

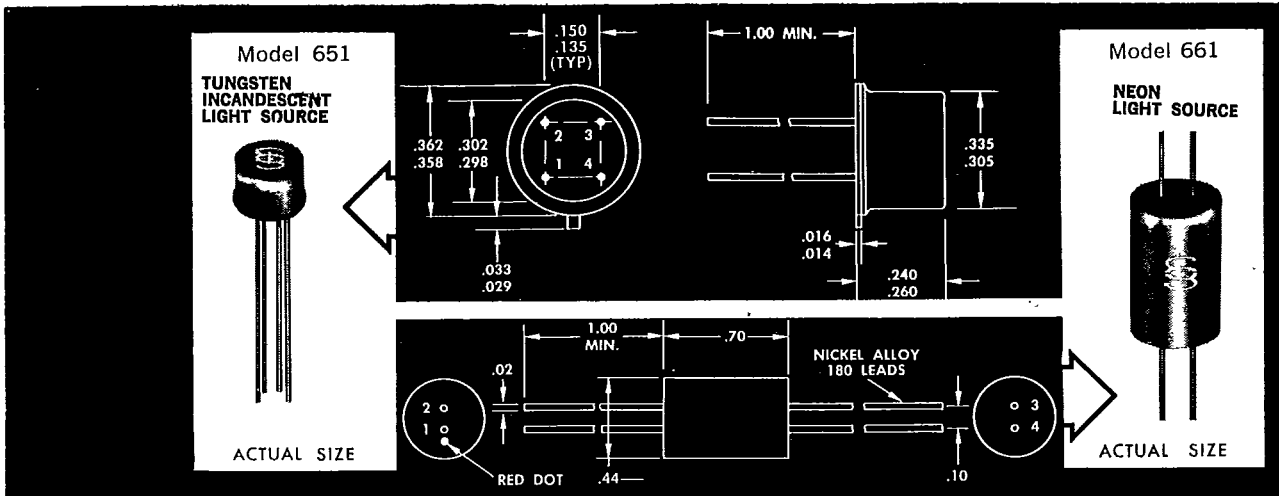
MODELS 651 & 661

**SOLID STATE  
ELECTRONICS  
CORP.**

# Solid State Raylay®

15321 RAYEN ST.  
SEPULVEDA, CALIFORNIA

(\*ISOLATED LIGHT-CONTROLLED RESISTOR)  
-55°C TO +70°C



## DESCRIPTION

The Solid State Raylay is a four-terminal photo-electronic device which combines a light source and a photocell within an opaque enclosure. Energy transfer from the input to the output is by means of light radiation.

Varying the drive to the light source from zero to full excitation causes the photocell to decrease its resistance up to a factor of  $10^6$ .

A major advantage of the Raylay is its complete electrical and mechanical isolation of the drive circuit from the signal circuit. This enables application as a non-mechanical relay, chopper, electrically controlled potentiometer or rheostat. The Raylay may also be used as a DC to low frequency transformer or as an isolated low pass filter.

For many applications the Raylay can be utilized as a direct

replacement for a conventional mechanical relay. Advantages include exceptionally long life extended up to three  $\times 10^4$  hours, reduced size and weight, higher resistance to shock and vibration, silent operation, increased speed of actuation, elimination of contact bounce, noise, wear, pitting and burning, decreased drive power and little or undetectable generation of radio frequency noise.

The Model 651 utilizes an incandescent light source whereas the Model 661 uses a gas discharge light source for excitation. The Model 651 has a lower "on" resistance than the 661 and may be actuated by relatively low voltages. Actuation of the Model 661 is faster than the 651.

The Raylay is highly immune to the effects of shock and vibration and is recommended for industrial, military, missile, space vehicle and portable applications.

## CHARACTERISTICS AT 25°C.

- FEATURES**
- SUBMINIATURE
  - NONMECHANICAL
  - LONG LIFE
  - ARCLESS
  - RF LESS
  - RELIABLE
  - WIDE RANGE
  - SILENT
  - CHATTERPROOF
  - NONCORROSIVE
  - SHOCKPROOF
  - NONSTICKING
  - LOW NOISE
  - ISOLATED DRIVE

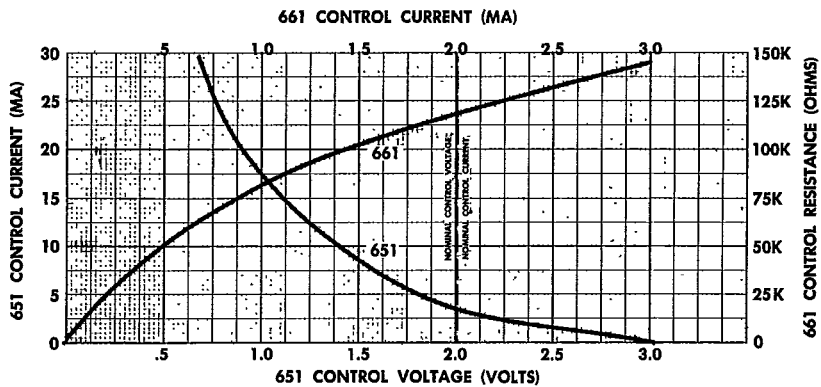
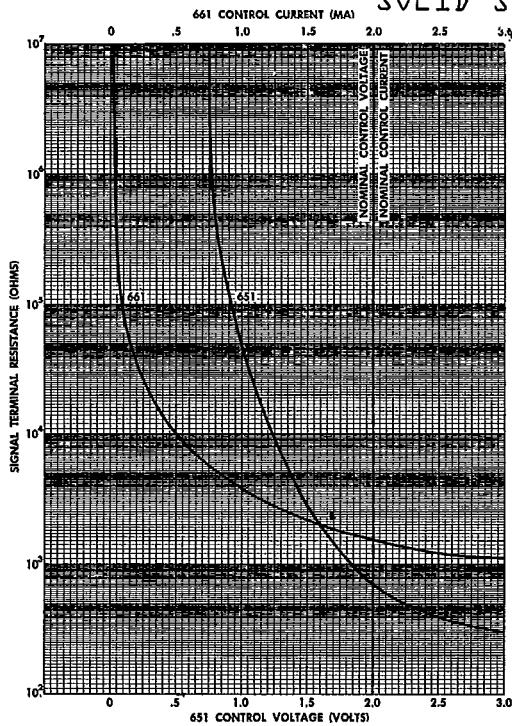
	PARAMETER	UNITS	MODEL 651	MODEL 661
<b>DRIVE</b>	NOMINAL CONTROL VOLTAGE	Volts DC or Peak	2	135
	NOMINAL CONTROL CURRENT	Milliamperes	24	2
	NOMINAL LIFE	Hours	$10^5$	$3 \times 10^6$
	CONTROL VOLTAGE RANGE	Volts DC or Peak	0 to 3	—
	CONTROL CURRENT RANGE	Milliamperes	0 to 30	1 to 3
	NOMINAL CONTROL RESISTANCE	Kilohms	—	20
	CONTROL RESISTANCE RANGE	Kilohms	—	0 to 135
<b>SIGNAL</b>	NOMINAL "ON" RESISTANCE	Ohms	700	1500
	MAXIMUM "ON" RESISTANCE	Ohms	1000	2500
	NOMINAL "OFF" RESISTANCE	Megohms	500	500
	MINIMUM "OFF" RESISTANCE	Megohms	10	10
	MAXIMUM SIGNAL VOLTAGE	Volts	125	125
	MAXIMUM POWER DISSIPATION (Derate 3mw/°C.)	Milliwatts	250	250
	NOMINAL SHUNT AND COUPLING CAPACITY	pf	1	1
	NOMINAL "SWITCH-ON" TIME ( $V_s=20V$ ; $R_L=50K$ )	milliseconds	20	1
NOMINAL "SWITCH-OFF" TIME ( $V_s=20V$ ; $R_L=50K$ )	milliseconds	30	7	

"ON" RESISTANCE VS CONTROL VOLTAGE

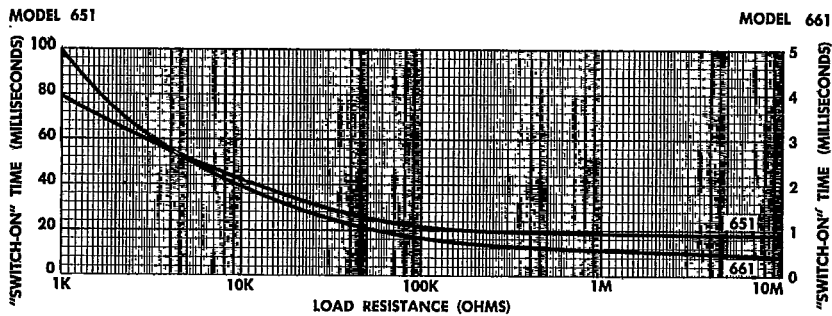
CONTROL CURRENT CHARACTERISTICS

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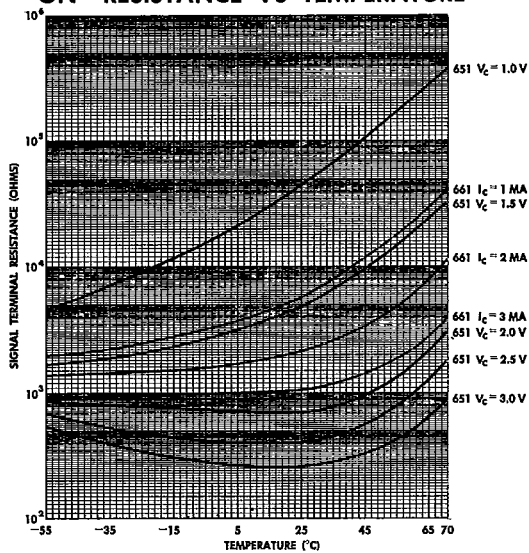
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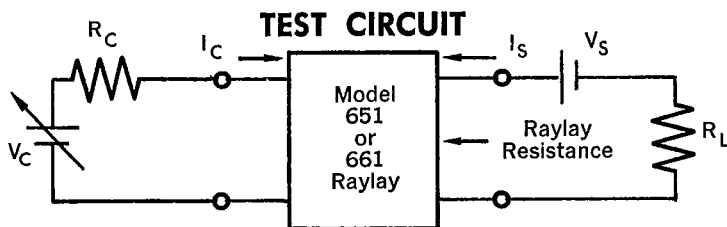
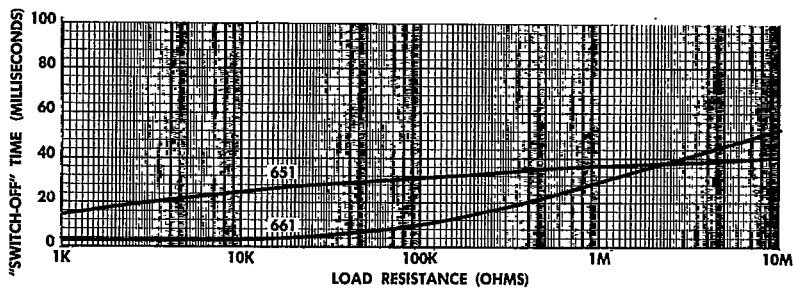
"SWITCH-ON" TIME VS LOAD RESISTANCE



"ON" RESISTANCE VS TEMPERATURE



"SWITCH-OFF" TIME VS LOAD RESISTANCE



- $V_C$  = Control Voltage
- $R_C$  = Control Resistance
- $I_C$  = Control Current
- $V_S$  = Signal Voltage
- $I_S$  = Signal Current
- $R_L$  = Load Resistance

APPLICATIONS

- Relay
- Isolated Switch
- Commutator Switch
- Chopper
- Isolated Bias Control
- High Voltage Isolation
- Isolated Variable Resistor
- Low Noise Control
- Logic Circuits
- Power Supply Regulation
- Automatic Gain Control
- Automatic Frequency Control
- DC to Low Frequency Isolation
- Low Frequency Modulator
- Low Pass Filter
- Microwave Bolometer

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