

# TELEDYNE SOLID STATE

## MILITARY SOLID STATE RELAY OPTICALLY ISOLATED 600 mA, 50 Vdc

**MODEL**  
**683-1**  
**(M28750/8)**

**SPST/NO**

### FEATURES

- Optical Isolation- Isolates control elements from load transients
- Fully Floating Output- Eliminates ground loops and allows the output to sink or source current
- Current Limited Control- Minimizes power dissipation over a wide control voltage range
- Qualified to MIL-R-28750- JAN branding ensures quality and availability

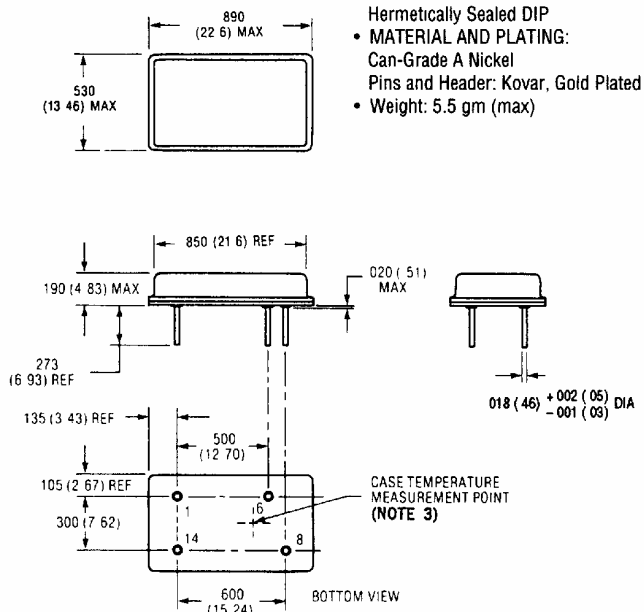
### DESCRIPTION

This solid state relay is designed for use in dc switching applications. The output is rated at 600mA at 50 Vdc with an offstate leakage of .03  $\mu$ A. The input circuit features a constant current IC to limit input power dissipation and to allow a wide control voltage range. Optical isolation allows safe control of dc loads from low level logic circuits. The low profile metal DIP package is hermetically sealed to withstand severe environmental conditions encountered in military and aerospace applications. This relay is qualified to MIL-R-28750/8-001 and is available in W and Y screening levels.

PART NUMBER*	MILITARY NUMBER*	RELAY TYPE
683-1W	M28750/8-001W	DC SOLID STATE RELAY
683-1Y	M28250/8-001Y	RELAY

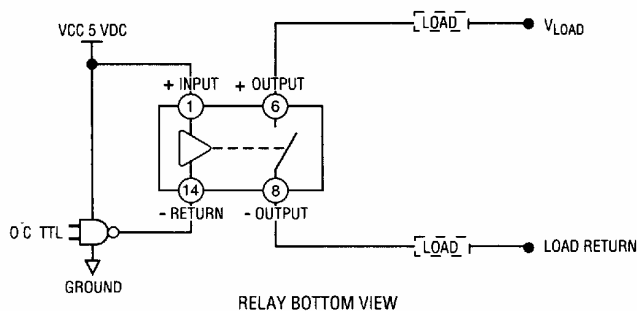
\*The W or Y suffix denotes the screening level of MIL-R-28750.

### OUTLINE DIMENSIONS



- CASE: Hermetically Sealed DIP
- MATERIAL AND PLATING: Can-Grade A Nickel
- Pins and Header: Kovar, Gold Plated
- Weight: 5.5 gm (max)

### WIRING DIAGRAM TYPICAL INTERFACE TO 5 VOLT LOGIC



**MODEL 683-1**

**ELECTRICAL SPECIFICATIONS  
(-55°C to +110°C UNLESS OTHERWISE SPECIFIED)**

INPUT (CONTROL) SPECIFICATIONS	MIN	TYP	MAX	UNITS
Input Current at: _____ 5 VDC (Current Limited, See Fig. 1) 16VDC		10 15	15 20	mAdc
Turn-On Voltage	3			Vdc
Turn-Off Voltage			1.0	Vdc
Input Supply Range	3		16	Vdc
OUTPUT (LOAD) SPECIFICATIONS	MIN	TYP	MAX	UNITS
Continuous Load Current (See Fig. 3 & 4)	0		600	mA
Leakage current at 35V	25°C	.03		µA
	110°C	.30		µA
Output Voltage Drop (See Fig. 2)		1.25	1.4	Vdc
Continuous Operating Load Voltage	2		50	Vdc
Turn-On Time ( $V_L = 25V, R_L = 250\Omega, V_{IN} = 5V$ )		15	50	µs
Turn-Off Time ( $V_L = 25V, R_L = 250\Omega, V_{IN} = 5V$ )		20	150	µs
Output Capacitance	50	75		pF
Input to Output Capacitance		5		pF
Dielectric Strength	500			VAC RMS 50 Hz SINE WAVE
Insulation Resistance @ 500 Vdc	.10 <sup>9</sup>			OHMS
Output Junction Temperature ( $T_J$ Max.)			150	°C
Thermal Resistance Junction To Ambient ( $\theta_{JA}$ )			115	°C/W
Thermal Resistance Junction To Ambient ( $\theta_{JA}$ )			35	°C/W

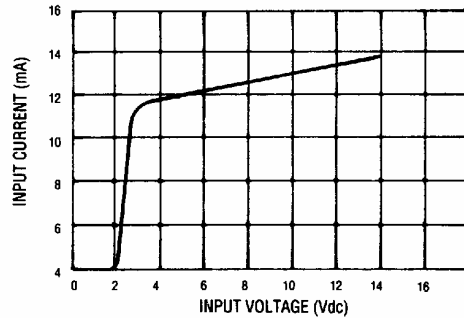
**ENVIRONMENTAL SPECIFICATIONS\***

Ambient Temperature	-55°C to 110°C Operating -55°C to 125°C Storage
Shock	1500 g, 0.5 ms
Vibration	100g, 10-3000 Hz
Acceleration Y1 Axis Only	5000 g

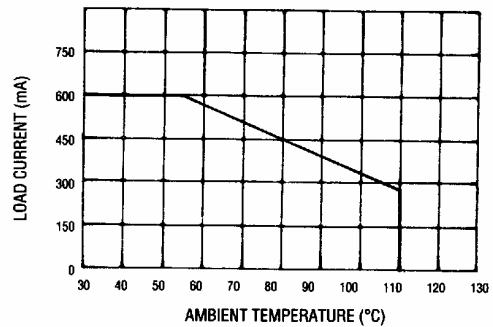
\*Contact factory for higher level environmental requirements.

**NOTES:**

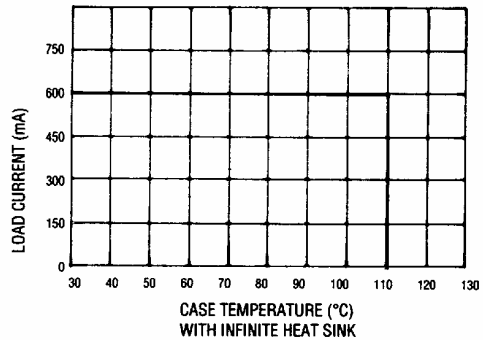
1. Reversing polarity of input or output may cause permanent damage.
2. Inductive loads must be diode suppressed
3. Case temperature is measured at point specified.
4. Test condition  $V_L = 25V, R_L = 250\Omega, V_{IN} = 5 Vdc$



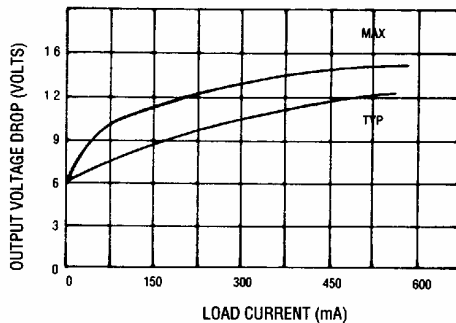
**FIGURE 1 - TYPICAL INPUT CURRENT VS. INPUT VOLTAGE**



**FIGURE 2- MAX. LOAD CURRENT VS. AMBIENT TEMPERATURE**



**FIGURE 3 - MAX. LOAD CURRENT VS. CASE TEMPERATURE  
(SEE NOTE 3)**



**FIGURE 4 - LOAD CURRENT VS. OUTPUT VOLTAGE DROP**