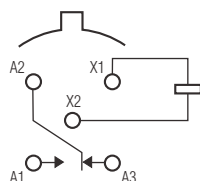


## Single Pole, Electrically Held, 1 Amp and Less

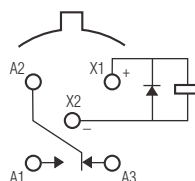
### 1MA, 1MAD, 1MADD

**1MA**  
**Standard TO-5**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/7**



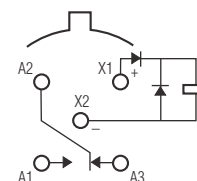
Terminal View

**1MAD**  
**Standard TO-5**  
**Diode Suppressed**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/23**



Terminal View

**1MADD**  
**Standard TO-5 Diode**  
**Suppressed/Protected**  
**High Performance Relay**  
**Qualified to**  
**MIL-R-39016/24**



Terminal View

#### Product Facts

- Hermetically sealed
- High shock & vibration ratings
- Spreader pad
- Excellent RF switching

#### Product Facts

- Suppression diode
- Hermetically sealed
- High shock & vibration ratings
- Spreader pad
- Excellent RF switching

#### Product Facts

- Suppression & protection diodes
- Hermetically sealed
- High shock & vibration ratings
- Spreader pad
- Excellent RF switching

#### Electrical Characteristics

**Contact Arrangement** —  
 1 Form C (SPDT)

**Contact Material** —  
 Stationary —  
 Gold/platinum/palladium/silver alloy  
 (gold plated)  
 Moveable —  
 Gold/platinum/palladium/silver alloy  
 (gold plated)

**Contact Resistance** —  
 Before Life — 100 milliohms max.  
 (measured @ 10 mA @ 6 Vdc)  
 After Life — 200 milliohms max.  
 (measured @ 1 A @ 28 Vdc)

**Mechanical Life Expectancy** —  
 1 million operations

**Coil Voltage** — 5 to 26.5 Vdc

**Coil Power** — 512 mW max. @ 25°C

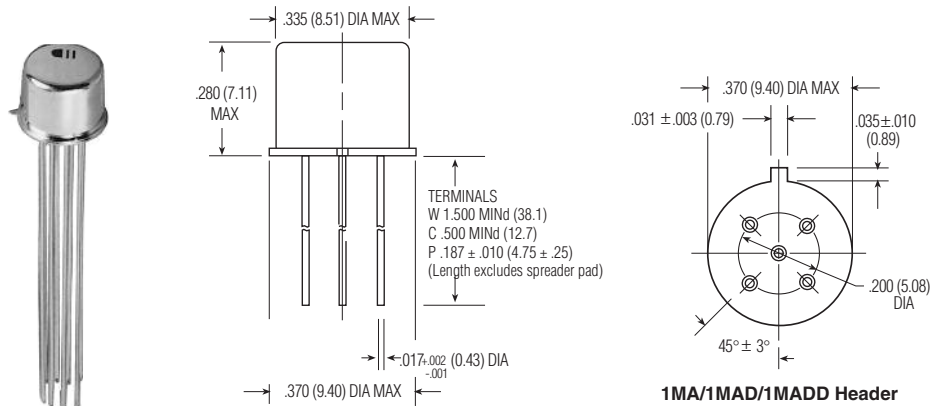
**Duty Cycle** — Continuous

**Pick-up Voltage** — Approximately  
 50% of nominal coil voltage

**Pick-up Sensitivity** —  
 100 mW max. @ 25°C

#### Contact Ratings

Contact Load	Type	Operations MINd.
1.0 A @ 28 Vdc	Resistive	100,000
250 mA @ 115 Vac, 60 Hz & 400 Hz	Resistive (case not grounded)	100,000
100 mA @ 115 Vac, 60 Hz & 400 Hz	Resistive	100,000
0.2 A @ 28 Vdc	Inductive (0.32 Henry)	100,000
0.1 A @ 28 Vdc	Lamp	100,000
30 µA @ 50 mVdc	Low Level	1,000,000
0.1 A @ 28 Vdc	Intermediate Current	50,000



1MA/1MAD/1MADD Enclosure

1MA/1MAD/1MADD Header

**Single Pole, Electrically Held, 1 Amp and Less** (Continued)

**1MA, 1MAD, 1MADD**  
(Continued)

**Operating Characteristics**

**Timing** —  
Operate Time — 2.0 ms max.  
Release Time —  
1MA — 2.0 ms max.  
1MAD/1MADD — 4.0 ms max.  
(suppression diode, suppression/  
steering diodes)

**Contact Bounce** — 1.5 ms max

**Dielectric Withstanding Voltage** —

Between Open Contacts —  
500 Vrms 60 Hz  
Between Adjacent Contacts —  
500 Vrms 60 Hz  
Between Contacts & Coil —  
500 Vrms 60 Hz

**Insulation Resistance** —

10,000 megohms @ 500 Vdc  
1,000 megohms @ 500 Vdc  
(coil to case @ +125°C)

**Environmental Characteristics**

**Temperature Range** —  
-65°C to +125°C

**Weight** —  
0.08 oz. (2.27 grms)  
0.09 oz. (2.52 grms) with spreader pad  
attached

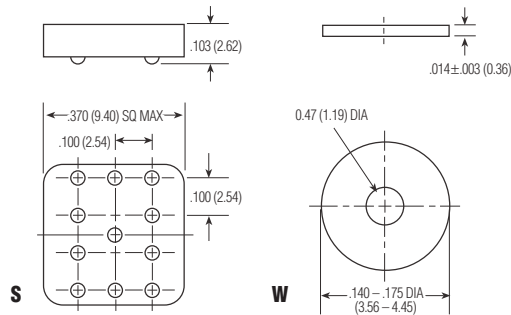
**Vibration Resistance** —  
30 G's, 10 to 3,000 Hz

**Shock Resistance** —  
75 G's, 6 ±1 ms max.

**QPL Approval** —  
MIL-R-39016/7 (J1MA)  
MIL-R-39016/23 (J1MAD)  
MIL-R-39016/24 (J1MADD)

**Semiconductor Characteristics**

**Diode** —  
100 Vdc peak inverse voltage (PIV)  
1.0 Vdc max. transient voltage



Spreader & Mounting Pads

**Coil Data**

Nom. Coil Voltage (Vdc)	Coil Resistance in Ohms ±10% @ 25°C (Note 1)	Coil Circuit Current mA (Max.) (Note 1 & 2)	Coil Circuit Current mA (Min.) (Note 1 & 2)	Pickup Voltage Vdc (Max.) @ 25°C (Note 2)	Base Turn On Current mA (Max.) @ 25°C	Pickup Voltage Vdc (Max.) @ 125°C (Note 2)	Base Turn On Current mA (Max.) @ 125°C	Drop-Out Voltage Vdc (Min.) @ 25°C (Note 2)	Drop-Out Voltage Vdc (Min.) @ -65°C (Note 2)	Nom. Coil Power (mW) @ 25°C	Max. Coil Voltage	Coil Desig.
<b>1MA/1MAD</b>												
5.0	63	n/a	n/a	2.8	n/a	3.7	n/a	0.23	0.15	397	6.0	5
6.0	125	n/a	n/a	3.5	n/a	4.5	n/a	0.28	0.18	288	8.0	6
9.0	280	n/a	n/a	5.3	n/a	6.8	n/a	0.54	0.35	289	12.0	9
12.0	500	n/a	n/a	7.0	n/a	9.0	n/a	0.63	0.40	288	16.0	12
18.0	1,130	n/a	n/a	10.5	n/a	13.5	n/a	0.91	0.58	287	24.0	18
26.5	2,000	n/a	n/a	14.2	n/a	18.0	n/a	1.37	0.89	351	32.0	26
<b>1MADD</b>												
5.0	50	100.0	72.7	3.5	n/a	4.5	n/a	0.23	0.15	500	6.0	5
6.0	98	62.4	46.3	4.1	n/a	5.5	n/a	0.28	0.18	367	8.0	6
9.0	280	33.7	25.9	6.3	n/a	7.8	n/a	0.54	0.35	289	12.0	9
12.0	500	25.6	20.0	8.0	n/a	10.0	n/a	0.63	0.40	288	16.0	12
18.0	1,130	17.2	13.6	11.6	n/a	14.5	n/a	0.91	0.58	287	24.0	18
26.5	2,000	14.4	11.5	15.4	n/a	19.0	n/a	1.37	0.89	351	32.0	26

**Notes:** 1. Coil resistance not directly measurable. Coil current should be within limits shown when tested at nominal voltage at 25°C for 5 seconds max.  
2. Set base current at 3 mA to 15 mA during measurements.

**Ordering Instructions**

Catalog-selected Relays: The catalog number is derived by choosing the proper CODE for each of the relay characteristics in the order in which the codes are listed.

**Specifying a Part Number Example\*:**

Type	Terminal	Diodes	Coils	Spreader/Mounting Pads
1MA	C	D	-26	S

\* The part number example shown on this page is for catalog items. For a list of specific QPL part numbers, please see the index in Section 15.

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