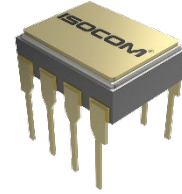


PART NUMBER

CDMR310x

COMPONENT SPECIFICATION

ISSUE 4



Component Specification For Hermetically Sealed, Radiation-Hard Dual Power MOSFET Optocoupler

Features	Applications
<ul style="list-style-type: none"> ▪ Compact Isolation Solid State Switches ▪ Continuous Output Current: 0.8A[Ⓢ] ▪ 3A Output Surge ▪ High Level of Transient Immunity ▪ Optically Coupled between Input and Output ▪ Military Screening available ▪ Full Military temperature range -55°C to +125°C 	<ul style="list-style-type: none"> ▪ Standard 28 V_{DC} and 48 V_{DC} Load Driver ▪ Military/High Reliability Systems ▪ Aircraft Controls ▪ Electromechanical and Solid State Relay Replacement

DESCRIPTION

- The CDMR310x is two power MOSFET optocouplers in a single 8 pin dual-in-line package, suitable for applications where two independent switches are required. This popular hermetic ceramic package combined with 1500V_{DC} isolation between input and output and between two isolated relays, makes this device ideal for solid state relay applications. The CDMR310x is available over the full military temperature range and with quality levels ranging from Commercial & Industrial to Defence and Space including any custom screening requirements. Gold plated leads are standard, but the other lead finishes per Mil-PRF-38534 are also available.

Functionally, the CDMR310x operates as two SPST, normally open (2 Form "A") solid state relays. Each relay is actuated by an input current, and this can be driven from standard TTL device. The input current bodes a light emitting diode that is optically coupled to an integrated photovoltaic diode array. The photovoltaic diode array energises control circuitry that operates the output MOSFET.



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STANDARDS

The following specifications have been complied with in the manufacturing of this product -

Aerospace Compliance Standards

AS9100D & ISO 9001:2015 – Design & Manufacture of Electronic and Optoelectronic Components (*Ref GB15/92780*)

Military Compliance Specifications

MIL-PRF-38534 – General Specification for Hybrid Microcircuits

MIL-PRF-19500 – General Specification for Discrete Semiconductor Devices

Military Compliance Standards

MIL-STD-202 – Test Method Standard Electronic and Electrical Component Parts

MIL-STD-883 – Test Method Standard Microcircuits

MIL-STD-750 – Test Method Standard for Semiconductor Devices

SCREENING INFORMATION

Our products can be screened to MIL-PRF-38534, applying test methods from MIL-STD-883; MIL-PRF-19500, applying test methods of MIL-STD-750; or a combination thereof. Please contact us for more information relating to the applicable screening processes.

AMENDMENT RECORD

Issue No.	Date	Description
1	February 2016	First issue
2	January 2021	Updated Quality Management Logos and Standards Section. Removed IECQ Logos, Screening Information and Group Testing Information.
3	June 2022	Updated Format
4	April 2024	Updated Format and Updated Functional Diagrams

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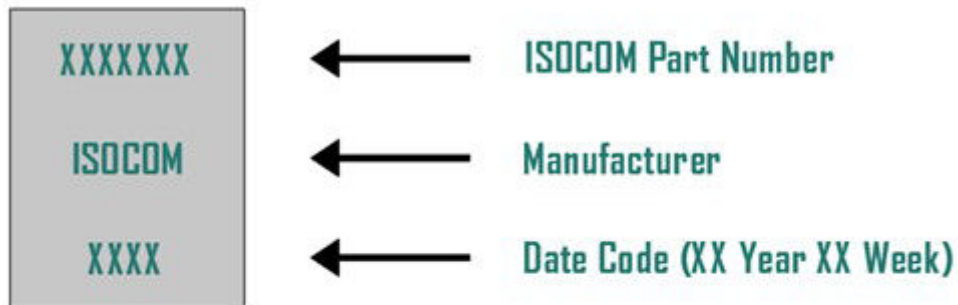
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PACKAGE STYLES AND CONFIGURATION OPTIONS

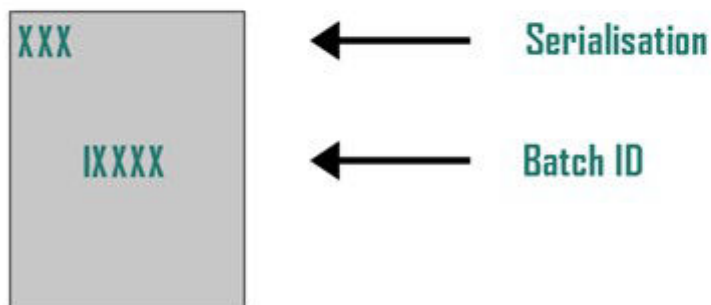
Package	8-Pin DIP
Lead Style	-
Channels	1
Common Channel Wiring	-
Isocom Part Number and Options	
Commercial	CDMR310(A/B)
Defense Screen Level	CDMR310(A/B)/L2
Space Screen Level	CDMR310(A/B)/L2S
Standard Gold Plate Finish	Gold Plate
Butt Joint	Option 10
Solder Dipped	Option 20
Gull Wing	Option 30
Butt Joint	Option 60

DEVICE MARKING

FRONT OF DEVICE



BACK OF DEVICE



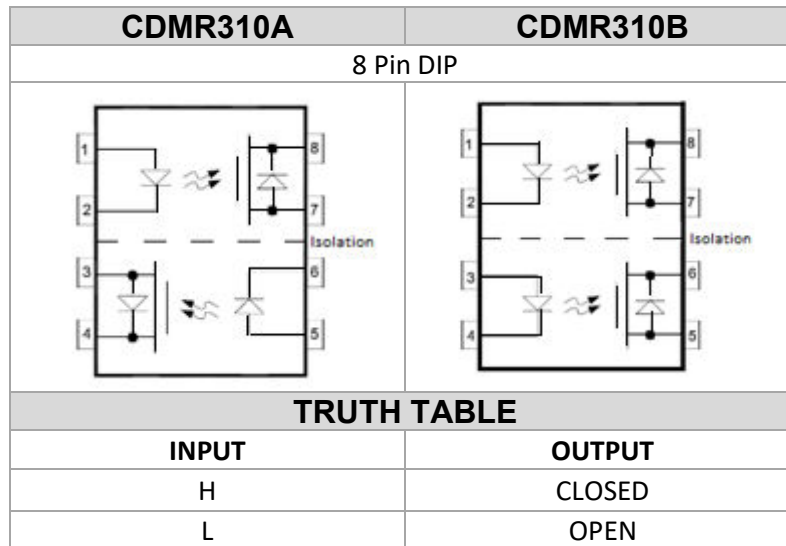
FOR SPACE SCREENED PARTS ONLY

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FUNCTIONAL DIAGRAMS



PIN CONFIGURATION

CDMR310A		CDMR310B	
Pin Number	Symbol	Pin Number	Symbol
1	+ IN 1	1	+ IN 1
2	- IN 1	2	- IN 1
3	- OUT 2	3	+ IN 2
4	+ OUT 2	4	- IN 2
5	+ IN 2	5	- OUT 2
6	- IN 2	6	+ OUT 2
7	- OUT 1	7	- OUT 1
8	+ OUT 1	8	+ OUT 1

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ABSOLUTE MAXIMUM RATINGS

$T_A = 25^\circ\text{C U.O.S}$

Storage Temperature	-65°C to +150°C	
Operating Ambient Temperature	-55°C to +125°C	
Lead Soldering Temperature	260°C	1.6mm below seating plane for 10 seconds
Junction Temperature	+150°C	
Average Input Current	20mA	
Peak Repetitive Input Current	40mA	Pulse Width <100mS; duty cycle<50%
Peak Surge Input Current	100mA	Pulse Width <0.2mS; duty cycle<0.1%
Continuous Output Current per relay	0.8A	
Single Shot Output Current per relay	3.0A	Pulse Width <10mS
Output Voltage	100V _{DC}	

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	V _{DC}
Operating Temperature	T_A	-55	+125	°C

ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C U.O.S}$

Parameter	Symbol	Conditions	Limits		Unit
			Min	Max	
Output Withstand Voltage	$V_{O(OFF)}$	$V_{O(OFF)} = 0.6\text{V}, I_o = 10\mu\text{A}$	90	-	V
Output On-Resistance ②	$R_{(ON)}$	$I_{FON} = 10\text{mA}, I_o = 800\text{mA}, \text{pulse duration} \leq 30\text{mS}, \text{duty cycles} < 10\%$	-	1.2	Ω
Output Leakage Current	$I_{O(OFF)}$	$V_{F(OFF)} = 0.6\text{V}, V_o = 90\text{V}$	-	10	μA
Input Forward Voltage	$V_{F(OFF)}$	$I_{FON} = 10\text{mA}$	1.0	1.7	V
Input Reverse Breakdown Voltage	V_R	$I_R = 10\mu\text{A}$	5.0	-	V
Input-Output Isolation Current ③	I_{I-O}	$V_{I-O} = 1000\text{V}_{DC}, t = 5\text{s}, RH \leq 45\%. T_A = 25^\circ\text{C}$	-	1.0	μA
Channel-Channel Isolation Current ③	I_{ISO}	$V_{ISO} = 1000\text{V}_{DC}, t = 5\text{s}, RH \leq 45\%. T_A = 25^\circ\text{C}$	-	1.0	μA
Turn-On Time ②	t_{ON}	$I_{FON} = 10\text{mA}, I_o = 800\text{mA}, \text{pulse duration} \leq 30\text{mS}, \text{duty cycles} < 10\%$	-	6.0	ms
Turn-Off Time ②	t_{OFF}	$I_{FON} = 10\text{mA}, I_o = 800\text{mA}, \text{pulse duration} \leq 30\text{mS}, \text{duty cycles} < 10\%$	-	2.0	ms

Application Notes:

- ① Maximum average current rating where the case temperature (T_c) is maintained below 120°C.
- ② During the pulsed R_{ON} measurement (I_o duration < 30ms), ambient (T_A) and case temperature (T_c) are equal.
- ③ This is a momentary withstand test, not a continuous operating condition.
- ④ Typical junction to case thermal resistance (θ_{JC}) for the device is 15°C/W, where the case temperature (T_C) is measured at the centre of the package bottom.

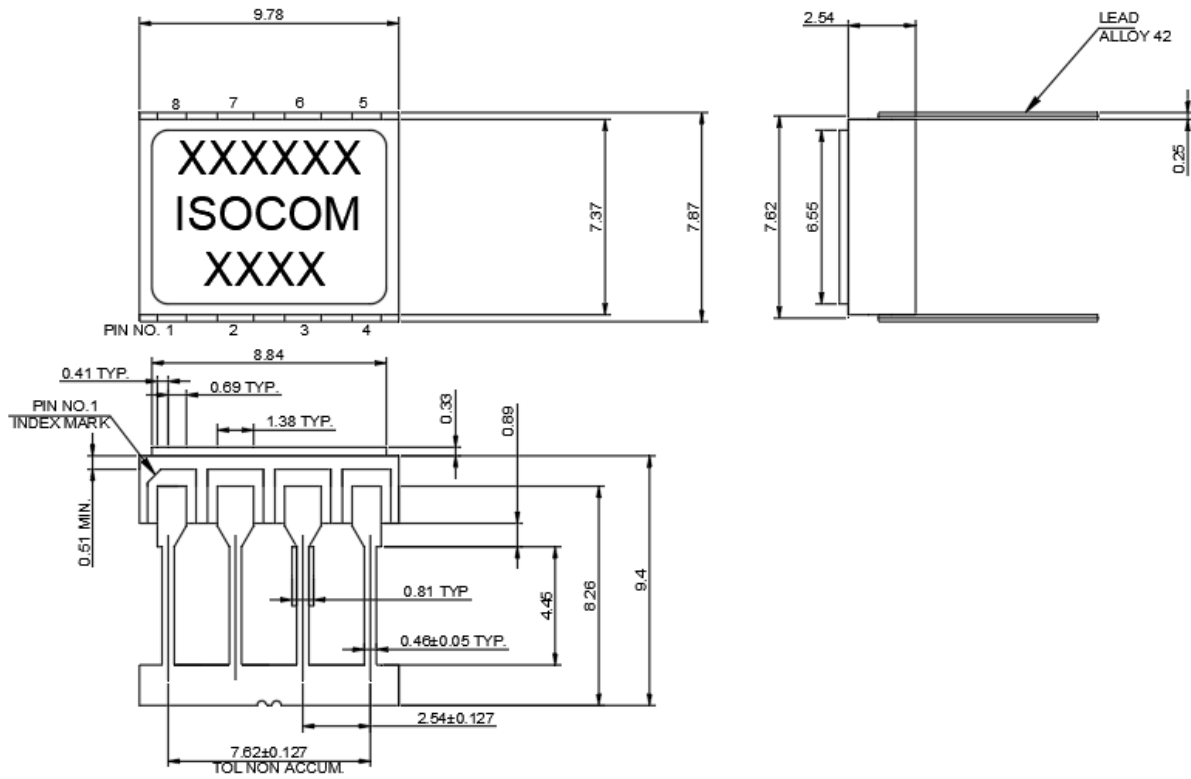
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OUTLINE DRAWINGS

8-Pin DIP



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