

MCA230X, MCA231X, MCA255X  
MCA230, MCA231, MCA255



**OPTICALLY COUPLED ISOLATOR  
PHOTODARLINGTON OUTPUT**

**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**

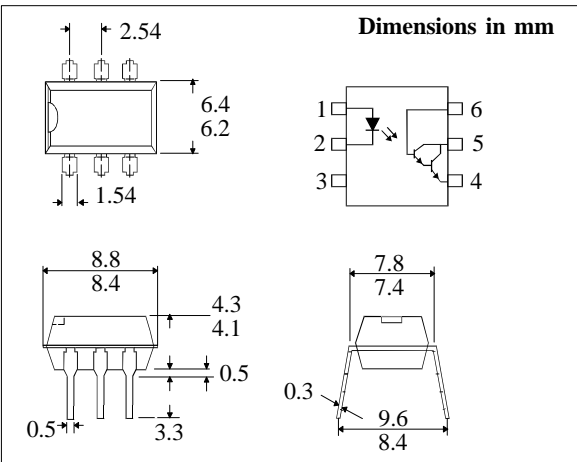
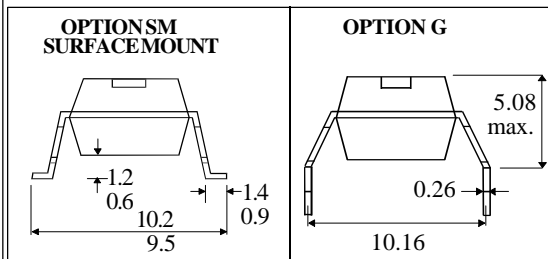
The MCA230, MCA231, MCA255 series of optically coupled isolators consist of an infrared light emitting diode and NPN silicon photodarlington in a space efficient dual in line plastic package.

**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<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- 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 \_\_\_\_\_ 60mA  
Reverse Voltage \_\_\_\_\_ 5V  
Power Dissipation \_\_\_\_\_ 105mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage BV<sub>CEO</sub>  
MCA255 \_\_\_\_\_ 55V  
MCA230, MCA231 \_\_\_\_\_ 30V  
Collector-base Voltage BV<sub>CBO</sub>  
MCA255 \_\_\_\_\_ 55V  
MCA230, MCA231 \_\_\_\_\_ 30V  
Emitter-collector Voltage BV<sub>ECO</sub> \_\_\_\_\_ 7V  
Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

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

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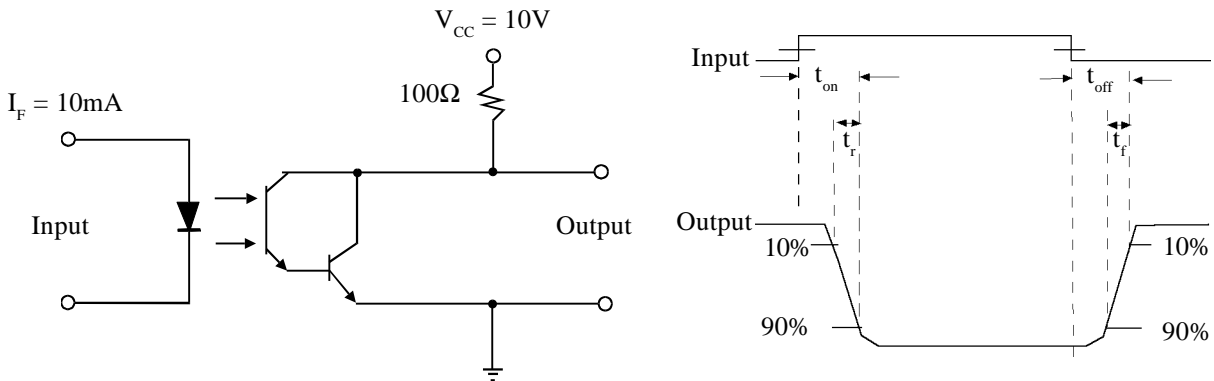
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION	
Input	Forward Voltage ( $V_F$ )		1.2	1.5	V	$I_F = 20\text{mA}$ $I_R = 10\mu\text{A}$ $V_R = 3\text{V}$	
	Reverse Voltage ( $V_R$ )	3			V		
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$		
Output	Collector-emitter Breakdown ( $BV_{CEO}$ ) MCA230, MCA231	30			V	$I_C = 100\mu\text{A}$ (note 2)	
	MCA255	55			V		
	Collector-base Breakdown ( $BV_{CBO}$ ) MCA230, MCA231	30			V	$I_C = 10\mu\text{A}$ (note 2)	
	MCA255	55			V		
	Emitter-collector Breakdown ( $BV_{ECO}$ )	5			V	$I_E = 10\mu\text{A}$	
	Collector-emitter Dark Current ( $I_{CEO}$ )			100	nA	$V_{CE} = 10\text{V}$	
Coupled	Collector Output Current ( $I_C$ ) (Note 2) MCA230, MCA255	100			%	$10\text{mA } I_F, 5\text{V } V_{CE}$ $10\text{mA } I_F, 5\text{V } V_{CE}$	
	MCA231	200			%		
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$ MCA230, MCA255			1.0	V	$50\text{mA } I_F, 50\text{mA } I_C$	
	MCA231			1.0	V		
	Input to Output Isolation Voltage $V_{ISO}$		5300			$V_{RMS}$	(note 1)
			7500			$V_{PK}$	
		Input-output Isolation Resistance $R_{ISO}$	$5 \times 10^{10}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
	Output Turn on Time $t_{on}$		10		$\mu\text{s}$	$V_{CC} = 2\text{V}, R_L = 100\Omega,$ $I_F = 10\text{mA}$ , fig.1	
	Output Turn off Time $t_{off}$		100		$\mu\text{s}$		

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.

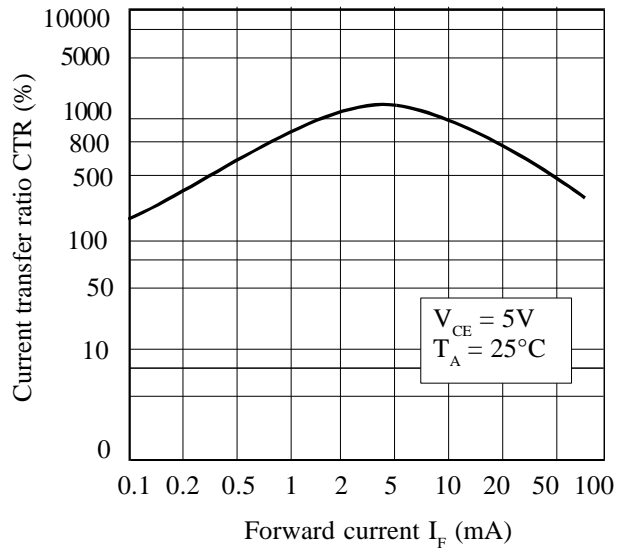
**FIGURE 1**



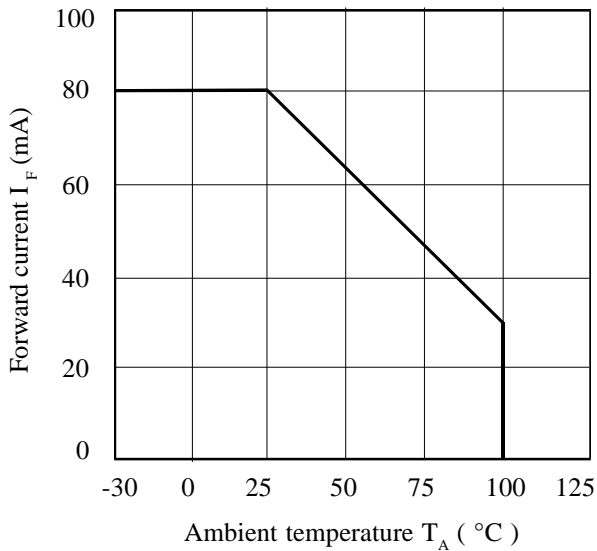
**Collector Power Dissipation vs. Ambient Temperature**



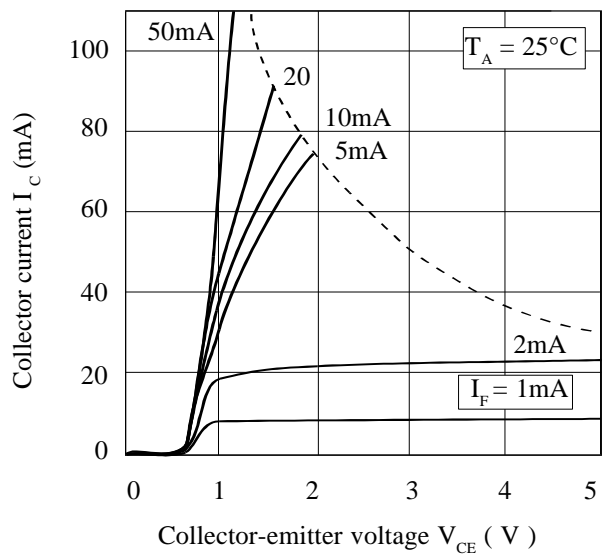
**Current Transfer Ratio vs. Forward Current**



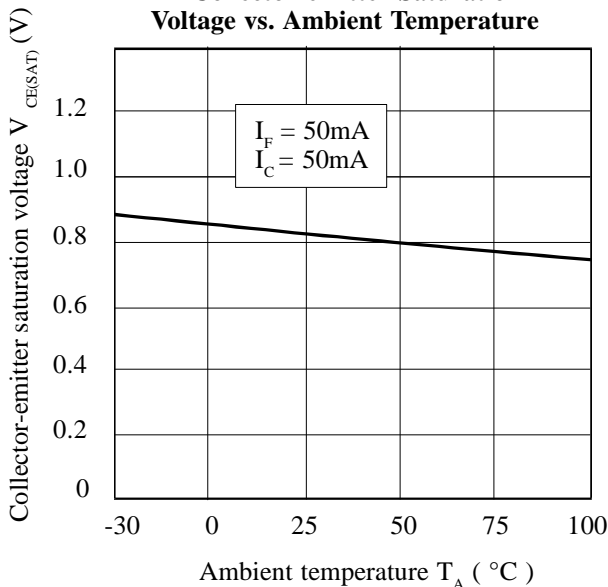
**Forward Current vs. Ambient Temperature**



**Collector Current vs. Collector-emitter Voltage**



**Collector-emitter Saturation Voltage vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Ambient Temperature**

