53252

90V - 0.8A DUAL POWER MOSFET OPTOCOUPLERS DLA DWG # 5962-03247

FEATURES:

- 8-Pin Dual-In-Line Hermetic Package
- Performance over –55°C to +125°C
- Compact Isolation Solid State Switches
- Continuous Output Current: 0.8 A (1)
- Optically Coupled between Input and Output
- Isolation Tested to 1000 VDC
- High Level of Transient Immunity
- 3 A Output Surge Current
- Shock and Vibration Resistant
- MIL-PRF-38534 screening optional

APPLICATIONS:

- Military/High Reliability Systems
- Standard 28 VDC and 48 VDC Load Driver
- Aircraft Controls
- Electromechanical and Solid State Relay Replacement
- I/O Modules
- Switching Heaters

DESCRIPTION

The 53252 is two power MOSFET optocouplers in a single 8-pin dual-in-line package suitable for applications where two independent switches are required. The popular hermetic eight-pin dual-in-line ceramic package combined with 1000 VDC isolation between input and output and between two isolated relays, makes this device ideal for solid-state relay applications. Performance is specified over the full military temperature range. This device is available in a variety of quality levels from COTS to class H including any custom screening requirements. Gold plated leads are standard, but other lead finishes per MIL-PRF-38534 are also available.

Functionally, the device operates as two SPST, normally open (2 Form “A”) solid-state relays. Each relay is actuated by an input current, which can be driven from a standard TTL device. The input current biases a light emitting diode that is optically coupled to an integrated photovoltaic diode array. The photovoltaic diode array energizes control circuitry that operates the output MOSFET.

ABSOLUTE MAXIMUM RATINGS: (Per relay unless otherwise noted)

Storage Temperature Range ..... -65°C to +150°C
Operating Ambient Temperature - T_A ..... -55°C to +125°C
Junction Temperature - T_J ..... +150°C
Lead Solder Temperature for 10 seconds ..... +260°C
(1.6 mm below seating plane)
Average Input Current - I_F ..... 20 mA
Peak Repetitive Input Current - I_{Fpk} ..... 40 mA
(pulse width < 100 ms; duty cycle < 50%)
Peak Surge Input Current - I_{Fpk} surge ..... 100 mA
(pulse width < 0.2 ms; duty cycle < 0.1%)
Continuous Output Current per relay - I_O ..... 0.8 A (1)
Single Shot Output Current per relay- I_{Opk} surge (pulse width < 10 ms) ..... 3 A
Output Voltage - V_O ..... 90 VDC

RECOMMENDED OPERATING CONDITIONS:

Parameter	Symbol	Min.	Max.	Units
Input Current (ON)	$I_{F\ (ON)}$	10	20	mA
Input Voltage (OFF)	$V_{F\ (OFF)}$	0	0.6	VDC
Operating Temperature	T_A	-55	+125	°C

ELECTRICAL SPECIFICATIONS

Test	Symbol	Conditions $-55°C \le T_A \le +125°C$ unless otherwise specified.	Group A subgroups	Device type	Limits		Unit
					Min	Max	
Output Withstand Voltage	$V_{O(OFF)}$	V_{FOFF} = 0.6 V, I_O = 10 µA	1, 2, 3	01, 02	90		V
Output On-Resistance 1/	$R_{(ON)}$	I_{FON} = 10 mA, I_O = 800 mA, pulse duration ≤ 30 ms, duty cycle < 10%	1, 2, 3	01		1.2	Ω
		I_{FON} = 5 mA, I_O = 800 mA, pulse duration ≤ 30 ms, duty cycle < 10%		02		1.2	
Output Leakage Current	$I_{O (OFF)}$	V_{FOFF} = 0.6 V, V_O = 90 V	1, 2, 3	01, 02		10	µA
Input Forward Voltage	V_{FOFF}	I_{FON} = 10 mA	1, 2, 3	01	1.0	1.7	V
		I_{FON} = 5 mA		02	1.0	1.7	
Input Reverse Breakdown Voltage	V_R	I_R = 10 µA	1, 2, 3	01, 02	5.0		V
Input-Output Isolation Current 2/	I_{I-O}	V_{I-O} = 1000 V dc, t = 5 s, RH ≤ 65%, T_A = +25°C	1	01, 02		1.0	µA
Channel-Channel Isolation Current 2/	I_{ISO}	V_{ISO} = 1000 V dc, t = 5 s, RH ≤ 65%, T_A = +25°C	1	01, 02		1.0	µA
Turn-On Time 1/	t_{ON}	I_{FON} = 10 mA, I_O = 0.8 A, Pulse duration ≤ 30 ms, duty cycle < 10%	9, 10, 11	01		6.0	ms
		I_{FON} = 5 mA, I_O = 0.8 A, Pulse duration ≤ 30 ms, duty cycle < 10%		02		6.0	
Turn-Off time 1/	t_{OFF}	I_{FON} = 10 mA, I_O = 0.8A, pulse duration ≤ 30 ms, duty cycle < 10%	9, 10, 11	01		2.0	ms
		I_{FON} = 5 mA, I_O = 0.8 A, pulse duration ≤ 30 ms, duty cycle < 10%		02		2.0	

NOTES:
1/ During the pulse R_{ON} measurement (I_O duration < 30 ms), ambient (T_A) and case temperature (T_C) are equal.
2/ This is a momentary withstand test, not a continuous operating condition.

CAUTION:
Care should be taken not to exceed the maximum output power dissipation, maximum case temperature, and maximum junction temperature when repetitively switching loads.

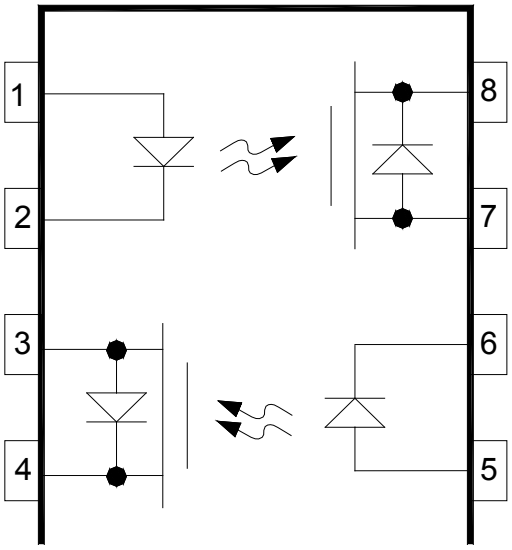
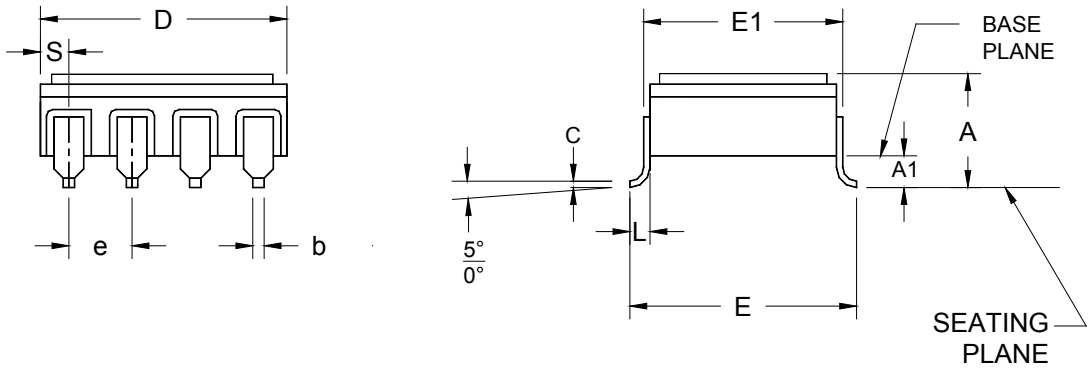


FIGURE 2. Terminal connections.

Case outlines	X, Y
Terminal number	Terminal symbol
1	+IN 1
2	-IN 1
3	-OUT 2
4	+OUT 2
5	+IN 2
6	-IN 2
7	-OUT 1
8	+OUT 1
FIGURE 1.	
Input	**Output**
OFF	OFF
ON	ON

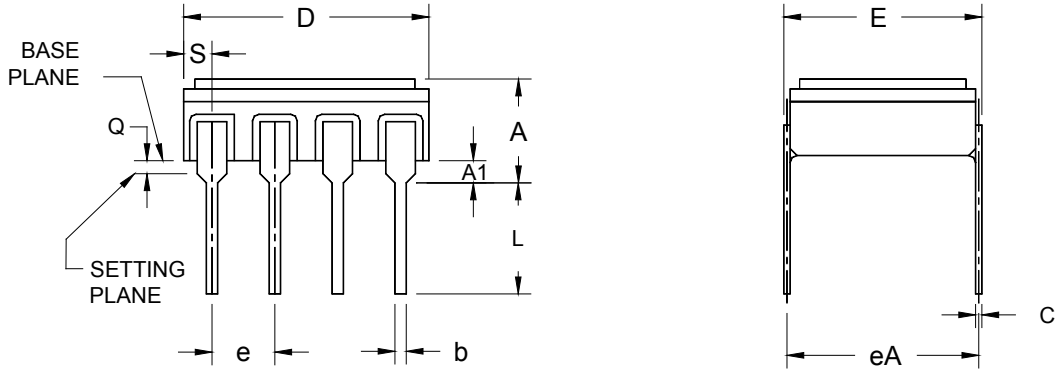
FIGURE 3. Truth table(s).

Case outline X



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A		6.99		.275
A1	1.40	1.65	.055	.065
b	0.41	0.53	.016	.021
c	0.18	0.33	.007	.013
D	9.40	9.91	.370	.390
e	2.29	2.79	.090	.110
E	9.65	9.91	.380	.390
E1		8.13		.320
L	1.07	1.32	.042	.052
S	0.89	1.27	.035	.050

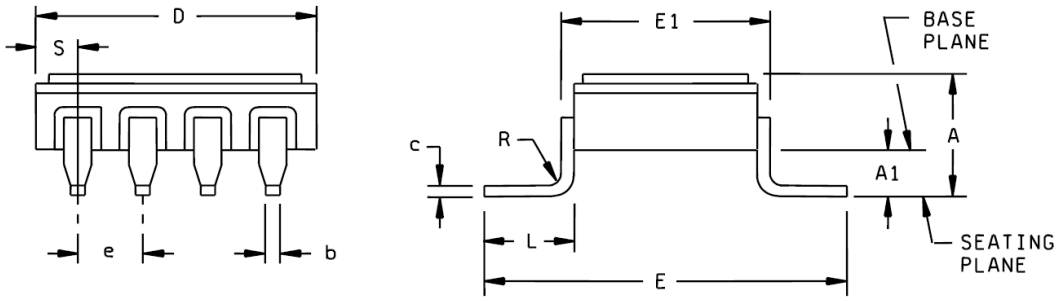
Case outline Y



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A		6.60		.260
A1	0.76	1.27	.030	.050
b	0.41	0.53	.016	.021
c	0.18	0.33	.007	.013
D	9.40	9.91	.370	.390
e	2.29	2.79	.090	.110
E		8.13		.320
eA	7.37	7.87	.290	.310
L		12.70		.500
Q	0.51		.020	
S	0.89	1.27	.035	.050

NOTES:
1. The U.S. government preferred system of measurement is the metric SI. This item was designed using inch-pound units of measurement. In case of problems involving conflicts between the metric and in-pound units, the inch-pound units shall rule.
2. Pin 1 is indicated by the ESD triangle(s) marked on top of the package.

Case outline Z



Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A		4.57		1.80
A1	1.40	1.65	0.055	0.065
b	0.41	0.53	0.016	0.021
c	0.18	0.33	0.007	0.013
D	9.40	9.91	0.370	0.390
e	2.29	2.79	0.090	0.110
E	12.45	12.70	0.490	0.500
E1		7.87		0.310
L	2.34		0.92	
R	0.51 TYP.		.020 TYP	
S	0.89	1.27	0..035	0.050

The following chart explains the ordering procedure for Micropac Part Numbers.
Please contact Micropac for other desired options.

Mii PART NUMBER.	STANDARD MILITARY DRAWING PIN	CASE OUTLINE
53252-1HXA	5962-0324701H**X**A	X
53252-1HXC	5962-0324701H**X**C	X
53252-1HYA	5962-0324701H**Y**A	Y
53252-1HYC	5962-0324701H**Y**C	Y
53252-1HZA	5962-0324701H**Z**A	Z
53252-1HZC	5962-0324701H**Z**C	Z
53252-2HXA	5962-0324702H**X**A	X
53252-2HXC	5962-0324702H**X**C	X
53252-2HYA	5962-0324702H**Y**A	Y
53252-2HYC	5962-0324702H**Y**C	Y
53252-2HZA	5962-0324702H**Z**A	Z
53252-2HZC	5962-0324702H**Z**C	Z