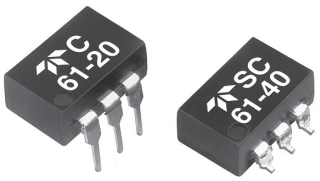
Series C61

Optically Isolated 0.3 to 1.0A DC Solid-State Relay

Part Number	Relay Description
C61	Solid-State Relay with Terminals for Through-Hole Mount
SC61	Solid-State Relay with Terminals for Surface Mount



ELECTRICAL SPECIFICATIONS

(25°C UNLESS OTHERWISE SPECIFIED)

INPUT (CONTROL) SPECIFICATIONS

Parameter	Min	Max	Units
Input Voltage Drop @ 10mA	1.1	1.5	Vdc
Input Current	5	50	mA
Reverse Voltage Protection		-6	Vdc
Input Current (Guaranteed off)		100	μA
Input Current (Guaranteed on)	5		mA

OUTPUT (LOAD) SPECIFICATIONS

Parameter		Min	Max	Units
Load Voltage Rating	C61-20		100	Vdc
	C61-40		400	
Output Current (See Figure 2)	C61-20		1.0	Adc
	C61-40		0.4	
On Resistance (See Note 7)	C61-20		0.3	Ohm
	C61-40		2.0	
Turn-On Time (See Figure 4 and Note 2)	C61-20		3.0	ms
	C61-40		3.0	
Turn-Off Time	C61-20		3.0	ms
	C61-40		3.0	
Output Capacitance	C61-20		250	pF
	C61-40		200	
Leakage Current at Rated Voltage			1.0	μAdc
Dielectric Strength			1500	Vrms
Input to Output Isolation		10^9		Ohms
Junction Temperature (T_J)			125	°C
Junction to Ambient Thermal Resistance			150	°C/W

FEATURES/BENEFITS

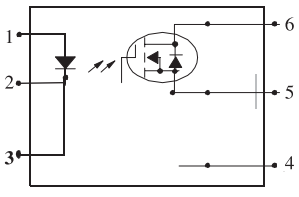
- Optical Isolation: Isolates control elements from load transients. Eliminates ground loops and signal ground noise.
- Low On Resistance power FET Output: Low leakage and voltage drop.
- Switches High Voltages and Currents: Voltages to 400 Vdc; Currents to 1.0 Adc
- Floating Output: Allows for high and low side switching
- High Noise Immunity: Control circuit can not be triggered by output switching noise.
- 6-Pin Mini DIP Package: Through-hole or surface-mount available

DESCRIPTION

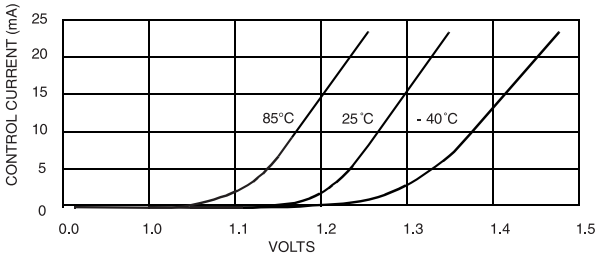
The Series C61 solid-state relay is an advanced design capable of switching heavy loads in a physically small 6 pin mini-DIP package. These relays have a power FET output that ensures low On Resistance, and low leakage current.

Optical isolation ensures complete protection of signal lines, power and ground bus and control circuits from switching noise and EMI.

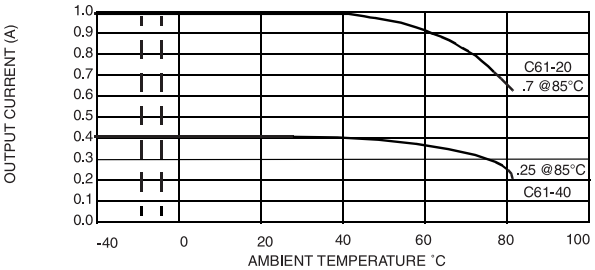
BLOCK DIAGRAM



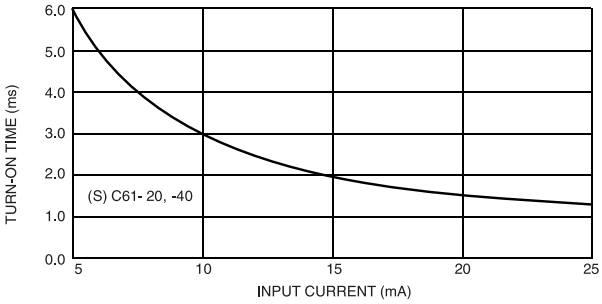
CHARACTERISTIC CURVES



CONTROL CURRENT VS. INPUT VOLTAGE
FIGURE 1

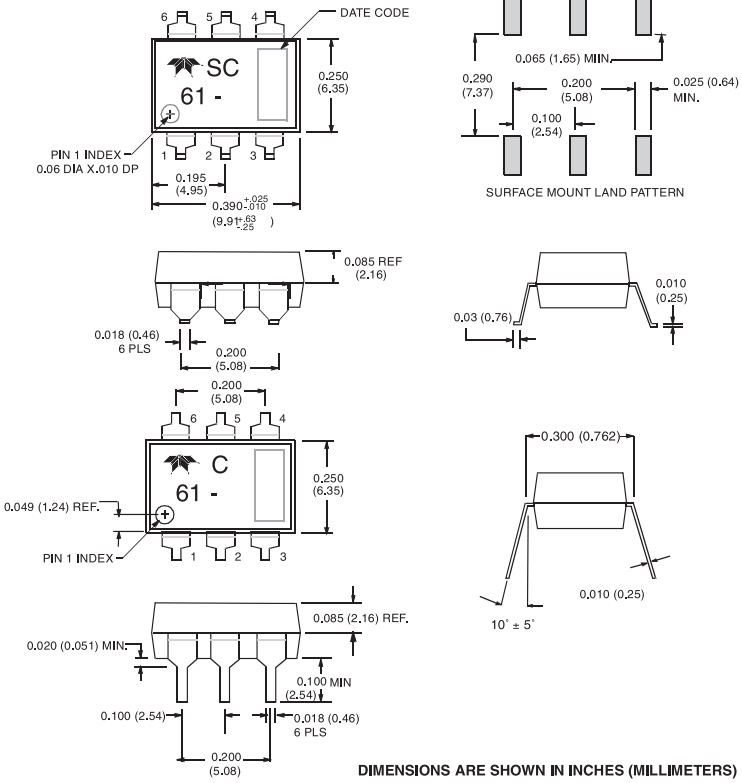


THERMAL DERATING CURVE
FIGURE 2 (SEE NOTE 4)



TYPICAL TURN ON TIME VS. INPUT CURRENT
FIGURE 3 (SEE NOTE 2)

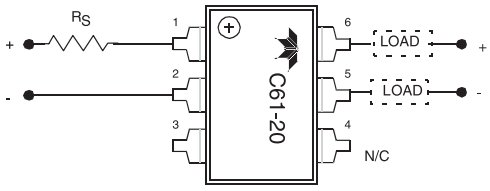
MECHANICAL SPECIFICATION



DIMENSIONS ARE SHOWN IN INCHES (MILLIMETERS)
Tolerances (unless otherwise specified)
0.XX = ± 0.010 (± 0.25)
0.XXX = ± 0.0005 (± 0.13)

- ≤ Operating Temperature Range: -40°C to 85°C
- ≤ Storage Temperature Range: -40°C to 100°C
- ≤ Weight: 1 gm. maximum
- ≤ Case: 6 pin dual In line, filled epoxy.

WIRING CONFIGURATIONS



NOTES:

1. Series resistor is required to limit input current to 50 mA maximum.
2. Turn On Time can be controlled with input control current. Calculate a new turn-on- time : $t_{On} = (t \text{ Specification Limit})(10 \text{ mA}/ I_{In})$
3. The input current is 10 mA for all tests unless otherwise specified.
4. Continuous load current is rated under the conditions of still air and mounted on a printed circuit board.
5. Loads may be connected to positive or negative referenced power supplies. Inductive loads must be diode suppressed.
6. The surge current is non-repetitive for a maximum duration of 20 ms (See Figure 3).
7. To calculate maximum ON Resistance for a given junction temperature calculate the new R_{on} using the equation shown below:

$$R_{On} = R_{(25^\circ C)} \times e^{0.006 (T_J - 25^\circ C)}$$

