



100 GRID TERMINAL RELAY DPDT

• Basic • Suppression • Suppression/Steering

Series
MGAE

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

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

Environmental and Physical Specifications

Temperature (Ambient)	- 65°C to + 125°C
Shock	75 g, 6 ms., half sine wave
Vibration (sinusoidal)	30 g, 10 to 3000 Hz, 2,0 amplitude peak
Vibration (random)	0,2g ² / Hz, 20 to 2000 Hz
Bump	40 g, 6 ms., half sine wave
Sealing	All welded, Hermetic
Weight	0,09 oz. (2,55 grams) max.
Finish	Case: bright tin lead plated Terminations: bright tin lead and gold plated



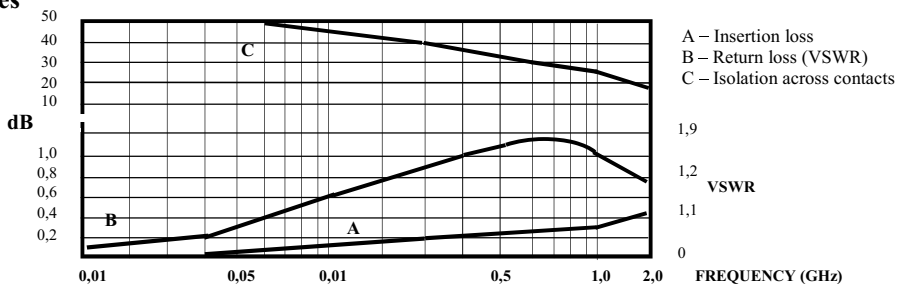
Electrical Characteristics (over the Temperature range. Unless otherwise noted)

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
Contact Resistance	0,1 Ω max. initial, 0,2 Ω max. after life		
Operate Time	2,0 ms. max.		
Release Time	1,5 ms. max. Series: MGAE	4,0 ms. max. Series: MGAED, MGAEDD	
Contact Bounce	1,5 ms. max.		
Contact Stabilisation Time	2,5 ms. max.		
Dielectric Strength	500 Vrms min., 50÷60 Hz, all points at sea level	250 Vrms min., 50÷60 Hz, all points at 25.000 mt.	
Insulation Resistance	10.000 MΩ min. all points at 500 Vdc		
Intercontact Capacitance	0,4 pF typical		
Sensitivity	140 mW at pick-up, 500 mW at nominal rated coil voltage, at 25 °C		
Diode P.I.V.	100 Vdc min. Series: MGAED, MGAEDD		
Negative Coil Transient	1,0 Vdc max. Series: MGAED, MGAEDD		

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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Typical Characteristics

Identification letter of the Coil	Coil Voltage Vdc		Coil resistance Ω $\pm 10\%$ 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	5,8	50	2,7	3,5	1,4	2,3	0,22	0,14	0 or 1
B	6,0	8,0	98	3,5	4,5	2,0	3,2	0,28	0,18	0 or 1
C	9,0	12,0	220	5,3	6,8	3,0	4,9	0,54	0,35	0 or 1
D	12,0	16,0	390	7,0	9,0	4,0	6,5	0,63	0,41	0 or 1
E	18,0	24,0	880	10,5	13,5	6,0	10,0	0,91	0,59	0 or 1
G	28,0	32,0	1560	14,2	18,0	8,0	13,0	1,37	0,89	0 or 1
A	5,0	5,8	39	3,2	4,0	2,3	2,8	0,6	0,6	2
B	6,0	8,0	78	4,0	5,0	2,8	3,4	0,7	0,7	2
C	9,0	12,0	220	6,3	7,8	4,2	5,3	0,9	0,8	2
D	12,0	16,0	390	8,0	10,0	5,2	6,5	1,1	0,9	2
E	18,0	24,0	880	11,5	14,5	7,3	10,0	1,4	1,1	2
G	28,0	32,0	1560	15,2	19,0	9,5	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

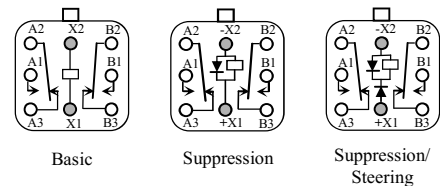
T	M	T	M	T	M	T	M	T	M	T	M	T	M
B	A	Without ground pin		B	P	Without ground pin		B	T	Without ground pin			
		D	A			D	P			O	A	O	P
C	A	With ground pin		C	P	With ground pin		C	T	With ground pin			
		D	J			D	K			O	J	O	K

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

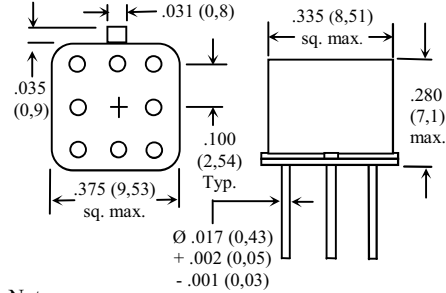
CODE	MOUNTING VARIANT
J	Ground pin
K	Ground pin with mounting pad round 0,36 mm
L	Ground pin with pad grid 2,54 mm, H = 0,8 mm
A	Without mounting hardware accessories
P	Mounting pad round, H = 0,36 mm
T	Pad grid 2,54 mm, H = 0,8 mm

Schematic Diagrams



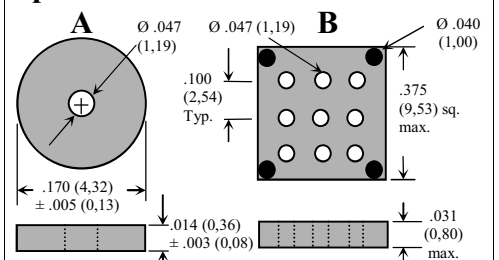
Notes:
- Schematics are viewed from terminals
- Diagram references are not marked on the relay

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- 801 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)