



IM series

DPDT Slimline and Low Profile Telecom/Signal PC Board Relays

File E111441

File 169679-1079886

16501-003

Users should thoroughly review the technical data before selecting a product part number. It is recommended that users also seek out the pertinent approvals files of the agencies/laboratories and review them to ensure the product meets the requirements for a given application.

Features

- Through hole or surface mount terminals.
- Meets Bellcore GR 1089, FCC Part 68 and ITU-T K20.
- For applications in telecommunications, office automation, consumer electronics, medical equipment, measurement and control equipment.
- Immersion cleanable, plastic sealed case.
- 100mW coil for latching models, 140mW coil for non-latching.
- Ultrasonic cleaning not recommended.

Contact Data @ 23°C (except as noted)

Arrangement: 2 Form C (DPDT) bifurcated contacts.

Material: Stationary: Palladium-Ruthenium, gold covered.

Ratings: Max. Switched Current: 2A.

Max. Carry Current: 2A (at max ambient temperature).

Max. Switched Voltage: 220VDC, 250VAC.

Max. Switched Power: 60W DC or 62.5VA AC.

UL/CSA Ratings: 250mA @ 250VAC; 2A @ 30VDC;
500mA @ 120VDC; 270mA @ 220VDC.

Initial Contact Resistance: <70 milliohms @ 10mA / 20mV.

Expected Mechanical Life: 100 million operations.

Expected Electrical Life: 2.5 million operations @ 10mA / 30mVDC.
2 million operations @ cable load open end.
500,000 operations @ 240mA / 125VDC, res.
500,000 operations @ 1A / 30VDC, res.
100,000 operations @ 270mA / 220VDC, res.
100,000 operations @ 2A / 30VDC, res.
100,000 operations @ 250mA / 250VDC, res.

Thermoelectric potential: <10µV.

High Frequency Data

Capacitance: Between Open Contacts: 1pF, max.

Between Coil and Contacts: 2pF, max.

Between Poles: 2pF, max.

RF Characteristics: Isolation at 100 / 900 MHz: -37.0 db / -18.8 db.
Insertion loss at 100 / 900 MHz: -0.03 db / -0.33 db.
V. S. W. R. at 100 / 900 MHz: 1.06 / 1.49 .

Initial Dielectric Strength

Between Open Contacts: 1,000Vrms for 1 minute.

Between Coil and Contacts: 1,800Vrms for 1 minute.

Between Poles: 1,000Vrms for 1 minute.

Surge Voltage Resistance per Bellcore 1089 (2 / 10 µs),

FCC 68 (10 / 160 µs) and IEC (10 / 700 µs):

Between Open Contacts: 1,500V.

Between Coil and Contacts: 2,500V.

Between Poles: 1,500V.

Initial Insulation Resistance

Between Contact and Coil: 10⁹ ohms or more @ 500VDC.

Coil Data @ 23°C

Voltage: 1.5 to 24VDC.

Nominal Power: 100mW for 1.5 - 12VDC latching models;
140mW for 1.5 - 12VDC non-latching models;
200mW for all 24VDC models.

Duty Cycle: Continuous.

Coil Data @ 23°C

Nominal Voltage (VDC)	Operate/Set Range		Minimum Release/Reset Voltage (VDC)	Resistance ±10% (Ohms)	Part Number
	Minimum Voltage (VDC)	Maximum Voltage (VDC)			
Non-latching 1 coil versions					
1.5	1.13	3.4	0.15	16	IM00
3	2.1	6.8	0.3	64	IM01
4.5	3.15	10.3	0.45	145	IM02
5	3.5	11.4	0.5	178	IM03
6	4.2	13.7	0.6	257	IM04
9	6.3	20.4	0.9	574	IM05
12	8.4	27.3	1.2	1,028	IM06
24	16.8	45.6	2.4	2,880	IM07
Latching 1 coil versions					
1.5	1.13	4.1	-1.13	23	IM40
3	2.25	8.1	-2.25	90	IM41
4.5	3.38	12.1	-3.38	203	IM42
5	3.75	13.5	-3.75	250	IM43
6	4.5	16.2	-4.5	360	IM44
9	6.75	24.2	-6.75	810	IM45
12	9.0	32.3	-9.0	1,440	IM46
24	18.0	41.9	-18.0	2,880	IM47

Operate Data @ 23°C

Operate and Release Voltage: See values in chart above.

Operate Time (at nominal voltage): 1 ms, typ.; 3 ms, max.

Reset Time [latching](at nominal voltage): 1 ms, typ.; 3 ms, max.

Release Time [non-latching](without diode in parallel): 1 ms, typ.; 3 ms, max.

Release Time [non-latching](with diode in parallel): 3 ms, typ.; 5 ms, max.

Bounce Time (at contact close): 1 ms, typ.; 5 ms, max.

Maximum Switching Rate (no load): 50 operations/s.

Environmental Data

Temperature Range: -55°C to +85°C.

Maximum Allowable Coil Temperature: 125°C.

Thermal Resistance: < 150K/W.

Shock, half sinus, 11 ms: Functional: 50g.

Shock, half sinus, 0.5 ms: Destructive: 500g.

Vibration, 10-1000 Hz.: Functional: 20g.

Needle Flame Test: Application Time 20s.

Resistance to Soldering: 260°C for 10s.

Mechanical Data

Termination: Through-hole printed circuit terminals or gull-wing or J-leg surface mount printed circuit terminals.

Mounting Position: Any.

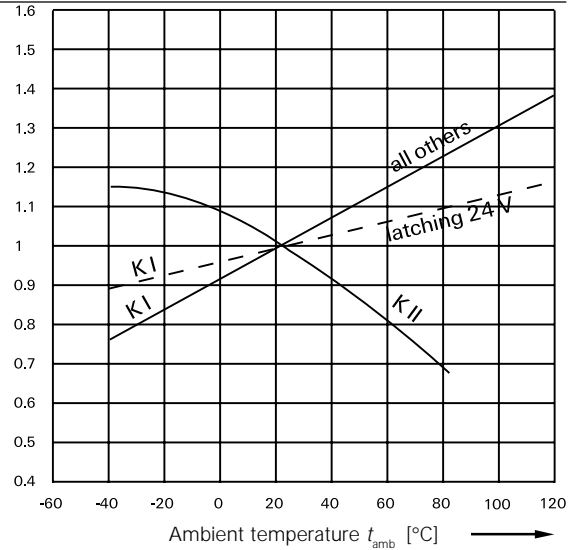
Enclosure Type: Immersion cleanable (IP67) plastic case.

Weight: 0.03 oz. (.75g) approximately.

U_I = Minimum voltage at 23° C after pre-energizing with nominal voltage without contact current
 U_{II} = Maximum continuous voltage at 23°

The operating voltage limits U_I and U_{II} depend on the temperature according to the formula:

$U_{I \text{ t amb}} = K_I \cdot U_{I \text{ 23° C}}$
 and
 $U_{II \text{ t amb}} = K_{II} \cdot U_{II \text{ 23° C}}$
 t_{amb} = Ambient temperature
 $U_{I \text{ t amb}}$ = Minimum voltage at ambient temperature, t_{amb}
 $U_{II \text{ t amb}}$ = Maximum voltage at ambient temperature, t_{amb}
 K_I, K_{II} = Factors (dependent on temperature), see diagram



Ordering Information

See "Part Number" column in Coil Data chart on previous page for available base part numbers in the IM series.
 For THT versions, add the suffix "TS" to the base part number.
 For gull-wing SMT versions, add the suffix "GR" to the base part number.
 For J-leg SMT versions, add the suffix "JR" to the base part number.

Packaging Information

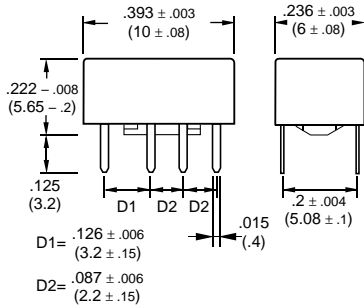
THT IM series relays are shipped in tubes of 50. There are 1,000 relays in a full carton. SMT IM series relays are shipped in reels of 1,000. There are 1,000 or 5,000 relays in a full carton.

Our authorized distributors are more likely to stock the following items for immediate delivery.

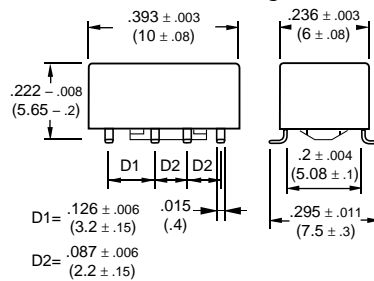
None at present.

Outline Dimensions

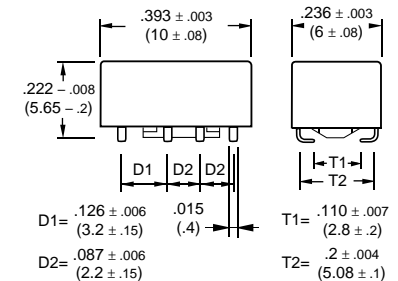
THT Version



SMT Version w/ Gull Wings

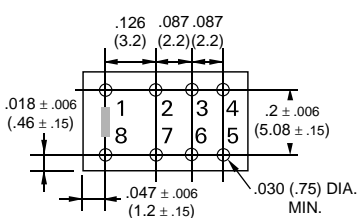


SMT Version w/ J Legs



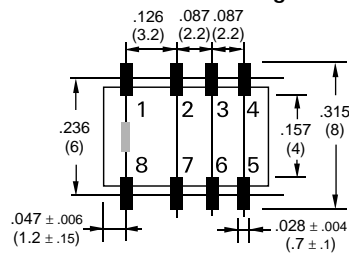
PC Board Layout (Bottom View)

THT Version

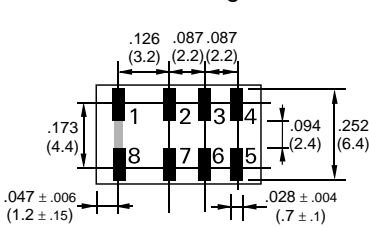


Solder Pad Layout (Bottom Views)

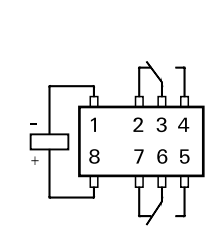
SMT Version w/ Gull Wings



SMT Version w/ J Legs

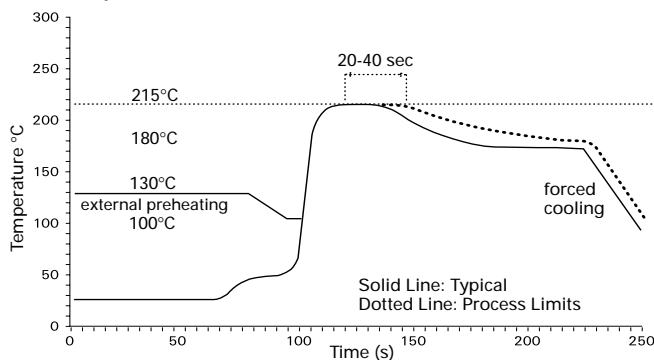


Wiring Diagram (Bottom View)



Recommended Soldering Conditions (according to CECC 00802)

Vapor Phase Soldering: Temperature/Time Profile (Lead Temperature)



Infrared Soldering: Temperature/Time Profile (Lead Temperature)

