

MCA2230X, MCA2231X, MCA2255X
MCA2230, MCA2231, MCA2255



OPTICALLY COUPLED ISOLATOR PHOTODARLINGTON OUTPUT

APPROVALS

- UL recognised, File No. E91231
- **'X' SPECIFICATION APPROVALS**
- **MCA2231X** -
VDE 0884 in 2 available lead form : -
- STD
- G form
VDE 0884 in SMD approval pending
- **MCA2230X, MCA2255X** -
VDE 0884 approval pending
- EN 60950 approval pending

DESCRIPTION

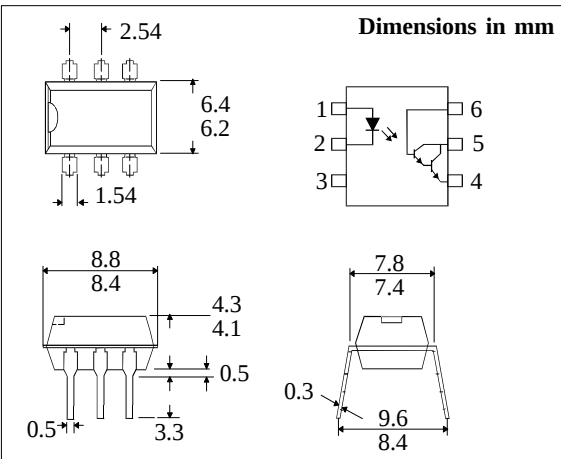
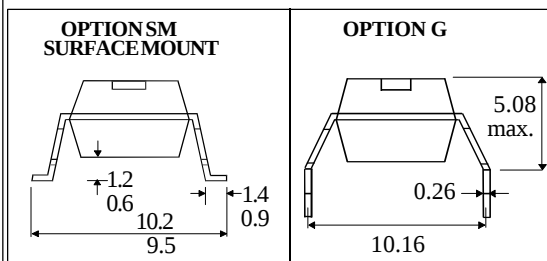
The MCA2230, MCA2231, MCA2255 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

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 ($5.3\text{kV}_{\text{RMS}}, 7.5\text{kV}_{\text{PK}}$)
- 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



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 _____ 80mA
Reverse Voltage _____ 6V
Power Dissipation _____ 105mW

OUTPUT TRANSISTOR

Collector-emitter Voltage BV_{CEO} _____
MCA2255 _____ 55V
MCA2230, MCA2231 _____ 30V
Collector-base Voltage BV_{CBO} _____
MCA2255 _____ 55V
MCA2230, MCA2231 _____ 30V
Emitter-base Voltage BV_{EBO} _____ 6V
Power Dissipation _____ 150mW

POWER DISSIPATION

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

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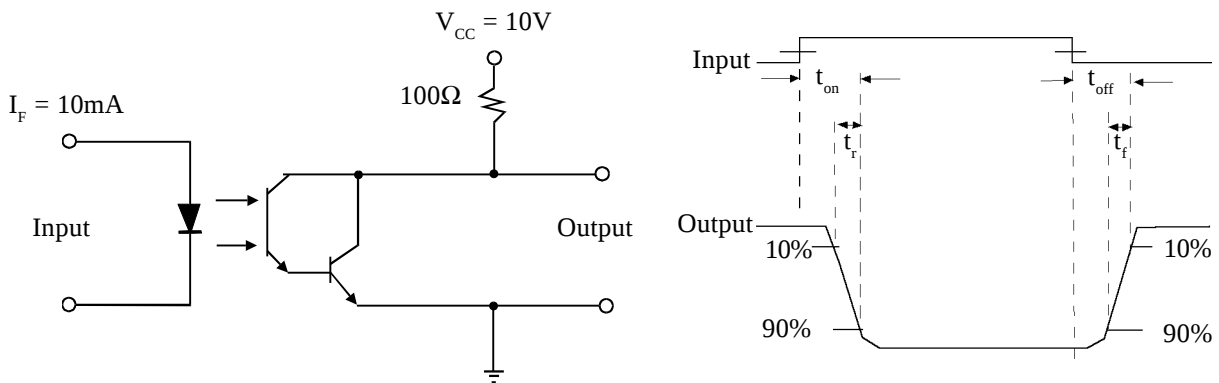
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

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	$I_C = 100\mu\text{A}$ (note 2)
	MCA2230, MCA2231	30			V	$I_C = 100\mu\text{A}$ (note 2)
	MCA2255	55			V	$I_C = 100\mu\text{A}$ (note 2)
	Collector-base Breakdown (BV_{CBO})				V	$I_C = 10\mu\text{A}$ (note 2)
	MCA2230, MCA2231	30			V	$I_C = 10\mu\text{A}$ (note 2)
	MCA2255	55			V	$I_C = 10\mu\text{A}$ (note 2)
	Emitter-base Breakdown (BV_{EBO})	5			V	$I_E = 10\mu\text{A}$
Coupled	Collector-emitter Dark Current (I_{CEO})			100	nA	$V_{CE} = 10\text{V}$
	Collector Output Current (I_C) (Note 2)					
	MCA2230	100			%	$10\text{mA } I_F, 5\text{V } V_{CE}$
	MCA2231, MCA2255	500			%	$10\text{mA } I_F, 5\text{V } V_{CE}$
		200			%	$1\text{mA } I_F, 1\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	MCA2230, MCA2255		1.0		V	$50\text{mA } I_F, 50\text{mA } I_C$
	MCA2231		1.0		V	$1\text{mA } I_F, 2\text{mA } I_C$
			1.0		V	$5\text{mA } I_F, 10\text{mA } I_C$
			1.2		V	$10\text{mA } I_F, 50\text{mA } I_C$
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	(note 1)
		7500			V_{PK}	(note 1)
	Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
	Output Turn on Time t_{on}		10		μs	$V_{CC} = 10\text{V}, R_L = 100\Omega,$
	Output Turn off Time t_{off}		100		μs	$I_F = 10\text{mA}$ (Fig.1)

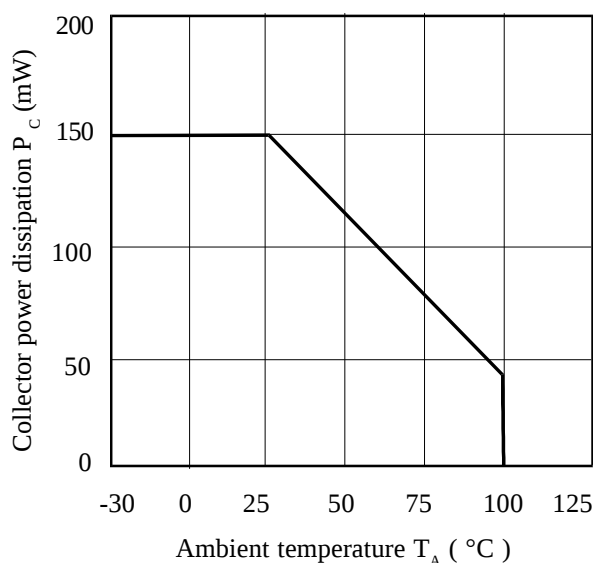
Note 1 Measured with input leads shorted together and output leads shorted together.

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

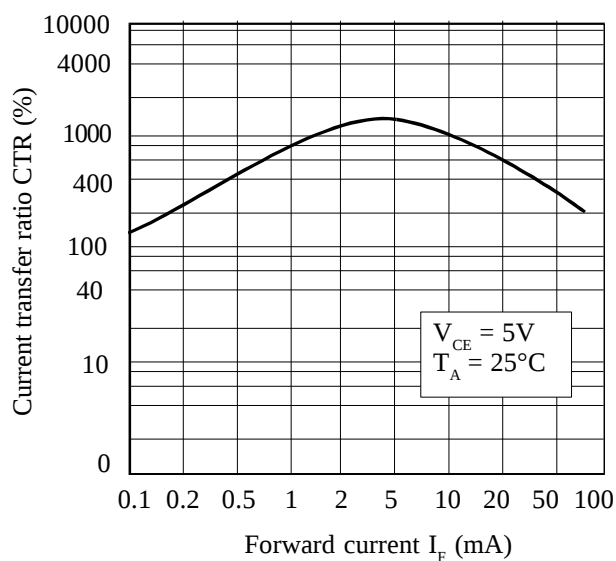
FIGURE 1



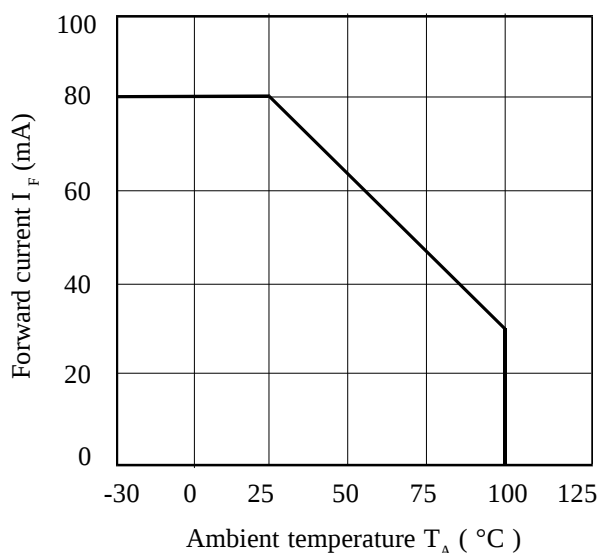
Collector Power Dissipation vs. Ambient Temperature



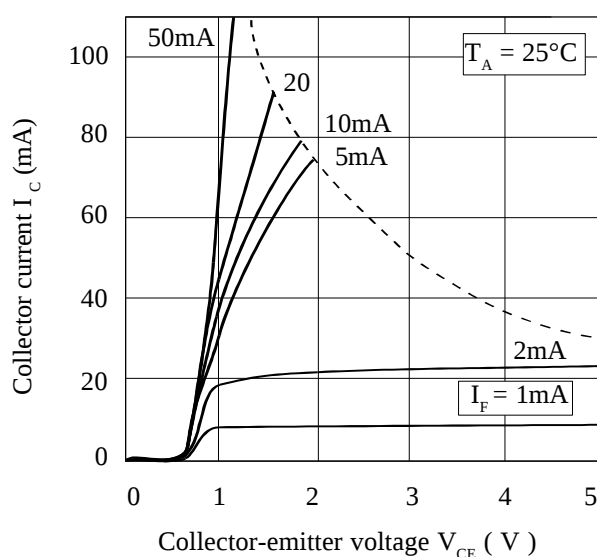
Current Transfer Ratio vs. Forward Current



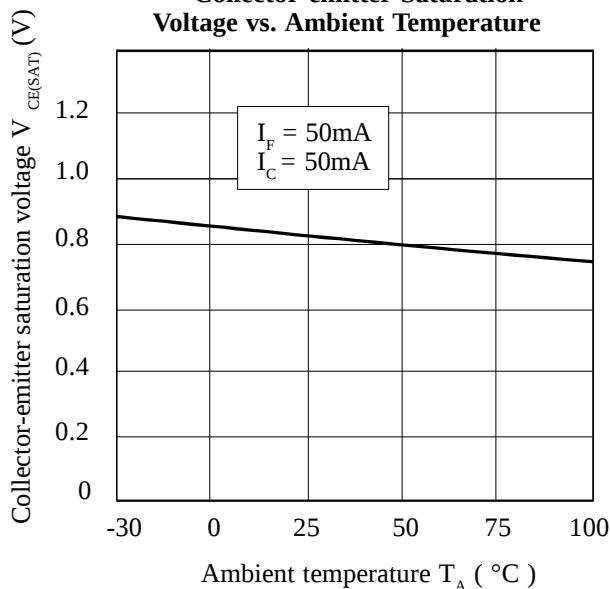
Forward Current vs. Ambient Temperature



Collector Current vs. Collector-emitter Voltage



Collector-emitter Saturation Voltage vs. Ambient Temperature



Relative Current Transfer Ratio vs. Ambient Temperature

