



# 100 GRID TERMINAL RELAY SENSITIVE DPDT

• Basic • Suppression • Suppression/Steering

Series  
MGSE

## Product Description

A series of ultra miniature hermetically sealed relays with .100 inch grid spaced terminations. These relays are similar to MA series TO-5 relays construction and are provided for the operation in military and/or commercial equipment and/or installations with increased mechanical and environmental requirements.

The following construction features ensure the highest reliability in extreme environments:

- All welded relay construction
- Cleaning and sealing techniques ensures maximum internal cleanliness
- Low level to 1 ampere switching
- 2 form C, DPDT contacts, special metal alloy with gold plating
- Frame design and force / mass ratio provides exceptional shock and vibration immunity

Low intercontact capacitance and contact circuit losses, provides also a reliable switching functions in demanding RF applications, combined with small size and low coil power dissipation (see figure 1).

## Series Types

- **MGSE** Basic Relay, 2 form C, DPDT
- **MGSED** Basic Relay combined with an internal diode for coil transient suppression
- **MGSEDD** Basic Relay incorporates two internal diodes for coil transient suppression and polarity reversal protection

## Environmental and Physical Specifications

<b>Temperature (Ambient)</b>	- 65°C to + 125°C
<b>Shock</b>	75 g, 6 ms., half sine wave
<b>Vibration (sinusoidal)</b>	30 g, 10 to 3000 Hz, 2,0 amplitude peak
<b>Vibration (random)</b>	0,2g <sup>2</sup> / Hz, 20 to 2000 Hz
<b>Bump</b>	40 g, 6 ms., half sine wave
<b>Sealing</b>	All welded, Hermetic
<b>Weight</b>	0,15 oz. (4,30 grams) max.
<b>Finish</b>	Case: bright tin lead plated Terminations: bright tin lead and gold plated



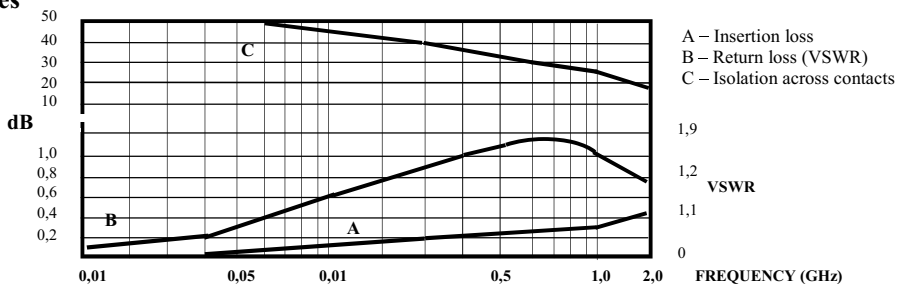
## Electrical Characteristics (over the Temperature range. Unless otherwise noted)

Coil Data	See Typical Characteristics chart		
Contact Rating	Type Load	Contact Load	Cycles min.
(Note: All ratings with grounded case)	Low Level	10 mA / 10 to 30 mV	1.000.000
	Resistive	1 A / 28 Vdc	100.000
	Inductive	200 mA / 28 Vdc (320 mH)	100.000
	Lamp	0,1 A / 28 Vdc	100.000
	Intermediate	0,1 A / 28 Vdc	50.000
	Resistive overload	2 A / 28 Vdc	100
	Inductive overload	0,4 A / 28 Vdc (320 mH)	100
<b>Contact Resistance</b>	0,1 Ω max. initial, 0,2 Ω max. after life		
<b>Operate Time</b>	4,0 ms. max.		
<b>Release Time</b>	2,5 ms. max. Series: MGSE	7,5 ms. max. Series: MGSED, MGSEDD	
<b>Contact Bounce</b>	1,5 ms. max.		
<b>Contact Stabilisation Time</b>	2,5 ms. max.		
<b>Dielectric Strength</b>	500 Vrms min., 50÷60 Hz, all points at sea level	250 Vrms min., 50÷60 Hz, all points at 25.000 mt.	
<b>Insulation Resistance</b>	10.000 MΩ min. all points at 500 Vdc		
<b>Intercontact Capacitance</b>	0,4 pF typical		
<b>Sensitivity</b>	60 mW at pick-up, 250 mW at nominal rated coil voltage, at 25 °C		
<b>Diode P.I.V.</b>	100 Vdc min. Series: MGSED, MGSEDD		
<b>Negative Coil Transient</b>	1,0 Vdc max. Series: MGSED, MGSEDD		

Figure 1 - Radio Frequency Curves

Note:

Radio frequency curves are typical characteristics based on factory knowledge. Tests to ensure compliance on RF performance, are not performed.





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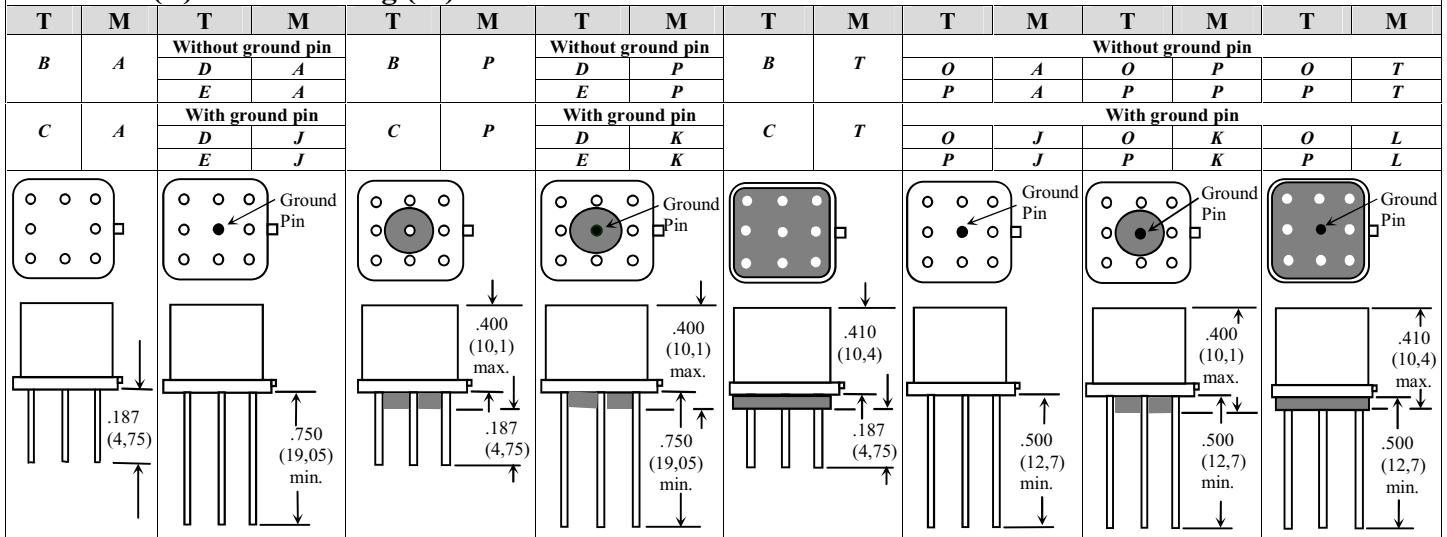
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## Typical Characteristics

Identification letter of the Coil	Coil Voltage [Vdc]		Coil resistance [Ω] ± 10% at 23°C	Must Operated Voltage [Vdc]		Release Voltage [Vdc]				Special Attributes Code No. (*)
	Rated	Max.		23°C	125°C	Max.		Min.		
						23°C	125°C	23°C	- 65°C	
A	5,0	7,5	100	2,7	3,5	1,4	2,5	0,22	0,12	0 or 1
B	6,0	10	200	3,5	4,5	2,0	3,2	0,28	0,18	0 or 1
C	9,0	15	400	5,0	6,8	3,0	4,9	0,54	0,35	0 or 1
D	12,0	20	800	7,0	9,0	4,0	6,5	0,63	0,41	0 or 1
E	18,0	30	1600	10,0	13,5	6,0	10,0	0,91	0,59	0 or 1
G	28,0	40	3200	14,2	18,0	8,0	13,0	1,4	0,89	0 or 1
A	5,0	7	64	3,0	4,0	2,3	2,8	0,8	0,6	2
B	6,0	10	125	4,0	5,0	2,5	3,0	0,9	0,7	2
C	9,0	15	400	6,1	8,0	4,0	4,5	1,0	0,8	2
D	12,0	20	800	8,0	11,0	5,0	5,8	1,3	1,0	2
E	18,0	30	1600	11,5	14,5	7,0	9,0	1,4	1,1	2
G	28,0	40	3200	15,2	19,0	10,5	13,0	1,8	1,4	2

Note: \*Without transient suppression, code "0", with transient suppression, code "1", with transient suppression and reverse polarity protection, code "2"

## Terminal (T) and Mounting (M) Variants

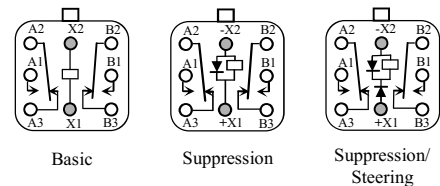


Note: Dimensions are shown in inches (millimetres)

CODE	TERMINAL
B	Pins, tinned
C	Pins, gold plated
D	Leads 19,05 mm, tinned
E	Leads 19,05 mm, gold plated
O	Leads 12,7 mm, tinned
P	Leads 12,7 mm, gold plated

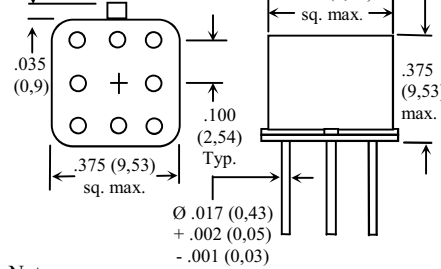
CODE	MOUNTING VARIANT
J	Ground pin
K	Ground pin with mounting pad round 0,36 mm
L	Ground pin with pad grid 2,54 mm, H = 0,8 mm
A	Without mounting hardware accessories
P	Mounting pad round, H = 0,36 mm
T	Pad grid 2,54 mm, H = 0,8 mm

## Schematic Diagrams



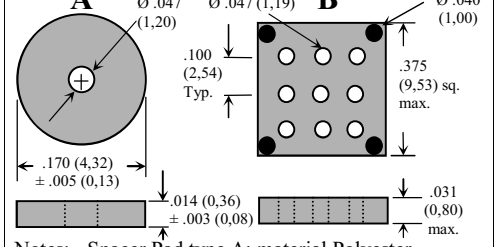
Notes:  
- Schematics are viewed from terminals  
- Diagram references are not marked on the relay

## Outline Dimensions



Note: Dimensions are shown in inches (millimetres)

## Spacer Pads



Notes: - Spacer Pad type A: material Polyester  
- Spacer Pad type B: Diallyl Phthalate  
- Dimensions are shown in inches (millimetres)

## Failure rate level

Code	Failures per 1 million cycles
E3	3
E5	1
E6	0,1
E7	0,01

## How to Order

CECC 16207- 802 A B P 1 Y E5

CECC number	Failure rate level (Identification code)
Type Code (CECC registration No.)	Assessment level
Coil Voltage (Identification letter)	Special attributes (Identification No. code)
Terminals (Identification letter)	Mounting (Identification letter)