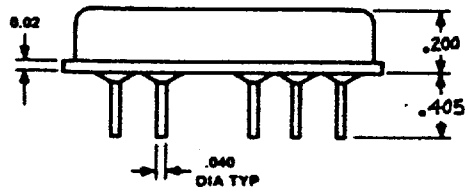
53107, 53108, 53109
SPST SOLID-STATE RELAYS

FEATURES

- Power FET Output - Low On-state Resistance
- Magnetic Coupling
  - Fast turn on time
  - 1000 VRMS isolation
  - Excellent parametic resistance
- Low on-state resistance
- TTL and CMOS compatible control
- 1000 VRMS isolation using magnetic coupling

MILITARY, DC SOLID STATE RELAYS

PACKAGE DIMENSIONS

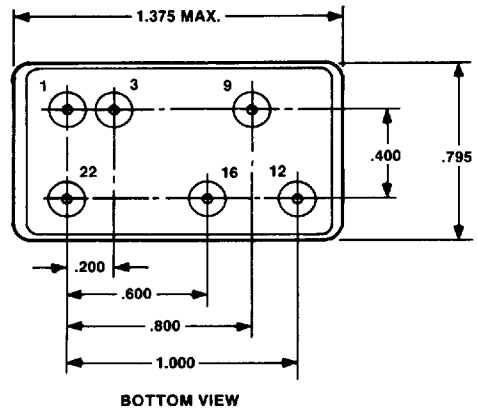


GENERAL DESCRIPTION

The MII 53107, 53108 & 53109 are military SPST solid-state relays. This solid state relay is capable of carrying a continous load current of 1A @ T_C = 200° C.

The combination of magnetic coupling and a power MOSFET switching element gives fast turn-on-times, 1000 VRMS isolation between control and load circuits, excellent parametric stability over the full temperature range, and very low on-state resistance.

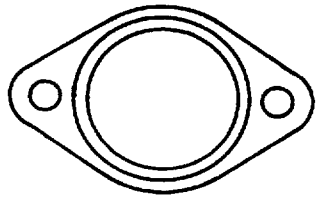
The control logic is CMOS and TTL (open collector) compatible.

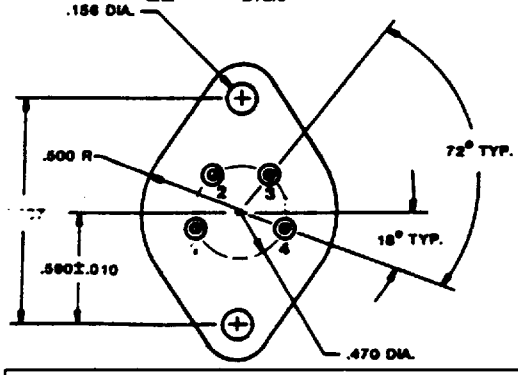


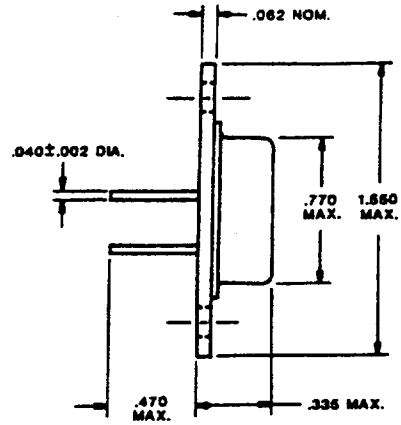
BOTTOM VIEW

PIN FUNCTION

1	Control
3	Input Return
9	Output Common
12	+ Output
16	N/C
22	Bias







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53107
ELECTRICAL CHARACTERISTICS* T_A = +25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Characteristics					
Bias Supply Range, V_{DD}	Note 1				
Bias Current			30	50	mA
Input Voltage		2. 2		3.5	VDC
Turn-Off Current				.1	mA
Turn-On Current			10		mA
Output Characteristics					
Output Current	T_C = 25 °C to 125 °C			6.0	Amps
Continuous Blocking Voltage	(AC)			±80	Peak
On-State Resistance	T_C = 25 °C			.200	Ohms
Output Leakage	At 60 Volts			100	µA
Turn-On Time	T_C = 25 °C, See Application Note 3			5.0	mSec
Turn-Off Time	T_C = 25 °C			10	mSec
Output Capacitance				1600	pF
Junction Temperature				150	°C
Thermal Resistance, θJA				30	°C/W
θJC				7	°C/W
Dielectric Strength	60 Hz	500			VAC RMS

APPLICATION NOTES:

1. Series resistor or current limit must be provided.
2. Internal transitions should be < 1 mS in duration and input source should be "bounceless contact" type.
3. MAX rep rate is 5 HZ

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53108
ELECTRICAL CHARACTERISTICS* T_A = +25°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input Characteristics					
Bias Supply Range, V_{DD}	Note 1				
Bias Current			12	16	mA
Input Voltage $_{(ON)}$	Note 4	3.8			VDC
Output Voltage $_{(OFF)}$	Note 4			1.5	VDC
Output Characteristics					
Output Current	T_C = 25 °C to 125 °C			15	Amps
Continuous Blocking Voltage	(DC)			100	VDC
On-State Resistance	T_C = 25 °C			.025	Ohms
Output Leakage	At 60 Volts			100	µA
Turn-On Time	T_C = 25 °C, Note 3			5.0	mSec
Turn-Off Time	T_C = 25 °C			10	mSec
Output Capacitance				2500	pF
Junction Temperature				150	°C
Thermal Resistance, θJA				30	°C/W
θJC				7	°C/W
Dielectric Strength	60 Hz	500			VAC RMS

APPLICATION NOTES:

1. Series resistor or current limit must be provided above 6V to limit on input current 16 mA max.

2. Internal transitions should be < 1 mS in duration and input source should be "bounceless contact" type.

3. MAX rep rate is 5 HZ

4. Voltage measured from pins 3 to 2.

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53109

ELECTRICAL CHARACTERISTICS* T_c = 0°C to 200°C

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Input (Control) Characteristics					
Control Current	5 VDC		70	80	µA
Control Voltage Range			5.0	7.0	VDC
Bias Supply Range VDD		4.5	5.0	5.5	VDC
Bias Current	200 °C		12	16	mA
Turn-Off Minimum (Assured)	200 °C	0.4			VDC
Turn-On Maximum (Assured)				3.8	VDC
Output (Load) Specifications					
Maximum Continuous	25 °C		5		Amp
Output Current	200 °C		1		Amp
Continuous Operating Output Voltage				60	VDC
Continuous Blocking Voltage				80	VDC
On-State Resistance Rds (on)	25 °C			.10	Ohms
On-State Resistance Rds (on)	200 °C			.20	Ohms
Turn-On Time	-0 °C to 200 °C		60		µsec
Turn-Off Time	-0 °C to 200 °C			0.5	msec
Off-State Leakage at 60 VDC	25 °C			10	µA
	200 °C			5	mA
Capacitance Across Output	@VDC = 25, F=1.0 MHz			1700	pf
Thermal Resistance, θJA				35	°C/W
θJC				7	°C/W
Isolation	@500 VDC, Input to Case	10^9			Ohms
	Input to Output, Output to Case				
Capacitance	Input to Output at 1KHz			15	pf
Dielectric Strength	Input to Case	1000			VAC RMS
	Input to Case, Output to Case				60 Hz

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