

TRANSISTOR OPTOCOUPERS

MCT 6 (Replacement for IL CT6) Dual Channel Opt-Isolator

DESCRIPTION

The MCT6 has two Opto-Isolators in one package. Each channel consists of a Gallium Arsenide infrared emitting diode and a NPN silicon phototransistor mounted in a standard 8-pin dual-in-line Package, with surface mount, butt cut and gull wing options available. The same electrical die, assembly processes and

materials are used for each channel of each device shown above. Therefore absolute maximum ratings, recommended operating conditions, electrical specifications and performance characteristics are identical for all units. Any exceptions, due to packaging variations and limitations, are as noted.

Isocom Ltd supplies a multitude of plastic optocouplers for all applications varying from standard transistor optos through to Darlington and Schmitt Trigger devices. It's massive family of optos vary in speed allowing maximum opportunity to engineers worldwide.

All devices are performance guaranteed between -20°C and +80°C and have completed rigorous testing. The Company's customers can be assured of our commitment to stringent quality, reliability and inspection standards, as demonstrated by our existing approvals. Other customer specific options can also be offered.

FEATURES

- Low cost dual-in-line package
- Manufactured and tested in BS9000 and CECC20000 approved premises
- High current transfer ratio
- 2500V electrical isolation

Isocom Ltd reserves the right to change the details on this specification without notice. Please consult Isocom Ltd prior to use. Isocom Ltd cannot accept liability for any errors or omissions.

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

Isocom Ltd, Hutton Close, Crowther Industrial Estate, District 3, Washington, NE38 0AH

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Or go to the Isocom Website @: [Http://www.isocom.uk.com](http://www.isocom.uk.com)

ABSOLUTE MAXIMUM RATINGS

Storage Temperature	-55°C to +150°C
Operating Temperature	-55°C to +100°C
Lead Soldering Temperature	260°C
Input-to-Output Isolation Voltage	±2500 VDC

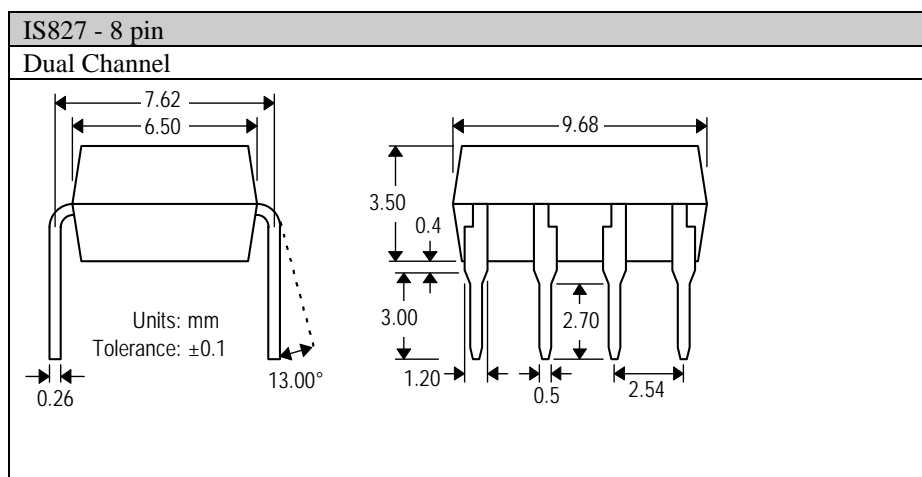
Input Diode

Forward DC Current	60 mA
Reverse DC Voltage	3 V
Peak forward Current	3 A
Power Dissipation	100 mW

Output Transistor

Collector-Emitter Voltage	30 V
Emitter-Collector Voltage	7 V
Power Dissipation	150 mW
Total Power Dissipation	400 mW

PACKAGES



SMD and GULL WING are available for all the above.

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ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$ U.O.S. (each channel where appropriate).

Input Diode Electrical Characteristics

Parameter	Symbol	Test Conditions	Device	Min	Typ	Max	Units
Forward Voltage	V_F	$I_F = 20\text{mA}$		-	1.3	1.5	V
Reverse Breakdown Voltage	V_R	$I_R = 10\mu\text{A}$		3.0	5.0	-	V
Reverse Current	I_R	$V_R = 3\text{V}$		-	-	10	μA

Output Detector Electrical Characteristics

Collector-Emitter Breakdown Voltage (See note 1 below)	BV_{CEO}	$I_C = 1\text{mA}$		30	50	-	V
Emitter-Collector Breakdown Voltage	BV_{ECO}	$I_E = 0.1\text{mA}$		7	8	-	V
Collector-Emitter Leakage Current	I_{CEO}	$V_{CE} = 10\text{V}$		-	-	100	nA

Coupled Electrical Characteristics

DC Current Transfer Ratio	I_C/I_F	$I_F = 10\text{mA}, V_{CE} = 10\text{V}$		20	50	-	%
Collector-Emitter Saturation Voltage	V_{CE} (Sat)	$I_F = 16\text{mA}, I_C = 2.0\text{mA}$		-	0.2	0.4	V
Input to Output Capacitance	C_{IO}	$V_{IO} = 0, f = 1\text{mhz}$ (See note 2 below)		-	0.6	1.0	pF
Input to Output Resistance	R_{IO}	$V_{IO} = 500\text{V}$ (See note 2 below)		5×10^{11}	-	-	\downarrow
Isolation Voltage	V_{IO}	(See note 2 below)		2500	-	-	VDC
Bandwidth	BW	$I_C = 2\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$			150		khz
Non Saturated Rise Time	t_r	$I_C = 2\text{mA}, V_{CC} = 10\text{V}, R_L = 100\Omega$		-	2.5	-	μS
Non Saturated Fall Time	t_f				2.5		
Non Saturated Rise Time	t_r	$I_C = 2\text{mA}, V_{CC} = 10\text{V}, R_L = 1\text{K}\Omega$		-	16	-	μS
Non Saturated Fall Time	t_f				16		
Saturated Turn -on Time (from 5.0 V to 0.8 V)	t_{on}	$V_{CC} = 10\text{V}, I_F = 15\text{mA}$		-	5.0	-	μS
Saturated Turn-off Time (from Saturation to 2.0 V)	t_{off}	$R_L = 2\text{K}\Omega$		-	25	-	μS

Notes

1. BV_{CEO} and BV_{CBO} can be selected to suit customer specifications.
2. Measured with input leads shorted together and output leads shorted together.
3. A higher CTR can be selected to suit customer specification as a standard part.

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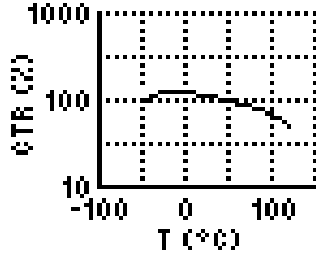
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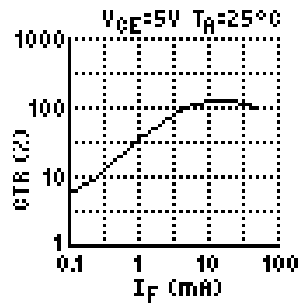
ELECTRICAL CHARACTERISTICS

CURRENT TRANSFER RATIO -v- TEMPERATURE
 $I_F=10\text{mA}$ $V_{CE}=5\text{V}$ $T_A=25^\circ\text{C}$



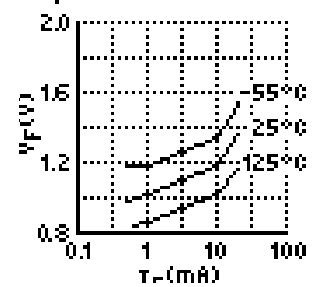
CTR vs Temperature

CURRENT TRANSFER RATIO -v- DIODE FORWARD CURRENT



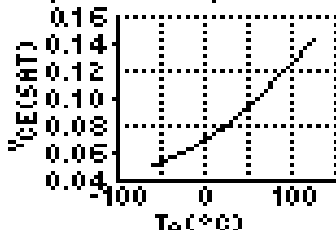
CTR vs Diode Forward Current

DIODE FORWARD VOLTAGE (typ) -v- FORWARD CURRENT



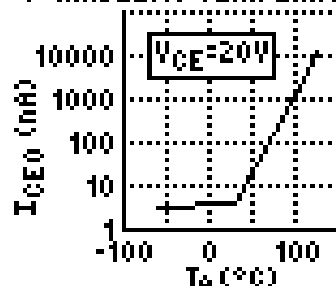
Forward Voltage (Typ) of the Diode vs Forward Current

COLLECTOR EMITTER SATURATION VOLTAGE -v- AMBIENT TEMPERATURE
 $I_F=15\text{mA}$ $I_C=2\text{mA}$



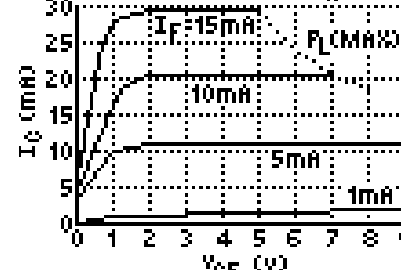
Collector-Emitter Saturation Voltage vs Ambient Temperature

COLLECTOR DARK CURRENT -v- AMBIENT TEMPERATURE



Collector Dark Current vs Ambient Temperature

COLLECTOR EMITTER VOLTAGE -v- COLLECTOR CURRENT $T_A=25^\circ\text{C}$



Collector Current vs Collector-Emitter Voltage

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