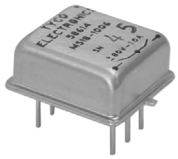
tyco Electronics

MS18-1006 High Performance Solid State Relay

DC & bi-directional solid state relay for loads up to 2A @ 80Vdc

Product Facts

- **Bi-directional power FET output.**
- **Optically coupled.**
- **Low on-resistance.**
- **Extremely low leakage current.**
- **Subminiature hermetically sealed package.**
- **Tested per MIL-R-28750 and approved to DSCC drawing 89116-006.**



The MS18-1006 is an optically coupled SSR employing power MOSFET output chips in an inverse series configuration for switching DC or bi-directional loads. A common source connection is provided for the user to configure the output switching circuit for DC operation up to 2A with very low on-resistance. The relay features fast switching speeds, low off-state leakage, virtually zero offset voltage and the capability to withstand high inrush currents up to 350% of rated. The low profile subminiature package is hermetically sealed with pinouts on a 0.1" x 0.3" grid pattern.

CII Part No.	DSCC Dwg. No.	Relay Version
MS18-1006	89116-006	Basic relay

Environmental Characteristics

Ambient Temperature Range:
Operating: -55°C to +120°C.
Storage: -55°C to +125°C.

Vibration Resistance:
100 G's, 10-2,000 Hz.

Shock Resistance:
1,500 G's, 0.5 ms pulse.

Constant Acceleration Resistance (Y-1 axis):
5,000 G's.

Mechanical Characteristics

Weight (approx.):
.07 oz. (5 grams)

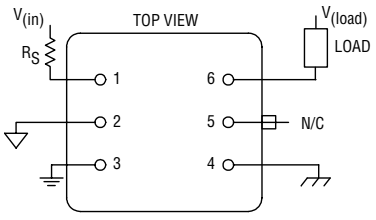
Materials:
Header: Kovar
Cover: Grade A Nickel
Pins: Kovar, gold plated

Electrical Specifications (-55°C to +120°C unless otherwise specified)

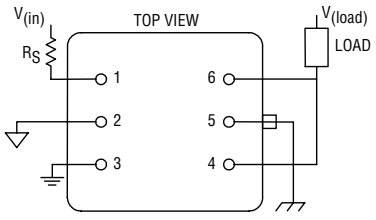
Input	
Input current (max.)	25mAdc
Input voltage drop (max. @ 25mA))	1.5 Vdc
Must turn-on current	10mA
Must turn-off current	10µA
Reverse voltage protection	-5.0Vdc
I/O	
Dielectric strength (60Hz., 1mA leakage)	500V rms
Insulation resistance (min.) @ 500Vdc	10^9 ohms
Capacitance (max. @ 25Vdc, 1 Mhz)	5pF
Output	
Continuous load current, parallel (DC) configuration (max.)	2A
Continuous load current, series (bi-directional) configuration (max.)	1A
Continuous operating load voltage (max.)	+/– 80V
Transient blocking voltage (5 sec max.)	+/– 90V
Overload (100ms, 10% duty cycle, 10 cycles max.)	350% of rated
dv/dt (min.)	100V / µs
On resistance (max.), parallel (DC) configuration	0.4 ohm
On resistance (max.), series (bi-directional) configuration	0.6 ohm
Thermal resistance, junction to ambient	110°C/W
Thermal resistance, junction to case	20°C/W

Figure 1 – Wiring Diagrams

Series Connection



Parallel Connection



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Catalog MS18-TBD
Issued 1-04

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-5-729-0425

South America: 55-11-3611-1514
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-141-810-8967

Figure 2 - Temperature Derating Curves

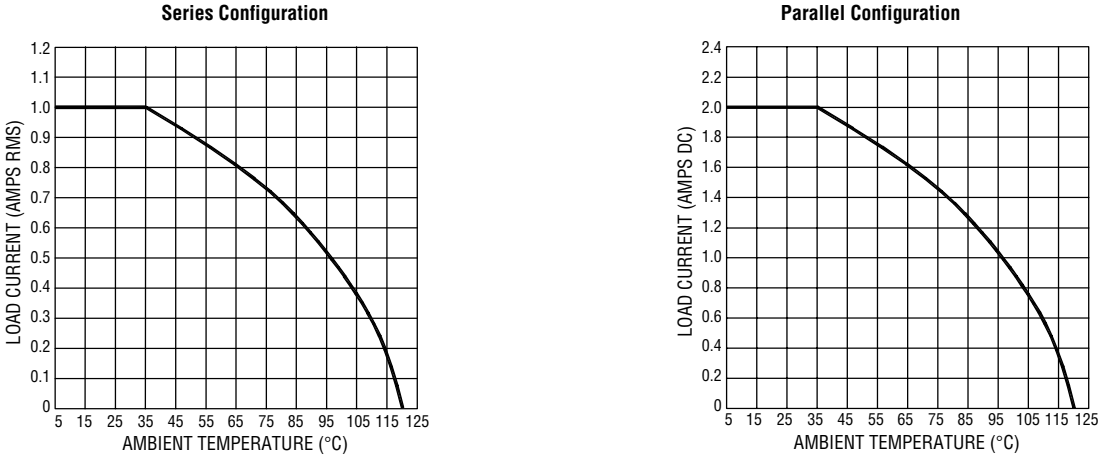


Figure 3 - Turn-on and Turn-off Timing

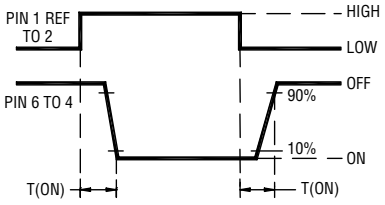


Figure 4 - Functional Block Diagram

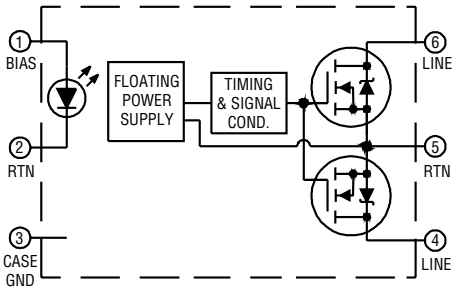
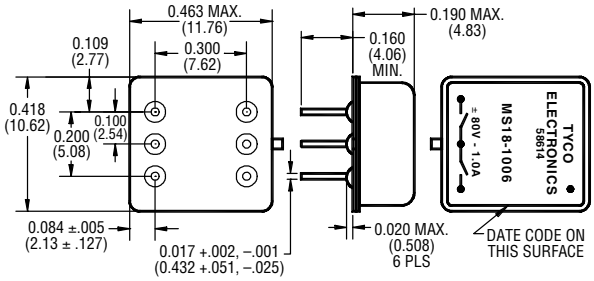


Figure 5 - Outline Dimensions



Notes

1. An external resistor must be in series with the input at all times.
2. Do not ramp input current. Input transition should be <1.0ms.
3. Input current/series resistor calculation (Approx.): $I_{(input)} = V_{IN} - V_{DROP}/R_{SERIES}$.
4. Unless otherwise specified parametric testing is accomplished at 25ma input current.
5. To calculate $R_{DS(ON)}$ for tempertures other than 25°C, use the following equation: $T_{(TEMP)} = (R_{DS(ON)}$ at + 25°C) • $e^{(X \bullet \Delta T)}$ where x = 0.0065.
6. Inductive loads must be diode suppressed.
7. Continuous load current is rated under conditions of still air.
8. Load may be connected to either side of relay, sink or source modes.
9. Reverse polarity >5Vdc may cause permanent damage
10. Acceptance testing is accomplished in the series (bi-directional) mode.

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