

Part Number* Relay Description

SR75-3 Solid-State Relay with Terminals for Through-Hole Mount

SR75-3S Solid-State Relay with Terminals for Surface Mount

* A 'W' or 'T' suffix denoting the S^W Teledyne reliability screening level, must be added to the part number.

ELECTRICAL SPECIFICATIONS

(-55°C TO 105°C, Ambient Temperature, Unless Otherwise Specified)

INPUT SPECIFICATIONS

	Min	Max	Units
Voltage Range (See Note 2)	3.8	32.0	Vdc
Input Current @ 5 Vdc (See Figure 2)		11.0	mA
Must Turn-On Voltage (See Note 3)	3.8		Vdc
Must Turn-Off Voltage		1.5	Vdc
Reverse Voltage Protection		-32.0	Vdc

OUTPUT (LOAD) SPECIFICATION

	Min	Max	Units
Load Voltage Rating		400	Vdc
Transient Blocking Voltage (See Note 5)		500	Vdc
Output Current Rating (See Figure 4)		0.5	Adc
On Resistance (See Figure 3) @ 25°C		2.4	Ohm
Leakage Current at Rated Voltage		100	µA
Turn-On Time		2.5	ms
Turn-Off Time		0.5	ms
dV/dt @ 400 V (See Note 5)		100	V/µs
Electrical System Spike (See Note 5)		± 600	Vpk
Output Capacitance @ 25 Vdc (See Note 5)		80	pF
Input to Output Capacitance at 1 KHz (See Note 5)		5	pF
Dielectric Strength (See Note 5)	1000		Vrms
Insulation Resistance @ 500 Vdc (See Note 5)	10 ⁸		Ohm
Junction Temperature		130	°C
Thermal Resistance Junction to Ambient		90	°C/W
Solderability (10 sec)		260	°C



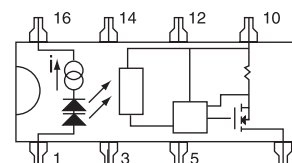
FEATURES/BENEFITS

- Short-Circuit Protected: Prevents damage to system components, assemblies and system wiring
- Designed for AC application using a bridge rectifier.
- Optical Isolation: Isolates control circuits from load transients eliminates ground loops and signal ground noise
- Low Off-State Leakage
- Switches High Voltages: To 400 Vdc
- Switches High Currents: To 0.5 Adc
- High Noise Immunity: Control signals isolated from switching noise
- High Dielectric Strength: For safety and for protection of control and signal level circuits

DESCRIPTION

The SR75-3 solid-state relay utilizes a power FET switch that is protected against overload and short-circuit currents. The short-circuit protection feature not only provides protection should a short or overload occur while the relay is on, but will also provide protection should the relay be switched into a short. Once the protection trips the relay off it will remain off until reset by cycling the input line. Using the SR75-3 to switch power sources and loads prevents damage to system assemblies and system wiring. The power FET output offers low "ON" resistance and can switch loads in either the high or the low side of the power line. The SR75-3 is packaged in a 16-pin DIP package with either surface mount or through-hole mounting available.

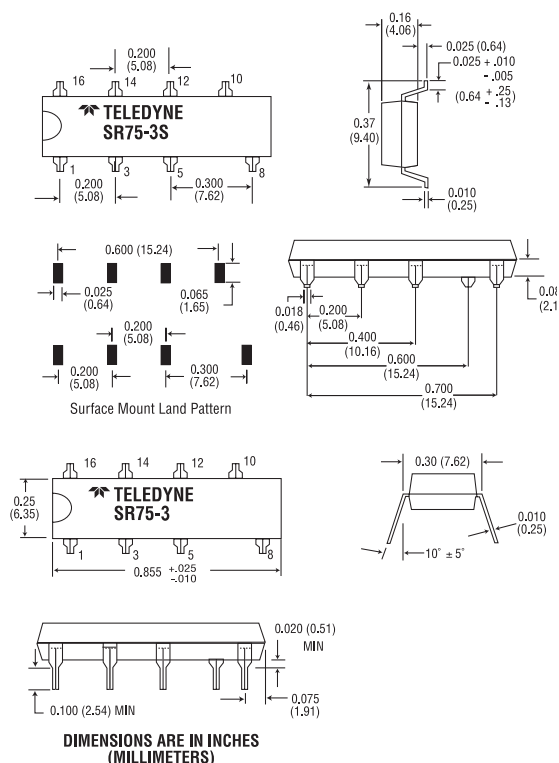
BLOCK DIAGRAM



OUTPUT (LOAD) SPECIFICATION

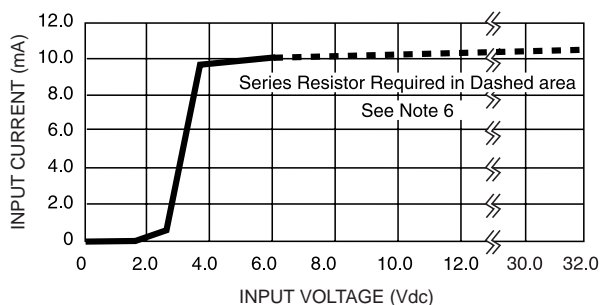
	Min	Max	Units
Load Capacitance C_{Load}		0.33	μF
Trip Time (See Figure 6)			
Turn-on into a Shorted Load (Note 8)		1.0	msec
Short Load with Relay On (Note 8)		100	μsec

MECHANICAL SPECIFICATIONS



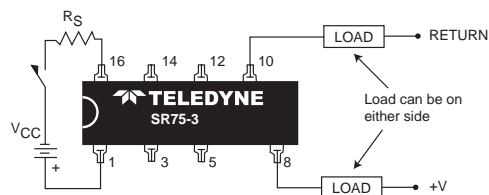
- Operating Temperature Range -55°C to 105°C
- Storage Temperature Range -55°C to 125°C
- Weight: 2.0 grams maximum
- Case: 16 pin Dual-In-Line (TO-116)
- Case Material: Filled Epoxy, self extinguishing

FIGURE 1

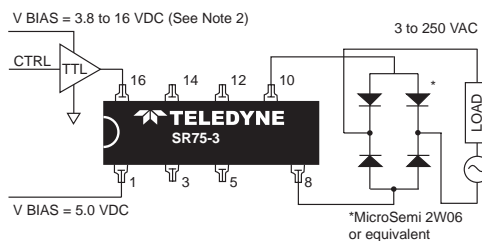


CONTROL CURRENT VS VOLTAGE
FIGURE 2

WIRING CONFIGURATIONS

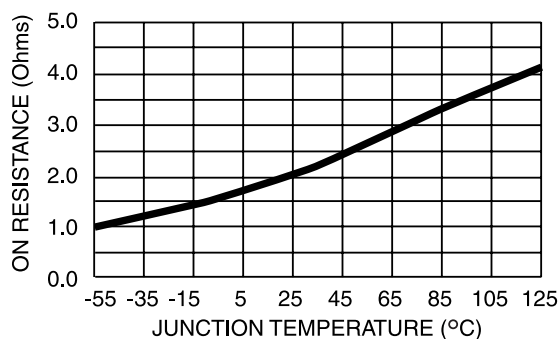


TYPICAL WIRING FOR DC APPLICATION

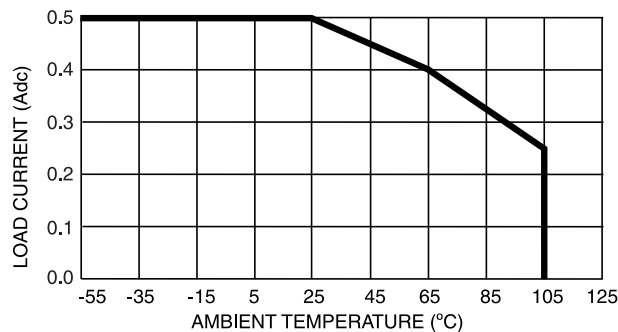


TYPICAL WIRING FOR AC APPLICATION
Pins 3, 5, 12 and 14 No Connection

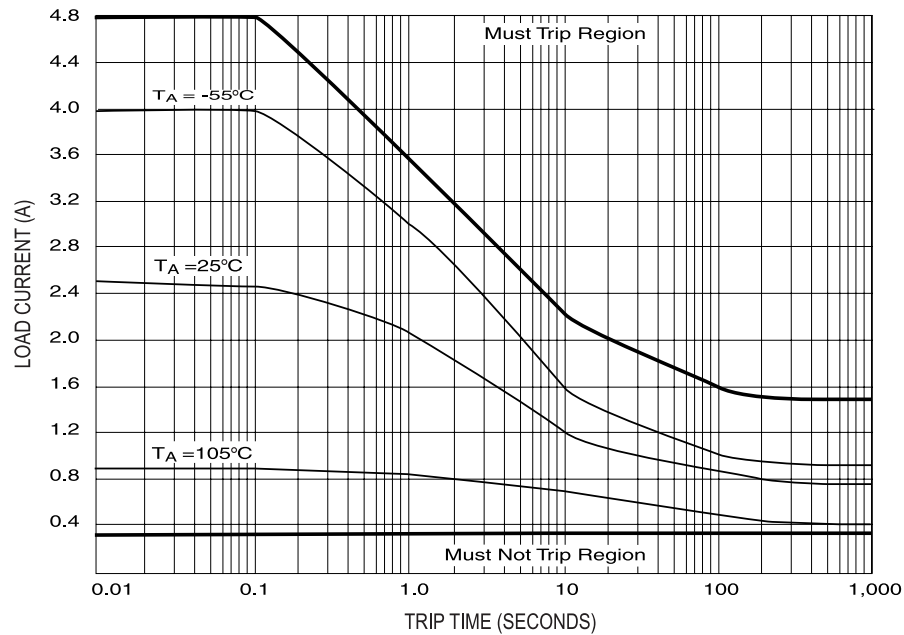
FIGURE 5



TYPICAL ON RESISTANCE VS JUNCTION
TEMPERATURE
FIGURE 3



LOAD CURRENT DERATING CURVE
FIGURE 4



TRIP CURRENT VS TIME
FIGURE 6

NOTES:

- 1 Unless otherwise specified, the following conditions shall apply for conformance testing:
 - Input Voltage = 5.0 Vdc for "on-state" and 0 Vdc for the "off-state"
 - Load Voltage = 350 Vdc
 - Load Current = 0.50 Adc at 25°C and -55°C ;
= 0.25 Adc at 105°C
- 2 For Input Voltage greater than 16.0 Vdc, a series resistor must be used to limit the power dissipation on the input of the relay. The resistor value should be selected using the following equation:

$$R = (V_{\text{Bias}} - 16 \text{ volts}) / 11 \text{ mA}$$
- 3 The Input transitions should be less than 1.0 msec duration.
- 4 Inductive loads must be diode suppresses.
- 5 At $+25^\circ\text{C}$ ambient.
- 6 System inductance must be less than 50 μH . (The residual inductance at the relay output with the load shorted across.)
- 7 The maximum capacitance across the relays output that will not cause the relay to "latch-off".
- 8 When turning on into a shorted load or when shorting the load with the relay on, the relay will "circuit-breaker" off within the time specified for other overload conditions, see Figure 6.
- 9 SR75-3 through-hole terminal series for solder-dip or wave-solder process $+260^\circ\text{C}$ for 10 seconds max per Mil STD 202, Method 210
- 10 SR75-3S surface-mount terminal series for soldering process that heat the entire package to $\leq +235^\circ\text{C}$ for 10 seconds max.