

| Part*<br>Number | Relay<br>Description          |
|-----------------|-------------------------------|
| <b>LD00KM</b>   | 270Vdc, 10A Solid State Relay |

\* The Y suffix denotes parameters tested to MIL-PRF-28750 specifications.  
 The W suffix denotes parameters tested to Teledyne Specifications.

### ELECTRICAL SPECIFICATIONS

(-55°C to +125°C UNLESS OTHERWISE NOTED)

#### INPUT (CONTROL) SPECIFICATIONS

##### When used in 2 terminal configuration

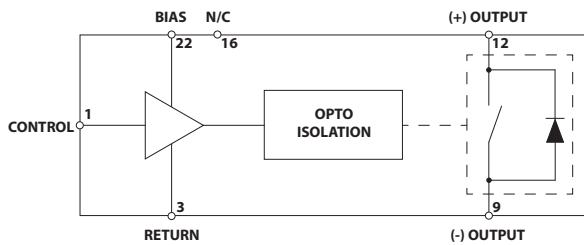
| (TTL or direct control) (See Fig 1)           | Min | Typ | Max | Units |
|---|-----|-----|-----|-------|
| Input Current @ $V_{IN} = 5$ Vdc(See Fig 2,4) |     |     | 25  | mA    |
| Turn-Off Voltage (Guaranteed Off)             |     |     | 1.5 | Vdc   |
| Turn-On Voltage (Guaranteed On)               | 4.2 |     |     | Vdc   |
| Reverse Voltage Protection                    |     |     | -32 | Vdc   |
| Input Supply Range (See Note 1)               | 4.2 |     | 32  | Vdc   |

#### INPUT (CONTROL) SPECIFICATIONS

##### When used in 3 terminal configuration

| (CMOS or open collector TTL) (See Fig. 1) | Min | Typ | Max | Units   |
|---|-----|-----|-----|---------|
| Control Current                           |     |     |     |         |
| $V_{CONTROL} = 5$ Vdc                     |     |     | 250 | $\mu$ A |
| $V_{CONTROL} = 18$ Vdc                    |     |     | 1   | mA      |
| Control Voltage Range                     | 0   |     | 18  | Vdc     |
| Bias Supply Voltage (See Note 1)          | 4.2 |     | 32  | Vdc     |
| Bias Supply Current @ $V_{BIAS} = 5$ Vdc  |     |     | 25  | mA      |
| Turn-Off Voltage (Guaranteed Off)         | 3.5 |     |     | Vdc     |
| Turn-On Voltage (Guaranteed On)           |     |     | 0.3 | Vdc     |

### BLOCK DIAGRAM



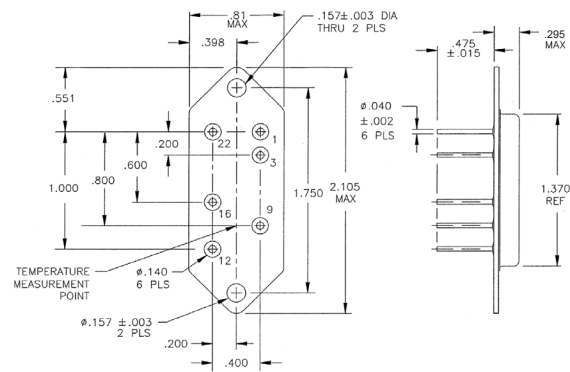
### FEATURES

- High Voltage
- TTL and CMOS compatible control
- Low ON resistance power SiC MOSFET output
- Fast switching speed
- Meets 270 Vdc system requirements of MIL-STD-704
- Optical isolation
- Low profile hermetic package
- Built and tested to the requirements of MIL-PRF-28750

### DESCRIPTION

The Series LD00KM solid-state relays are screened utilizing MIL-PRF-28750 test methods and are packaged in low profile hermetically sealed cases. These relays are constructed with state-of-the-art solid state techniques and feature fully floating power FET output technology. This allows the load to be connected to either output terminal and provides a low ON resistance. The input (control) and output are optically isolated to protect input logic circuits from output transients. This series is designed for output loads up to 270Vdc but is also used in many applications switching 36, 28, 14, and 12Vdc.

### MECHANICAL SPECIFICATION



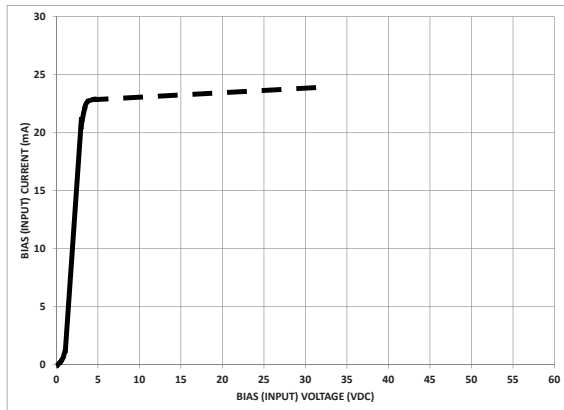
ENCLOSURE: HERMETICALLY SEALED DIP  
 MATERIAL HEADER - COLD ROLLED STEEL NICKEL PLATED  
 PINS - COPPER CORE  
 CAN - COLD ROLLED STEEL NICKEL PLATED  
 WEIGHT: 20 GRAMS  
 TOLERANCE: .XXX ± .005

**OUTPUT (LOAD) SPECIFICATIONS**

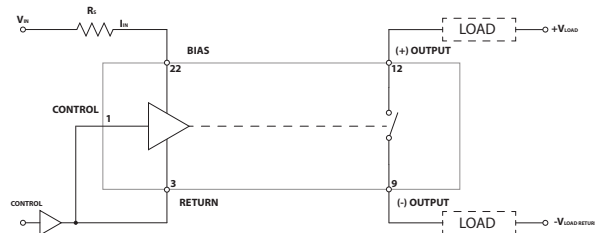
| (See Note 2)  | Min             | Typ   | Max | Units           |
|---|-----------------|-------|-----|-----------------|
| Load Current without heatsink (Figure 3)                  |                 | 7.5   |     | A <sub>dc</sub> |
| Load Current with heatsink (Figure 3)                     |                 | 10    |     | A <sub>dc</sub> |
| Leakage Current @ V <sub>LOAD</sub> = 270 Vdc             |                 | 10    |     | μA              |
| Output Voltage Drop @ 10A                                 |                 | 0.42  |     | V <sub>dc</sub> |
| Continuous Operating Load Voltage                         |                 | 270   |     | V <sub>dc</sub> |
| Transient Blocking Voltage                                |                 | 500   |     | V <sub>dc</sub> |
| ON Resistance   |                 | 0.042 |     | Ohm             |
| Turn-On Time (See Fig. 6)                                 |                 | 7     |     | ms              |
| Turn-Off Time (See Fig. 6)                                |                 | 2     |     | ms              |
| Electrical System Spike @ 25°C                            |                 | ±600  |     | V <sub>pk</sub> |
| Input to Output Capacitance                               |                 | 10    |     | pF              |
| Dielectric Strength                                       | 1000            |       |     | V <sub>ac</sub> |
| Insulation Resistance @ 500 Vdc                           | 10 <sup>9</sup> |       |     | Ohm             |
| Output Junction Temperature                               |                 | 135   |     | °C              |
| @ I <sub>LOAD</sub> = I <sub>MAX RATED</sub>              |                 |       |     |                 |
| Thermal Resistance Junction to Ambient (θ <sub>JA</sub> ) |                 | 30    |     | °C/W            |
| Thermal Resistance Junction to Case (θ <sub>JC</sub> )    |                 | 5     |     | °C/W            |

**ENVIRONMENTAL SPECIFICATIONS**

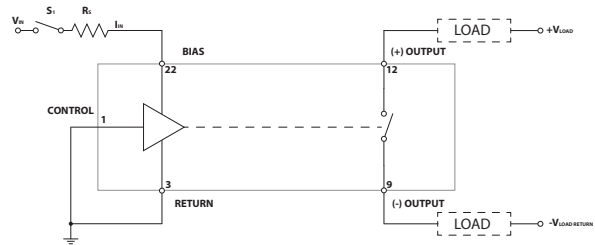
|                       | Min | Typ | Max  | Units |
|-----------------------|-----|-----|------|-------|
| Temperature Range     |     |     |      |       |
| Operating             | -55 |     | +125 | °C    |
| Storage               | -55 |     | +125 | °C    |
| Vibration 100g        | 10  |     | 3000 | Hz    |
| Constant Acceleration |     |     | 5000 | g     |
| Shock, 0.5 ms         |     |     | 1500 | g     |



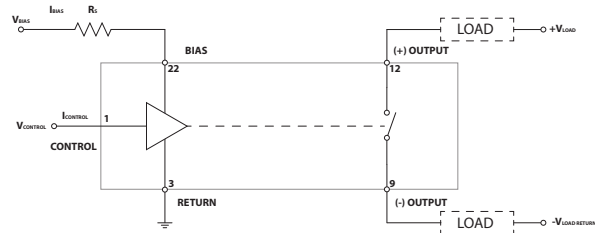
**BIAS (INPUT) CURRENT VS BIAS (INPUT) VOLTAGE**  
FIGURE 3  
(See Note 1)



**A) 2 TERMINAL INPUT (OPEN COLLECTOR TTL DRIVE)**



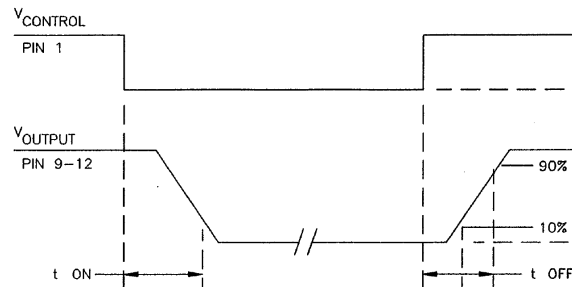
**B) 2 TERMINAL INPUT (DIRECT DRIVE)**



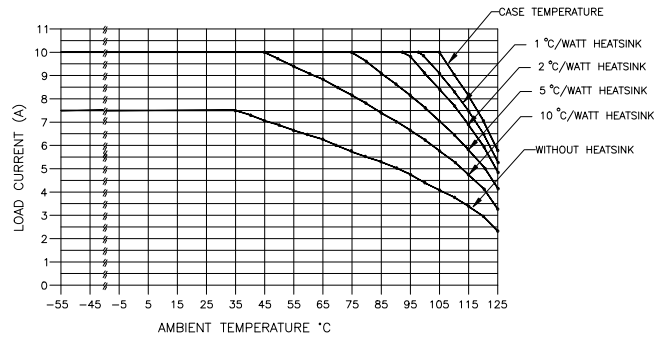
**C) 3 TERMINAL INPUT**

**WIRING CONFIGURATIONS**

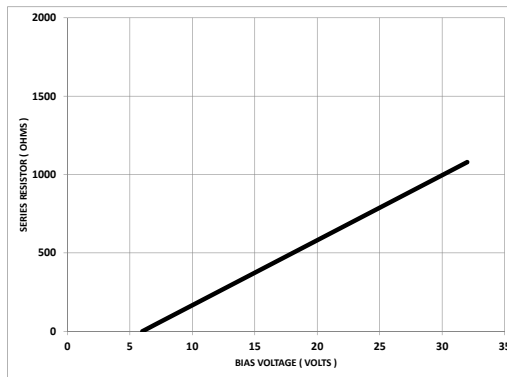
FIGURE 1  
(See Note 1)



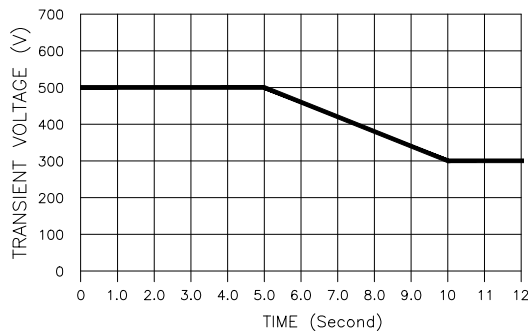
**OUTPUT TURN-ON AND TURN-OFF TIMING**  
FIGURE 2



**LOAD CURRENT DERATING CURVE**  
**FIGURE 4**



**SERIES LIMIT BIAS RESISTOR VS BIAS VOLTAGE**  
**FIGURE 5 (See Note 1)**



**TRANSIENT VOLTAGE vs. TIME**  
**FIGURE 6**

**NOTES:**

1. Control input is compatible with CMOS or open collector TTL (with pull up resistor). For bias voltages above 6V, a series resistor is required. Use the standard resistor value equal to or less than the value found in Figure 4.
2. The rated input voltage is 5V for all tests unless otherwise specified.
3. Inductive loads should be diode suppressed. Input transitions should be  $\leq 1$  ms duration and the input drive should be a bounceless contact type.
4. Contact factory for higher voltage relays.