TELEDYNE RELAYS
A Unit of Teledyne Electronic Technologies

Series 682

1A, 250 Vrms Optically Isolated
AC Solid-State Relay

Part* Number	Mil Spec Number	Relay Description
682-1Y	M28750/9-001	1A, 250 Vrms, AC Solid-State Relay (2A with Heatsink)

* The Y suffix denotes parameters tested to MIL-PRF-28750 test methods.
The W suffix denotes parameters tested to Teledyne specifications.

ELECTRICAL SPECIFICATIONS

(-55°C TO +110°C UNLESS OTHERWISE SPECIFIED)

INPUT (CONTROL) SPECIFICATIONS

	Min	Max	Units
Input Current (See Figure 1)			
V_{IN} = 5 Vdc		15	mAdc
V_{IN}=32 Vdc		16	mAdc
Turn-Off Voltage (Guaranteed Off)		1.5	Vdc
Turn-On Voltage (Guaranteed On)	3.8		Vdc
Reverse Voltage Protection		-32	Vdc
Input Voltage Range	3.8	32	Vdc

OUTPUT (LOAD) SPECIFICATIONS

		Min	Max	Units
Output Current Rating (See Figure 3)		0.2	2.0	Arms
Output Voltage Rating		20	250	Vrms
Frequency Range		40	440	Hz
Output Voltage Drop @ 1 Amp (See Figure 4)	@ -55 °C		1.8	Vrms
	@ 25 °C		1.6	Vrms
	@ 110 °C		1.5	Vrms
Off-State Leakage Current (250 Vac, 400 Hz)			1.0	mArms
Turn-On Time			1/2	Cycle
Turn-Off Time			1	Cycle
Transient Voltage (T < 5 s)			±500	Vpk
Surge Current @ 25° C (16 ms) (See Figure 2)			8	Apk
Overload (Repetitive, 10% Duty Cycle)			1.5	Arms
Zero Voltage Turn-On Point at 25° C			±15	Vpk
Off-State dv/dt (with Snubber - See Note 2)		200		V/µs
Load Power Factor (See note 3)		0.2	1	
Insulation Resistance @ 500 Vdc		10^9		Ohm
Isolation (Input to Output)			10	pF
Dielectric Withstanding Voltage		1500		Vac



FEATURES

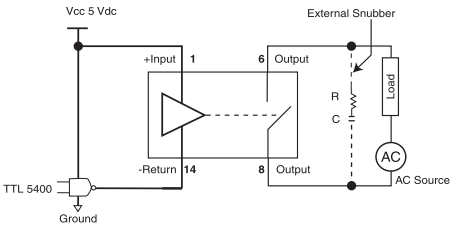
- Relay Qualified to MIL-PRF-28750
- Zero voltage turn-on SCR output
- Optical isolation
- Logic compatible input
- Low minimum output current
- Extremely low EMI
- Low profile metal DIP package

DESCRIPTION

This state-of-the-art solid-state relay is designed for use in AC power switching applications. The output is rated for 1A at 250 Vrms and can operate from 40 to 440 Hz for resistive and reactive loads with power factors as low as 0.2. Back-to-back SCRs are configured for zero voltage turn-on and can handle current surges up to 8A. The patented circuit design assures the lowest possible EMI by virtually eliminating commutation spikes while maintaining excellent noise immunity. Optical isolation allows safe control of AC 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-PRF-28750/9-001 and is available to Y screening levels.

WIRING DIAGRAM

TYPICAL INTERFACE TO 5 VOLT LOGIC
(WITH SUGGESTED dv/dt SUPPRESSION - SEE NOTE 2)



SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE © 2002 TELEDYNE RELAYS

OUTPUT (LOAD) SPECIFICATIONS

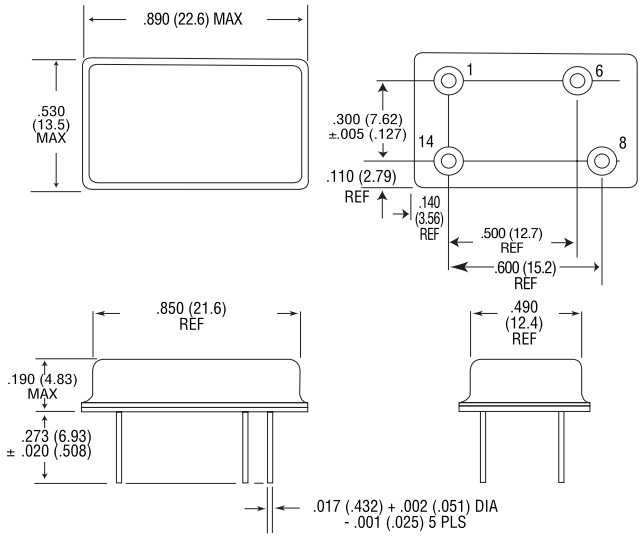
	Min	Max	Units
Junction Temperature (T_J Max)		130	°C
Thermal Resistance Junction to Ambient (θ_{JA})		65	°C/W
Thermal Resistance Junction to Case (θ_{JC})		15	°C/W

ENVIRONMENTAL SPECIFICATIONS

	Min	Max	Units
Ambient Temperature			
Operating	-55	+110	°C
Storage	-55	+125	°C
Shock (0.5 ms)		1500	g
Vibration, 20g	10	2000	Hz
Acceleration		5000	g

* Contact Factory for Higher level enviromental requirements

MECHANICAL SPECIFICATIONS

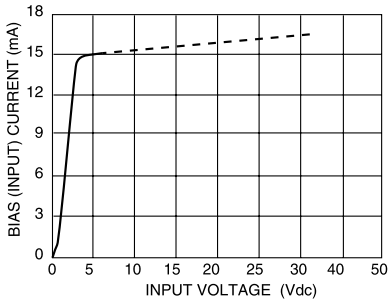


- **Weight:** 6 grams (Max.)
- **Case:** Hermetically sealed 4 Pin DIP
- **Material and Plating:**
  Pins and Header:Kovar gold plated per MIL G-45204
  Type III, Grade A, Class 1

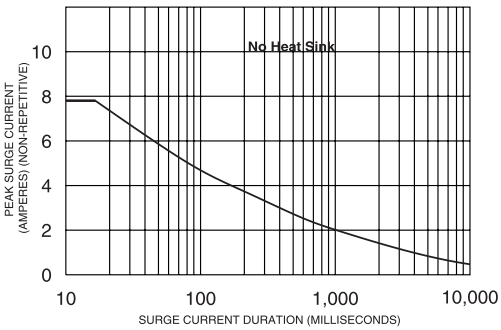
DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)

NOTES:

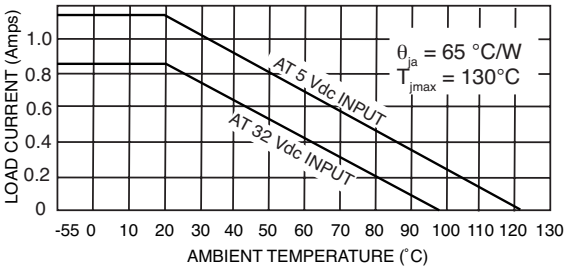
1. Case temperature is measured at point specified.
2. The dv/dt is 200 V/μs with recommended snubber across output terminals R= 100 ohm, 1/2 W, C=0.01 μf (600V). The dv/dt rating is based on a source impedance of 50 ohms.
3. Output may lose blocking capability during and after surge until T_J falls below maximum.
4. Contact factory for additional specifications.



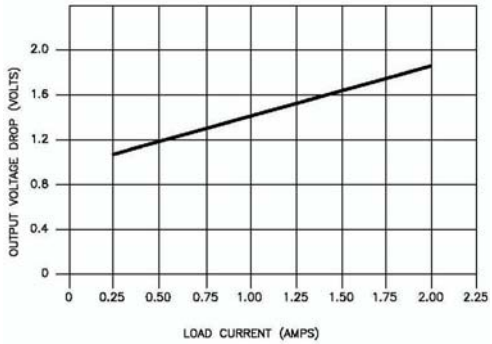
TYPICAL INPUT CURRENT VS INPUT VOLTAGE
FIGURE 1



PEAK SURGE CURRENT VS SURGE CURRENT DURATION
FIGURE 2 (SEE NOTE 3)



MAXIMUM LOAD CURRENT VS. AMBIENT TEMPERATURE
FIGURE 3



LOAD CURRENT VS. TYPICAL OUTPUT VOLTAGE DROP
FIGURE 4

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