

MCT270, MCT271, MCT272, MCT273,
MCT274, MCT275, MCT276, MCT277

**OPTICALLY COUPLED
ISOLATOR
PHOTOTRANSISTOR OUTPUT**



APPROVALS

- UL recognised, File No. E91231

DESCRIPTION

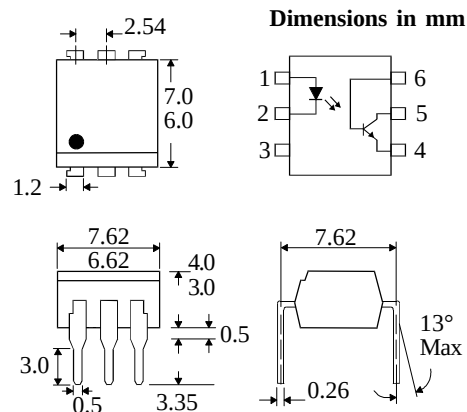
The MCT27_ series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

FEATURES

- Options :-
10mm lead spread - add G after part no.
Surface mount - add SM after part no.
Tape&reel - add SMT&R after part no.
- High Isolation Voltage ($5.3\text{kV}_{\text{RMS}}$, 7.5kV_{PK})
- All electrical parameters 100% tested
- Custom electrical selections available

APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances



**ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)**

Storage Temperature _____ -55°C to + 150°C
Operating Temperature _____ -55°C to + 100°C
Lead Soldering Temperature
(1/16 inch (1.6mm) from case for 10 secs) 260°C

INPUT DIODE

Forward Current _____ 60mA
Reverse Voltage _____ 6V
Power Dissipation _____ 105mW

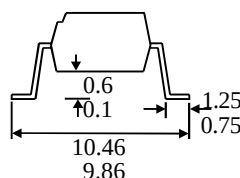
OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO} 30V
(MCT275 only) BV_{CEO} 80V
Collector-base Voltage BV_{CBO} 70V
Emitter-base Voltage BV_{EBO} 5V
Power Dissipation _____ 160mW

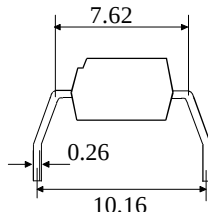
POWER DISSIPATION

Total Power Dissipation _____ 200mW
(derate linearly 2.67mW/°C above 25°C)

**OPTION SM
SURFACE MOUNT**



OPTION G



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

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	$I_F = 20\text{mA}$
	Reverse Voltage (V_R)	3			V	$I_R = 10\mu\text{A}$
	Reverse Current (I_R)			10	μA	$V_R = 3\text{V}$
Output	Collector-emitter Breakdown (BV_{CEO})				V	$I_C = 1\text{mA}$
	MCT27x (except MCT275)	30			V	
	MCT275 (note 2)	80			V	
	Collector-base Breakdown (BV_{CBO})	70			V	$I_C = 100\mu\text{A}$
	Emitter-base Breakdown (BV_{EBO})	5			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current (I_{CEO})			50	nA	$V_{CE} = 10\text{V}$
Coupled	Current Transfer Ratio (CTR)					$10\text{mA } I_F, 10\text{V } V_{CE}$
	MCT270	50			%	
	MCT271	45	90		%	
	MCT272	75	150		%	
	MCT273	125	250		%	
	MCT274	225	400		%	
	MCT275	70	210		%	
	MCT276	15	60		%	
	MCT277	100			%	
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			0.4	V	$16\text{mA } I_F, 2\text{mA } I_C$
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
	Switching Time t_{ON}, t_{OFF}					$V_{CC} = 5\text{V}, R_L = 100\Omega,$
	MCT270,272		10		μs	$I_C = 2\text{mA}$, (fig 1)
	MCT271		7		μs	
	MCT273		20		μs	
	MCT274		25		μs	
	MCT275,277		15		μs	
	MCT276		3.5		μs	

Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

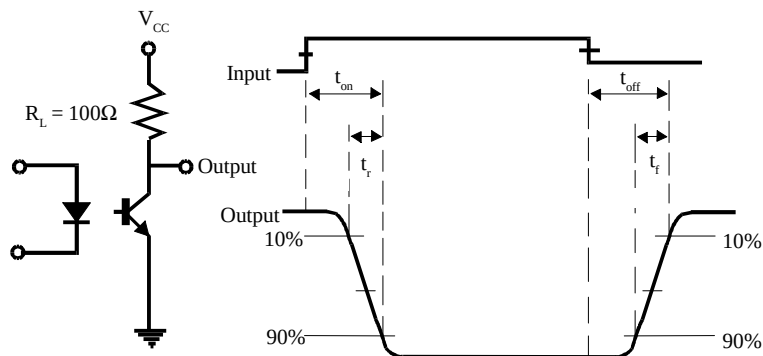
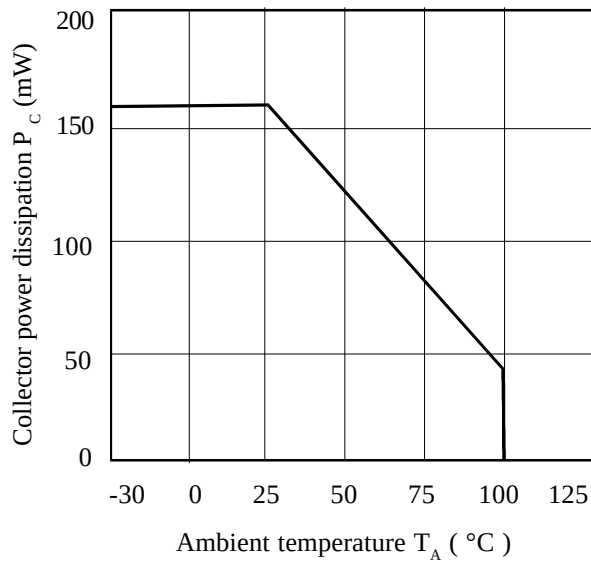
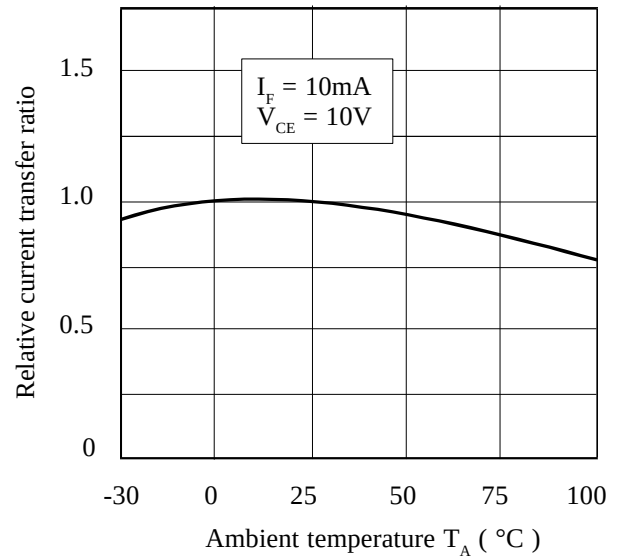


FIG 1

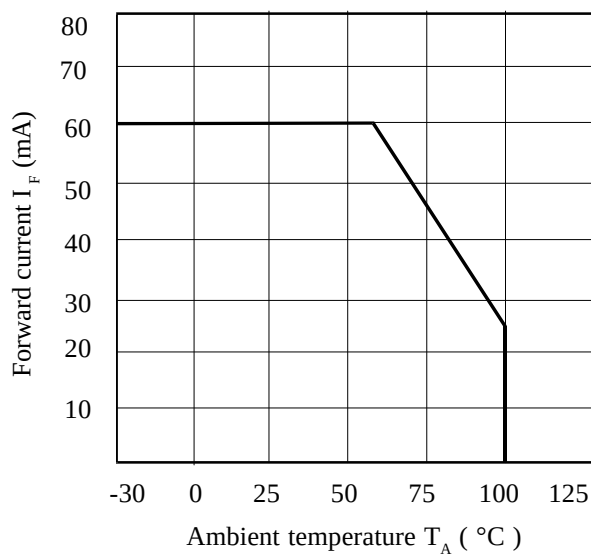
Collector Power Dissipation vs. Ambient Temperature



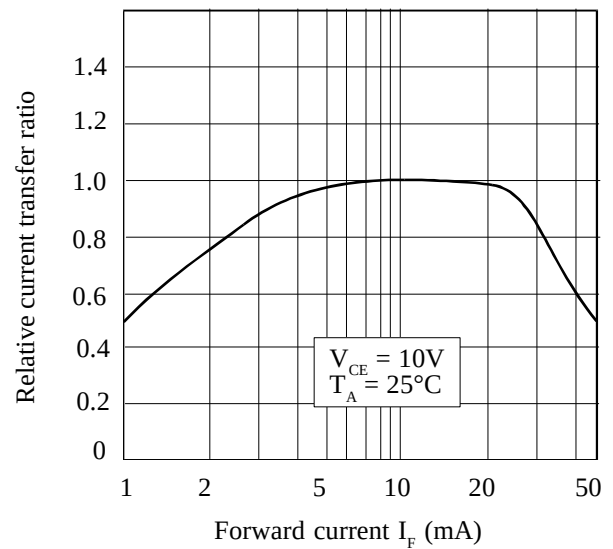
Relative Current Transfer Ratio vs. Ambient Temperature



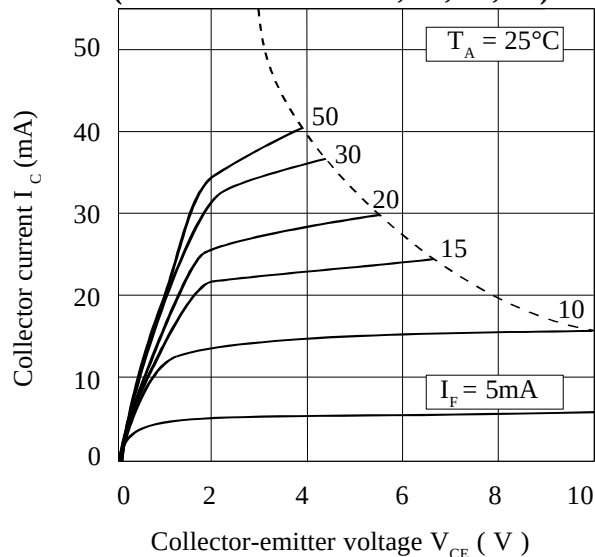
Forward Current vs. Ambient Temperature



Relative Current Transfer Ratio vs. Forward Current



Collector Current vs. Collector-emitter Voltage (Normalised to MCT270,273,275,277)



Collector-emitter Saturation Voltage vs. Ambient Temperature

