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.

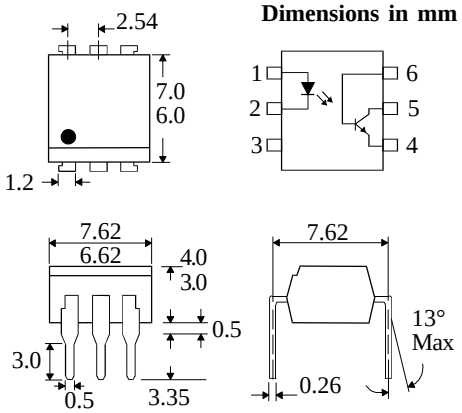
FEATURES

- 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 ($5.3kV_{RMS}$,$7.5kV_{PK}$)
- 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

Dimensions in mm



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

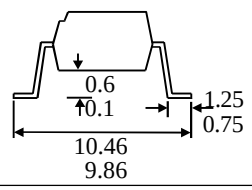
OUTPUT TRANSISTOR

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

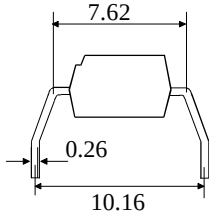
POWER DISSIPATION

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°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.5	V	I_F = 20mA
	Reverse Voltage (V_R)	3			V	I_R = 10µA
	Reverse Current (I_R)			10	µA	V_R = 3V
Output	Collector-emitter Breakdown (BV_{CEO})					
	MCT27x (except MCT275)	30			V	I_C = 1mA
	MCT275 (note 2)	80			V	
	Collector-base Breakdown (BV_{CBO})	70			V	I_C = 100µA
	Emitter-base Breakdown (BV_{EBO})	5			V	I_E = 100µA
	Collector-emitter Dark Current (I_{CEO})			50	nA	V_{CE} = 10V
Coupled	Current Transfer Ratio (CTR)					
	MCT270	50			%	10mA I_F , 10V V_{CE}
	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	16mA I_F , 2mA 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}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Switching Time t_{ON} , t_{OFF}					
	MCT270,272			10	µs	V_{CC} = 5V , R_L = 100Ω,
	MCT271			7	µs	I_C = 2mA, (fig 1)
	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.

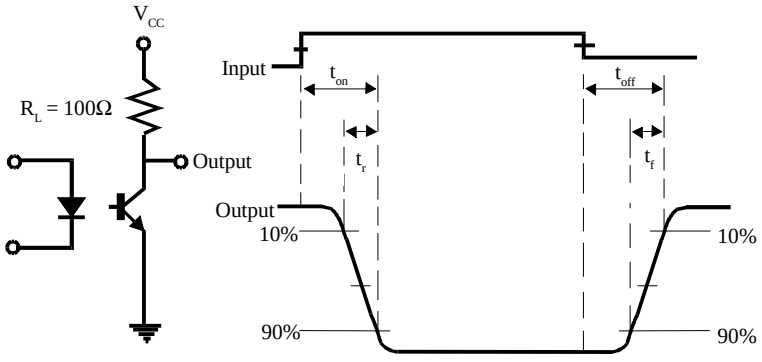
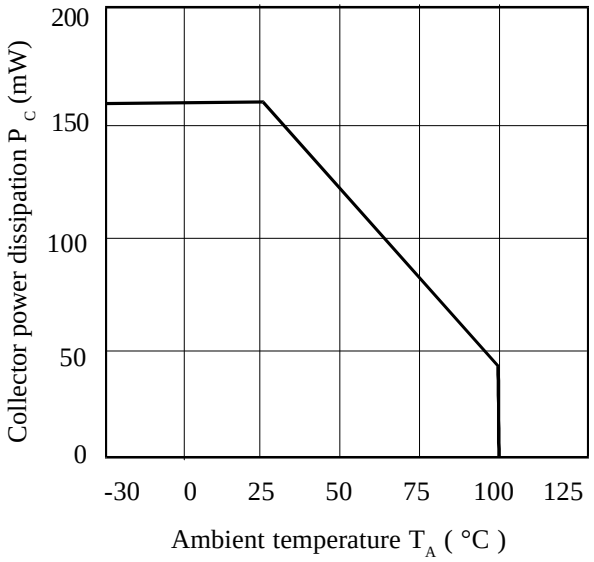
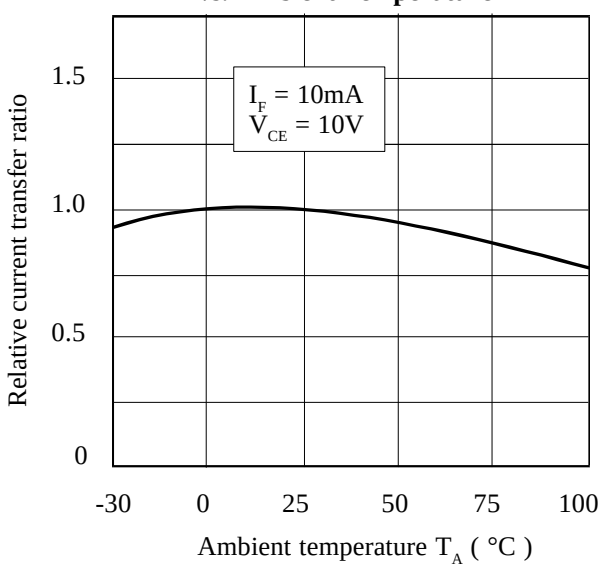


FIG 1

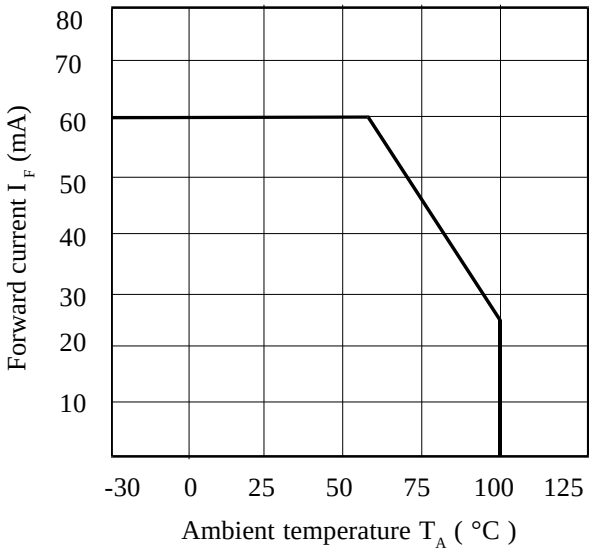
Collector Power Dissipation vs. Ambient Temperature



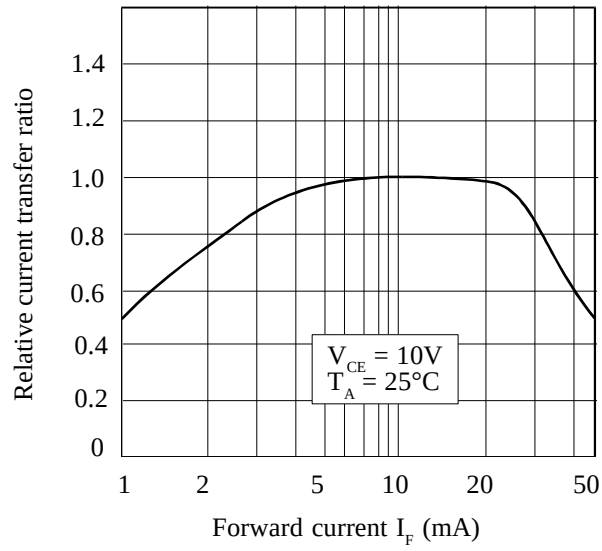
Relative Current Transfer Ratio vs. Ambient Temperature



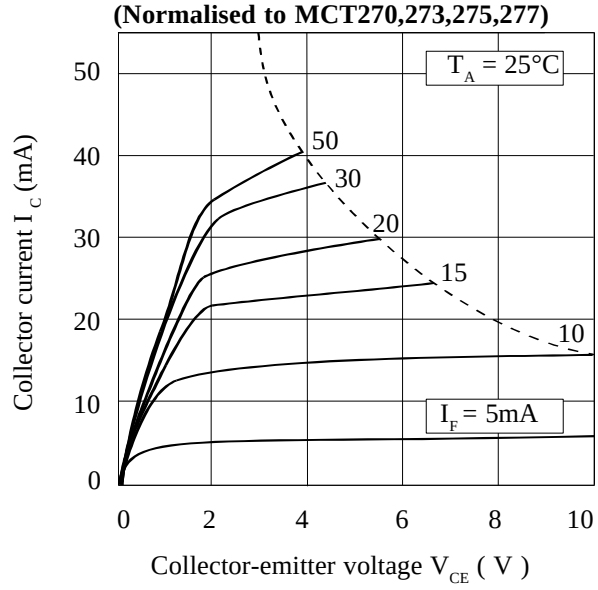
Forward Current vs. Ambient Temperature



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