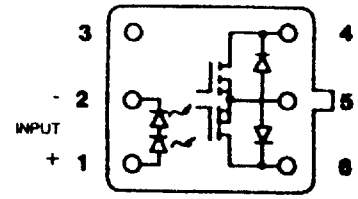
53120, 53121
SPST SOLID STATE RELAYS

FEATURES

- SPST, Normally Open
- Up to 500V RMS Optical Isolation
- Power FET Output - Low On-state Resistance
- Full Military Temperature Operation: -55°C to +120°C
  - Military Environmental Screening Available
- Improved Thermal Characteristics
- Built and tested per MIL-R-28750 utilizing the test methods of MIL-STD-883

MILITARY SPST HIGH VOLTAGE AC/DC SOLID STATE RELAYS

BLOCK DIAGRAM



BOTTOM VIEW

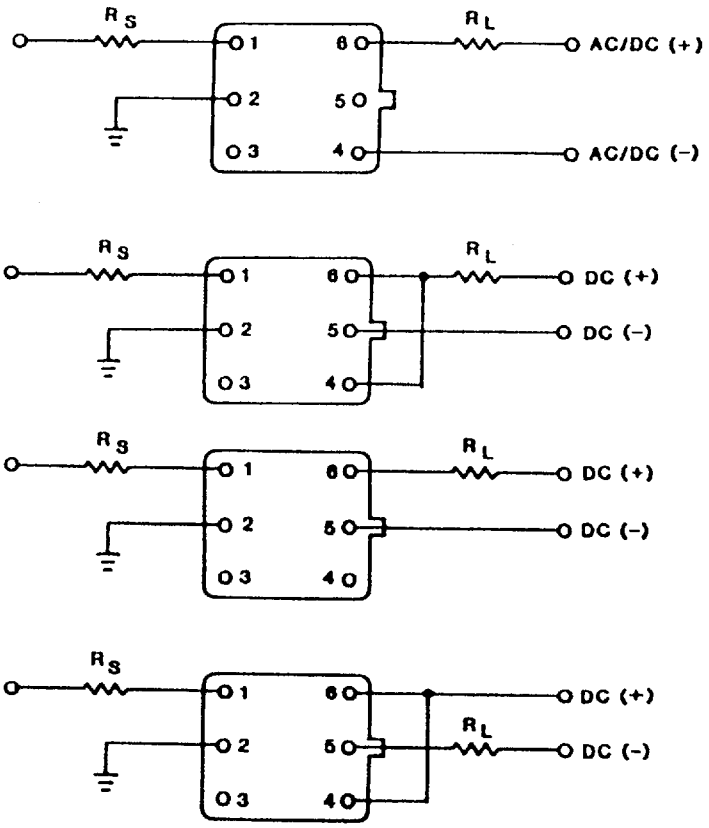
GENERAL DESCRIPTION

These solid state relays are military SPST Solid State Relays. These light-weight devices are resistant to damage from shock and vibration, and are immune to contact-related problems (contamination, arcing) associated with mechanical equivalents.

Optical coupling between the input and output stages provides effective isolation up to 500 volts AC RMS. Power FET outputs eliminate bipolar offset, and minimize output voltage drop.

These solid-state relays are ideal for use in military systems, or wherever high reliability, low power actuation, low cost and light weight are design considerations. Applications include general purpose signal switching and electonic load control.

WIRING DIAGRAMS



GENERAL SPECIFICATIONS

Part Number	Max. Operating Voltage	Max. Load (25°C)	Replaced Teledyne
53120	±180 VDC	0.65A (see Figure 2)	CGG-1
53121	±400 VDC	0.25A (see Figure 1)	CGG-2

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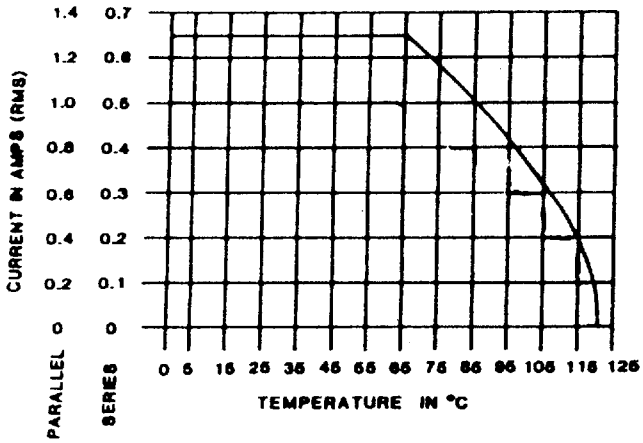


Figure 1 Thermal derating curve
53120

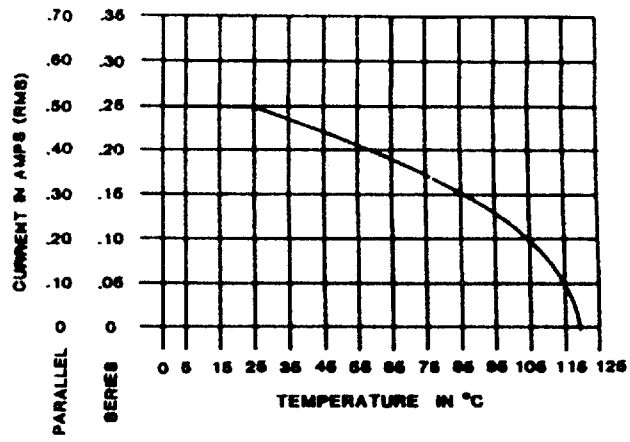


Figure 2 Thermal derating curve
53121

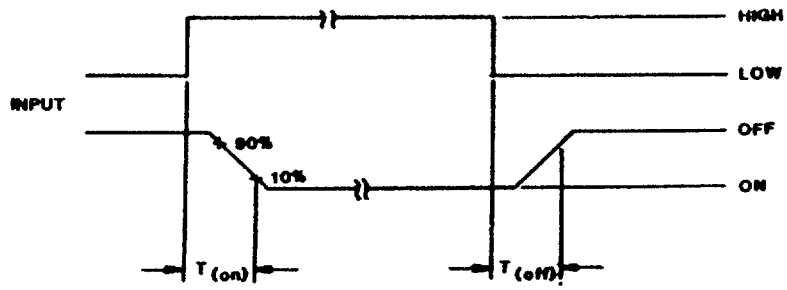
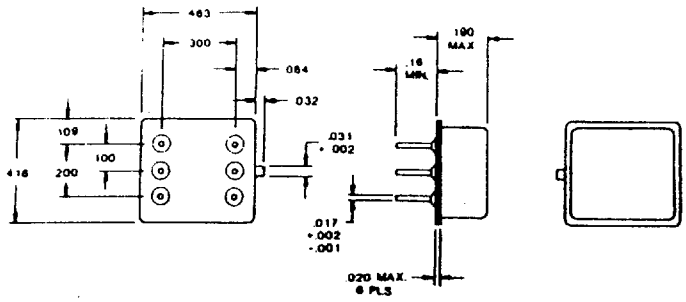


Figure 4 Turn-on/Turn-off timing

PACKAGE DIMENSIONS



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ELECTRICAL CHARACTERISTICS* T_A = -55° C TO 120° C (unless otherwise noted)

INPUT CHARACTERISTICS		MIN	TYP	MAX	UNITS
LED Input Current	-55 °C to +105 °C	10		50	mA dc
	+105 °C to +120 °C	10		25	mA dc
Rated Input Current			25		mA dc
Turn-on Current (Assured)		10			mA dc
Turn-off Current (Assured)				10	µA dc
Turn-off Voltage (Assured)				1.5	Vdc
Input Voltage Drop at 25 mA				3.25	Vdc
Reverse Voltage Protection				-5	Vdc

OUTPUT CHARACTERISTICS		53120 MIN	53120 MAX	53121 MIN	53121 MAX	UNITS
Output Voltage		±180		±400		VDC
Output Load Current (See Figures 1,2,3)		0.65		0.25		Amps
Output Voltage Drop	Series	1.0		2.40		VDC
at 25 mA	Parallel	0.50		1.80		
Output Leakage	Series	20		20		µA
(25 °C to 120 °C) Vin = 1.5 VDC	Parallel	40		40		
Output Leakage (-55 °C to 25 °C)	Series	200		200		
Vin = 1.5 VDC	Parallel	400		400		nA
On State Resistance	Series	1.0		8.0		Ohms
@ 25 mA (see Note 1)	Parallel	.25		2.0		
Overload @ 25 °C I_{IN} = 25 mA 10 cycles max. at a 1HZ, 10% max. duty cycle (on time)		3.5 x rated current				Amps
Turn-on Time (Figure 4) (I_{IN} = 25 mA)		800		500		µs
Turn-off Time (Figure 4) I_{IN} = 25 mA)		500		500		µs
Transient Blocking Voltage (5 seconds max.)		±180		±400		VDC
dv/dt		100		100		V/µs
Dielectric Strength		500		500		VAC
DC Offset Voltage		100		100		µV

Notes: 1. On-state resistance greater than 25°C

$R_T = (4@\ 25°C)\ e^X$ where $X = .0065\ (T_J - 25°C)$

$X = .0072\ (T_J - 25°C)$ for ±350 VDC

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