The Comus Group of Companies

SENSING THE WORLD'S NEEDS

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We also have a large network of worldwide agents. These can be seen on any of our website.

Com/1/Jan16/Iss.4

REED RELAYS

From the Comus Group of Companies

COMUS **The Comus Group of Companies**

REED RELAY SERIES	DESCRIPTION	CONTACT FORM	PACKAGE STYLE	NOMINAL COIL VOLTAGE (VDC)	CONTACT RATING (MAX WATTS)	SWITCHING VOLTAGE (MAX VDC)	SWITCHING CURRENT (MAX AMPS)	CARRY CURRENT (MAX AMPS)	CONTACT RESISTANCE (MAX OHMS)	DIELECTRIC STRENGTH BETWEEN CONTACTS (MIN VDC)	DIELECTRIC STRENGTH CONTACT TO COIL (MIN VDC)	INSULATION RESISTANCE @100V, 20°C, 40%RH (MIN OHMS)	FEATURES	OPTIONS	REED RELAY SERIES
BF/BFS 	Instrumentation Reed Relays	1A, 1C	Potted	5, 12	A 10 C 5	A 200 C 150	A 0.5 C 0.25	A 1.5 C 1.0	A 0.100 C 0.150	A 250 C 200	1500	A 10^{12} C 10^{9}	External Magnetic Shield	ES Shield Coaxial Shield (A Only)	BF/BFS
BFH 	Multi-Pole Instrumentation Reed Relays	2A, 3A, 2C	Potted	5, 12	A 10 C 5	A 200 C 150	A 0.5 C 0.25	A 1.5 C 1.0	A 0.150 C 0.200	A 250 C 200	1000	A 10^{12} C 10^{9}	External Magnetic Shield	ES Shield Coaxial Shield (2A Only)	BFH
BFM 	Instrumentation Reed Relays	1A, 1C	Potted	5, 12	A 10 C 5	A 200 C 150	A 0.5 C 0.25	A 1.5 C 1.0	A 0.100 C 0.150	A 350 C 200	1500	A 10^{12} C 10^{9}	External Magnetic Shield	ES Shield Coaxial Shield	BFM
BFM-CW 	Instrumentation Reed Relays for Wide Range -40°C to +125°C Operation	1A, 1C	Potted	5, 12	A 10 C 5	A 200 C 150	A 0.5 C 0.25	A 1.5 C 1.0	A 0.100 C 0.150	A 350 C 200	1500	A 10^{12} C 10^{9}	External Magnetic Shield Coaxial Shield		BFM-CW
1210/1220/1231 	General Purpose DIP	1A, 2A, 1C	Molded	5, 12, 24	A 10 C 5	A 150 C 100	A 0.5 C 0.4	A 1.0 C 0.5	A 0.150 C 0.200	200	1500	A 10^{10} C 10^{9}		Diode ES Shield	1210/1220/1231
1331 	General Purpose SIP	1A	Molded	5, 12, 24	10	150	0.5	1.0	0.200	200	1500	10^{10}		Diode	1331
1333 	Instrumentation Grade SIP	1A	Molded	5, 12	10	200	0.5	1.5	0.150	200	1500	10^{12}		Diode	1333
1411 	Instrumentation Grade Mini SIP	1A	Molded	5, 12	10	200	0.5	1.5	0.150	200	1500	10^{12}		Diode Internal Magnetic Shield	1411
1421 	Instrumentation Grade Mini SIP	2A	Molded	5, 12	10	200	0.5	1.5	0.150	200	1500	10^{12}	External Magnetic Shield	Diode	1421
1339 	High Power Instrumentation Grade SIP	1A	Molded	5, 12	15	200	1.0	1.25	0.150	200	1500	10^{12}		Diode	1339
1419 	High Power Instrumentation Grade Mini SIP	1A	Molded	5, 12	15	200	1.0	1.25	0.150	200	1500	10^{12}		Diode Internal Magnetic Shield	1419
1429 	High Power Instrumentation Grade Mini SIP	2A	Molded	5, 12	15	200	1.0	1.25	0.150	200	1500	10^{12}	External Magnetic Shield	Diode	1429
1512 	Instrumentation Grade Micro Mini SIP	1A	Molded	5, 12	15	200	0.5	1.0	0.150	200	1500	10^{12}	Internal Magnetic Shield	Diode	1512
1517 	Instrumentation Grade Ultra Mini SIP	1A	Molded	5	10	170	0.5	1.0	0.200	200	1500	10^{12}	External Magnetic Shield	Diode	1517
CGSM 	Instrumentation Grade SMD	1A	Molded	3.3, 5	10	170	0.5	1.0	0.150	210	1500	10^{12}	External Magnetic Shield Coaxial Shield		CGSM
3350-1275 3551-1275 	High Voltage Reed Relays	1A	Potted	5, 12, 24	200 50	3500 7500	3.0	5.0	0.250	7500 10000	10000	10^{10}	Internal Magnetic Shield		3350-1275 3551-1275
3350-4275 3351-4275 	High Voltage Reed Relays	1B	Potted	5, 12, 24	200 50	3500 7500	3.0	5.0	0.250	7500 10000	10000	10^{10}	Internal Magnetic Shield		3350-4275 3351-4275
MSS2 	All Position Hg DIP Relay	1A	Molded	5, 12, 24	50	500	2.0	2.0	0.100	1500	1500	10^{10}		Diode	MSS2
MVS2 	Position Sensitive Hg DIP Relay	1A	Molded	5, 12, 24	50	500	2.0	3.0	0.100	2000	1500	10^{10}		Diode	MVS2
MSS4 	All Position Hg SIP Relay	1A	Molded	5, 12, 24	50	500	2.0	3.0	0.100	2000	1400	10^{10}		Diode	MSS4
MVS4 	Position Sensitive Hg SIP Relay	1A	Molded	5, 12, 24	50	500	2.0	3.0	0.100	2000	1400	10^{10}		Diode	MVS4

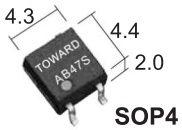
COMUS | TOWARD

Part Number: 47 Series
High Current - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

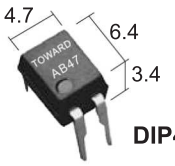
80 VOLTS

High Current up to 2A

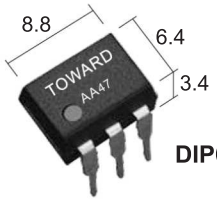
PICTURE



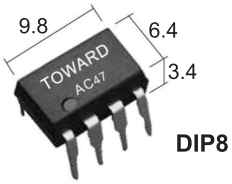
SOP4



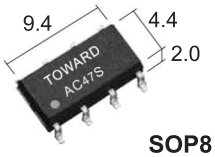
DIP4



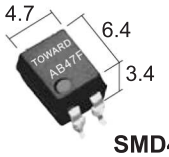
DIP6



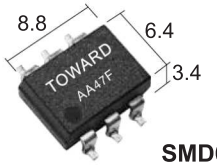
DIP8



SOP8



SMD4



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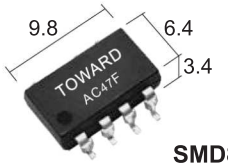


SMD8

Drawings not to scale. All dimensions in mm nominal. Pitch: 2.54 mm

✔RoHS Compliant

ORDERING INFORMATION

Body Style	Series	Options
AB = 4 pin AA = 6 pin AC = 8 pin	47	F = SMD S = SOP R1 = Tape & Reel (SMD / SOP Only) H = 5KV I/O BV (DIP / SMD Only) H = 3.75KV I/O BV (SOP)

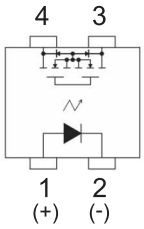
Part Number Example: XX47X-XX
AB47S-R1 = Series 47, 1 Form A, 4 Pin, SOP with tape and reel packaging

FEATURES

- TOWARD PhotoDMOS Relays
- 80 Volt, 2.0 Amp High Current design
- On-Resistance: 0.15 Ω (typical)
- I/O Breakdown Voltage: SOP 1500 Vrms Min.
  DIP / SMD 3750 Vrms Min.
- Optional High I/O BV: SOP 3750 Vrms Min.
  DIP / SMD 5000 Vrms Min.
- Max LED Current 3.0 mA
- Low Off-State Leakage Current 1.0 μ A Max
- UL File E344988 c UL us

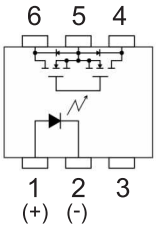
SCHEMATIC

AB47(F)(S)



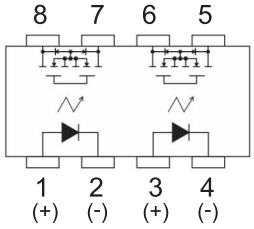
1: Anode (LED)
2: Cathode (LED)
3, 4: Drain (MOS FET)

AA47(F)



1: Anode (LED)
2: Cathode (LED)
3: NC
4, 6: Drain (MOS FET)
5: Source (MOS FET)

AC47(F)(S)



1, 3: Anode (LED)
2, 4: Cathode (LED)
5, 6, 7, 8: Drain (MOS FET)

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Rev: 0 - Date: June/17/2016 - Signature: BR

An ISO 9001 Certified Company

COMUS | TOWARD

Part Number: 47 Series
High Current - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

80 VOLTS

High Current up to 2A

ABSOLUTE MAXIMUM RATINGS (Ambient Temperature: 25˚C)

ITEM		SYMBOL	VALUE				
OUTLINE PACKAGE			SOP 4/8		DIP 4/8 SMD 4/8		DIP 6 SMD 6
			1CH	2CH	1CH	2CH	1CH
Input	Continuos LED Current	I_F	50 mA				
	Peak LED Current (f=100 Hz, duty=1%)	I_{FP}	500 mA				
	LED Reverse Voltage	V_R	5 V				
	Input Power Dissipation	P_{In}	75 mW				
Output	Load Voltage	V_L	80 V (AC peak or DC)				
	Load Current (A)	I_L	1.25	1.0	1.25	1.0	2.0
	Peak Load Current (1 ms, 1 shot) (A)	I_{Peak}	3.0	3.5	3.0	3.0	5.0
	Output Power Dissipation (mW)	P_{Out}	350	450	350	450	500
Total Power Dissipation (mW)		P_T	400	500	400	500	550
I/O Breakdown Voltage (Vrms)		$V_{I/O}$	1500	1500	3750	3750	3750
Operating Temperature		T_{Opr}	-40˚ +85˚C				
Storage Temperature		T_{Stg}	-40˚ +100˚C				

ELECTRICAL SPECIFICATIONS (Ambient Temperature: 25˚C)

ITEM		SYMBOL	MIN	TYP	MAX	UNITS	CONDITIONS
Input	LED Forward Voltage	V_F	1.0	1.37	1.5	V	I_F = 10mA
	Operation LED Current	$I_{F\ On}$		1.2	3.0	mA	
	Recovery LED Voltage	$V_{F\ Off}$	0.5	1.0		V	
Output	On-Resistance Drain to Drain	R_{On}		0.15 0.1(DIP6)	0.5 0.16(DIP6)	Ω	I_F = 5mA I_L = Rating Time to flow is within 1 sec.
	Off-State Leakage Current	I_{Leak}			1.0	μA	V_L=80V
	Output Capacitance	C_{Out}		190 500(DIP6)		pF	V_L=0V, f=1MHz
Transmission	Turn-On Time	T_{On}		0.7	3.0	ms	I_F = 5mA I_L = Rating (for SOP/DIP4 - 8 type)
	Turn-Off Time	T_{Off}		0.06	0.5	ms	
	Turn-On Time	T_{On}		0.7	3.0	ms	I_F = 10mA I_L = Rating (for DIP6 type)
	Turn-Off Time	T_{Off}		0.04	0.5	ms	
Coupled	I/O Insulation Resistance	$R_{I/O}$	10^9			Ω	
	I/O Capacitance	$C_{I/O}$		1.3		pF	f = 1MHz

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COMUS | TOWARD

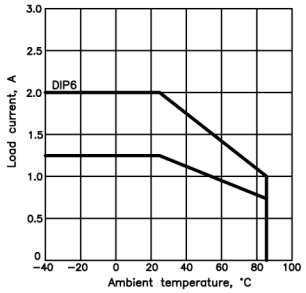
Part Number: 47 Series
High Current - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

80 VOLTS

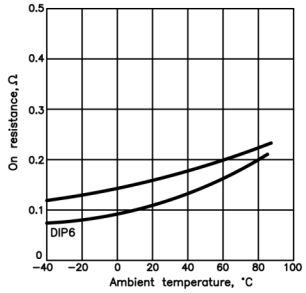
High Current up to 2A

GRAPHS

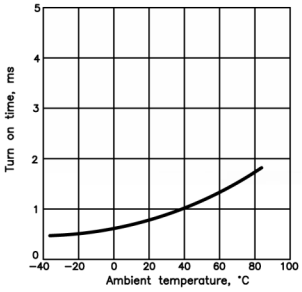
Load current Vs. Ambient temperature



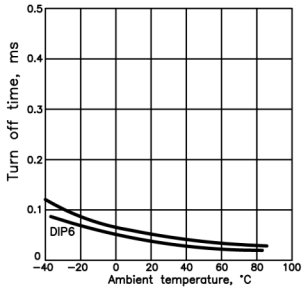
On resistance Vs. Ambient temperature



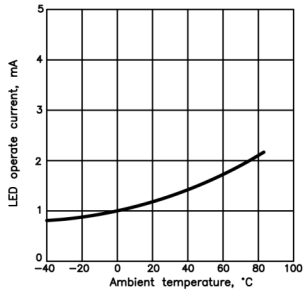
Turn on time Vs. Ambient temperature



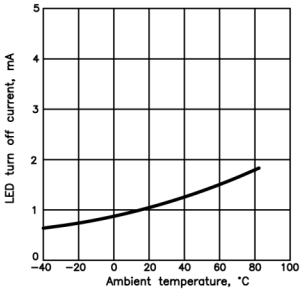
Turn off time Vs. Ambient temperature



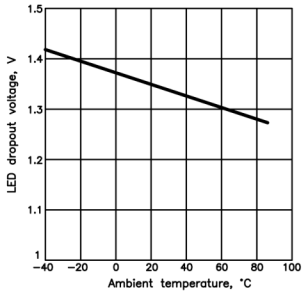
LED operate current Vs. Ambient temperature



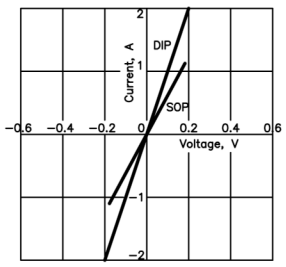
LED Turn off current Vs. Ambient temperature



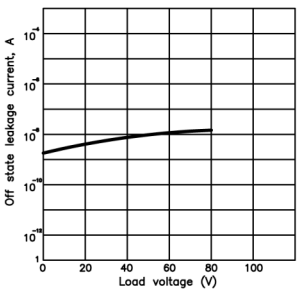
LED forward voltage Vs. Ambient temperature



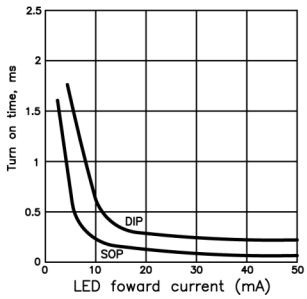
Voltage Vs. current characteristics of output at MOS portion



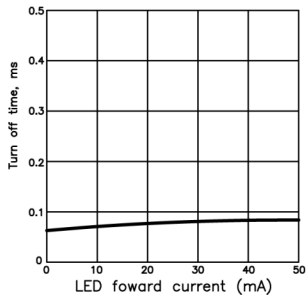
Off state leakage current Vs. Load voltage characteristics



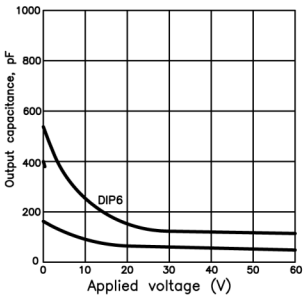
LED foward current Vs. turn on time characteristics



LED foward current Vs. turn off time characteristics



Applied voltage Vs. output capacitance characteristics



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COMUS Relays

Part Number: 3570 1333
Instrumentation Grade SIP - 1 Form A
Product Data Sheet

PICTURE

✔RoHS Compliant

FEATURES

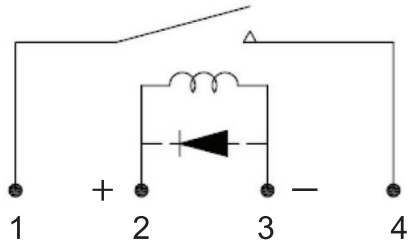
- High Reliability Instrumentation Grade COTO TECHNOLOGY reed switch with sputtered Ruthenium contacts.
- SIP 1 Form A - 10 W dry reed relays
- Ideal for test and instrumentation applications.
- High Insulation Resistance : 10^{12} Ω MIN
- Molded thermoset industry standard package.
- Optional internal coil suppression diode.
- UL File E358613 c UL us

ORDERING INFORMATION

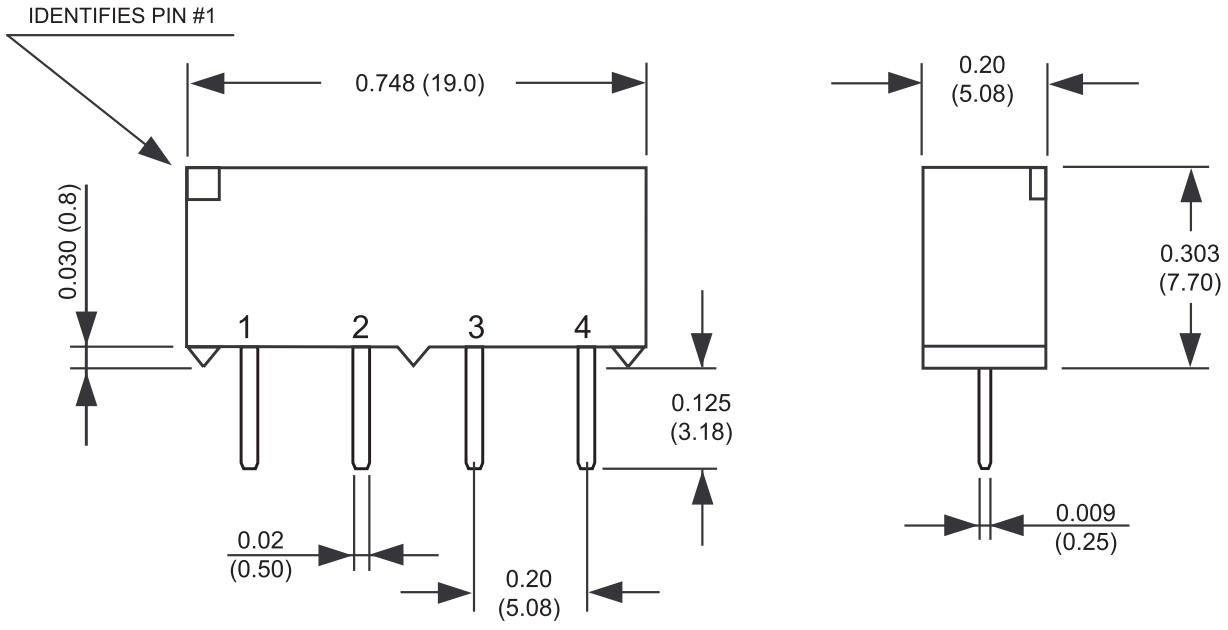
Series	Coil	Options
3570.1333.	05	1 = no diode
	12	3 = with diode

Part Number Example: 3570.1333.xxx
3570.1333.051 = 5 volt coil, no diode

SCHEMATIC



DIMENSIONS



Drawings not to scale.
All dimensions in inches (mm) nominal.

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COMUS Relays

Part Number: 3570 1333
Instrumentation Grade SIP - 1 Form A
Product Data Sheet

COIL DATA-STANDARD TYPE 1 FORM A (at 20˚C)				
NOMINAL COIL VOLTAGE (VDC)	NOMINAL COIL RESISTANCE ±10% (Ω)	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX COIL VOLTAGE (VDC)
5	500	3.75	0.8	7
12	1000	9	1	16

CONTACT RATING	
Max Switching Power	10 W
Max Switching Voltage	200 VDC
Max Switching Current	0.5 A
Max Carry Current	1.5 A

SPECIFICATION	
Contact Resistance (Initial)	MAX 150 mΩ
Operate Time - including bounce (Typical)	0.35 ms (At Nominal Voltage)
Release Time (Typical)	0.1 ms
Insulation Resistance @ 100V, 20°C, 40% RH (MIN)	10^{12} Ω
Dielectric Strength (MIN)	Between Open Contacts 200 V DC / peak AC Between Coil to Contacts 1500 V DC / peak AC
Capacitance Between Open Contacts (Typical)	0.5 pF
Vibration	20G
Shock	50G
Operating Temperature	-40° +85°C
Storage Temperature	-40° +100°C
Life Expectancy of Electrical	1000 x 10^6 ops (1 VDC, 10mA)

Phone: (1) 973 777 6900 **www.comus-intl.com** **Fax: (1) 973 777 8405**

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DESCRIPTION

Reed Relays consist of a reed switch and coil fitted into a housing, which could be plastic, metal or moulded. Compared with electromechanical relays, reed relays generally have a faster response time, lower coil consumption and are smaller in size. Furthermore, the switch is sealed in a dry, inert atmosphere preventing the ingress of contaminants.

OPERATION

High Voltage Relays have outstanding performance in insulation and stand-off voltage. Energizing the coil operates a reed switch causing the contacts to open or close. It is important that the switch is not overloaded by applying loads in excess of the switch ratings. For details on switch loads refer to the reed relay specifications and the reed switch application page in this catalogue.

General Parameters

All characteristics for pull-in voltage, drop-out voltage and coil resistance at 20°C ±3°C ambient temperature. For other temperatures see diagram "operating temperature."

Contact Resistance

Initial value at nominal voltage measured by the Kelvin test method at 20V/100mA.

Soldering

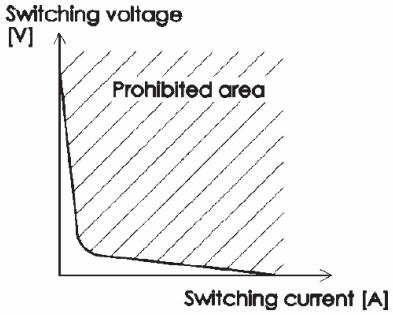
During soldering make sure no mechanical stress is applied to terminals because the thermoplastic moulding material might be damaged.

Insulation Resistance

The insulation resistance is measured with a Tera Ohmmeter at 500V DC. The ambient climate is 20°C ±3°C and 50% relative humidity.

Switching Voltage, Switching Current and Power Rating

The listed values for switching voltage, switching current and power rating are absolute limits. If any of these values is exceeded, a reduction of life expectancy will result (see following power diagram).

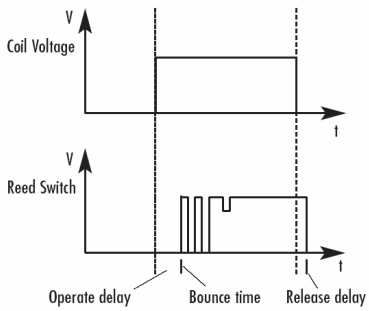


Dielectric Strength

Tested in a radiation (eg. light, x-ray) free environment by applying a DC voltage across the open contacts, between adjacent contacts and between coil and contact. The test current is 100 mA. The unused contacts should not be connected during the test.

Switching Time

Pull-in time including bounce time at nominal voltage and 20 Hz: 1.5 - 3.5 ms
Release time (without diode) at nominal voltage and 20 Hz: 0.4 - 1.5 ms.



Contact Capacitance (Typical Values)

Across open contacts	0.8 - 1.2 pF
Between open contact and coil	1.4 - 2.2 pF
Between closed contacts and coil	2.3 - 3.5 pF

Shock and Vibration

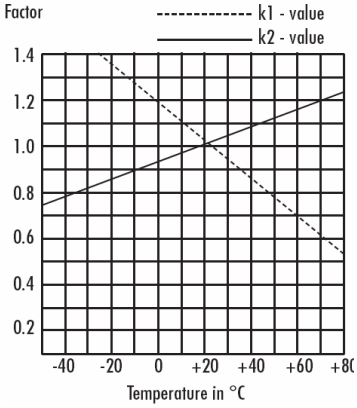
During shock and vibration tests the relays must be energized with nominal voltage. The contact should not open or close longer than 10 µs.
Vibration stability: 20 g/50 - 500 Hz. Shock stability: 35 g/11 ms half sine wave.

Life Expectancy

The life expectancy of a Reed Relay is at least 10^5 - 10^6 operations at nominal load. At minimum load the life expectancy can endure up to 5 x 108 operations. The mechanical life expectancy is 109 operations (minimum). When switching higher loads, especially inductive or capacitive and lamp loads, life expectancy can be considerably reduced. Proper contact protection will reduce electromagnetic interference and rapid contact erosion.

Operating Temperature

The operating temperature is the internal temperature of the relay (ambient temperature plus self heating). If relays are operating at higher ambient temperatures
(Ju) than +20 °C, the pull-in voltage and the maximum coil voltage must be calculated as follows:
Pull-in voltage = Pull-in voltage at 20 °C x k1.
Maximum coil voltage = Max. coil voltage at 20 °C x k2.
When mounting relays side by side a gap of approximately half the relay-width is recommended to avoid mu-



How to order High Voltage Relays:

3392 - 1270 - 12 - 6

- 3392: Contact code
- 1270: Termination Style
- 12: Coil Voltage
- 6: Version Number

NOTE: All parts of the order code must be completed

All dimensions are nominal, in millimetres unless otherwise stated.
As part of the groups policy of continued product improvement, specifications may change without notice. Our sales office will be pleased to help you with the latest information on our products.

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High Voltage - Reed Relays

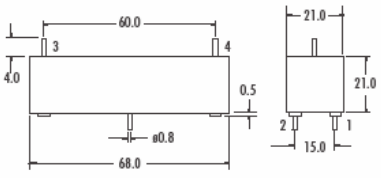
NORMALLY Open TYPE 33xx . 12xx . xx6

Version Number			6				6				6			
Contact Form			1 Normally Open				1 Normally Open				1 Normally Open			
Contact Code			3316	3390	3391	3392	3316	3390	3391	3392	3316	3390	3391	3392
Termination Style			1270	1270	1270	1270	1280	1280	1280	1280	1290	1290	1290	1290
Contact Parameters														
Switching Voltage	max.	VACpeak/VDC	1500	5000	7500	10000	1500	5000	7500	10000	1500	5000	7500	10000
Dielectric Strength	min.	VDC	3000	7000	10000	14000	3000	7000	10000	14000	3000	7000	10000	14000
Switching Capacity	max.	W	30	50	50	50	30	50	50	50	30	50	50	50
Switching Current	max.	A	1	3	3	3	1	3	3	3	1	3	3	3
Carrying Current	max.	A	2	5	5	5	2	5	5	5	2	5	5	5
Contact Resistance	max.	mΩ	80	250	250	250	80	250	250	250	80	250	250	250
Coil Parameters														
Nominal Coil Voltage		VDC	5	12	24		5	12	24		5	12	24	
Pull-in Voltage	max.	VDC	4	10	20		4	10	20		4	10	20	
Drop-out Voltage	min.	VDC	1	2	4		1	2	4		1	2	4	
Operating Voltage	max.	VDC	8	18	36		8	18	36		8	18	36	
Coil Resistance	±15%	Ω	35	200	720		35	200	720		35	200	720	
Relay Parameters														
Dielectic Strength	coil/contact	VDC	20000				20000				20000			
Dielectic Strength	contact/contact	VDC	-				-				-			
Insulation Resistance	coil/contact	Ω	1×10^9				1×10^9				1×10^9			
Storage Temperature		℃	-35 +90				-35 +90				-35 +90			
Operating Temperature		℃	-20 +70				-20 +70				-20 +70			
Pull-in Time incl. Bounce Time max.		ms	3.5				3.5				3.5			
Drop-out Time		ms	1.5				1.5				1.5			
Weight, approx.		g	55				55				55			

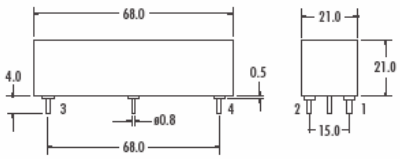
Relays with contact code 3390-91-92 have tungsten-plated switch contacts and should be used only for switching power above approx. 10 mW

TERMINATION STYLES

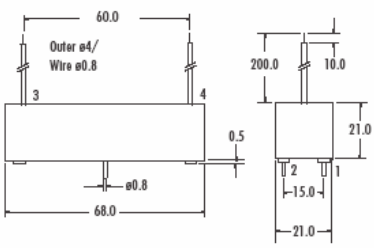
33 ... 1280 ... 6



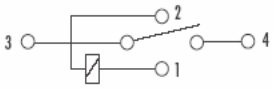
1270



1290



Pin layout



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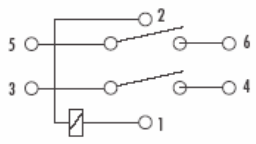
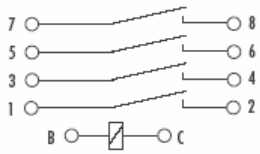
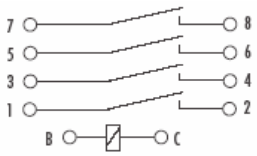
High Voltage - Reed Relays

NORMALLY Open TYPE 33xx . 12xx . xx6

Version Number			6				6				6			
Contact Form			2 Normally Open				4 Normally Open				4 Normally Open			
Contact Code			3316	3390	3391	3392	3316	3390	3391	3392	3316	3390	3391	3392
Termination Style			1272	1272	1272	1272	1274	1274	1274	1274	1294	1294	1294	1294
Contact Parameters														
Switching Voltage	max.	VACpeak/VDC	1500	5000	7500	10000	1500	5000	7500	10000	1500	5000	7500	10000
Dielectric Strength	min.	VDC	3000	7000	10000	14000	3000	7000	10000	14000	3000	7000	10000	14000
Switching Capacity	max.	W	30	50	50	50	30	50	50	50	30	50	50	50
Switching Current	max.	A	1	3	3	3	1	3	3	3	1	3	3	3
Carrying Current	max.	A	2	5	5	5	2	5	5	5	2	5	5	5
Contact Resistance	max.	mΩ	80	250	250	250	80	250	250	250	80	250	250	250
Coil Parameters														
Nominal Coil Voltage		VDC	5	12	24		5	12	24		5	12	24	
Pull-in Voltage	max.	VDC	4	10	20		4	10	20		4	10	20	
Drop-out Voltage	min.	VDC	0.5	1.2	2.4		0.5	1	2		0.5	1	2	
Operating Voltage	max.	VDC	7	16	29		7	14.5	27		7	14.5	27	
Coil Resistance	±15%	Ω	15	85	275		12	42	175		12	42	175	
Relay Parameters														
Dielectic Strength	coil/contact	VDC	10000				10000				10000			
Dielectic Strength	contact/contact	VDC	10000				8000				8000			
Insulation Resistance	coil/contact	Ω	1 X 10^9				1 X 10^9				1 X 10^9			
Storage Temperature		℃	-35 +90				-35 +90				-35 +90			
Operating Temperature		℃	-20 +70				-20 +70				-20 +70			
Pull-in Time incl. Bounce Time max.		ms	3.5				3.5				3.5			
Drop-out Time		ms	1.5				1.5				1.5			
Weight, approx.		g	55				130				130			

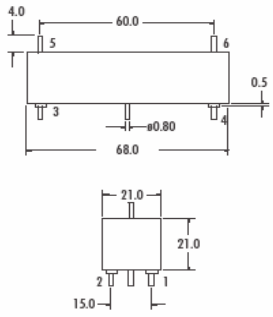




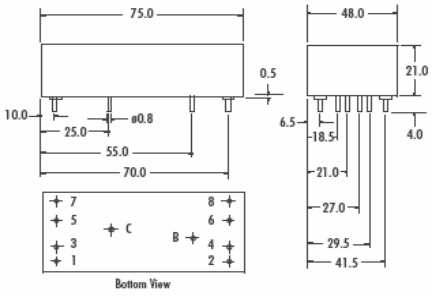


Relays with contact code 3390-91-92 have tungsten-plated switch contacts and should be used only for switching power above approx. 10 mW

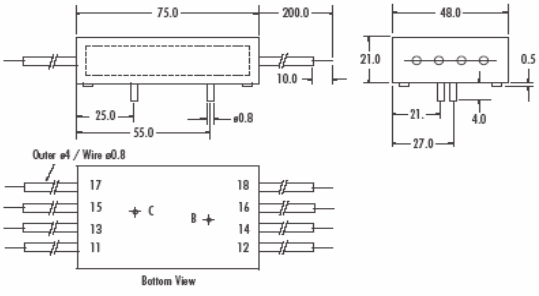
1272



1274



1294



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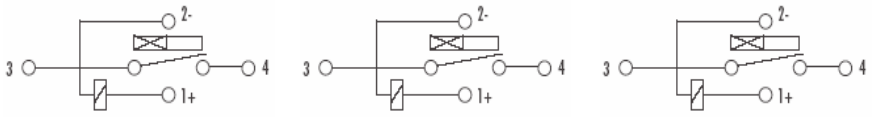
High Voltage - Reed Relays

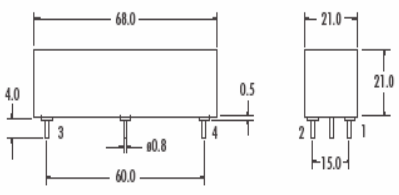
NORMALLY CLOSED TYPE 33xx . 42xx . xx6

Version Number			6				6				6			
Contact Form			1 Normally Closed				1 Normally Closed				1 Normally Closed			
Contact Code			3316	3390	3391	3392	3316	3390	3391	3392	3316	3390	3391	3392
Termination Style			4270	4270	4270	4270	4280	4280	4280	4280	4290	4290	4290	4290
Contact Parameters														
Switching Voltage	max.	VACpeak/VDC	1500	5000	7500	10000	1500	5000	7500	10000	1500	5000	7500	10000
Dielectric Strength	min.	VDC	3000	7000	10000	14000	3000	7000	10000	14000	3000	7000	10000	14000
Switching Capacity	max.	W	30	50	50	50	30	50	50	50	30	50	50	50
Switching Current	max.	A	1	3	3	3	1	3	3	3	1	3	3	3
Carrying Current	max.	A	2	5	5	5	2	5	5	5	2	5	5	5
Contact Resistance	max.	mΩ	80	250	250	250	80	250	250	250	80	250	250	250
Coil Parameters														
Nominal Coil Voltage		VDC	5	12	24		5	12	24		5	12	24	
Pull-in Voltage	max.	VDC	4	10	20		4	10	20		4	10	20	
Drop-out Voltage	min.	VDC	0.5	1	2		0.5	1	2		0.5	1	2	
Operating Voltage	max.	VDC	6.5	14.5	27		6.5	14.5	27		6.5	14.5	27	
Coil Resistance	±15%	Ω	50	400	675		50	400	675		50	400	675	
Relay Parameters														
Dielectic Strength	coil/contact	VDC	20000				20000				20000			
Dielectic Strength	contact/contact	VDC	-				-				-			
Insulation Resistance	coil/contact	Ω	1 X 10^9				1 X 10^9				1 X 10^9			
Storage Temperature		℃	-35 +90				-35 +90				-35 +90			
Operating Temperature		℃	-20 +70				-20 +70				-20 +70			
Pull-in Time incl. Bounce Time max.		ms	3.5				3.5				3.5			
Drop-out Time		ms	1.5				1.5				1.5			
Weight, approx.		g	55				55				55			

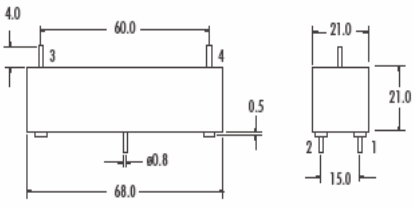


Relays with contact code 3390-91-92 have tungsten-plated switch contacts and should be used only for switching power above approx. 10 mW

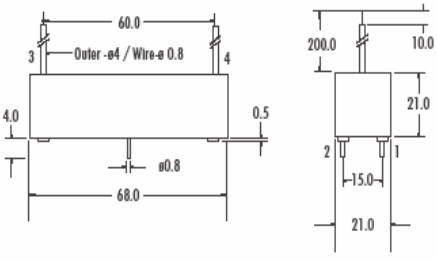
4270



4280



4290



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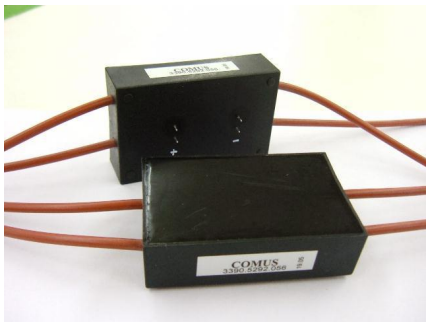
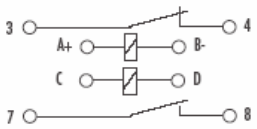
High Voltage - Reed Relays

NORMALLY CLOSED TYPE 33xx . 52xx . xx6

Version Number			6				6			
Contact Form			1 NO + 1NC				1 NO + 1NC			
Contact Code			3316	3390	3391	3392	3316	3390	3391	3392
Termination Style			5272	5272	5272	5272	5292	5292	5292	5692
Contact Parameters										
Switching Voltage	max.	VACpeak/VDC	1500	5000	7500	10000	1500	5000	7500	10000
Dielectric Strength	min.	VDC	3000	7000	10000	14000	3000	7000	10000	14000
Switching Capacity	max.	W	30	50	50	50	30	50	50	50
Switching Current	max.	A	1	3	3	3	1	3	3	3
Carrying Current	max.	A	2	5	5	5	2	5	5	5
Contact Resistance	max.	mΩ	80	250	250	250	80	250	250	250
Coil Parameters										
Nominal Coil Voltage		VDC	5	12	24		5	12	24	
Pull-in Voltage	max.	VDC	4	10	20		4	10	20	
Drop-out Voltage	min.	VDC	0.5	1	2		0.5	1	2	
Operating Voltage	max.	VDC	7.5	14.5	27		7.5	14.5	27	
Coil Resistance	±15%	Ω	27	135	345		27	135	345	
Relay Parameters										
Dielectic Strength	coil/contact	VDC	10000				10000			
Dielectic Strength	contact/contact	VDC	8000				8000			
Insulation Resistance	coil/contact	Ω	1 X 10^9				1 X 10^9			
Storage Temperature		℃	-35 +90				-35 +90			
Operating Temperature		℃	-20 +70				-20 +70			
Pull-in Time incl. Bounce Time max.		ms	3.5				3.5			
Drop-out Time		ms	1.5				1.5			
Weight, approx.		g	130				130			

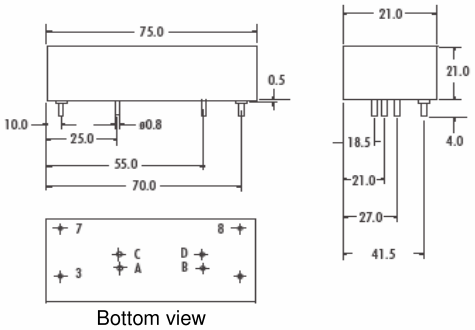




Relays with contact code 3390-91-92 have tungsten-plated switch contacts and should be used only for switching power above approx. 10 mW

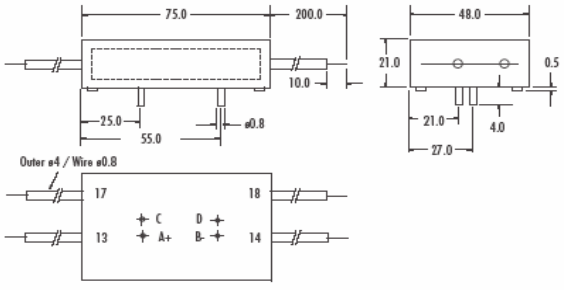
TERMINATION STYLES

5272



Bottom view

5292



Bottom view

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COMUS | TOWARD

Part Number: 23RS Series
General Purpose - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

Low Capacitance / Resistance

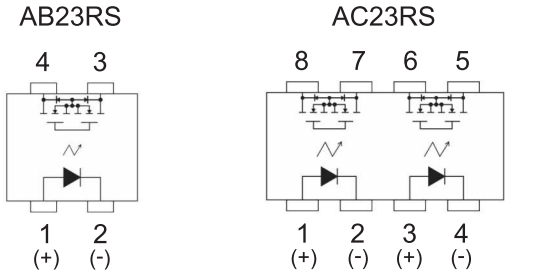
PICTURE

SOP4 SOP8

Drawings not to scale. All dimensions in mm nominal. Pitch: 2.54 mm

✔RoHS Compliant

SCHEMATIC



AB23RS		AC23RS	
1: Anode	(LED)	1, 3: Anode	(LED)
2: Cathode	(LED)	2, 4: Cathode	(LED)
3, 4: Drain	(MOS FET)	5, 6, 7, 8: Drain	(MOS FET)

ORDERING INFORMATION

Body Style	Series	Options
AB = 4 pin AC = 8 pin	23RS	R1 = Tape & Reel

Part Number Example: XX23RS-XX
AC23RS-R1 = Series 23RS, 2 Form A, 8 Pin, with tape and reel packaging

FEATURES

- TOWARD PhotoDMOS Relays
- 250 Volt, 170 mA
- On-Resistance: 11 Ω (typical)
- I/O Breakdown Voltage: 1500 Vrms Min.
- Output Capacitance: 37 pF
- Max LED Current 3.0 mA
- Low Off-State Leakage Current 10 μ A Max
- UL File E344988 c UL us

ABSOLUTE MAXIMUM RATINGS (Ambient Temperature: 25°C)

ITEM		SYMBOL	VALUE	
Input	Continuos LED Current	I_F	50 mA	
	Peak LED Current (f=100 Hz, duty=1%)	I_{FP}	500 mA	
	LED Reverse Voltage	V_R	5 V	
	Input Power Dissipation	P_{In}	75 mW	
Output	Load Voltage	V_L	250 V (AC peak or DC)	
	Load Current (mA)	I_L	170 (1ch)	140 (2ch)
	Peak Load Current (1 ms, 1 shot) (mA)	I_{Peak}	420	
	Output Power Dissipation (mW)	P_{Out}	300 (1ch)	450 (2ch)
Total Power Dissipation (mW)		P_T	350 (1ch)	500 (2ch)
I/O Breakdown Voltage (Vrms)		$V_{I/O}$	1500	
Operating Temperature		T_{Opr}	-40° +85°C	
Storage Temperature		T_{Stg}	-40° +100°C	

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COMUS | TOWARD

Part Number: 23RS Series
General Purpose - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

Low Capacitance / Resistance

ELECTRICAL SPECIFICATIONS (Ambient Temperature: 25˚C)

ITEM		SYMBOL	MIN	TYP	MAX	UNITS	CONDITIONS
Input	LED Forward Voltage	V_F	1.0	1.17	1.5	V	I_F = 10mA
	Operation LED Current	$I_{F\ On}$		0.6	3.0	mA	
	Recovery LED Voltage	$V_{F\ Off}$	0.5	1.0		V	
Output	On-Resistance Drain to Drain	R_{On}		11	15	Ω	I_F = 5mA I_L = Rating Time to flow is within 1 sec.
	Off-State Leakage Current	I_{Leak}		0.1	10	μA	V_L= 40V
	Output Capacitance	C_{Out}		37		pF	V_L= 0V, f= 1MHz
Transmission	Turn-On Time	T_{On}		0.15	0.3	ms	I_F = 5mA I_L = Rating
	Turn-Off Time	T_{Off}		0.05	0.2	ms	
Coupled	I/O Insulation Resistance	$R_{I/O}$	10^9			Ω	
	I/O Capacitance	$C_{I/O}$		0.8		pF	f = 1MHz

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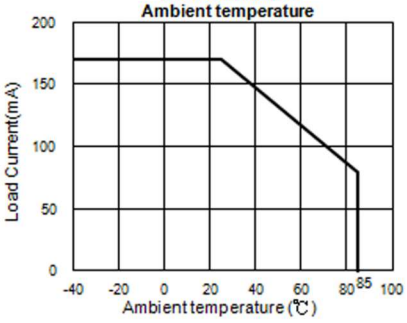
COMUS | TOWARD

Part Number: 23RS Series
General Purpose - 1 Form A / 2 Form A - PhotoDMOS Relays
Product Data Sheet

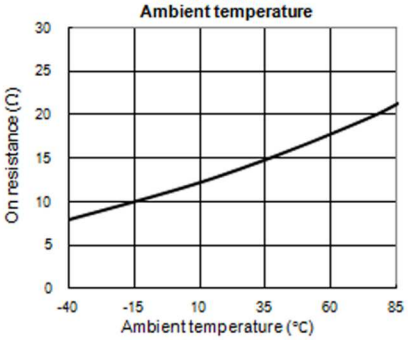
Low Capacitance / Resistance

GRAPHS

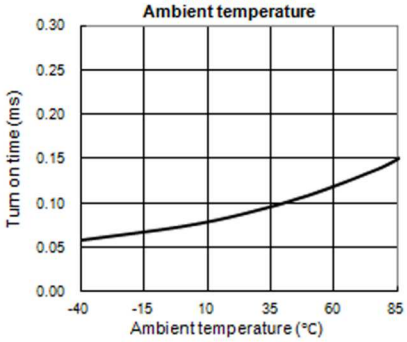
Load Current Vs. Ambient temperature



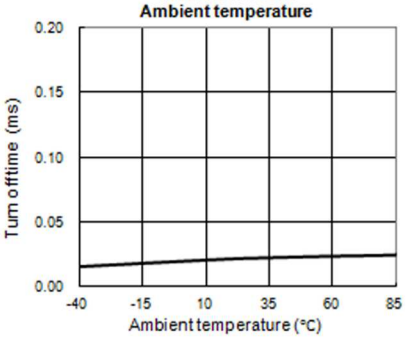
On resistance Vs. Ambient temperature



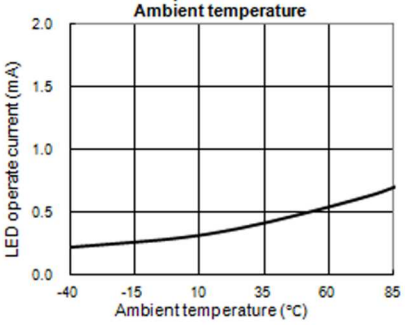
Turn on time Vs. Ambient temperature



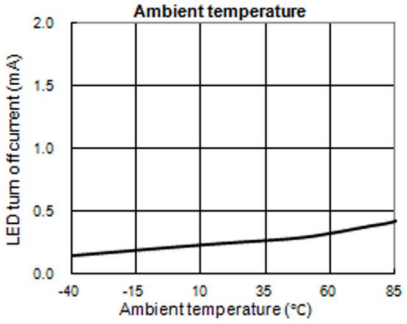
Turn off time Vs. Ambient temperature



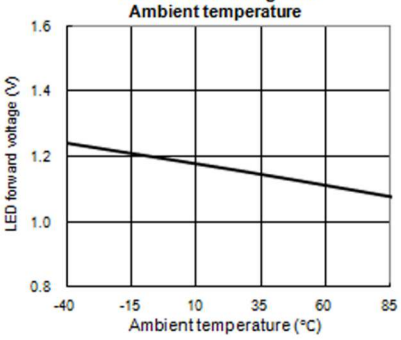
LED operate current Vs. Ambient temperature



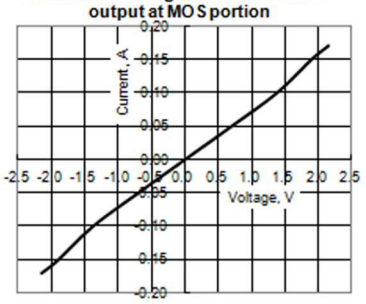
LED turn off current Vs. Ambient temperature



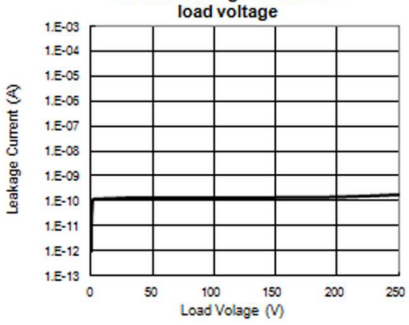
LED forward voltage Vs. Ambient temperature



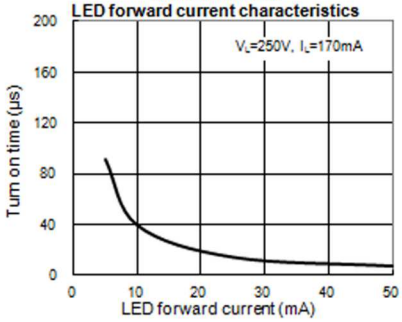
Current Vs. voltage characteristics of output at MOS portion



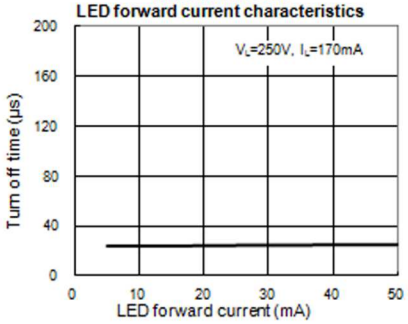
Off state leakage Current Vs. load voltage



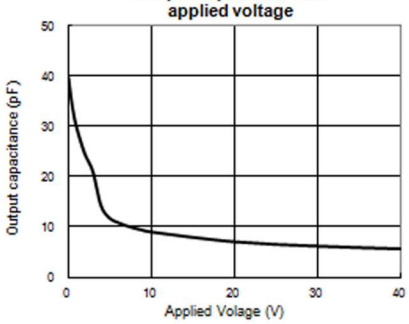
Turn on time Vs. LED forward current characteristics



Turn off time Vs. LED forward current characteristics



Output capacitance Vs. applied voltage



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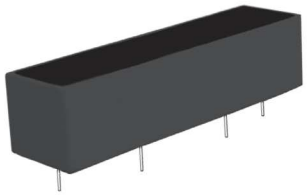
COMUS Relays

Part Number: 3350 Series
High Voltage Reed Relays
Product Data Sheet

PICTURE

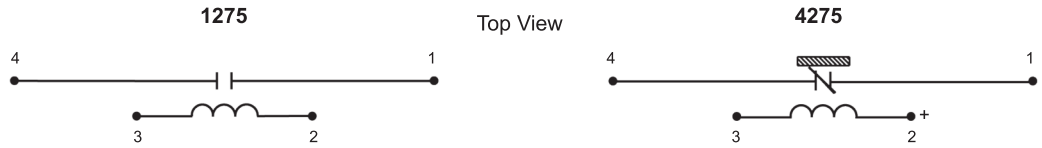


✔RoHS Compliant

FEATURES

- Industry Standard Packages
- Up to 7,500 VDC Switching Voltage
- Up to 10,000 VDC Dielectric Strength
- Up to 200 Watts / 5 Amp Carry Current
- Contact Forms: 1 Form A or 1 Form B
- Custom Designs Welcome

SCHEMATIC

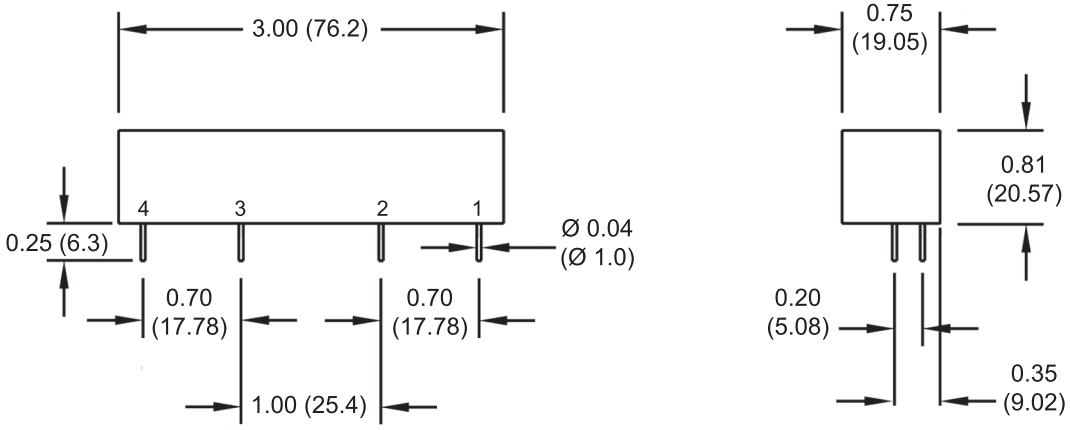


ORDERING INFORMATION

Series	Form	Coil
3350 = 3500 V 3351 = 7500 V	1275 = Normally Open / 1A 4275 = Normally Closed / 1B	05 12 24

Part Number Example: 335x.xxxx.xx6 3350.4275.056 = 3500 Switching Volt,1 form B, 5 Volt Coil

PACKAGE DIMENSIONS



Drawings not to scale.
All dimensions in inches (mm) nominal.

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COMUS Relays

Part Number: 3350 Series
High Voltage Reed Relays
Product Data Sheet

SPECIFICATIONS

Contact Form				Normally Open / 1A			Normally Closed / 1B		
Series				3350	3351		3350	3351	
Model				1275	1275		4275	4275	
CONTACT PARAMETERS									
Switching Voltage	Max		DC/peakAC	3500	7500		3500	7500	
Dielectric Strength	Min		VDC	7500	10000		7500	10000	
Switching Capacity	Max		W	200	50		200	50	
Switching Current	Max		A	3	3		3	3	
Carrying Current	Max		A	5	5		5	5	
Contact Resistance	Max		mΩ	250	100		250	100	
COIL PARAMETERS									
Nominal Coil Voltage			VDC	5	12	24	5	12	24
Pull-In Voltage	Max		VDC	3.75	9	18	3.75	9	18
Drop-Out Voltage	Min		VDC	0.5	1	2	0.5	1	2
Operating Voltage	Max		VDC	6.5	15	30	6.5	15	30
Coil Resistance	±15%		Ω	40	175	575	40	175	575
RELAY PARAMETERS									
Dielectric Strength	coil/contact	Min	VDC	10000			10000		
Insulation Resistance		Min	Ω	1×10^{10}			1×10^{10}		
Operating Temperature			°C	-20 to +85			-20 to +85		
Storage Temperature			°C	-35 to +100			-35 to +100		
Operate Time incl. Bounce Time		Typ	ms	3.0			3.0		
Release Time		Typ	ms	3.0			3.0		
Weight, approx.			g	60			65		

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COMUS Group

COMUS International

Part Number: 3570 3572 3563 DIP Series
ATE Grade Dry Reed Relays
Product Data Sheet

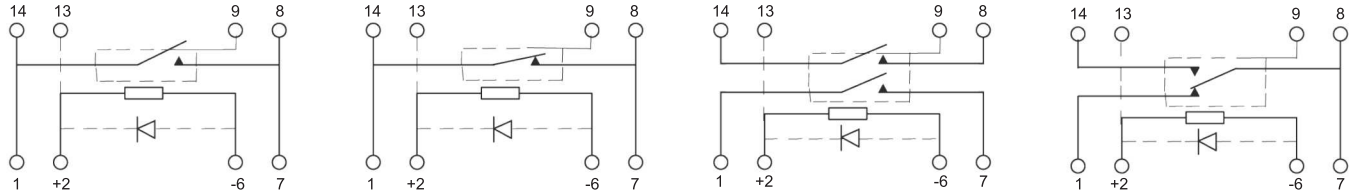
PICTURE

✔RoHS Compliant

FEATURES

- Epoxy molded, 14pin dual-in-line packages.
- Can be immersed during board cleaning operations.
- High isolation between input and output.
- High speed and low driving power.
- Diode and external magnetic shield available.
- ATE Grade, includes Coto® reed switch with sputtered Ruthenium contacts.
- Internal shield available upon request.

CIRCUIT DIAGRAM

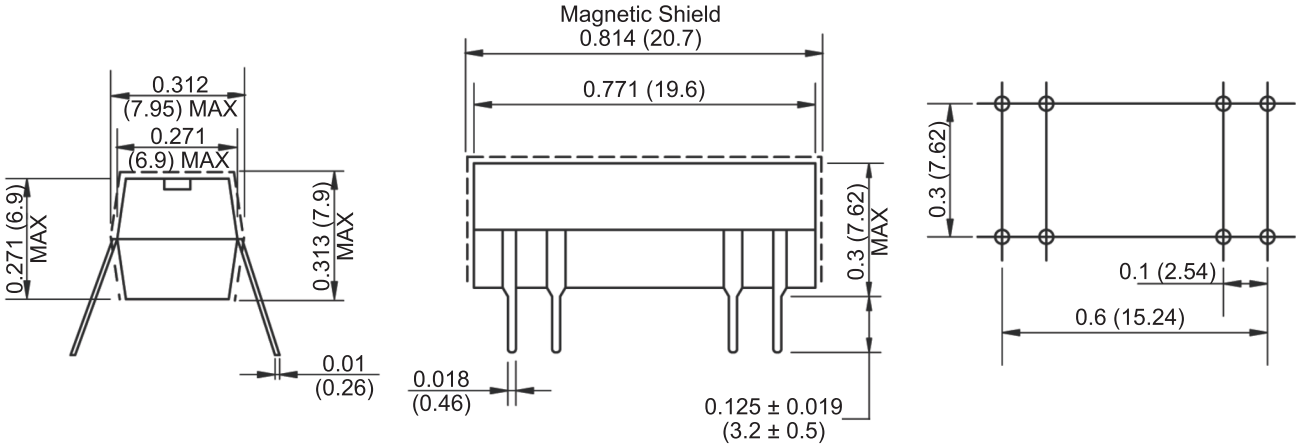


1 FORM A | 1 FORM B | 2 FORM A | 1 FORM C

ORDERING INFORMATION

3570.1210. (Form A)	05	1 = without diode
3572.1220. (Form A)	12	2 = electrostatic external shield (pin 9)
3570.7262. (Form B)		3 = with diode (pin 2/13-6, pin 2 = +)
3563.1231. (Form C)	24	4 = electrostatic external shield + diode

DIMENSIONS



Drawings not to scale.
All dimensions in inches (mm) nominal.

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COMUS International

Part Number: 3570 3572 3563 DIP Series
ATE Grade Dry Reed Relays
Product Data Sheet

COIL DATA-STANDARD TYPE 1 FORM A (at 20˚C)					
NOMINAL VOLTAGE DC±10%[V]	COIL RESISTANCE ±10% (ohm)	NOMINAL INPUT POWER	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX ALLOWABLE VOLTAGE (VDC)
5	500	50 mW	3.75	0.6	10
12	1000	144 mW	9	1	20
24	2150	268 mW	18	2	32

COIL DATA-STANDARD TYPE 2 FORM A (at 20˚C)					
NOMINAL VOLTAGE DC±10%[V]	COIL RESISTANCE ±10% (ohm)	NOMINAL INPUT POWER	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX ALLOWABLE VOLTAGE (VDC)
5	140	179 mW	3.75	0.6	10
12	500	288 mW	9	1	20
24	2150	268 mW	18	2	32

COIL DATA-STANDARD TYPE 1 FORM B (at 20˚C)					
NOMINAL VOLTAGE DC±10%[V]	COIL RESISTANCE ±10% (ohm)	NOMINAL INPUT POWER	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX ALLOWABLE VOLTAGE (VDC)
5	500	50 mW	3.75	0.6	6
12	1000	144 mW	9	1	14.5
24	2150	268 mW	18	2	29

COIL DATA-STANDARD TYPE 1 FORM C (at 20˚C)					
NOMINAL VOLTAGE DC±10%[V]	COIL RESISTANCE ±10% (ohm)	NOMINAL INPUT POWER	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX ALLOWABLE VOLTAGE (VDC)
5	200	50 mW	3.75	0.6	10
12	500	144 mW	9	1	20
24	2150	268 mW	18	2	32

CONTACT RATING			
Contact Form	1 / 2 Form A	1 Form B	1 Form C
Max Switching Power	10 W		5 W
Max Switching Voltage	200 VDC or 140 VAC		175 VDC or 125 VAC
Max Switching Current	0.5 A		0.4 A
Max Carry Current	1.75 A		0.5 A

SPECIFICATION			
Contact Resistance	Max 100m ohm	Max 115m ohm	Max 140m ohm
Operate Time (Incl. bounce)	0.5 ms		1.5 ms
Release Time	0.5 ms		2.0 ms
Insulation Resistance	1G ohm Min (100 VDC)		1G ohm Min (100 VDC)
Dielectric Strength	Between Open Contacts 200 VDC / peak AC Between Coil to Contacts 1500 VDC / peak AC		
Capacitance (Between open contacts)	0.5 pF		0.8 pF
Vibration	20G (10~2KHz, 1.5mm)		20G (10~2KHz, 1.5mm)
Shock Resistance	30G (11ms, 1/2sin Wave)		30G (11ms, 1/2sin Wave)
Operating Temperature	-20˚ +85˚C		-20˚ +85˚C
Life Expectancy of Electrical	$1x10^8$ops (1 VDC, 10mA)		$1x10^8$ops (1 VDC, 10mA)

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COMUS Relays

Part Number: 3570 3572 3563 Series
General Purpose DIP Reed Relays
Product Data Sheet

PICTURE

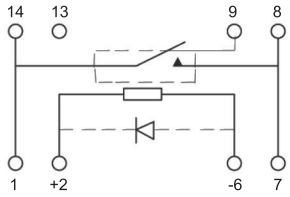
✔RoHS Compliant

FEATURES

- Industry standard, 14 pin DIP packages.
- High speed and low drive power.
- Optional diode and electrostatic shield available.
- 10 W Form A, 5 W Form C
- 5, 12 and 24 volt coils available.
- 1A, 2A and 1C contacts available.

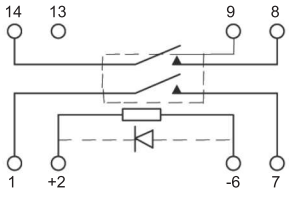
SCHEMATIC

3570.1210



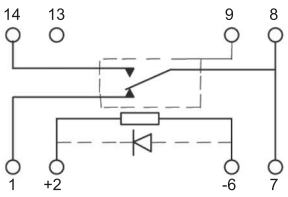
1 FORM A

3572.1220



2 FORM A

3563.1231



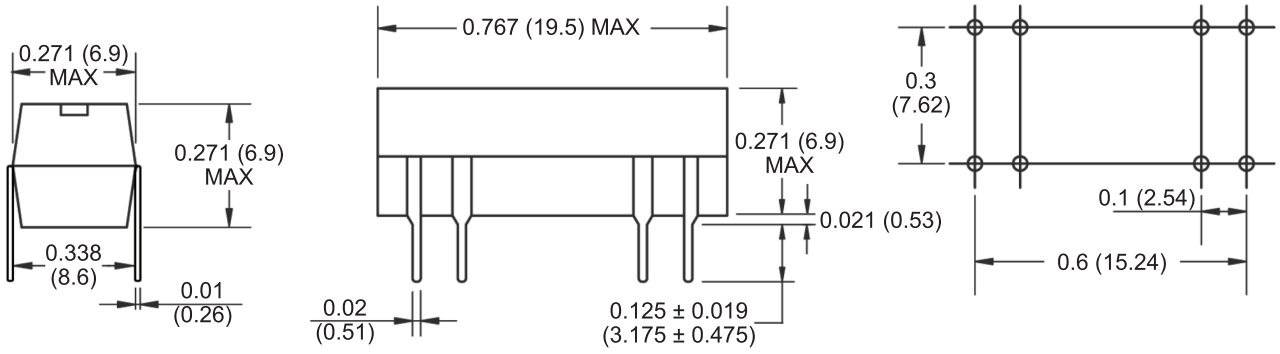
1 FORM C

ORDERING INFORMATION

Series	Coil	Options
3570.1210. (1 Form A) 3572.1220. (2 Form A) 3563.1231. (1 Form C)	05 12 24	1 = without diode 2 = electrostatic shield (pin 9) 3 = with diode (pin 2 + pin 6 -) 4 = electrostatic shield + diode

Part Number Example: 3570.1210.xxx 3570.1210.053 = 1 form A, 5 Volt Coil with diode

DIMENSIONS



Drawings not to scale.
All dimensions in inches (mm) nominal.

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COMUS Relays

Part Number: 3570 3572 3563 Series
General Purpose DIP Reed Relays
Product Data Sheet

COIL DATA-STANDARD TYPE 1 FORM A (at 20˚C)				3570.1210
NOMINAL COIL VOLTAGE (VDC)	NOMINAL COIL RESISTANCE ±10% (Ω)	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX COIL VOLTAGE (VDC)
5	500	3.75	0.6	7
12	1000	9	1	16
24	2150	18	2	32

COIL DATA-STANDARD TYPE 2 FORM A (at 20˚C)				3572.1220
NOMINAL COIL VOLTAGE (VDC)	NOMINAL COIL RESISTANCE ±10% (Ω)	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX COIL VOLTAGE (VDC)
5	140	3.75	0.6	7
12	500	9	1	16
24	2150	18	2	32

COIL DATA-STANDARD TYPE 1 FORM C (at 20˚C)				3563.1231
NOMINAL COIL VOLTAGE (VDC)	NOMINAL COIL RESISTANCE ±10% (Ω)	MAX OPERATE VOLTAGE (VDC)	MIN RELEASE VOLTAGE (VDC)	MAX COIL VOLTAGE (VDC)
5	200	3.75	0.6	7
12	500	9	1	16
24	2150	18	2	32

CONTACT RATING		
Contact Form	1 / 2 Form A	1 Form C
Max Switching Power	10 W	5 W
Max Switching Voltage	150 VDC	100 VDC
Max Switching Current	0.5 A	0.4 A
Max Carry Current	1 A	0.5 A

SPECIFICATION		
Contact Resistance (Initial)	Max 150 mΩ	Max 200 mΩ
Operate Time - including bounce (Typical)	0.5 ms	1 ms
Release Time (Typical)	0.5 ms	1.5 ms
Insulation Resistance @ 100V, 20°C, 40% RH (MIN)	10^{10} Ω	10^{9} Ω
Dielectric Strength (MIN)	Between Open Contacts 200 VDC / peak AC Between Coil to Contacts & All Other Pins 1500 VDC / peak AC	
Capacitance Between Open Contacts (Typical)	0.5 pF	1.5 pF
Vibration	20G	20G
Shock Resistance	50G	50G
Operating Temperature	-20° +85°C	-20° +85°C
Storage Temperature	-40° +100°C	-40° +100°C
Life Expectancy at Specified Load (Typical)	250 x10^{6}ops (1 VDC, 10mA)	100 x10^{6}ops (1 VDC, 10mA)

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COMUS Group

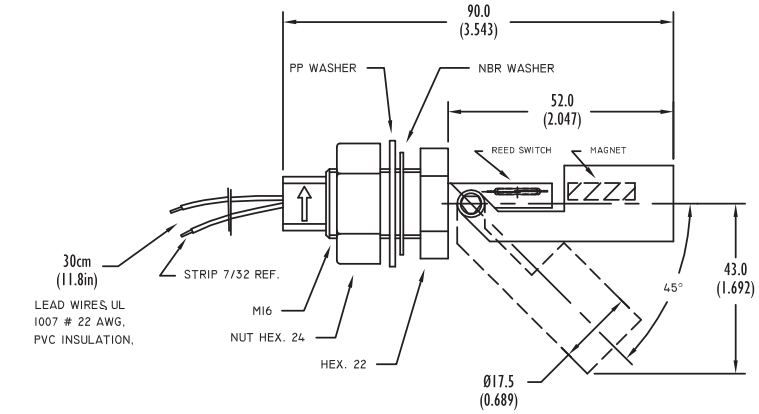
COMUS International

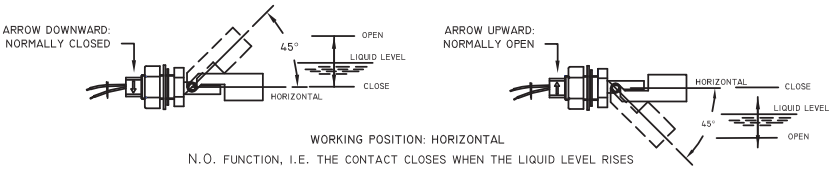
Product Data Sheet

Part Number: HFP21
Float - Reed Switch - Plastic

PICTURE

DIMENSIONS





WORKING POSITION: HORIZONTAL

N.O. FUNCTION, I.E. THE CONTACT CLOSES WHEN THE LIQUID LEVEL RISES

Drawings not to scale
All dimensions in mm(inches) nominal

SPECIFICATIONS

Contact Form		Installation Dependant
Switching Voltage	Max. V	240 Vac / 200 Vdc
Switching Current	Max. A	0.5
Carry Current	Max. A	1.0
Switching Capacity	Max. VA	50W
Contact Resistance	Max. mOhms	200
Lead Wire		XLPE AWG22
Reversible Switch Action		YES
Operating Pressure	Max. Kg/cm^2	4.0
Operating Temperature	Deg.°C	-20° +80°
Material		Polypropylene
Suitable Specific Gravity		0.75
Weight	g.	22
Mounting Hole Diameter	mm.	16.0

REV. NO.	REVISION NOTE	DATE	SIGNATURE
B	Datasheet Redesign	May 29, 2008	LG

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CERTIFIED BY STR-R ISO 9001:2000 REGISTERED COMPANY

As part of the company policy of continued product improvement, specifications may change without notice. Our sales office will be pleased to help you with the latest information on this product range and the details of our full design and manufacturing service. All products are supplied to our standard conditions of sale unless otherwise agreed in writing.

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High Insulation Reed Relays

Datasheet MDAS series

Comus International Bvba
Overhaamlaan 40
3700 Tongeren, Belgium
Phone: +32 12390400
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Email: info@comus.be
www.comus.be

Features

* *1 form A Dry Reed Relay*
* *High insulation resistance of 10^{14} ohm over open contact*
* *Electrostatic shield*
* *Relay for measurement equipment, test and control systems*
* *RoHS compliant*

Technical data

Input Data/Coil Data	Conditions				unit
Nominal voltage		5	12	24	V
Coil resistance	+/- 10 %	200	1000	4000	Ohm
Must operate / Pull in		3.5	8.4	18	V
Must release / Drop out		0.75	1	4	V
Nominal input power		125	144	144	mW

Output Data/Contact Data	Conditions		unit
Max. switching power	Max DC/PeakAC Resistive	10	W/VA
Max. switching voltage	Max DC/PeakAC Resistive	200	V
Max. switching current	Max DC/PeakAC Resistive	1	A
Max. carry current	Max DC/PeakAC Resistive	2	A
Max. contact resistance	50 mV, 10 mA	150	mOhm
Life expectancy, min	1 V, 10 mA	100 x 10^6	Ops.
Contact material		Rhodium	

Relay parameters	Conditions	MIN	TYP	MAX	UNITS
Insulation resistance	between contacts Between contact and coil at 500 V, 25°C, 40% RH	10^{14} 10^{14}			Ohms Ohms
Capacitance	Across open contacts		0.5	0.6	pF
	Open contact to coil		1.2	1.5	pF
Dielectric strength	Between contacts	400			VDC/Peak AC
	Cont. to coil / cont. to shield / coil to shield	2000			VDC/Peak AC
Operate time (bounce incl)	At nominal coil voltage, 10 Hz Sq.W.		0.3	0.5	ms
Release time	Zener-diode suppression		0.3	0.5	ms

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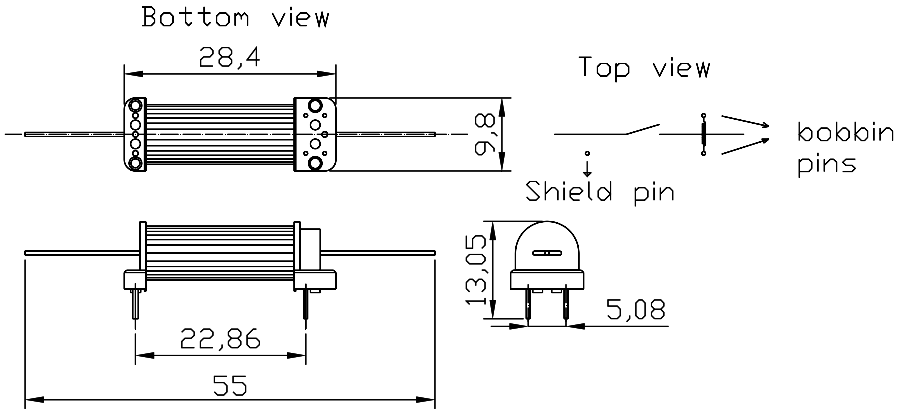
Environmental Ratings

Operating temperature		-25	85	°C
Storage temperature		-25	85	°C
Shock resistance	1/2 sine wave duration 11 ms		50	g
Vibration resistance	10 to 2000 Hz		20	g
Weight		3.2		grams
Terminal solderability	IEC 68-2-20 test Ta, method 1, solderbath temp 235°C, immersion time 2 sec			
Resistance to solder heat	IEC 68-2-20 test Tb, method 1A, solderbath temp 260°C, immersion time 10 sec			

Dimensions in mm



Ordering Information

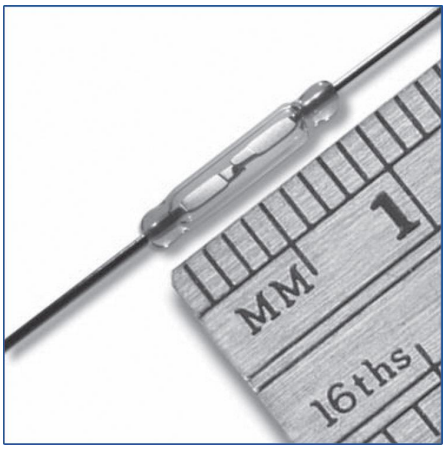
MDAS1A05
MDAS1A12
MDAS1A24

Coil voltage
Normally open contact
Relay series

COMUS Group

COMUS formerly COTO TECHNOLOGY

RI-69 Series Dry Reed Switch



RI-69 Series

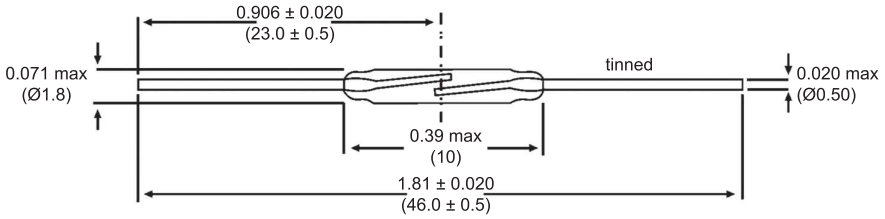
Ultra-miniature dry-reed switch hermetically sealed in a gas-filled glass envelope. Single-pole, single-throw (SPST) type, having normally open contacts, and containing two magnetically actuated reeds.

The switch is of the double-ended type and may be actuated by an electromagnet, a permanent magnet or a combination of both. The device is intended for use in relays, sensors, pulse counters or similar devices.

RI-69 Series Features

- High power switching 10 mm reed switch
- Can handle up to 20W load
- Contact layers: gold, sputtered ruthenium
- Superior glass-to-metal seal and blade alignment
- Excellent life expectancy and reliability

Dimensions for RI-69 Series



All Dimension in inches (mm) nominal

General data for all models RI-69

AT-Customization / Performed Leads

Besides the standard models, customized products can also be supplied offering the following options:
• Operate and release ranges to customer specification
• Cropped and/or performed leads

Coils

All characteristics are measured using the Philips Standard Coil. For definitions of the Philips Standard Coil, refer to *"Application Notes"* in the *Reed Switch Technical & Application Information* Section of this catalog.

Life expectancy and reliability

The life expectancy data given below are valid for a coil energized at 1.25 times the published maximum operate value for each type in the RI-69 series.

No load conditions (operating frequency: 100Hz)

Life expectancy: min. 10^9 operations with a failure rate of less than 2×10^{-10} with a confidence level of 90%.
End of life criteria:
Contact resistance > 1Ω after 2 ms
Release time > 2 ms (latching or contact sticking).

Loaded conditions (resistive load: 5 V; 100 mA; operating frequency: 125 Hz)

Life expectancy: min. 2×10^7 operations with a failure rate of less than 10^{-8} with a confidence level of 90%.
End of life criteria:
Contact resistance > 2Ω after 2.5 ms
Release time > 2.5 ms (latching or contact sticking).

Loaded conditions (resistive load: 20 V; 500 mA; operating frequency: 125 Hz)

Life expectancy: min. 2×10^7 operations with a failure rate of less than10^{-8} with a confidence level of 90%.
End of life criteria:
Contact resistance > 2Ω after 2.5 ms
Release time > 2.5 ms (latching or contact sticking).
Switching different loads involves different life expectancy and reliability data. Further information is available on request.

Mechanical Data

Contact arrangement is normally open; lead finish is

RI-69 Series Dry Reed Switch

Technical Specifications

Parameters	Test Conditions	Units	RI-69
Operating Characteristics			
Operate Range		AT	7-21
Release Range		AT	3-16
Operate Time - including Bounce (typ.)		ms	0.15 (25 AT)
Bounce Time (typ.)		ms	0.035 (25 AT)
Release Time (max)		µs	20
Resonant Frequency (typ.)		Hz	11300
Electrical Characteristics			
Switched Power (max)		W	20
Switched Voltage DC (max)		V	200
Switched Voltage AC, RMS value (max)		V	140
Switched Current DC (max)		mA	1000
Switched Current AC, RMS value (max)		mA	700
Carry Current DC (max)		mA	1000
Breakdown Voltage (min)		V	230
Contact Resistance (initial max.)		mΩ	125 (25 AT)
Contact Resistance (initial typ.)		mΩ	95 (25 AT)
Contact Capacitance (max)	without test coil	pF	0.25
Insulation Resistance (min)	RH ≤ 45%	MΩ	10^6

tinned; net mass is approximately 90mg; and can be mounted in any position.

Shock
The switches are tested in accordance with "IEC 68-2-27", test Ea (peak acceleration 100 G, half sinewave; duration 11 ms). Such a shock will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

Vibration
The switches are tested in accordance with "IEC 68-2-26", test Fc (acceleration 10G; below cross-over-frequency 57 to 62 Hz; amplitude 0.75 mm; frequency range 10 to 2000 Hz; duration 90 minutes.) Such a vibration will not cause an open switch (no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

Mechanical Strength
The robustness of the terminations is tested in accordance with "IEC 68-2-21", test Ua1 (load 40 N).

Operating and Storage Temperature
Operating ambient temperature; min: -55°C; max: +75°C. Storage temperature; min: -55°; max: +125°C. Note: Temperature excursions up to 150°C may be permissible. For more information contact your nearest Comus Group sales office.

Soldering
The switch can withstand soldering heat in accordance with "IEC 68-2-20", test Tb, method 1B: solder bath at 350 ± 10°C for 3.5 ± 0.5 s. Solderability is tested in accordance with "IEC 68-2-20" test Ta, method 3: solder globule temperature 235°C; ageing 1b: 4 hours steam.

Welding
The leads can be welded.

Mounting
The leads should not be bent closer than 1 mm to the glass-to-metal seals. Stress on the seals should be avoided Care must be taken to prevent stray magnetic fields from influencing the operating and measuring conditions.

RI-69 Series Dry Reed Switch

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