

# 53224 SPST SOLID-STATE POWER CONTROLLER



## FEATURES

- Replacement for M33C-1NS
- SPST, Normally Open
- Up to 1000 V RMS Optical Isolation
- Output Current Up to 5 Amps DC
- Power FET Output - Low On-state Resistance
- Full Military Temperature Operation:  
-55°C to +105°C
- Military Environmental Screening Available

## GENERAL DESCRIPTION

The MII 53224 is a military SPST high-power solid-state relay. This light-weight device is resistant to damage from shock and vibration, and is immune to contact-related problems (contamination, arcing) associated with mechanical equivalents.

The input and output stages provides effective isolation up to 1000 volts AC RMS. 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 and thermal shutdown protection is provided. The unit senses excessive current flow while under load or while switching, and responds by opening the output. The output will remain blocked indefinitely until the short is removed, and the unit reset. This feature prevents damage to the controller, and also averts further system failures that may be caused by the short circuit.

## MILITARY, HIGH CURRENT DC POWER CONTROLLER WITH INTEGRAL SHORT CIRCUIT PROTECTION AND OUTPUT STATUS INDICATION

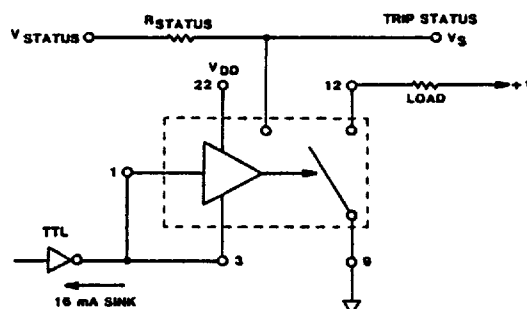


Figure 1. CMOS Input Configuration

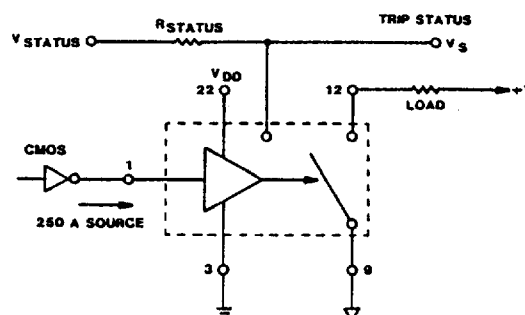
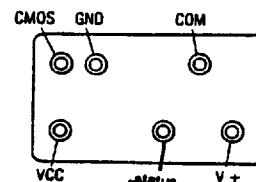
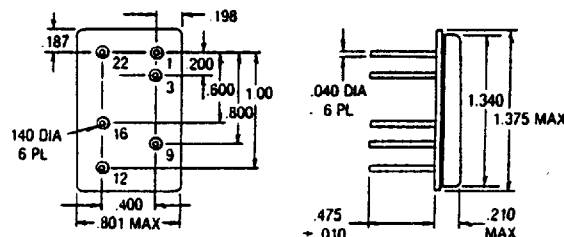


Figure 2. CMOS Input Configuration



## Notes:

1. 60 HZ
2. At 25°C C/W heat sink
3. Reversing polarity on the input or output may cause permanent damage

## ABSOLUTE MAXIMUM RATINGS

Isolation Voltage <sup>1</sup>	1000 VAC RMS
Continuous Operating Output Voltage <sup>3</sup>	60VDC
Load Current <sup>2</sup>	5.0 Amps DC
Bias Supply Voltage, VDD	3.8 to 32 VDC
Operating Temperature	-55° to +105° C Case
Storage Temperature	-55° to +125° C

**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 0001256 T58 ■

2-60

**53224****SOLID-STATE POWER CONTROLLER****ELECTRICAL CHARACTERISTICS\*** (-55°C to +105°C case unless otherwise specified)

<b>INPUT CHARACTERISTICS</b> <b>CMOS Configuration</b> (Figure 1)	<b>CONDITIONS</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>UNITS</b>
Bias Supply Range, $V_{DD}$		3.8		32	VDC
Bias Current			13	16	mA
Input Current	5 VDC Input			250	$\mu$ A
Control Voltage Range		2.5		18	VDC
Turn Off Voltage (Guaranteed Off)	@ -55° C to +25° C			3.2	VDC
	@ +105° C			2.8	VDC
Turn On Voltage (Guaranteed On)	@ -55° C to +25° C	0.5			VDC
	@ +105° C	0.3			VDC
Total Hysteresis			1.8		VDC
Dielectric Strength	60 Hz	1000			VAC RMS
<b>Input Characteristics:</b> <b>TTL Configuration</b> (Figure 2)					
Input Current			13	16	mA
Control Voltage Range		3.8		32	VDC
Turn Off Voltage (Guaranteed Off)				1.5	VDC
Turn On Voltage (Guaranteed On)		3.8			VDC
Output Characteristics					
Output Current @ 25° C	With 2° C/W Heat Sink			5.0	Amps DC
Output Current @ 85° C				2.5	Amps
Continuous Output Voltage				60	VDC
Continuous Blocking Voltage				80	VDC
On-State Resistance, $R_{ds}$ :	25° C Case			0.100	Ohms
On-State Resistance $R_{ds}$ @ 85° C	$I_{LOAD} = 100$ mA			.150	$\Omega$
Turn-On Time at 25° C & -55° C	See Application Note 1			3.0	msec
Turn-On Time at +105° C				5.0	msec
Turn-Off Time at 25° C Case				2.0	msec
Off State Leakage	60VDC			100	$\mu$ A
@ -55° C to +100° C	80 VDC			1.0	mA
Capacitance Across Output				1600	pF
Junction Temperature				125	°C
Thermal Resistance $\theta_{JA}$				30	°C/W
$\theta_{JA}$				7	°C/W

*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 0001257 994 ■

Q-61