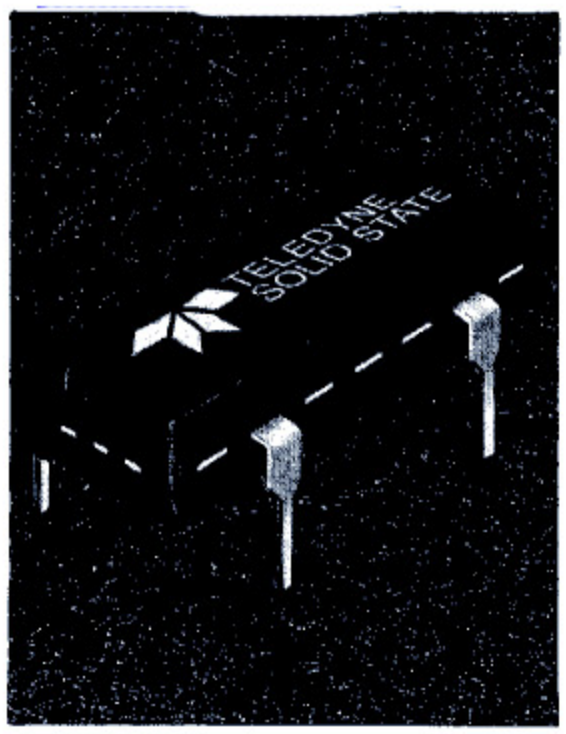
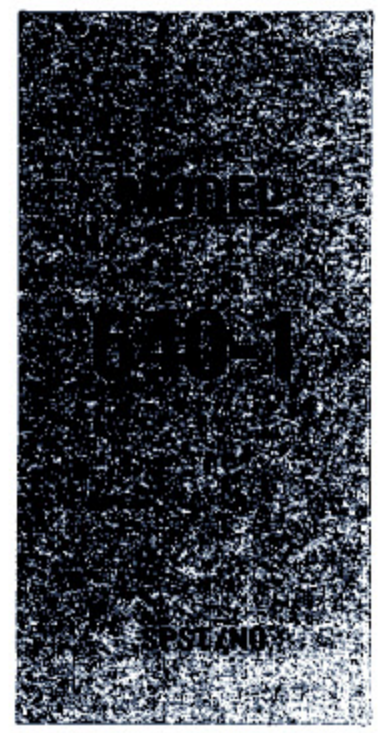


TELEDYNE SOLID STATE

SERENDIP®
SOLID STATE AC/DC RELAY

TRANSFORMER ISOLATED
80 mA/ ±50 Vdc



FEATURES

- Solid State pin compatible replacement for DIP reed relays
- Switches AC or DC up to 50V
- Low on-resistance (2 ohms typical)
- High switching speed
- Standard TO-116 DIP

DESCRIPTION

The 640-1 features AC/DC switching capability up to 50V and low on-resistance which is stable with time and temperature. Thus it serves as an ideal solid state replacement for SPST DIP reed relays. Transformer coupling provides 1500 V rms isolation and low off-state leakage. Internal construction employs thick film hybrid circuitry a unique patented lead frame design for low cost, molded in a standard TO-116 DIP. The 640-1 is most frequently used as a data coupler, isolated line driver, current loop switch, and for general purpose analog and transducer signal switching.

ELECTRICAL SPECIFICATIONS
(25°C UNLESS OTHERWISE SPECIFIED)

INPUT (CONTROL) SPECIFICATIONS		MIN.	TYP.	MAX.	UNITS	NOTES
Control Voltage Range		4.0		10	Vdc	See Fig. 2 & Note 1
Input Current at 5VDC Control Voltage			18	22	mA	See Fig. 1
Must Turn Off Voltage				0.4	Vdc	
Dielectric Strength (Input to Output)		1500			V rms	60 Hz Sine Wave
Isolation (Input to Output)		10^9			Ohms	
Capacitance (Input to Output)				5	pf	
Reverse Voltage Protection				3	Vdc	
OUTPUT (LOAD) SPECIFICATIONS		**MIN.**	**TYP.**	**MAX.**	**UNITS**	**NOTES**
Maximum Allowable Output Current with 10 Volt Control Voltage		0		±80	mA Peak	See Fig. 2 & Note 1
Maximum Allowable Output Current with 5 Volt Control Voltage		0		±40	mA Peak	See Fig. 2 & Note 1
Output Voltage (At Any Current)		0		±50	V Peak	
Offset Voltage			±1.0	±5.0	mV	See Fig. 3, 6
Output "On" Resistance			2	5	Ohms	
Off State Leakage Current	$V_O = \pm 25V$			0.006	μA	See Fig. 4
	$V_O = \pm 50V$			60		
Turn On Time ($T_{DELAY} + T_{RISE}$) (See Fig. 8)				1.0	μS	Note 2
Turn Off Time ($T_{DELAY} + T_{FALL}$) (See Fig. 7)			8	10	μS	
Capacitance Across Output			7	10	pF	
Surge Current Rating				150	% of Rating	See Fig. 5

PATENT #3,791,025

CHARACTERISTIC CURVES

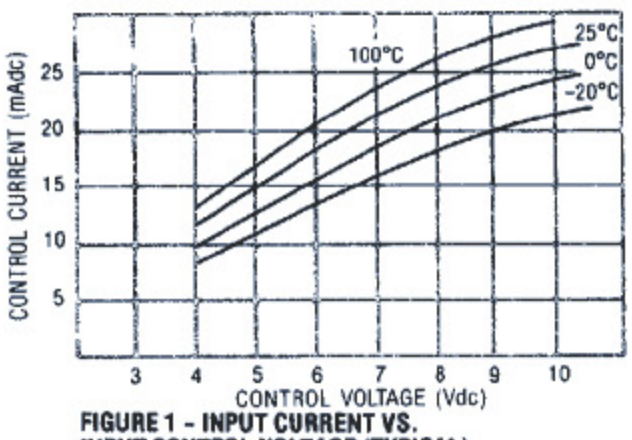


FIGURE 1 - INPUT CURRENT VS. INPUT CONTROL VOLTAGE (TYPICAL)

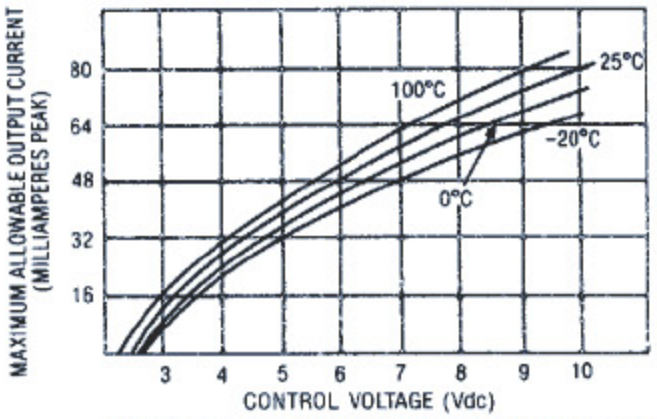


FIGURE 2 - MAXIMUM ALLOWABLE OUTPUT CURRENT VS. INPUT CONTROL VOLTAGE

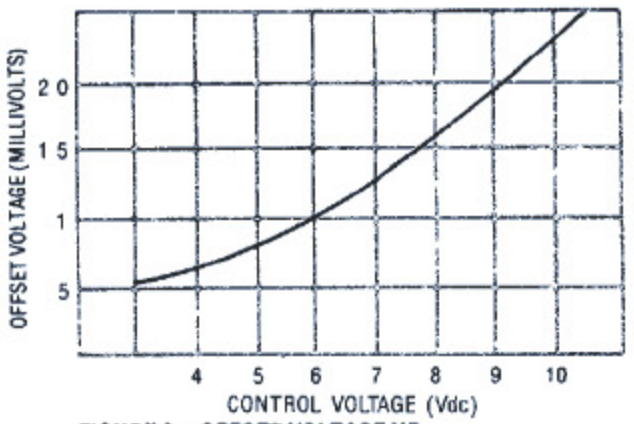


FIGURE 3 - OFFSET VOLTAGE VS. INPUT CONTROL VOLTAGE (TYPICAL)

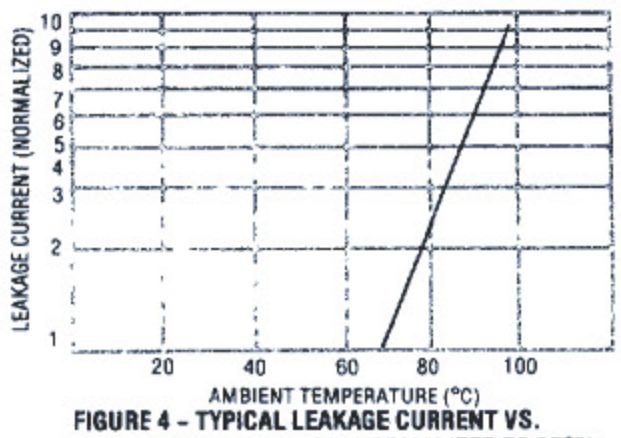


FIGURE 4 - TYPICAL LEAKAGE CURRENT VS. AMBIENT TEMPERATURE (NORMALIZED TO 25°C)

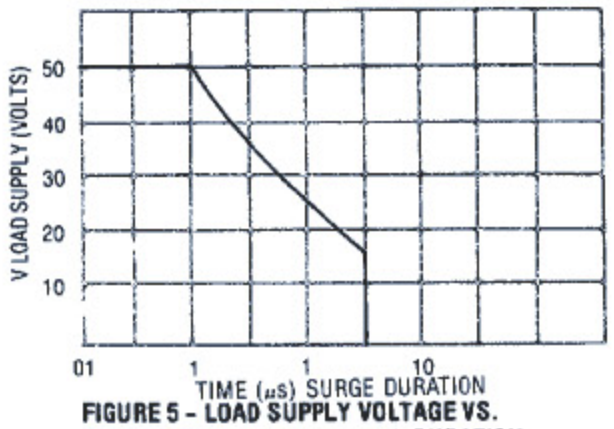


FIGURE 5 - LOAD SUPPLY VOLTAGE VS. ALLOWABLE SURGE CURRENT DURATION (CURRENT MUST NOT EXCEED 150% OF RATING)

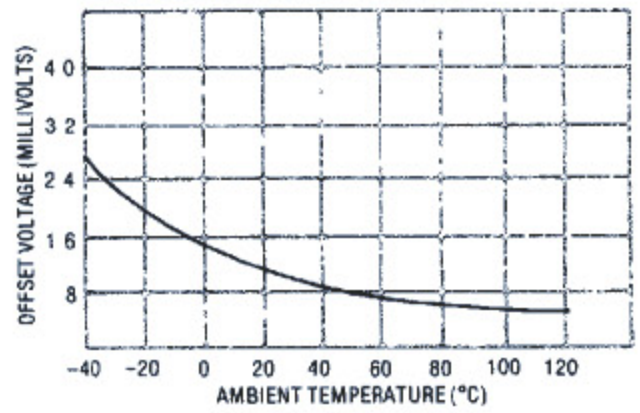


FIGURE 6 - OFFSET VOLTAGE VS. AMBIENT TEMPERATURE (TYPICAL)

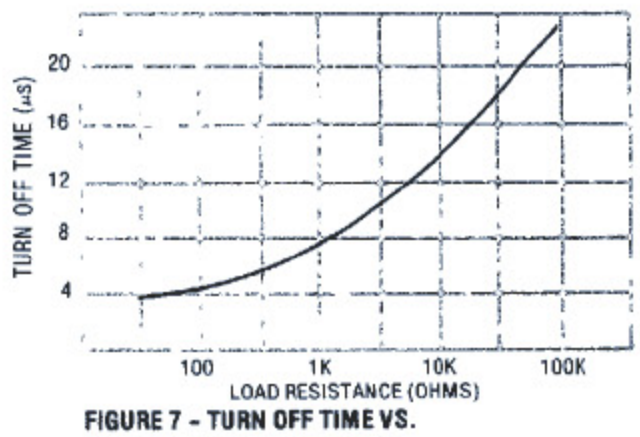


FIGURE 7 - TURN OFF TIME VS. LOAD RESISTANCE (TYPICAL)

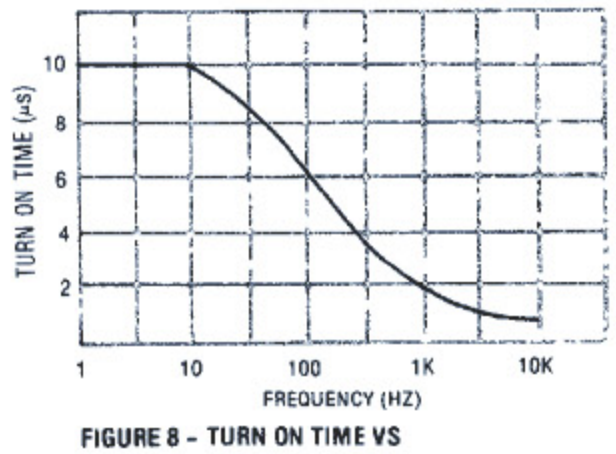
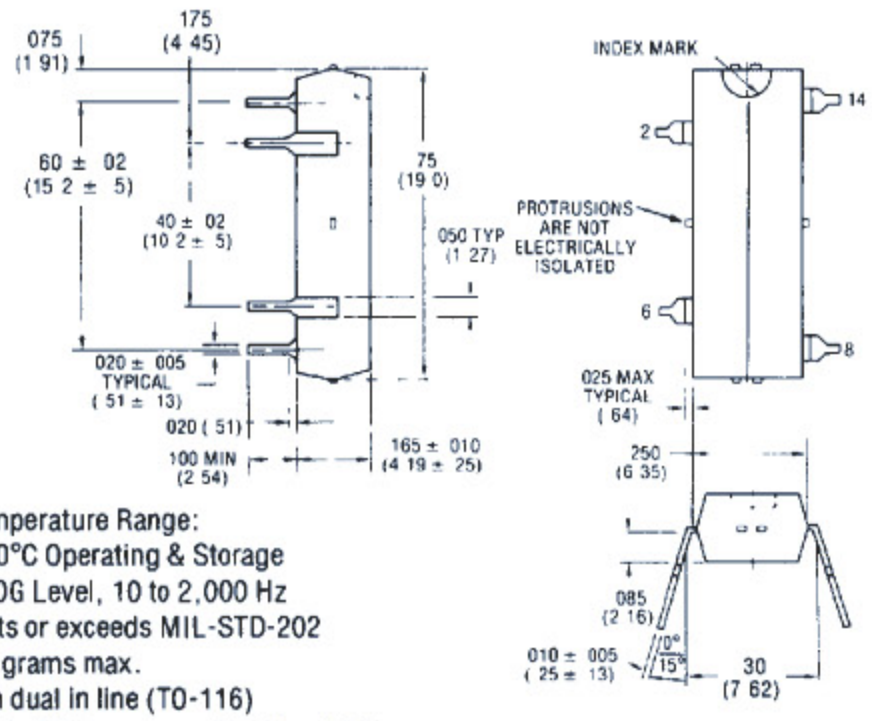


FIGURE 8 - TURN ON TIME VS DRIVE FREQUENCY (TYPICAL)

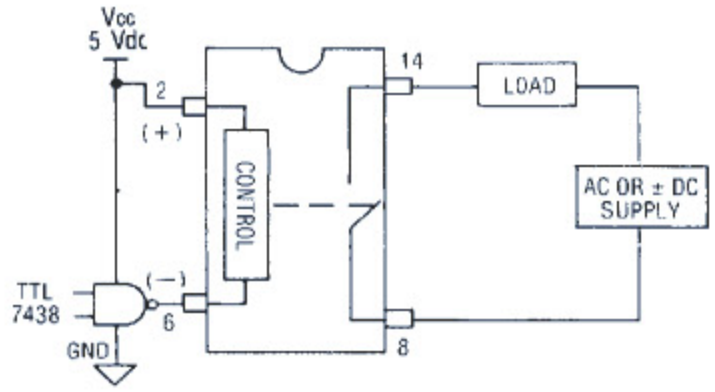
MECHANICAL SPECIFICATIONS



- Ambient Temperature Range: -20°C to 100°C Operating & Storage
- Vibration: 30G Level, 10 to 2,000 Hz
- Shock: Meets or exceeds MIL-STD-202
- Weight: 2.0 grams max.
- Case: 14 pin dual in line (TO-116)
- Case Material: Filled epoxy, self extinguishing

DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)
Tolerances unless otherwise specified ±.015 (.38)

TYPICAL INTERFACE TO 5V LOGIC



NOTES:

1. For any control voltage, the maximum steady state load current value shown in Figure 2 must not be exceeded. (Attempting to draw steady state currents in excess of these curves can cause permanent damage.)
2. Test Conditions: V_{IN} = 5 V, f_{IN} = 5 kHz, V_L = 20V, R_L = 1000 Ω.

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