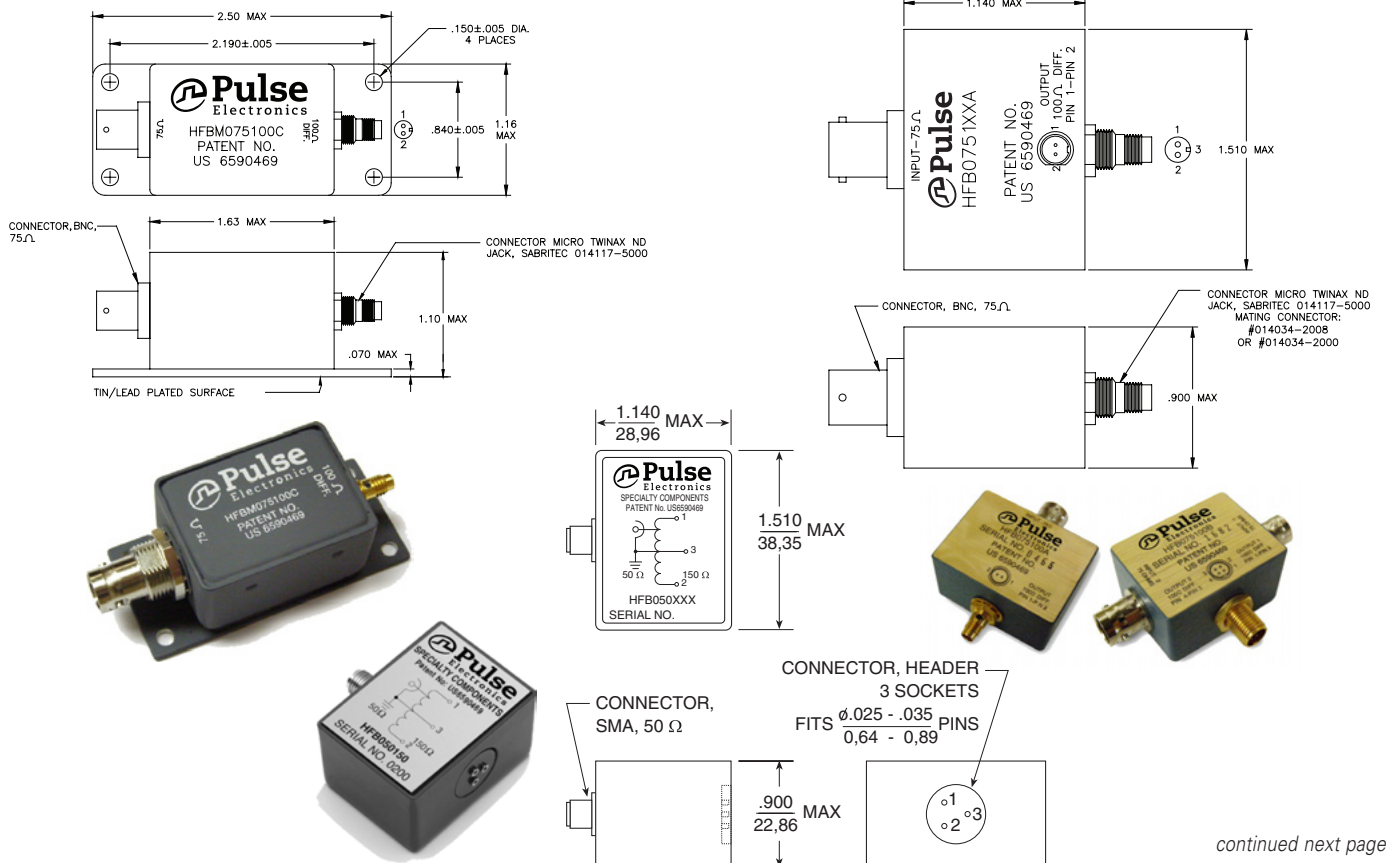
Transforms 100Ω balanced differential signal to 75Ω, Grounded unbalanced signal. Designed for SMPTE-292M HDTV application at 1.485GBs data rate.

*Designed for M21038 Environmental, EMI requirements.

Part Number	Impedance Unbalanced	Impedance Balanced	Insertion Loss dB MAX 1.485GBs	Return Loss (dB MIN) 1.0MHz - 1.2 GHz	Datasheet
HFB050150	50	150	-2	15	M100
HFB050100	50	100	-2	15	M100
HFB050078	50	78	-2	15	M100

Transforms a balanced differential signal to a 50Ω, grounded, unbalanced signal for testing different cable.

Designed for standard test equipment with SMA connectors. Wide bandwidth- 1.0MHz - 1.2GHz



continued next page

HIGH SPEED DATA TRANSFORMER

T1/E1/CEPT/ISDN-PRI SMT TRANSFORMER

Part Number	Turns Ratio Pri: Sec: $\pm 2\%$	OCL Pri@25 deg C ($\mu\text{H MIN}$)	Cww (pf MAX)	DCR Pri (Ω MAX)	Primary Pins	Package L/W/H	Datasheet
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10/100/1000: Standard Operating Temperature: -40°C to +85°C Extended Operating Temperature (X): -55°C to +125°C

Number of Ports	Part Number	Turns Ratio	Configuration ¹		Style ²	Package Size L/W/H (in.)	Data Sheet ¹
			RX	TX			

1. **"10/100Base-TX Single-Port Transformer Modules - Military/Aerospace Grade"** (M101.pdf) or **"10/100Base-TX Quad-Port Transformer Modules - Military/Aerospace Grade"** (M102.pdf) at www.pulseelectronics.com.
2. Parts can be ordered Non-Lead by adding **"NL"** to the part number (i.e. 100B-1001**FNL**).

	1000B-5001F	1CT:1CT	T, C, S	T, C, S	24-pin SOIC	.695/.635/.230	M106 ¹
	1000B-5001EX	1CT:1CT	T, C, S	T, C, S	24-pin SOIC	.695/.635/.230	M106 ¹

1. **Web:** www.pulseelectronics.com home page, pick data sheets "10/100/1000Base-T Single Port Transformer Modules -- Military/ space grade" (M106.pdf).
 2. **T** = Transformer, **C** = Choke, **S** = Shunt inductor, **SMT** = 50 mil pitch leads, **SOIC** = 100 mil pitch leads
 3. **0.99mm** (0.39") pitch leads

Part	Insertion Loss (dB MAX)	Return Loss (dB MIN)	Crosstalk (dB MIN)	Differential to Common Mode Rejection (dB MIN)
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MILITARY/AEROSPACE PRODUCTS

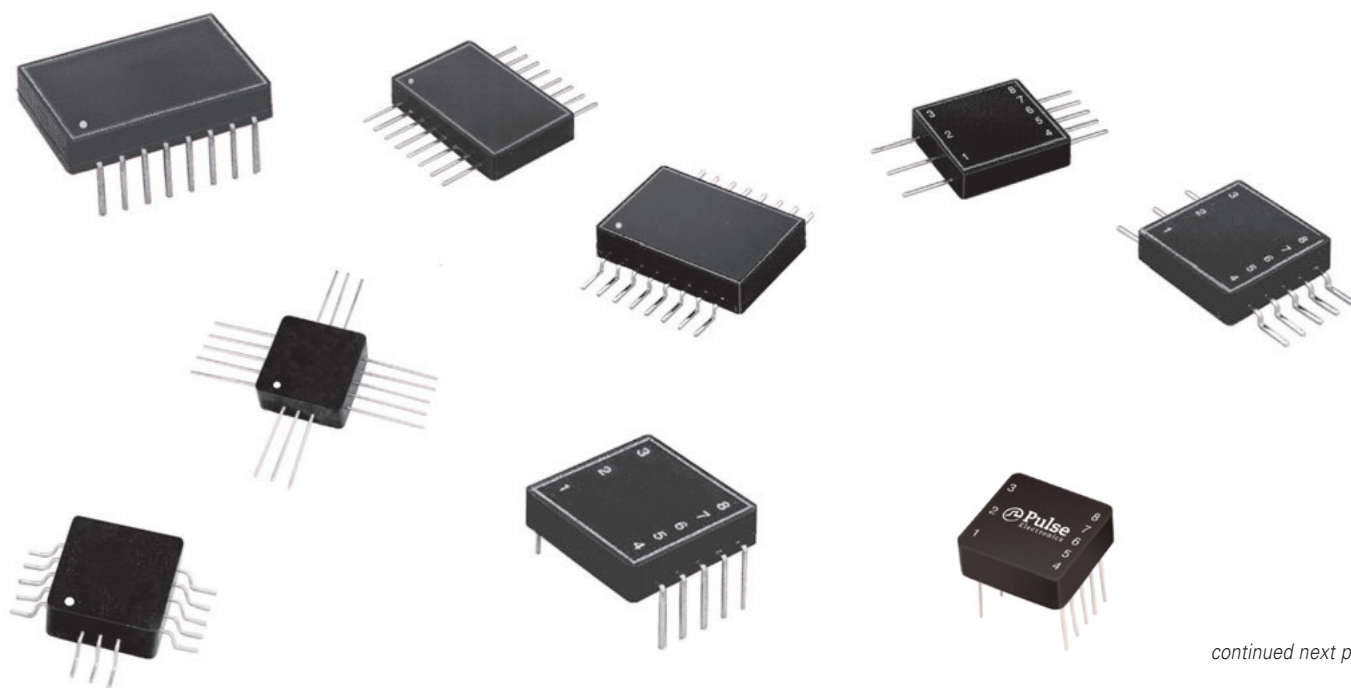
MIL-STD-1553 INTERFACE TRANSFORMERS

Non-QPL, Low Profile and Stacked ¹

Part Number ²	Turns Ratio (±3%)	Impedance (Ω MIN)	Package L/W/H (in.)	Data Sheet	Part Number ²	Turns Ratio (±3%)	Impedance (Ω MIN)	Package L/W/H (in.)	Data Sheet
FL1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.155	M227 ^{2,3}	DTL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.930/.630/.155	M228 ^{2,3}
GL1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.155	M227 ^{2,3}	STQ1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.340	M230 ^{2,3}
TL1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.155	M226 ^{2,3}	Q1553-70	1CT:3CT/1CT:2.15CT	4000	.625 / .625 / .250	M128
FL1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.155	M227 ^{2,3}	STQ1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.340	M230 ^{2,3}
GL1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.155	M227 ^{2,3}	STQ1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.340	M230 ^{2,3}
TL1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.155	M226 ^{2,3}	STQ1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.340	M230 ^{2,3}
FL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.155	M227 ^{2,3}	STQ1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.340	M230 ^{2,3}
GL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.155	M227 ^{2,3}	SFQ1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.340	M231 ^{2,3}
TL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.155	M226 ^{2,3}	SGQ1553-1	1CT:1CT/1CT:707CT	4,000	.630/.630/.340	M231 ^{2,3}
FL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.155	M227 ^{2,3}	SFQ1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.340	M231 ^{2,3}
GL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.155	M227 ^{2,3}	SGQ1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.340	M231 ^{2,3}
TL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.155	M226 ^{2,3}	SFQ1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.340	M231 ^{2,3}
FL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.155	M227 ^{2,3}	SGQ1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.340	M231 ^{2,3}
GL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.155	M227 ^{2,3}	SFQ1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.340	M231 ^{2,3}
TL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.155	M226 ^{2,3}	SGQ1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.340	M231 ^{2,3}
DFL1553-1	1CT:1CT/1CT:707CT	4,000	.930/.630/.155	M227 ^{2,3}	SFQ1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.340	M231 ^{2,3}
DGL1553-1	1CT:1CT/1CT:707CT	4,000	.930/.630/.155	M227 ^{2,3}	SGQ1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.340	M231 ^{2,3}
DTL1553-1	1CT:1CT/1CT:707CT	4,000	.930/.630/.155	M228 ^{2,3}	SLQG1553-1	1CT:1CT/1.4CT:1CT	4,000	.630/.630/.280	M234 ²
DFL1553-2	1.4CT:1CT/2CT:1CT	7,200	.930/.630/.155	M229 ^{2,3}	SLQG1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.280	M234 ²
DGL1553-2	1.4CT:1CT/2CT:1CT	7,200	.930/.630/.155	M229 ^{2,3}	SLQG1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.280	M234 ²
DTL1553-2	1.4CT:1CT/2CT:1CT	7,200	.930/.630/.155	M228 ^{2,3}	SLQG1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.280	M234 ²
DFL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.930/.630/.155	M229 ^{2,3}	SLQG1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.280	M234 ²
DGL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.930/.630/.155	M229 ^{2,3}	SLQT1553-1	1CT:1CT/1.4CT:1CT	4,000	.630/.630/.280	M234 ²
DTL1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.930/.630/.155	M228 ^{2,3}	SLQT1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.280	M234 ²
DFL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.930/.630/.155	M229 ^{2,3}	SLQT1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.280	M234 ²
DGL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.930/.630/.155	M229 ^{2,3}	X-1584	1CT:1.79CT	3,000	.500/.350/.172	M157
DTL1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.930/.630/.155	M228 ^{2,3}	X-1596	1CT:2.5CT	3,000	.500/.350/.173	M157
DFL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.930/.630/.155	M229 ^{2,3}	SMQT1553-70	1CT:3CT/1CT:2.15CT	4,000	.625/.625/.251	M128
DGL1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.930/.630/.155	M229 ^{2,3}					

1. **Designed** and built to conform to MIL-PRF-21038/27

2. **Web** : <http://productfinder.pulseelectronics.com/products/datasheets/M128.pdf>



continued next page

MIL-STD-1553 (continued)

Non-QPL, Low Profile and Stacked (continued)¹

Part Number	Turns Ratio (± 3%)	Impedance (Ω MIN)	Package L/W/H (in.)	Data Sheet ²
SLQT1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.280	M234
SLQT1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.280	M234
SLOF1553-1	1CT:1CT/1.4CT:1CT	4,000	.630/.630/.280	M234
SLOF1553-2	1.4CT:1CT/2CT:1CT	7,200	.630/.630/.280	M234
SLOF1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.630/.630/.280	M234
SLOF1553-5	1CT:2.12CT/1CT:1.5CT	4,000	.630/.630/.280	M234
SLOF1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.630/.630/.280	M234

1. **Designed** and built to conform to MIL-PRF-21038/27

2. **http://www.pulseelectronics.com:** home page, pick DATA SHEETS "Non-QPL MIL-STD-1553 Interface Transformers" (N_QPL_Cat2_links.pdf) or "MIL-STD-1553 Interface Transformers - Low profile/Stacked/Dual Ratio" (M234.pdf).

Interface Transformers — COTS Series^{1,2}

Part Number	Turns Ratio (±3%)	Impedance (Ω MIN)	Package (L/W/H) in.	Data ³ Sheet
X1553-1	1CT:1CT/1CT:.707CT	4,000	.625/.625/.250	M223
X1553-2	1.4CT:1CT/2CT:1CT	7,200	.625/.625/.250	M223
X1553-3	1.25CT:1CT/1.66CT:1CT	4,000	.625/.625/.250	M223
X1553-5	1CT:2.12CT/1.5CT:1CT	4,000	.625/.625/.250	M223
X1553-45	1CT:2.5CT/1CT:1.79CT	4,000	.625/.625/.250	M223

1. **Designed** and built to conform to MIL-PRF-21038/27

2. **Prefix/Operating Temperature:** C/0°C to +70°C; N/-40°C to +85°C; TQ/-55°C to +125°C

3. **Web:** <http://productfinder.pulseeng.com/products/datasheets>

Interface Transformers — Low Profile Miniature Series

Part Number	Turns Ratio (±3%)	Impedance (Ω MIN)	Package (L/W/H) in.	Data Sheet
SMG1553-60	1.25CT:1CT	4,000	.400/.400/.185	M112
SMG1553-61	1.66CT:1CT	4,000	.400/.400/.185	M112
SMG1553-62	1.41CT:1CT	7,200	.400/.400/.185	M112
SMG1553-63	2CT:1CT	7,200	.400/.400/.185	M112
SMG1553-65	1CT:1.79CT	4,000	.400/.400/.185	M112
SMG1553-66	1CT:2.7CT	4,000	.400/.400/.185	M112

QPL Series — Qualified to MIL-PRF-21038/27

Part ¹ Number	Military Designation Number	Turns Ratio (±3%)	Impedance (Ω MIN)	Package L/W/H (in.)	Data ² Sheet
Q1553-20	M21038/27-05	1:1.41	3,000	.500/.350/.250	M223
Q1553-21	M21038/27-06	1CT:1CT	3,000	.500/.350/.250	M223
Q1553-22	M21038/27-07	1CT:1.41CT	3,000	.500/.350/.250	M223
Q1553-23	M21038/27-08	1CT:1.66CT	3,000	.500/.350/.250	M223
Q1553-24	M21038/27-09	1CT:2CT	3,000	.500/.350/.250	M223
Q1553-25	M21038/27-28	1CT:1.5CT	3,000	.500/.350/.250	M223
Q1553-51	M21038/27-29	1CT:1.79CT	3,000	.500/.350/.250	M223
Q1553-52	M21038/27-30	1CT:2.5CT	3,000	.500/.350/.250	M223
Q1553-1	M21038/27-01	1CT:1CT/1CT:.707CT	4,000	.625/.625/.250	M224
Q1553-2	M21038/27-02	1.4CT:1CT/2CT:1CT	7,200	.625/.625/.250	M224
Q1553-3	M21038/27-03	1.25CT:1CT/1.66CT:1CT	4,000	.625/.625/.250	M224
Q1553-5	M21038/27-10	1CT:2.12CT/1CT:1.5CT	4,000	.625/.625/.250	M224
Q1553-45	M21038/27-26	1CT:2.5CT/1CT:1.79CT	4,000	.625/.625/.275	M224
Q1553-81	M21038/27-21	1CT:1CT/1CT:.707CT	4,000	.625/.625/.275	M224
Q1553-82	M21038/27-22	1.4CT:1CT/2CT:1CT	7,200	.625/.625/.275	M224
Q1553-83	M21038/27-23	1.25CT:1CT/1.66CT:1CT	4,000	.625/.625/.275	M224
Q1553-84	M21038/27-24	1CT:2.12CT/1CT:1.5CT	4,000	.625/.625/.275	M224
Q1553-85	M21038/27-25	1CT:2.5CT/1CT:1.79CT	4,000	.625/.625/.275	M224
FPQ1553-6	M21038/27-16	1CT:1CT/1CT:.707CT	4,000	.625/.625/.250	M225
SMQ1553-6	M21038/27-11	1CT:1CT/1CT:.707CT	4,000	.625/.625/.250	M225
FPQ1553-7	M21038/27-17	1.4CT:1CT/2CT:1CT	7,200	.625/.625/.250	M225
SMQ1553-7	M21038/27-12	1.4CT:1CT/2CT:1CT	7,200	.625/.625/.250	M225
FPQ1553-8	M21038/27-18	1.25CT:1CT/1.66CT:1CT	4,000	.625/.625/.250	M225
SMQ1553-8	M21038/27-13	1.25CT:1CT/1.66CT:1CT	4,000	.625/.625/.250	M225
FPQ1553-10	M21038/27-20	1CT:2.12CT/1CT:1.5CT	4,000	.625/.625/.250	M225
SMQ1553-10	M21038/27-15	1CT:2.12CT/1CT:1.5CT	4,000	.625/.625/.250	M225
FPQ1553-45	M21038/27-31	1CT:2.5CT/1CT:1.79CT	4,000	.625/.625/.250	M225
SMQ1553-45	M21038/27-27	1CT:2.5CT/1CT:1.79CT	4,000	.625/.625/.250	M225
Q1553-70	M21038	1CT:3CT/1CT:2.15CT	4,000	.625/.625/.250	M128
SMQ1553-70	M21038	1CT:3CT/1CT:2.15CT	4,000	.625/.625/.250	M128
GL1553-71	M21038	1CT:3.54CT/1CT:2.50CT	4,000	.630/.630/.155	M128
DGL1553-71	M21038	1CT:3.54CT/1CT:2.5CT	4,000	.930/.630/.155	M128
TQ1553-71	M21038	1CT:3.54CT/1CT:2.5CT	4,000	.625/.625/.250	M128

1. **Part number options:** C and T level QPL testing (xxQC1553-xx, xxQT1553-xx, M21038/27-xxC, M21038/27-xxT).

2. **Web:** Go to www.pulseelectronics.com home page, select "DATA SHEETS" on the right-hand navigation bar and from the menu select Military/Aerospace.

3. Summary Performance Specifications:

Droop = 20%

Overshoot = ±1 V MAX;

Common Mode Rejection = 45 dB

Frequency Range (no load) = 75 kHz to 1 MHz

Operating Temperature Range = -55°C to +130°C

Weight = 5 grams

Insulation Resistance = 10 kMΩ @ 250 VDC

Dielectric Withstanding Voltage = 100 VRMS

MILITARY/AEROSPACE PRODUCTS



Pulse offers off-the-shelf inductors and transformers for modern military and aerospace power applications: the SLED™, the SLIC, and the POGO™ series. The SLED series consists of rail-mount inductors with a ruggedized header for durable board connections, utilizing two rails for board mounting and cores bonded to high temperature headers for durability and mechanical strength. The SLIC series, self-leaded transformers and inductors, has ruggedized construction. The structural header is bonded to the cores and lead wires, increasing mechanical durability. The POGO series is made up of pad-mounted inductors with open construction for robust board mounting and rugged pins used for both surface board mounting and electrical connection.

Pulse also offers shielded drum core inductors, including ruggedized mounting hardware to improve board mounting

performance

for enhanced mechanical durability. These inductors eliminate the use of pure tin plating for compliance with military and aerospace requirements. A variety of inductances and current capacity is offered in five different physical sizes to meet the majority of system performance requirements.

OFF-THE-SHELF POWER INDUCTORS & CHOKES

Toroid Power Inductors - SLED Series

Part Number	@ I _{RATED} (μH)	I _{RATED} (A)	DCR (mΩ MAX)	Inductance @0A _{DC} (μH)	Package* L/W/H (in.)	Data Sheet
SLED 20						
PL8100	1.01	3.40	11	1.1	.400/.345/.250	M107
PL8101	6.2	1.40	70	7	.400/.345/.250	M107
PL8102	17.6	1.00	125	22.7	.400/.345/.250	M107
SLED 30						
PL8110	3.8	4.80	17.3	5.2	.625/.525/.400	M107
PL8111	9.4	2.80	43.4	12.3	.625/.525/.400	M107
PL8112	29.7	1.40	166	35.3	.625/.525/.400	M107
PL8113	114	0.94	380	167	.625/.525/.400	M107
SLED 40						
PL8120	2.5	8.00	8.3	3.8	.725/.575/.410	M107
PL8121	5.1	5.40	17.7	7.5	.725/.575/.410	M107
PL8122	16.2	2.70	72	21.9	.725/.575/.410	M107
PL8123	58.1	1.30	290	73	.725/.575/.410	M107
PL8124	192	0.90	560	292	.725/.575/.410	M107
PL8125	383	0.72	862	672	.725/.575/.410	M107
PL8130	4.9	7.80	12.4	7.9	.725/.575/.410	M107
PL8131	9	5.50	28	14	.725/.575/.410	M107
PL8132	29.1	2.70	100	40.5	.725/.575/.410	M107
PL8133	645	0.74	1250	1134	.725/.575/.410	M107
PL8150	0.81	14.30	2.5	1.25	.725/.575/.410	M107
PL8151	1.32	11.50	4.0	2.1	.725/.575/.410	M107
SLED 50						
PL8140	9.3	7.20	18.7	16	.900/.690/.520	M107
PL8141	16.1	5.10	32.0	25.9	.900/.690/.520	M107
PL8142	50	2.60	133	72.9	.900/.690/.520	M107
PL8143	x1070	0.71	1700	1950	.900/.690/.520	M107
PL8160	1.68	13.90	3.6	2.8	.900/.690/.520	M107
PL8161	2.5	11.40	5.4	4.2	.900/.690/.520	M107
PL8170	3.5	12.40	6.6	6.5	.900/.690/.520	M107
PL8171	4.7	10.40	8.3	8.4	.900/.690/.520	M107

SMT Common Mode Chokes: SLIC Series

Part Number	Inductance (mH ±35%)	I _{RATED} (A)	DCR (mΩ MAX)	Package* L/W/H (in.)	Data Sheet
SLIC Series, Common Mode Chokes					
PL8200	0.47	14.0	8	1.220/1.000/.500	M108
PL8201	0.63	11.6	10	1.220/1.000/.500	M108
PL8202	0.81	9.70	14	1.220/1.000/.500	M108
PL8203	0.53	7.20	15	1.110/1.00/395	M108
PL8204	0.59	5.60	21	.770/.670/.395	M108
PL8205	0.77	4.70	40	.770/.670/.395	M108
PL8206	0.22	3.30	60	.770/.670/.390	M108
PL8207	1.32	3.30	60	.770/.670/.395	M108
PL8208	1.47	2.80	80	.770/.670/.395	M108
PL8209	0.88	1.63	110	.500/.500/.215	M108
PL8210	1.17	1.22	200	.500/.500/.215	M108

SMT Power Inductors: SLIC (HCCI-80) Series

Part Number	@ I _{RATED} (μH)	I _{RATED} (A)	DCR (mΩ MAX)	Inductance @0A _{DC} (μH)	Package* L/W/H (in.)	Data Sheet
SLIC (HCCI) Series						
PL8304 P	1.1	38	1.3	2.1	1.220/1.000/.500	M109
PL8303 P	1.6	34	1.6	3.5	1.220/1.000/.500	M109
PL8302 P	2.45	27	2.5	5.1	1.2 20/1.000/.500	M109
PL8301 P	3.2	24	3.5	7.2	1.220/1.000/.500	M109
PL8300 P	4.52	19	4.8	9.5	1.220/1.000/.500	M109
PL8300 S	18.1	9.5	19.3	38.0	1.220/1.000/.500	M109

1. Connection: P = Parallel, S = Series

SMT Power Inductors: Toroid, SLED Series

SLED 25						
PL8500	9.4	3.8	32	10.4	.625/.525/.310	M113
PL8501	13.3	3.2	46	14.6	.625/.525/.310	M113
PL8502	23	2.4	74	25	.625/.525/.310	M113
PL8503	50	1.6	135	56	.625/.525/.310	M113
PL8504	75	1.3	220	83	.625/.525/.310	M113
PL8505	90	1.2	285	100	.625/.525/.310	M113
PL8506	137	1	425	152	.625/.525/.310	M113
PL8507	200	.82	673	220	.625/.525/.310	M113
PL8508	305	.66	972	331	.625/.525/.310	M113
PL8509	439	.56	1520	472	.625/.525/.310	M113

POGO

SMT Power Inductors: Toroid, POGO Series

PL8600 P	2.0	8.30	7.6	2.2	.625/.525/.310	M114
PL8601 P	2.4	7.20	10.9	2.6	.625/.525/.310	M114
PL8602 P	5.0	5.20	19.0	5.5	.625/.525/.310	M114
PL8600 S	7.0	4.16	16.0	8.75	.625/.525/.310	M114
PL8603 P	9.3	3.80	29.8	10.4	.625/.525/.310	M114
PL8601 S	8.4	3.78	21.8	10.4	.625/.525/.310	M114
PL8604 P	14.1	3.10	45.3	15.7	.625/.525/.310	M114
PL8605 P	19.8	2.6	66.3	22.1	.625/.525/.310	M114
PL8602 S	17.9	2.6	38.0	22.45	.625/.525/.310	M114
PL8606 P	29.3	2.20	106	32.8	.625/.525/.310	M114
PL8603 S	33.8	1.89	60	41.7	.625/.525/.310	M114
PL8607 P	42.6	1.80	151	47.6	.625/.525/.310	M114
PL8604 S	50.9	1.54	91	62.8	.625/.525/.310	M114
PL8608 P	61.3	1.50	224	67.5	.625/.525/.310	M114
PL8605 S	71.5	1.30	133	88.2	.625/.525/.310	M114

1. Connection: P = Parallel, S = Series

(continued next page)

MILITARY/AEROSPACE PRODUCTS

OFF-THE-SHELF POWER INDUCTORS (continued)

SMT Power Inductors: Toroid, POGO Series (continued)

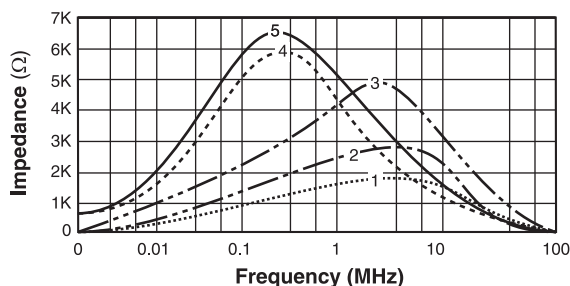
Part Number	@ I _{RATED} (μH)	I _{RATED} (A)	DCR (mΩ MAX)	Inductance @0A _{DC} (μH)	Package* L/W/H (in.)	Data Sheet
POGO 25 (continued)						
PL8609 ^P	84.2	1.20	324	91.0	.625/.525/.310	M114
PL8606 ^S	106.1	1.07	202	131.0	.625/.525/.310	M114
PL8607 ^S	154.2	0.89	302	190.3	.625/.525/.310	M114
PL8608 ^S	218.9	0.74	444	270.2	.625/.525/.310	M114
PL8609 ^S	295.0	0.64	636	364.0	.625/.525/.310	M114
POGO 40						
PL8400 ^S	43.6	1.1	309	77	.725/.575/.380	M111
PL8700 ^P	1.5	14.40	4.41	2.2	.725/.600/.380	M115
PL8701 ^P	2.4	11.20	6.54	3.5	.725/.600/.380	M115
PL8702 ^P	4.2	8.20	10.47	5.9	.725/.600/.380	M115
PL8703 ^P	5.8	6.80	14.94	7.9	.725/.600/.380	M115
PL8700 ^S	6.1	7.20	17.60	9.0	.725/.600/.380	M115
PL8704 ^P	7.6	5.70	20.99	10.1	.725/.600/.380	M115
PL8701 ^S	9.7	5.60	26.20	14.0	.725/.600/.380	M115
PL8705 ^P	12.1	5.40	23.24	18.5	.725/.600/.380	M115
PL8702 ^S	17.0	4.10	41.90	23.7	.725/.600/.380	M115
PL8706 ^P	18.0	4.40	38.15	27.4	.725/.600/.380	M115
PL8703 ^S	23.1	3.40	59.70	31.5	.725/.600/.380	M115
PL8707 ^P	27.0	3.54	53.21	40.5	.725/.600/.380	M115
PL8704 ^S	30.6	2.85	84.00	40.5	.725/.600/.380	M115
PL8708 ^P	34.8	3.00	73.89	50.5	.725/.600/.380	M115
PL8705 ^S	48.5	2.70	93.00	74.1	.725/.600/.380	M115
PL8706 ^S	72.0	2.20	152.60	109.8	.725/.600/.380	M115
PL8708 ^S	139.1	1.50	295.60	202.2	.725/.600/.380	M115
PL8707 ^S	108.0	1.77	212.80	161.8	.725/.600/.380	M115
POGO 50						
PL8401 ^S	21.9	2.7	90.5	39.5	.910/.700/.510	M111
PL8402 ^S	4.025	6.4	23	6.575	.910/.700/.510	M111
PL8403 ^P	0.53	23.8	3	0.88	.910/.700/.510	M111
PL8404 ^P	1.1	21	2.5	2.1	.910/.700/.510	M111
POGO 60						
PL8405 ^P	2.1	22.4	3.4	4	1.280/1.070/.510	M111

1. Connection: **P** = Parallel, **S** = Series

SMT Common Mode Inductors: Toroid, POGO Series

Part Number	Inductance (mH ±30%)	I _{RATED} (A)	DCR (mΩ MAX)	SRF (MHz)	Impedance Curve ¹	Package* L/W/H (in.)	Data Sheet
POGO 40							
PL8801	1.5	1.50	60	2	2	.725/.575/.380	M116
PL8803	10.0	1.00	450	0.5	4	.725/.575/.380	M116
PL8804	22.0	0.50	850	0.3	5	.725/.575/.380	M116
POGO 50							
PL8800	1.0	3.60	50	4	1	.910/.700/.510	M116
PL8802	3.0	2.50	80	2.2	3	.910/.700/.510	M116

1. See graph below.



*SM = Surface Mount

SMT Power Inductors: Shielded Drum Core

Part Number	Inductance @ I _{RATED} (μH TYP)	I _{RATED} ¹ (A)	DCR (mΩ MAX)	Inductance @0A _{DC} ² (μH)	Saturation Current @25°C	Package* L/W/H (in.)	Data Sheet
PL8901	0.80	11	4.0	1.0 ²	14	.413/.413/.280	M117
PL8902	1.20	10	6.0	1.5 ²	13	.413/.413/.280	M117
PL8903	2.1	9.0	7.3	2.7 ²	11	.413/.413/.280	M117
PL8904	2.9	8.0	8.5	3.7 ²	9.2	.413/.413/.280	M117
PL8905	3.7	7.3	9.5	4.7 ²	8.2	.413/.413/.280	M117
PL8906	4.8	6.0	16.5	6.0 ²	6.9	.413/.413/.280	M117
PL8907	6	5.5	18.5	7.6 ²	6.2	.413/.413/.280	M117
PL8908	8	5.0	21.8	10	5.5	.413/.413/.280	M117
PL8909	9.6	4.5	29.0	12	5.1	.413/.413/.280	M117
PL8910	12	4.1	35.4	15	4.4	.413/.413/.280	M117
PL8911	14.4	4.0	37.0	18	4.3	.413/.413/.280	M117
PL8912	17.6	3.8	42.0	22	3.8	.413/.413/.280	M117
PL8913	21.6	3.4	45.9	27	3.4	.413/.413/.280	M117
PL8914	26.4	3.0	64.8	33	3.0	.413/.413/.280	M117
PL8915	31.2	2.7	81.5	39	2.8	.413/.413/.280	M117
PL8916	37.6	2.6	89.0	47	2.6	.413/.413/.280	M117
PL8917	54.4	2.1	135.0	68	2.1	.413/.413/.280	M117
PL9101	0.96	10.5	4.5	1.0 ²	12.7	.413/.413/.248	M121
PL9102	1.52	9.5	5.5	1.8 ²	10.1	.413/.413/.248	M121
PL9103	2.34	7.8	7.8	2.7 ²	8.4	.413/.413/.248	M121
PL9104	3.27	6.7	11.0	3.9 ²	7.2	.413/.413/.248	M121
PL9105	4.39	5.6	15.6	5.1 ²	6.3	.413/.413/.248	M121
PL9106	5.54	5.2	18.0	6.8 ²	5.6	.413/.413/.248	M121
PL9107	6.73	5.0	20.0	8.2 ²	5.1	.413/.413/.248	M121
PL9108	8.19	4.6	22	10	4.6	.413/.413/.248	M121
PL9109	9.9	4.2	27	12	4.2	.413/.413/.248	M121
PL9110	13.4	3.6	30	15	3.6	.413/.413/.248	M121
PL9111	15.4	3.4	40	18	3.4	.413/.413/.248	M121
PL9112	17.6	3.2	45	22	3.2	.413/.413/.248	M121
PL9113	22.5	2.8	62	27	2.8	.413/.413/.248	M121
PL9114	28.5	2.5	70	33	2.5	.413/.413/.248	M121
PL9115	31.4	2.4	75	39	2.4	.413/.413/.248	M121
PL9116	38.4	2.2	100	47	2.2	.413/.413/.248	M121
PL9117	48.3	1.9	110	56	1.9	.413/.413/.248	M121
PL9118	55.9	1.8	120	68.0	1.8	.413/.413/.248	M121
PL9119	67.6	1.7	178	82.0	1.7	.413/.413/.248	M121
PL9120	86.1	1.4	230	100.0	1.4	.413/.413/.248	M121
PL9121	103	1.3	253	120.0	1.3	.413/.413/.248	M121
PL9122	121	1.2	280	150.0	1.2	.413/.413/.248	M121
PL9123	149	1.1	310	180.0	1.1	.413/.413/.248	M121
PL9124	186	1.0	400	220.0	1.0	.413/.413/.248	M121
PL9125	224	0.91	460	270	0.91	.413/.413/.248	M121
PL9126	279	0.82	690	330	0.82	.413/.413/.248	M121
PL9127	335	0.72	760	390	0.72	.413/.413/.248	M121
PL9128	398	0.68	850	470	0.68	.413/.413/.248	M121
PL9129	464	0.63	1060	560	0.63	.413/.413/.248	M121
PL9130	563	0.57	1200	680	0.57	.413/.413/.248	M121
PL9131	681	0.52	1550	820	0.52	.413/.413/.248	M121
PL9132	879	0.46	1750	1000	0.46	.413/.413/.248	M121
PL9201	0.95	8.7	5.7	1.0 ¹	11	.413/.413/.201	M122
PL9202	1.55	7.4	7.9	1.6 ¹	8.8	.413/.413/.201	M122
PL9203	2.32	6.6	10.0	2.7 ¹	7.3	.413/.413/.201	M122
PL9204	3.24	5.5	14.5	3.6 ¹	6.3	.413/.413/.201	M122

1. The rated current as listed is either the saturation current or the heating current depending on which value is lower.

2. Inductance at 0A_{DC} tolerance is ±30%. The tolerance is ±20% on all other parts.

Optional Tape & Reel packaging can be ordered by adding a "T" suffix to the end of the part number.

continued on the next page

MILITARY/AEROSPACE PRODUCTS

OFF-THE-SHELF POWER INDUCTORS (continued)

SMT Power Inductors: Shielded Drum Core (continued)

Part Number	Inductance @ f _{rated} (μH TYP)	I _{rated} ¹ (A)	DCR (mΩ MAX)	Inductance @0A _{dc} ² (μH)	Saturation Current @25°C	Package* L/W/H (in.)	Data Sheet	Part Number	Inductance @ f _{rated} (μH TYP)	I _{rated} ¹ (A)	DCR (mΩ MAX)	Inductance @0A _{dc} ² (μH)	Saturation Current @25°C	Package* L/W/H (in.)	Data Sheet
PL9205	4.26	5.1	16.5	4.5 ²	5.5	.413/.413/.201	M122	PL9401	0.67	8.50	4.4	0.68 ±25%	8.50	.410/.410/.132	M123
PL9206	5.64	4.4	22	6.0 ²	4.9	.413/.413/.201	M122	PL9402	1.3	6.10	6.4	1.5 ±25%	6.10	.410/.410/.132	M123
PL9207	7.17	4.2	25	7.6 ²	4.4	.413/.413/.201	M122	PL9403	2.1	5.70	10.4	2.2 ±25%	5.70	.410/.410/.132	M123
PL9208	9.3	3.6	35	10	4.0	.413/.413/.201	M122	PL9404	3.1	4.80	15.6	3.3 ±25%	4.80	.410/.410/.132	M123
PL9209	10.8	3.3	37	12	3.7	.413/.413/.201	M122	PL9405	4.5	4.10	21.2	4.7 ±25%	4.10	.410/.410/.132	M123
PL9210	13.4	3.0	47	15	3.4	.413/.413/.201	M122	PL9406	5.8	3.60	25.2	6.2 ±25%	3.60	.410/.410/.132	M123
PL9211	17.5	2.7	58	18	2.9	.413/.413/.201	M122	PL9407	7.0	3.30	27.8	6.8 ±25%	3.30	.410/.410/.132	M123
PL9212	19.4	2.6	67	22	2.8	.413/.413/.201	M122	PL9408	9.4	3.00	39.5	8.2 ±30%	3.00	.410/.410/.132	M123
PL9213	24.2	2.2	79	27	2.4	.413/.413/.201	M122	PL9409	11	2.70	42.9	10 ±20%	2.70	.410/.410/.132	M123
PL9214	30.6	2.1	94	33	2.2	.413/.413/.201	M122	PL9410	12	2.40	50.0	12 ±20%	2.40	.410/.410/.132	M123
PL9215	38.5	1.8	126	39	2.0	.413/.413/.201	M122	PL9411	15	2.25	65.2	15 ±20%	2.25	.410/.410/.132	M123
PL9216	46.1	1.7	140	47	1.8	.413/.413/.201	M122	PL9412	24	1.85	86.1	22 ±25%	1.85	.410/.410/.132	M123
PL9217	53.2	1.6	157	56	1.7	.413/.413/.201	M122	PL9413	35	1.40	125.6	33 ±20%	1.40	.410/.410/.132	M123
PL9218	63.1	1.45	202	68.0	1.6	.413/.413/.201	M122	PL9414	48	1.25	187.7	47 ±20%	1.25	.410/.410/.132	M123
PL9219	76.6	1.36	232	82.0	1.4	.413/.413/.201	M122	PL9415	55	1.15	207.9	56 ±20%	1.15	.410/.410/.132	M123
PL9220	88	1.29	270	100.0	1.3	.413/.413/.201	M122	PL9416	64	1.05	279.5	68 ±20%	1.05	.410/.410/.132	M123
PL9221	112	1.07	316	120.0	1.2	.413/.413/.201	M122	PL9417	88	0.94	317.3	82 ±20%	0.94	.410/.410/.132	M123
PL9222	135	1.02	456	150.0	1.05	.413/.413/.201	M122	PL9418	106	0.88	357.8	100 ±20%	0.88	.410/.410/.132	M123
PL9223	132	0.87	497	180.0	0.96	.413/.413/.201	M122	PL9419	129	0.80	477.9	120 ±20%	0.80	.410/.410/.132	M123
PL9224	198	0.82	681	220.0	0.86	.413/.413/.201	M122	PL9420	157	0.70	545.4	150 ±20%	0.70	.410/.410/.132	M123
PL9225	237	0.78	775	270	0.79	.413/.413/.201	M122	PL9421	238	0.58	837.0	220 ±20%	0.58	.410/.410/.132	M123
PL9226	296	0.66	955	330	0.71	.413/.413/.201	M122	PL9422	325	0.45	1198.8	330 ±20%	0.45	.410/.410/.132	M123
PL9227	355	0.58	1087	390	0.66	.413/.413/.201	M122	PL9501	2.15	2.60	17.6	2.5	2.6	.256/.256/.122	M124
PL9228	445	0.54	1403	470	0.59	.413/.413/.201	M122	PL9502	2.58	2.30	20.3	3.3	2.3	.256/.256/.122	M124
PL9229	495	0.53	1623	560	0.54	.413/.413/.201	M122	PL9503	3.43	2.10	27.0	4	2.1	.256/.256/.122	M124
PL9230	610	0.49	1824	680	0.49	.413/.413/.201	M122	PL9504	4.63	1.85	31.1	5	1.85	.256/.256/.122	M124
PL9231	702	0.43	2355	820	0.45	.413/.413/.201	M122	PL9505	5.22	1.70	41.9	6	1.7	.256/.256/.122	M124
PL9232	890	0.40	2850	1000	0.41	.413/.413/.201	M122	PL9506	6.57	1.50	49.9	8	1.5	.256/.256/.122	M124
PL9301	0.62	7.60	5.5	0.68 ±25%	10	.410/.410/.157	M120	PL9507	8.65	1.30	54.0	10	1.3	.256/.256/.122	M124
PL9302	1.2	7.10	7.3	1.3 ±25%	8	.410/.410/.157	M120	PL9508	9.78	1.20	72.0	12	1.2	.256/.256/.122	M124
PL9303	1.9	5.80	10.9	2.2 ±25%	6.15	.410/.410/.157	M120	PL9509	12.13	1.10	82.0	15	1.1	.256/.256/.122	M124
PL9304	2.8	5.20	13.3	3.3 ±25%	5.8	.410/.410/.157	M120	PL9510	15.23	1.05	102.0	18	1.05	.256/.256/.122	M124
PL9305	4.0	4.70	19.6	4.7 ±25%	5.4	.410/.410/.157	M120	PL9511	18.7	0.95	119.0	22	0.95	.256/.256/.122	M124
PL9306	5.4	3.70	27.0	6.0 ±25%	4.5	.410/.410/.157	M120	PL9512	21.54	0.85	146.0	27	0.85	.256/.256/.122	M124
PL9307	6.9	3.50	30.8	7.6 ±25%	4	.410/.410/.157	M120	PL9513	27.71	0.76	183.0	33	0.76	.256/.256/.122	M124
PL9308	8.0	3.40	33.2	10 ±20%	3.8	.410/.410/.157	M120	PL9514	33.57	0.68	210.0	39	0.68	.256/.256/.122	M124
PL9309	11	3.00	45.2	12 ±20%	3.4	.410/.410/.157	M120	PL9515	40.15	0.60	230.0	47	0.6	.256/.256/.122	M124
PL9310	12	2.80	49.4	15 ±20%	3.1	.410/.410/.157	M120	PL9516	49.68	0.55	305.0	56	0.55	.256/.256/.122	M124
PL9311	19	2.30	77.2	22 ±20%	2.8	.410/.410/.157	M120	PL9517	60.66	0.48	351.0	68	0.48	.256/.256/.122	M124
PL9312	25	2.10	89.1	27 ±20%	2.3	.410/.410/.157	M120	PL9518	74.71	0.45	419.0	82	0.45	.256/.256/.122	M124
PL9313	38	1.65	141.9	47 ±20%	2.1	.410/.410/.157	M120	PL9519	85.39	0.40	520.0	100	0.4	.256/.256/.122	M124
PL9314	55	1.32	212.0	68 ±20%	1.5	.410/.410/.157	M120								
PL9315	83	1.10	327.9	100 ±20%	1.35	.410/.410/.157	M120								
PL9316	123	0.88	499.9	150 ±20%	1.15	.410/.410/.157	M120								
PL9317	178	0.73	738.6	220 ±20%	0.92	.410/.410/.157	M120								
PL9318	278	0.60	1132.8	330 ±20%	0.7	.410/.410/.157	M120								

1. The rated current as listed is either the saturation current or the heating current depending on which value is lower.

2. Inductance at 0A_{dc} tolerance is ±30%. The tolerance is ±20% on all other parts.

Optional Tape and Reel packaging can be ordered by adding a "T" suffix to the end of the part number.

SMT CURRENT SENSE TRANSFORMER

Part Number	Turns Ratio	Current Rating (A)	Secondary Inductance (μH MIN)	DCR Primary (1,3-2,4) (Ω MAX)	DCR Secondary (5-6) (Ω MAX)	Hipot	Package L/W/H	Datasheet
PL1961	1:1:200	15.00	59.200	2.3	4200	500	.575 / .575 / .280	M150

SMT GATE DRIVE TRANSFORMER

Part Number	Turns Ratio	Pri-Sec Insulation (Vdc)	MAX (v* usec)	Primary Inductance (μH MAX)	Leakage Inductance (μH MAX)	DCR Primary	DCR Secondary	Package L/W/H	Datasheet
PL1960	1:1	1500.00	9.7	785.0	.46	.60	.60	.265 / .340 / .140	M149

*SM = Surface Mount

MILITARY/AEROSPACE PRODUCTS

PLANARS TRANSFORMERS

Height: 7.4mm Max

Footprint: 19.8mm x 19.6mm Max

Inductance Range: .405μH to 6.2μH

Electrical Specifications @ 25°C - Operating Temperature -40°C to +130°C

Part	Inductance @		DCR (mΩ)		Inductance @	Saturation Current		Heating	Data
Number	I _{rated} (μH ±15%)	I _{rated} (ADC)	TYP	MAX	0 A _{DC} (μH ±15%)	25°C	100°C	Current (A)	Sheet
2-Turn (Low Loss)									
PL10100	0.45	73	0.38	0.48	0.45	95	80	73	M194
PL10101	0.63	54	0.38	0.48	0.65	63	53	73	M194
PL10102	0.85	39	0.38	0.48	0.91	46	37	73	M194
PL10103	1.05	30	0.38	0.48	1.1	35	30	73	M194
PL10104	1.25	25	0.38	0.48	1.3	29	26	73	M194
PL10105	1.45	21	0.38	0.48	1.5	24	22	73	M194
2-Turn Series									
PL10106	0.45	52	0.78	0.98	0.45	95	80	52	M194
PL10107	0.63	52	0.78	0.98	0.65	63	53	52	M194
PL10108	0.85	39	0.78	0.98	0.91	46	37	52	M194
PL10109	1.05	30	0.78	0.98	1.1	35	30	52	M194
PL10110	1.25	25	0.78	0.98	1.3	29	26	52	M194
PL10111	1.45	21	0.78	0.98	1.5	24	22	52	M194

3-Turn and 4-Turn Series also available.

CUSTOM CAPABILITIES

Space Development/Testing/Validation Capabilities

- MIL-STD-981
- NASA EEE-INST-002
- NASA-STD 8739.3
- IPC-STD-001DS
- MIL-PRF-21038
- MIL-PRF-27
- MIL-STD-202
- ECSS-Q-ST-70-38C
- AEC-Q200
- MIL-STD-883
- Custom Power
- Signal Design/Build

Program Participation

ISS Orion World View III MagEIS HPCA James Webb Telescope
 Space Station GPS III GBD

Manufacturing Capabilities

Bobbin Winding Toroid Winding AS9100C Quality System



MILITARY/AEROSPACE PRODUCTS

CUSTOM CAPABILITIES *(continued)*

Product Capability	PACKAGING	MAXIMUM POWER	MAXIMUM CURRENT	FREQUENCY
SINGLE INDUCTORS/ SPLIT DIFFERENTIAL	Lamination, Toroidal, Tape Wound	4KVA		15- 2MHz
COMMON MODE CHOKES 1/3 Phase	Lamination, Toroidal, Tape Wound		500A	15 - 2400Hz
CHOKES 3 PHASE (LINE FILTERING)	Lamination, Tape Wound		500A	15 - 2400Hz
POWER TRANSFORMERS 1 Phase	Lamination, Toroidal, Tape Wound	10KVA		15 - 1200Hz
TRANSFORMERS Laminated 3 Phase	Lamination, Toroidal, Tape Wound	10KVA		15 - 1200Hz
TRANSFORMERS - Switchmode	Planar, Bobbin Wound, Toroidal	1KVA		20K- 1MHz
INDUCTORS - Switchmode Buck/Boost	Toroidal, Bobbin Wound	500VA		20K- 1MHz
TRANSFORMERS - Current Sense	Toroidal, Bobbin Wound	4KVA (burden)		15- 1MHz
TRANSFORMER MODULES -Current Sense 1/3 PHASE	Toroidal, Bobbin Wound	4KVA (burden)		15- 1MHz
TRANSFORMERS Gate Drive	Toroidal, Bobbin Wound			20KHz- 1MHz
HALL EFFECT SENSORS	Lamination, Toroidal, Tape Wound	10KVA		15 - 1200Hz

Note: Magnetics for high temp requirement at +200°C

Testing Services

Testing capabilities for product qualification and design validation

ELECTRICAL

- Inductance with or without DC
- Turns Ratio
- HI-POT - Vac up to 5kv, Vdc up to 6kV
- Insulation Resistance
- Distortion
- Pulse Testing
- Thermal Rise
- Impedance
- Q (up to 1 Mhz)
- DCR
- SRF (up to 3Ghz)
- Leakage Inductance
- Voltage Ratio
- Insertion Loss

ENVIRONMENTAL

- Mechanical Shock
- Mechanical Vibration
- Solderability
- Resistance to Soldering

MECHANICAL

- Humidity (to 90% RH)
- Moisture Resistance
- Thermal Shock
- Thermal Cycling
- High/Low Temperature Storage
- Steam Aging

ANALYTICAL

- X-Ray Imaging
- Real Time X-ray
- Plating composition analysis
- Detailed Inspection Plans
- First Article Inspection to AS9102

