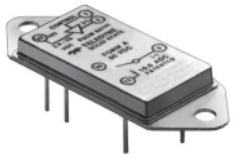
TELEDYNE RELAYS
Everywhereyoulook™

Series LD00KM

10A, 270Vdc, Optically Isolated
NEW Silicon Carbide DC Solid-State Relay

Part* Number	Relay Description
LD00KM	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	µAdc
$V_{CONTROL}$ = 18 Vdc			1	mAdc
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

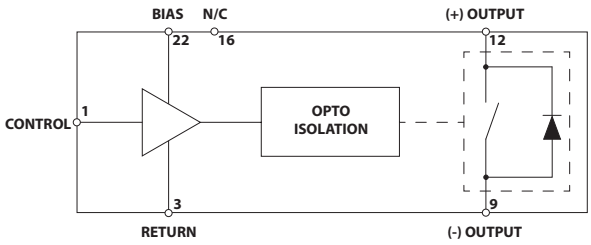
FEATURES

- 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

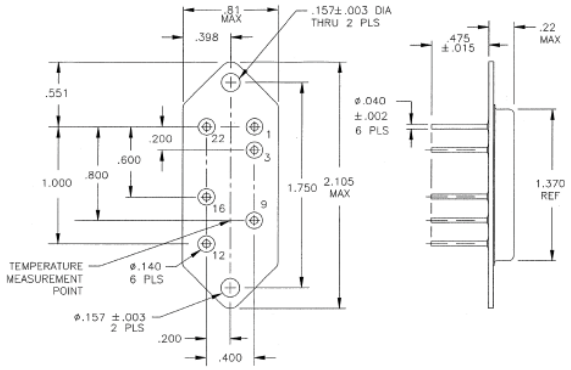
DESCRIPTION

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.

BLOCK DIAGRAM



MECHANICAL SPECIFICATION



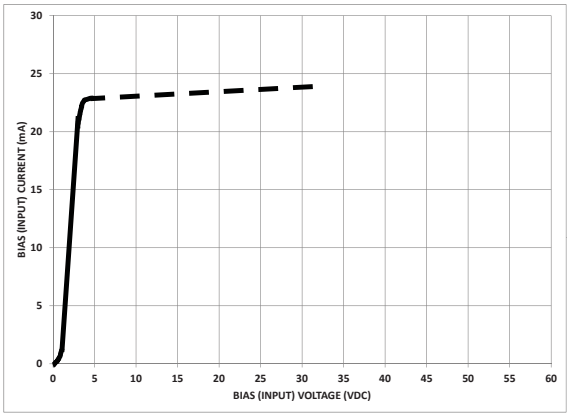
ENCLOSURE: HERMETICALLY SEALED DIP
MATERIAL HEADER - COLD ROLLED STEEL NICKEL PLATED
PINS - COPPER CORE
CAN - COLD ROLLED STEEL NICKEL PLATED
WEIGHT: 20 GRAMS
TOLERANCE: .XXX ± .005

OUTPUT (LOAD) SPECIFICATIONS

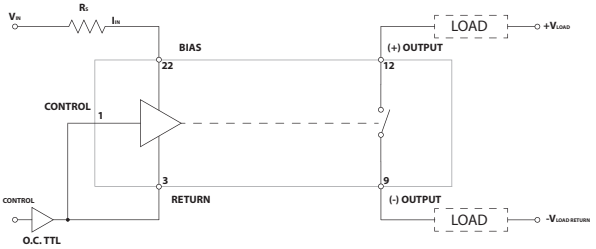
(See Note 2)	Min	Typ	Max	Units
Load Current without heatsink (Figure 3)			7.5	Adc
Load Current with heatsink (Figure 3)			10	Adc
Leakage Current @ V_{LOAD} = 500 Vdc			100	µA
Output Voltage Drop @ 10A			0.42	Vdc
Continuous Operating Load Voltage			270	Vdc
Transient Blocking Voltage			500	Vdc
ON Resistance			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	Vpk
Input to Output Capacitance			10	pF
Dielectric Strength	1000			Vac
Insulation Resistance @ 500 Vdc	10^9			Ohm
Output Junction Temperature @ $I_{LOAD} = I_{MAX\ RATED}$			135	°C
Thermal Resistance Junction to Ambient (θ_{JA})			30	°C/W
Thermal Resistance Junction to Case (θ_{JC})			5	°C/W

ENVIRONMENTAL SPECIFICATIONS

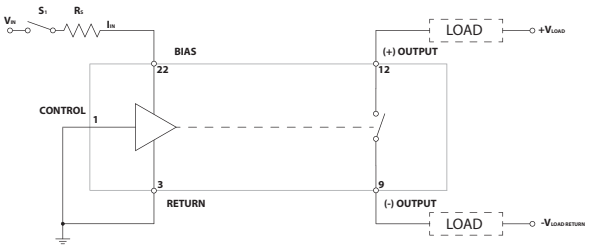
	Min	Typ	Max	Units
Temperature Range				
Operating	–55		+125	°C
Storage	–55		+125	°C
Vibration 100g	10		3000	Hz
Constant Acceleration			5000	g
Shock, 0.5 ms			1500	g



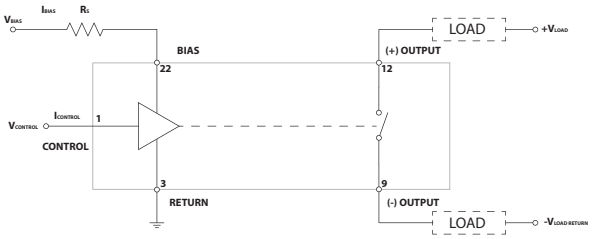
BIAS (INPUT) CURRENT VS BIAS (INPUT) VOLTAGE
FIGURE 2
(See Note 1)



A) 2 TERMINAL INPUT (OPEN COLLECTOR TTL DRIVE)

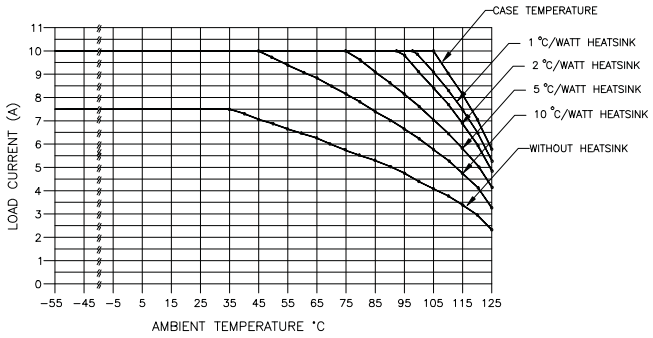


B) 2 TERMINAL INPUT (DIRECT DRIVE)

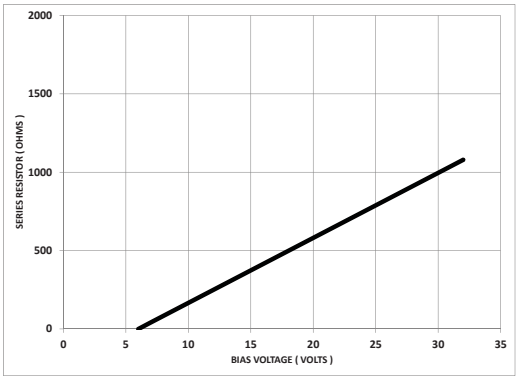


C) 3 TERMINAL INPUT

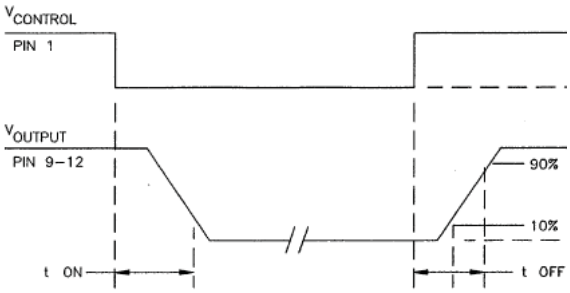
WIRING CONFIGURATIONS
FIGURE 1
(See Note 1)



LOAD CURRENT DERATING CURVE
FIGURE 3



SERIES LIMIT BIAS RESISTOR VS BIAS VOLTAGE
FIGURE 4 (See Note 1)



OUTPUT TURN-ON AND TURN-OFF TIMING
FIGURE 5

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 ≤1 ms duration and the input drive should be a bounce-less contact type.

4. Contact factory for higher voltage relays.