PART NUMBER **CDMR1010**

COMPONENT SPECIFICATION **ISSUE 3**

Component Specification for Dual Channel Optically Coupled Solid State Relay

Features	Applications
▪ Released to European Standard and complies to MIL-STD	▪ Space Equipment and Systems
▪ 10A Continuous Current	▪ Military and High Reliability Systems
▪ Buffered Input Stage	▪ Medical Instruments
▪ 8 Lead Surface Mount Package	▪ MOS/CMOS Applications
▪ High Isolation up to 1,000V_{dc}	▪ Logic Interfacing
▪ Optically Coupled	▪ Power Supply
▪ Hermetically Sealed	

DESCRIPTION

The CDMR1010 has two power MOSFET optocouplers packaged into an 8-Lead Surface Mount package, and is suited for applications where two independent switches are required. This popular hermetic ceramic package combined with 1,000V_{dc} isolation between input and output, and between two isolated relays, makes this device ideal for solid state relay applications.

The CDMR1010 is available over the full military temperature range and with quality and screening levels ranging from Commercial and Industrial, to Defence and Space. Gold plated leads are standard, but the other lead finishes per Mil-PRF-38534 are also available. Functionally, the CDMR1010 operates as dual, single-pole-single-throw (SPST) normally open relay. Each relay is actuated by a standard logic input.

ISOCOM Limited is AS9100 certified for the design and manufacture of electronic and optoelectronic components.

For sales enquiries, or further information, please contact our sales office at:

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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-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 Methods 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.

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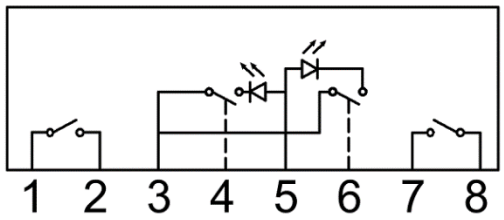
SELECTION GUIDE PACKAGE STYLES AND CONFIGURATION OPTIONS

ISOCOM Part Number and Options	
Package	8 Lead Surface Mount
Lead Style	–
Channels	2
Common Channel Wiring	–
Commercial	CDMR1010
Defense Screen Level	CDMR1010/L2
Space Screen Level	CDMR1010/L2S
Standard Finish	Gold Plating
Solder Dipped	Option #20

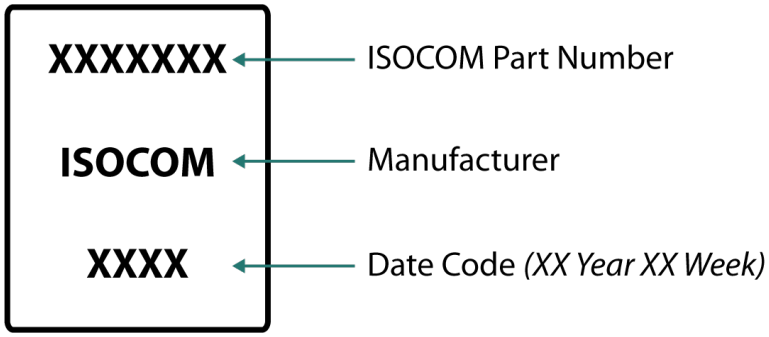
FUNCTIONAL DIAGRAMS

CDMR1010

8 Lead Surface Mount



DEVICE MARKING



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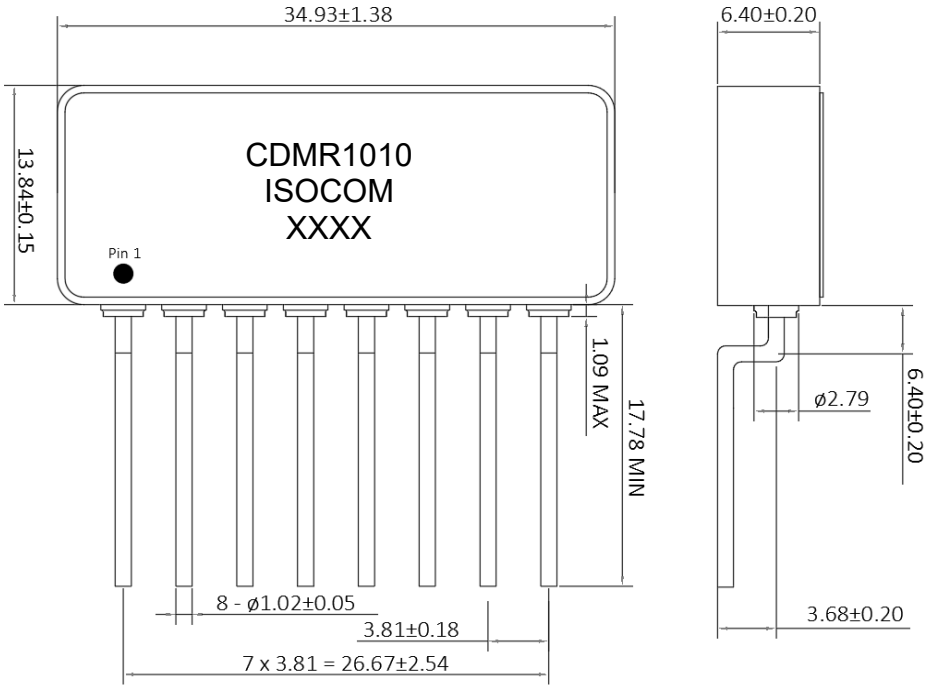
OUTLINE DRAWINGS



PIN CONFIGURATION

CDMR1010	
Pin Number	**Description**
1	+ Output 1
2	- Output 1
3	Input GND
4	Input 1
5	VDD
6	Input 2
7	- Output 2
8	+ Output 2

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ABSOLUTE MAXIMUM RATINGS

T_J=25°C U.O.S.

Parameter	Symbol	Value	Units
Output Maximum Voltage ⑤	V_S	100	V
Output Current ④, ⑤	I_O	12	A
Input Buffer Voltage ③	V_{IN}	±7.5	V
Input Buffer Current	I_{IN}	±10	mA
Input Supply Voltage	V_{DD}	5.25	V
Input Supply Current	I_{DD}	25	mA
Power Dissipation ④, ⑤	P_{DISS}	60	W
Operating Temperature Range	T_J	-55 to 125	°C
Storage Temperature Range	T_S	-65 to 150	
Lead Temperature	T_L	300	

ELECTRICAL CHARACTERISTICS

-55°C ≤T_J≤125°C U.O.S.

Parameter	Symbol	Group A Subgroups	Test Conditions	Min.	Typ.	Max.	Units
Output On-Resistance	$R_{DS(ON)}$	1	V_{in} = 3.3V, V_{DD} = 5.0V, I_O = 10.0A	-	0.070	0.100	Ω
		2		-	0.125	0.165	
Output Leakage Current	I_O	1	V_{in} = 0.1V, V_S = 100V	-	-	25	µA
		2	V_{in} = 0.1V, V_S = 80V	-	-	250	
Input Supply Current	I_{DD}	1, 2, 3	V_{DD} = 5.0V, I_O = 10A	-	18	25	mA
Input Buffer Current	I_{IN}	1	V_{IN} = 3.3V	-	-	1.0	µA
		2, 3		-	-	3.0	
Turn-On Delay ⑥	t_{ON}	1, 2, 3	V_{IN} = 3.3V, V_{DD} = 5.0V, V_S = 30.0V, RC = 7Ω/100µF, PW = 50.0ms	-	0.18	0.45	ms
Turn-Off Delay ⑥	t_{OFF}	1, 2, 3	V_{IN} = 0.1V, V_{DD} = 5.0V, V_S = 30.0V, RC = 7Ω/100µF, PW = 50.0ms	-	0.50	0.75	
Rise Time ②, ⑥	t_r	1, 2, 3	V_{IN} = 3.3V, V_{DD} = 5.0V, V_S = 30.0V, RC = 7Ω/100µF, PW = 50.0ms	-	0.25	0.40	
Fall Time ②, ⑥	t_f	1, 2, 3	V_{IN} = 0.1V, V_{DD} = 5.0V, V_S = 30.0V, RC = 7Ω/100µF, PW = 50.0ms	-	1.50	1.80	

Notes

① Specification guarenteed by design.

② Rise and fall times are controlled internally.

③ Inputs protected for V_{IN} <1.0V and V_{IN} >7.5V.

④ Optically coupled Solid State Relays (SSRs) have relativley sloqw turn on and off times. Care must be taken to insure that transient currents do not cause violation of SOA. If transient conditions are present, Isocom recommends a complete simulation to be perfomred by the end user to insure compliance with SOA requirements.

⑤ While the SSR design meets the design requirements in MIL-PRF 38534, the end user is responsible for product derating, as required for the application.

⑥ Reference figures 2 & 3 for switching test circuits and waveform.

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TEST DIAGRAMS

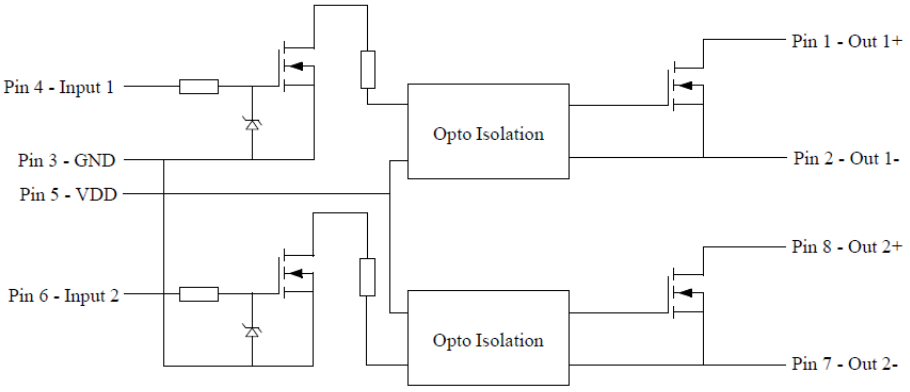

Fig 1. Typical Application

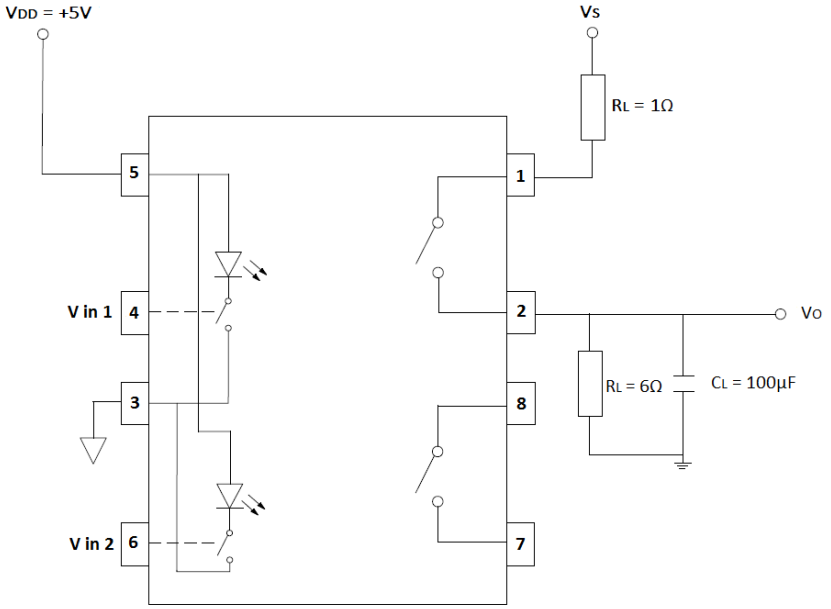

Fig 2. Switching Test Circuit (Single Channel Shown)

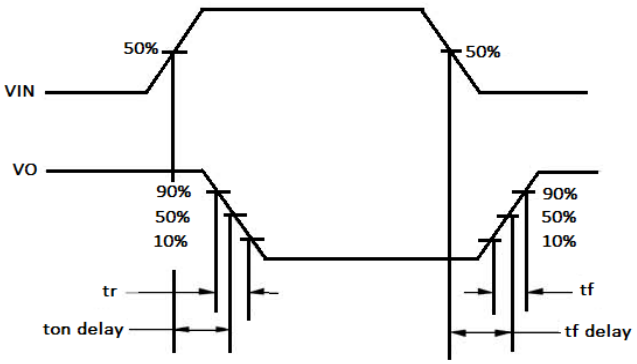

Fig 3. Switching Test Waveform

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