MCA230X, MCA231X, MCA255X
MCA230, MCA231, MCA255

OPTICALLY COUPLED ISOLATOR PHOTODARLINGTON OUTPUT

ROHS COMPLIANT

APPROVALS

- UL recognised, File No. E91231

'X' SPECIFICATION APPROVALS

- VDE 0884 in 2 available lead form :
  - STD
  - G form

  VDE 0884 inSMD approval pending
- SETI approved, reg. no.151786-18

DESCRIPTION

The MCA230, MCA231, MCA255 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

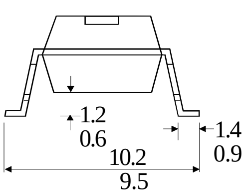
FEATURES

- 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 Current Transfer Ratio
- High Isolation Voltage (5.3kV$_{RMS}$,7.5kV$_{PK}$)
- All electrical parameters 100% tested
- Custom electrical selections available

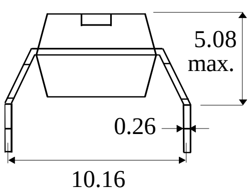
APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

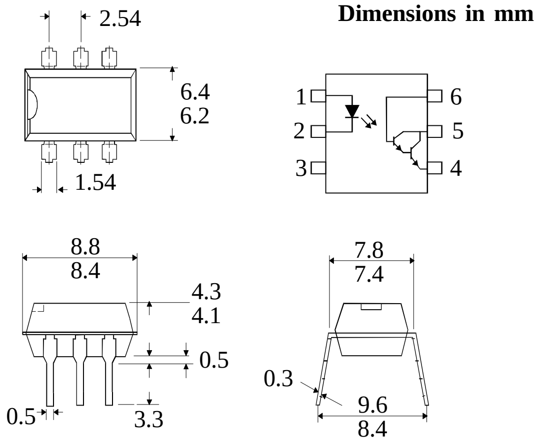
OPTION SM SURFACE MOUNT



OPTION G



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	5V
Power Dissipation	105mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV$_{CEO}$	
MCA255	55V
MCA230, MCA231	30V
Collector-base Voltage BV$_{CBO}$	
MCA255	55V
MCA230, MCA231	30V
Emitter-collector Voltage BV$_{ECO}$	7V
Power Dissipation	150mW

POWER DISSIPATION

Total Power Dissipation	250mW
(derate linearly 3.3mW/°C above 25°C)	

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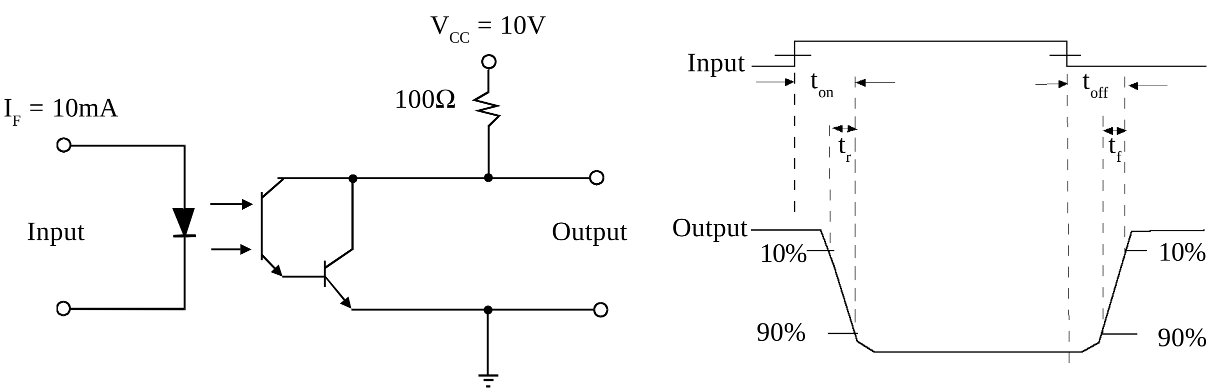
ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless otherwise noted)

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})					
	MCA230, MCA231	30			V	I_C = 100µA (note 2)
	MCA255	55			V	I_C = 100µA (note 2)
	Collector-base Breakdown (BV_{CBO})					
	MCA230, MCA231	30			V	I_C = 10µA (note 2)
	MCA255	55			V	I_C = 10µA (note 2)
	Emitter-collector Breakdown (BV_{ECO})	5			V	I_E = 10µA
	Collector-emitter Dark Current (I_{CEO})			100	nA	V_{CE} = 10V
Coupled	Collector Output Current (I_C) (Note 2)					
	MCA230, MCA255	100			%	10mA I_F , 5V V_{CE}
	MCA231	200			%	10mA I_F , 5V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	MCA230, MCA255			1.0	V	50mA I_F , 50mA I_C
	MCA231			1.0	V	1mA I_F , 2mA I_C
				1.0	V	5mA I_F , 10mA I_C
				1.2	V	10mA I_F , 50mA I_C
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	(note 1)
		7500			V_{PK}	(note 1)
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Output Turn on Time ton		10		µs	V_{CC} = 2V, R_L = 100Ω,
	Output Turn off Time toff		100		µs	I_F = 10mA , fig.1

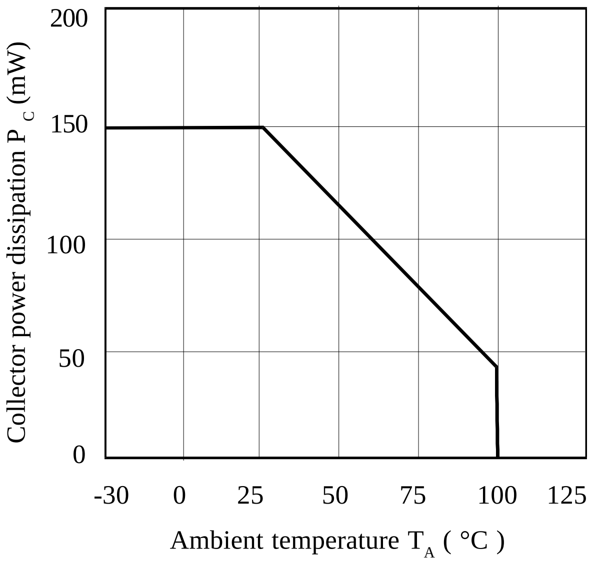
Note 1 Measured with input leads shorted together and output leads shorted together.

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

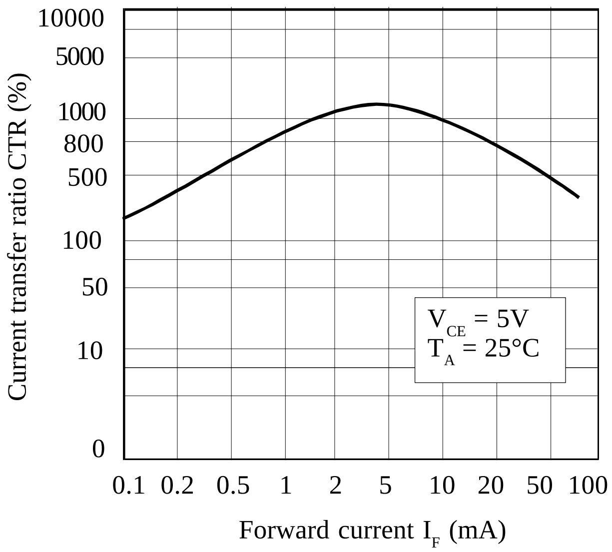
FIGURE 1



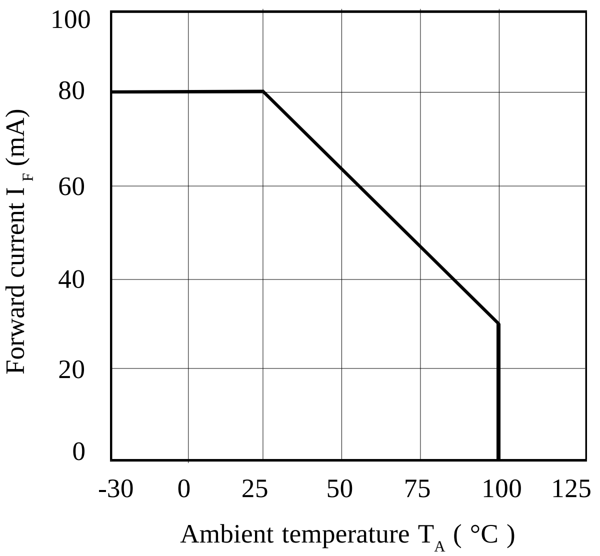
Collector Power Dissipation vs. Ambient Temperature



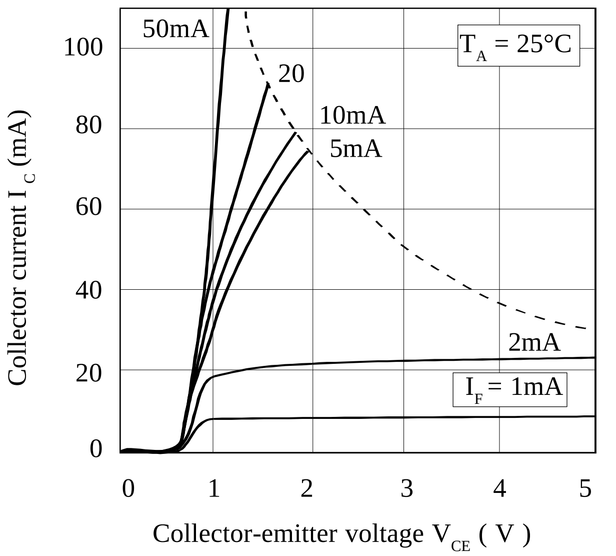
Current Transfer Ratio vs. Forward Current



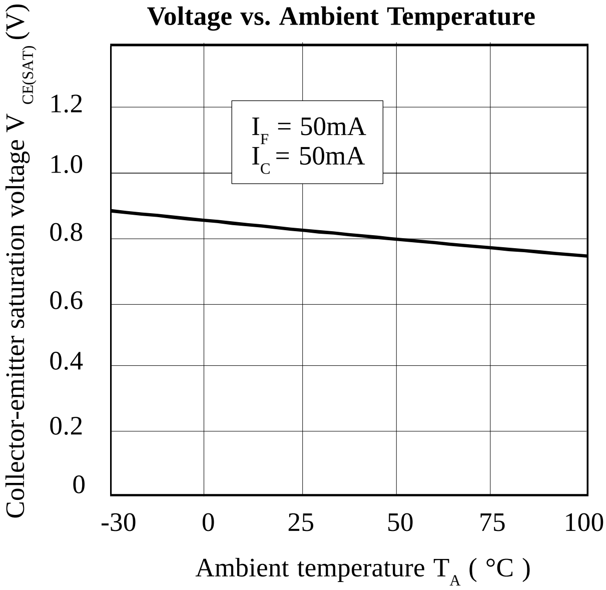
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature