53200 53203 53204	SPDT SOLID-STATE RELAYS	Mii MICROCIRCUITS PRODUCTS DIVISION

Features:

- Replacements for M31-1, M31-1A, M31-2 A
- SPDT, Break-Before-Make
- Up to 1500 V RMS Optical Isolation
- Output current up to 8.2 Amps (53203)
- Power FET Output Low On-state Resistance
- Full Military Temperature Operation: -55ºC to +125ºC
- Military Environmental Screening Available

Applications:

- Heater Load Switching
- Sensor Activation
- Remote Signal Activation
- Servo and synchro control
- High power switching

DESCRIPTION

The MII 53200, 53203, and 53204 are military SPDT high power, 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 1500 volts AC RMS. Power FET outputs eliminate bipolar offset, and minimize output voltage drop for high current capability. The control logic is CMOS compatible, and will accommodate bias supplies between 4 and 16 VDC. A TTL input driver with pull-up resistor may also be used. These solid-state relays are ideal for use in military systems, or wherever high reliability, low power actuation, and light-weight are design considerations. Applications include general-purpose signal switching and electronic load control.

ABSOLUTE MAXIMUM RATINGS

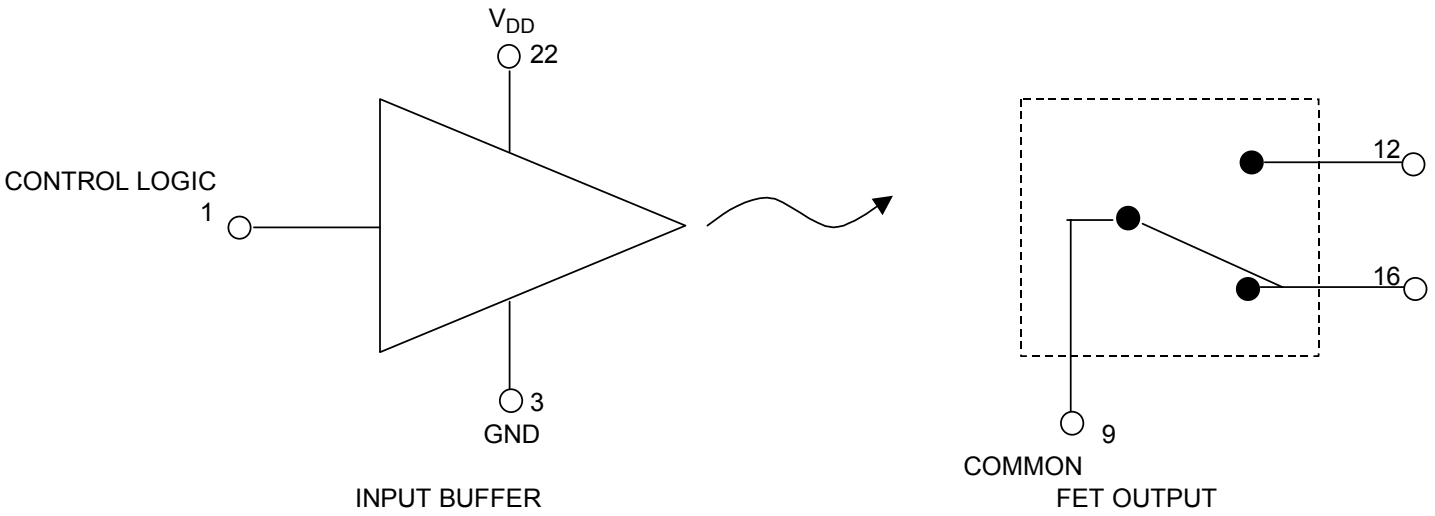
Isolation Voltage[1]		1000 VAC RMS
Continuous Operating Output Voltage[3]:	53200	80 VDC
	53203	80 VDC
	53204	160 VDC
Load Current[2]:	53200	4.8 Amps DC
	53203	8.2 Amps DC
	53204	5.2 Amps DC
Bias Supply Voltage, V_{DD}		16 VDC
Control Logic Input Voltage		16 VDC
Operating Temperature		-55ºC to +125ºC Case
Storage Temperature		-55ºC to +125ºC

Notes: [1] 60 Hz sine wave [2] at 25ºC with 2.0º C/W heat sink [3] Reversing polarity on the output may cause permanent damage.

MICROPAC INDUSTRIES, INC. MICROCIRCUITS PRODUCTS DIVISION • 905 E. Walnut St., Garland, TX 75040 • (972) 272-3571 • Fax (972) 494-2281
www.micropac.com E-MAIL: hybridsales@micropac.com 8/12/02

ELECTRICAL CHARACTERISTICS
T_A = +25° C

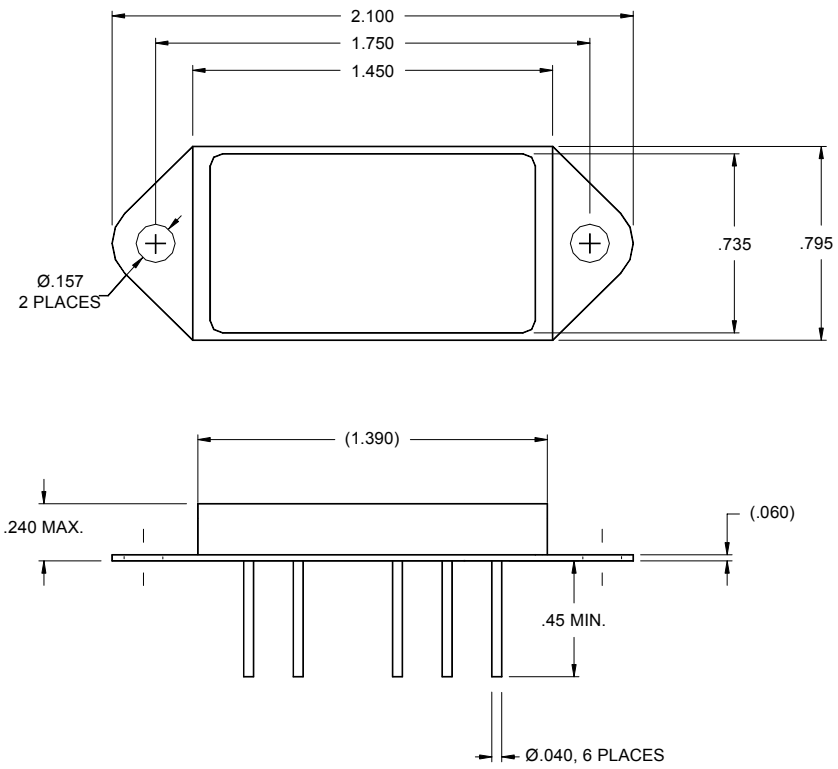
PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
Isolation Voltage, I/O	60 Hz Sine Wave	1500			VAC RMS
Isolation Resistance	Input to Case, at 50V		10^9		Ohms
Continuos Operating Output Voltage					
53200				80	VDC
53203				80	VDC
53204				160	VDC
Transient Output Voltage					
53200				80	VDC
53203				80	VDC
53204				180	VDC
Load Current: 53200	2.0 ºC/W Heat Sink			4.8	Amps DC
53203				8.2	Amps DC
53204				5.2	Amps DC
On Resistance: 53200				0.3	Ohms
53203				0.15	Ohms
53204				0.38	Ohms
Capacitance, I/O	25 V, 1 MHz			5	PF
Leakage Current: 53200	Load Voltage =			20	µA
53203	Maximum			40	µA
53204				40	µA
Bias Supply Voltage, V_{DD}		4		16	VDC
Bias Current			13	16	MA
Control Logic Voltage				16	VDC
Control Logic Current				2	µA
Control Logic Level – High		0.75 VDD			VDC
Control Logic Level – Low		0		0.15 V_{DD}	VDC
t_r (Rise Time): 53200	Load Voltage = 25 VDC			2.0	ms
53203	R_L = 50Ω			3.0	ms
53204				3.0	ms
t_{on} (Turn-On-Time): 53200				3.0	ms
53203				4.0	ms
53204				4.0	ms
t_f (Fall Time)				50	µs
t_{off} (Turn-Off-Time): 53200				200	µs
53203				250	µs
53204				250	µs
t_d (Dwell Time)		0.5		1.5	ms
Thermal Resistance, θ_{JA}:					
53200			23		ºC/W
53203			20		ºC/W
53204			20		ºC/W
Thermal Resistance, θ_{JC}:					
53200			7.0		ºC/W
53203			4.2		ºC/W
53204			4.2		ºC/W



Truth Table

INPUT (PIN 1)	PIN 12	PIN 16
High	Closed	Open
Low	Open	Closed

Package Dimensions



MICROPAC INDUSTRIES, INC. MICROCIRCUITS PRODUCTS DIVISION • 905 E. Walnut St., Garland, TX 75040 • (972) 272-3571 • Fax (972) 494-2281
www.micropac.com **E-MAIL:** hybridsales@micropac.com **8/12/02**