

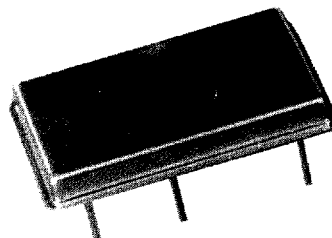
# 53220 SPST SOLID-STATE RELAYS



## FEATURES

- Short Circuit Protection (SCP)
- SCP Status Output
- 1000 VAC RMS Isolation
- Power FET Output - Low On-state Resistance
- Full Military Temperature Operation:  
-55°C to +125°C
- Military Environmental Screening Available

## MILITARY, DC SOLID STATE RELAYS WITH INTEGRAL SHORT CIRCUIT PROTECTION



## GENERAL DESCRIPTION

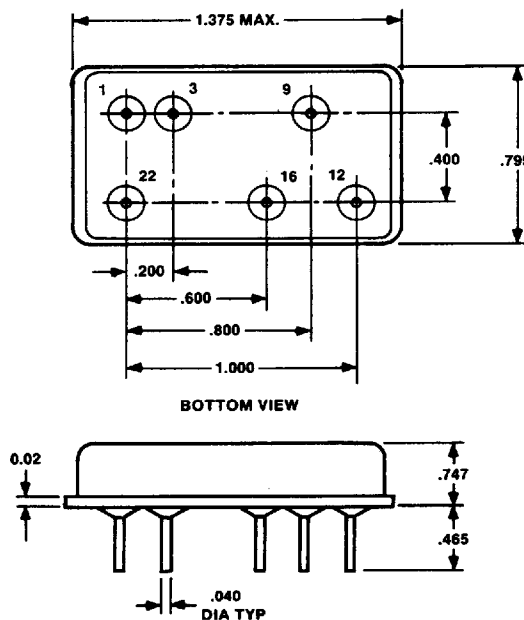
The MII 53220 is a military-grade, SPST solid-state relay. This light-weight device is resistant to damage from shock and vibration, and is immune to contact-related problems inherent with mechanical equivalents.

Effective isolation of 1000 VAC RMS between the input and output stages is achieved through the use of optical coupling. Power FET outputs eliminate bipolar offset, and minimize output voltage drop for high current capability.

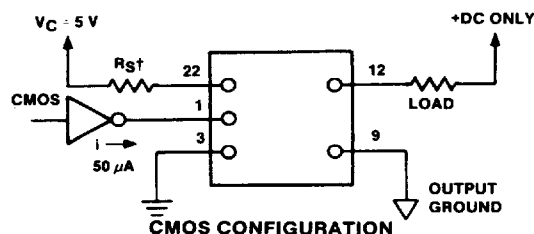
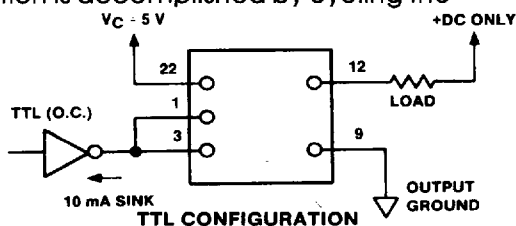
The control input logic may be driven by either CMOS or TTL, and will accommodate bias supplies ranging between 3.8 and 32 VDC.

Integral short-circuit protection is provided. The device senses excessive current flow during switching or normal operating conditions and responds by opening the output. The 53220 incorporates an open collector status line that indicates the condition of the short circuit protection circuitry. After a short occurs, the output will remain non-conductive indefinitely until the short is removed and the unit reset. This feature prevents damage to the SSR and also averts further system failures that may be caused by the fault condition. The status line output remains on until the relay is turned off for resetting. Return to normal operation is accomplished by cycling the input control.

## PACKAGE DIMENSIONS



PIN	FUNCTION
1	CMOS
3	GND
9	- OUT
12	+ OUT
16	STATUS
22	VCC



**Micropac Industries** cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement. **Micropac** reserves the right to make changes at any time in order to improve design and to supply the best product possible.

**MICROPAC INDUSTRIES, INC.** • 905 E. WALNUT STREET GARLAND, TEXAS 75040 • (214) 272-3571 • FAX (214) 494-2281

6112640 0001252 302

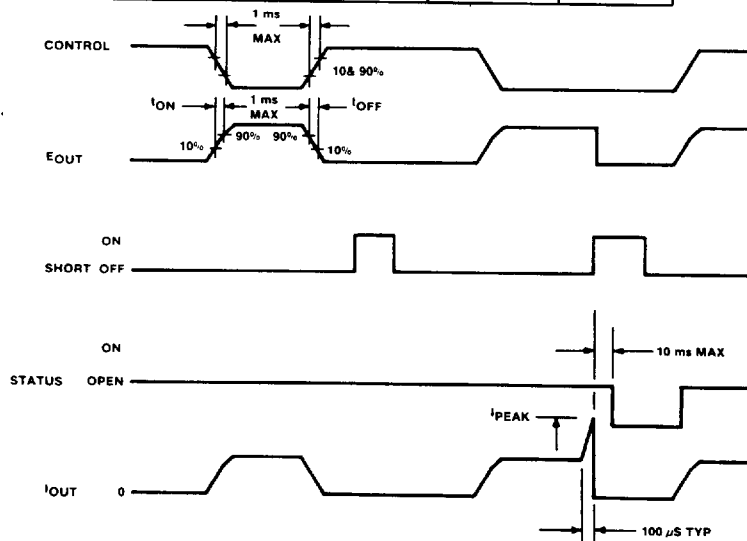
2 - 56

**53220****SPST SOLID-STATE RELAYS****ELECTRICAL CHARACTERISTICS\***  $T_A = +25^\circ\text{C}$ 

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
<b>Input Characteristics CMOS Configuration (Figure 1)</b>					
Bias Supply Range, $V_{DD}$		3.8		32	VDC
Bias Current			12	16	mA
Input Current	5 VDC Input			250	$\mu\text{A}$
Control Voltage Range		3.8		18	VDC
Turn-Off Voltage		3.2			VDC
Turn-On Voltage				0.5	VDC
<b>Input Characteristics TTL Configuration (Figure 2)</b>					
Input Current			12	16	mA
Control Voltage Range		3.8		32	VDC
Turn-Off Voltage	Note 3			1.5	VDC
Turn-On Voltage	Note 3	3.8			VDC
<b>Output Characteristics</b>					
Output Current	$T_c = 25^\circ\text{C}$ max with straight line derating to 0 A @ $125^\circ\text{C}$			5.0	Amps DC
Continuous Blocking Voltage				80	VDC
On-State Resistance	$T_c = 25^\circ\text{C}$			0.075	Ohms
Status On Voltage (53038)	On at 5 mA			0.4	VDC
Status Off Leakage (53038)	Off at 20 Volts			20	$\mu\text{A}$
Turn-On Time	$T_c = 25^\circ\text{C}$ , See Application Note 1			5.0	mSec
Turn-Off Time	$T_c = 25^\circ\text{C}$			3.5	mSec
Off-State Leakage	At Maximum Blocking Voltage			1.0	mA
Output Capacitance				1600	pF
Short Circuit Current	$T_c + 25^\circ\text{C}$		10		Amps
Junction Temperature				150	$^\circ\text{C}$
Thermal Resistance, $\theta_{JA}$				30	$^\circ\text{C/W}$
$\theta_{JC}$				7	$^\circ\text{C/W}$
Dielectric Strength	60 Hz	1000			VAC RMS

**APPLICATION NOTES**

- Maximum input switching frequency not to exceed 20 Hz under normal conditions, or 1 Hz if output is shorted.
- Input transitions should be < 1 ms in duration and input source should be "bounceless contact" type.



**Micropac Industries** cannot assume any responsibility for any circuits shown or represent that they are free from patent infringement. **Micropac** reserves the right to make changes at any time in order to improve design and to supply the best product possible.

**MICROPAC INDUSTRIES, INC.** • 905 E. WALNUT STREET GARLAND, TEXAS 75040 • (214) 272-3571 • FAX (214) 494-2281

■ 6112640 0001253 249 ■ 2-57