

**MCT6**

**MCT61**

**MCT62**

**DESCRIPTION**

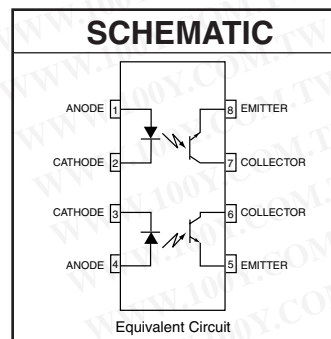
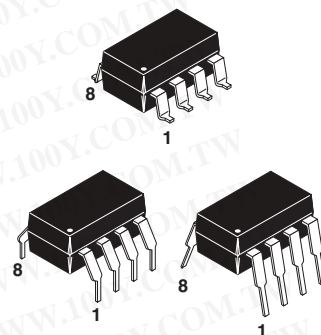
The MCT6X Optocouplers have two channels for density applications. For four channel applications, two-packages fit into a standard 16-pin DIP socket. Each channel is an NPN silicon planar phototransistor optically coupled to a gallium arsenide infrared emitting diode.

**FEATURES**

- Two isolated channels per package
- Two packages fit into a 16 lead DIP socket
- Choice of three current transfer ratios
- Underwriters Laboratory (U.L.) recognized File E90700

**APPLICATIONS**

- AC Line/Digital Logic - isolate high voltage transients
- Digital Logic/Digital Logic - Eliminate spurious grounds
- Digital Logic/AC Triac Control - isolate high voltage transients
- Twisted pair line receiver - Eliminate ground loop feedthrough
- Telephone/Telegraph line receiver - isolate high voltage transients
- High Frequency Power Supply Feedback Control - Maintain floating grounds and transients
- Relay contact monitor - isolate floating grounds and transients
- Power supply monitor - Isolate transients



<b>ABSOLUTE MAXIMUM RATINGS</b>			
Rating	Symbol	Value	Unit
<b>EMITTER (Each channel)</b>			
Forward Current - Continuous	$I_F$	60	mA
Forward Current - Peak (PW = 1μs, 300pps)	$I_F(pk)$	3	A
Reverse Voltage	$V_R$	3.0	V
LED Power Dissipation @ $T_A = 25^\circ C$ Derate above 25°C (Total Input)	$P_D$	100 1.3	mW mW/°C
<b>DETECTOR (Each channel)</b>			
Collector Current - Continuous	$I_C$	30	mA
Detector Power Dissipation @ $T_A = 25^\circ C$ Derate above 25°C	$P_D$	150 2.0	mW mW/°C
<b>TOTAL DEVICE</b>			
Storage Temperature	$T_{STG}$	-55 to +150	°C
Operating Temperature	$T_{OPR}$	-55 to +100	°C
Lead Solder Temperature (wave solder)	$T_{SOL}$	250 for 10 sec	°C
Total Device Power Dissipation @ $T_A = 25^\circ C$ Derate above 25°C	$P_D$	400 5.33	mW mW/°C

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**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  Unless otherwise specified.)

**INDIVIDUAL COMPONENT CHARACTERISTICS**

Parameter	Test Conditions	Symbol	Min	Typ**	Max	Unit
<b>EMITTER</b>						
Input Forward Voltage	( $I_F = 20\text{ mA}$ )	$V_F$		1.2	1.5	V
Reverse Voltage	( $I_R = 10\ \mu\text{A}$ )	$V_R$	3.0	25		V
Reverse Current	( $V_R = 5\text{ V}$ )	$I_R$		0.001	10	$\mu\text{A}$
Junction Capacitance	( $V_F = 0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_J$		50		pF
<b>DETECTOR</b>						
Collector-Emitter Breakdown Voltage	( $I_C = 1.0\text{ mA}$ , $I_F = 0$ )	$BV_{CEO}$	30	85		V
Emitter-Collector Breakdown Voltage	( $I_E = 100\ \mu\text{A}$ , $I_F = 0$ )	$BV_{ECO}$	6	13		V
Collector-Emitter Dark Current	( $V_{CE} = 10\text{ V}$ , $I_F = 0$ )	$I_{CEO}$		5	100	nA
Capacitance	( $V_{CE} = 0\text{ V}$ , $f = 1\text{ MHz}$ )	$C_{CE}$		8		pF

**TRANSFER CHARACTERISTICS**

AC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
<b>SWITCHING TIMES</b>						
Non-Saturated Turn-on Time	( $R_L = 100\ \Omega$ , $I_C = 2\text{ mA}$ , $V_{CC} = 10\text{ V}$ )	$t_{on}$		2.4		$\mu\text{s}$
Non-Saturated Turn-off Time	( $R_L = 100\ \Omega$ , $I_C = 2\text{ mA}$ , $V_{CC} = 10\text{ V}$ )	$t_{off}$		2.4		$\mu\text{s}$

**TRANSFER CHARACTERISTICS**

DC Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Current Transfer Ratio, Collector-Emitter	(I <sub>F</sub> = 10 mA, V <sub>CE</sub> = 10 V)	CTR	20			%
MCT6			50			
MCT61			100			
MCT62	(I <sub>F</sub> = 5 mA, V <sub>CE</sub> = 5 V)					
Saturation Voltage	(I <sub>F</sub> = 16 mA, I <sub>C</sub> = 2 mA)	$V_{CE(sat)}$		0.15	0.40	V

**ISOLATION CHARACTERISTICS**

Characteristic	Test Conditions	Symbol	Min	Typ**	Max	Units
Input-Output Isolation Voltage	( $I_{I-O} \leq 1\ \mu\text{A}$ , $t = 1\text{ min.}$ )	$V_{ISO}$	5300			Vac(rms)
Isolation Resistance	( $V_{I-O} = 500\text{ VDC}$ )	$R_{ISO}$	$10^{11}$			$\Omega$
Isolation Capacitance	( $f = 1\text{ MHz}$ )	$C_{ISO}$		0.5		pf

\*\* All typicals at  $T_A = 25^\circ\text{C}$

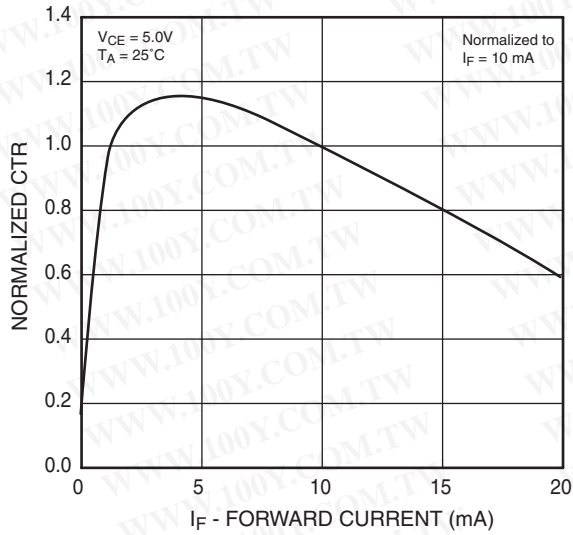
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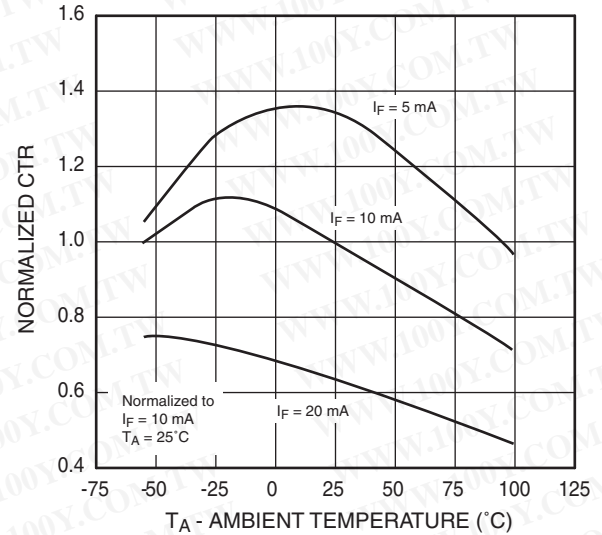
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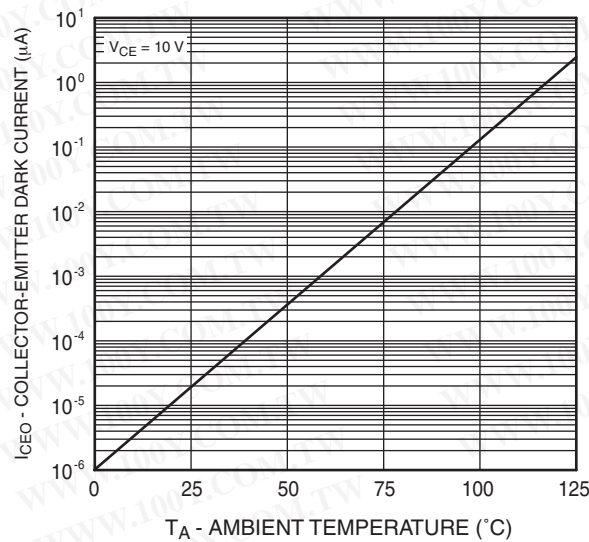
Normalized CTR vs. Forward Current



Normalized CTR vs. Ambient Temperature



Dark Current vs. Ambient Temperature



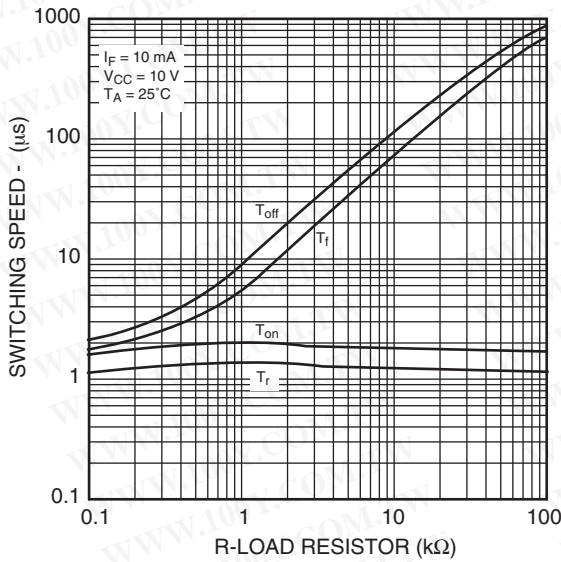
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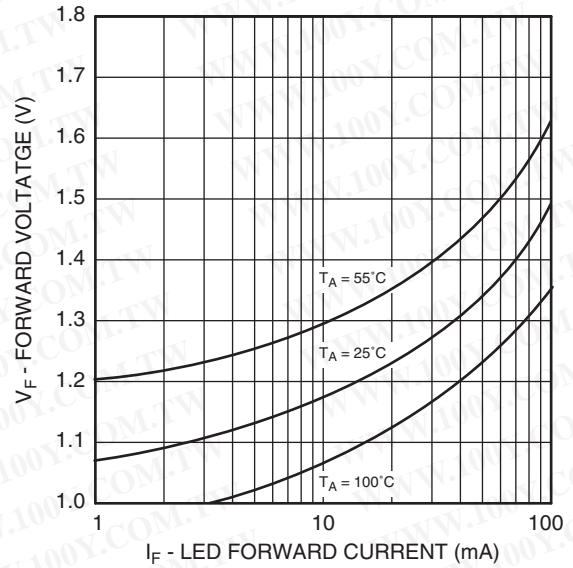
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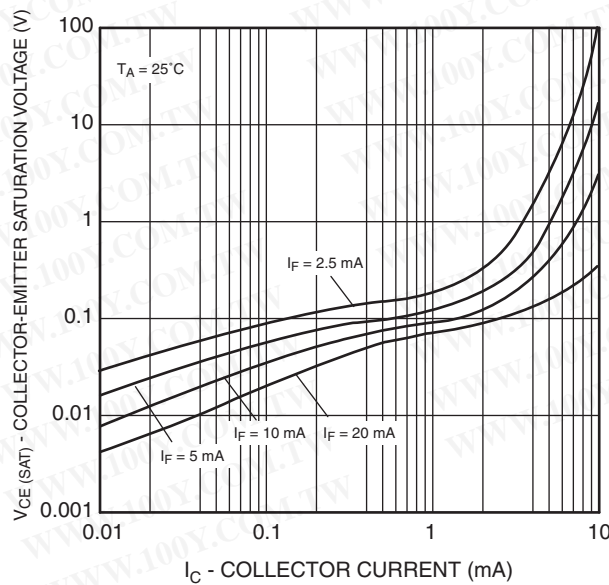
**Switching Speed vs. Load Resistor**



**LED Forward Voltage vs. Forward Current**



**Collector-Emitter Saturation Voltage vs Collector Current**



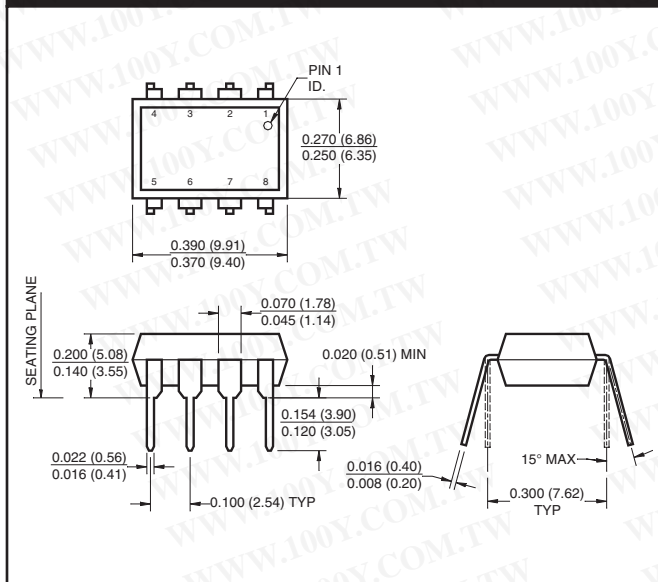
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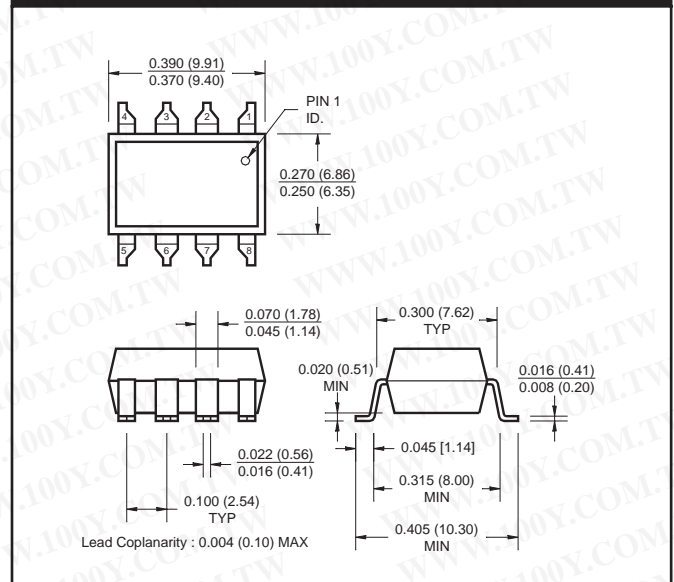
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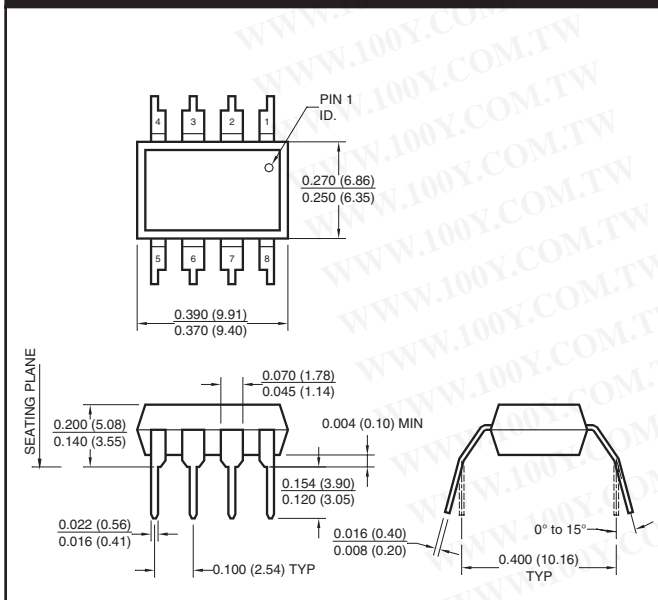
**Package Dimensions (Through Hole)**



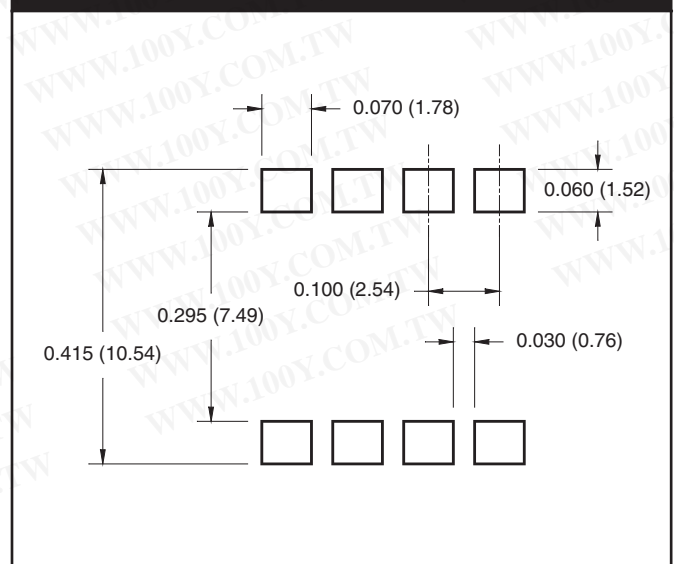
**Package Dimensions (Surface Mount)**



**Package Dimensions (0.4" Lead Spacing)**



**Recommended Pad Layout for  
Surface Mount Leadform**



**NOTE**

All dimensions are in inches (millimeters)

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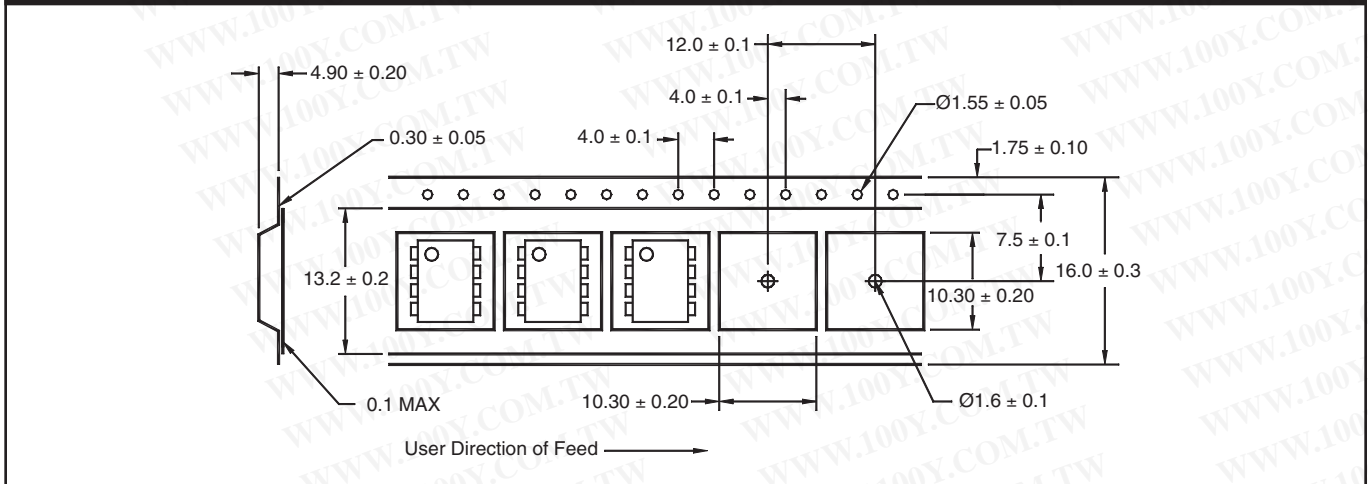
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**ORDERING INFORMATION**

Option	Order Entry Identifier	Description
S	.S	Surface Mount Lead Bend
SD	.SD	Surface Mount; Tape and reel
W	.W	0.4" Lead Spacing

**Carrier Tape Specifications**



**NOTE**

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