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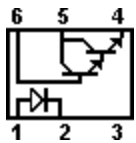
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# MCA230, MCA231, MCA255 OPTICALLY COUPLED ISOLATORS

## Circuit



## Features

High Current Transfer Ratio 100% min (MCA231: 200% min).  
55 volt BV<sub>ceo</sub> for MCA255

## Description

The MCA230, MCA231 and MCA255 are photodarlington optically coupled isolators consisting of an infrared emitting diode with a silicon photodarlington transistor. Surface Mount Option Available.

All electrical parameters are 100% tested by manufacturing. Specifications are guaranteed to a cumulative 0.65% AQL.

## Absolute Maximum Ratings (Ta=25°C)

Storage Temperature:	-55°C to +150°C
Operating Temperature:	-55°C to +100°C
Lead Soldering:	260°C for 10s, 1.6mm from case
Derate linearly from 25°C:	3.5mW/°C

## Input Diode

Forward DC Current:	60mA
Reverse DC Voltage:	6V
Peak Forward Current):	3A (1µs pulse, 300pps
Power Dissipation 25°C ambient:	135mW
Derate Linearly:	1.83mW/°C above 25°C

## Detector

Collector-Emitter Breakdown Voltage $BV_{CEO}$ :	30V (MCA255: 55V)
Collector-Base Breakdown Voltage $BV_{CBO}$ :	30V (MCA255: 55V)
Emitter-Collector Breakdown Voltage $BV_{ECO}$ :	7V
Power Dissipation:	210mW
Derate Linearly:	2.8mW/°C above 25°C

## Electro-optical Characteristics (Ta=25°C)

INPUT DIODE	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
$V_F$	Forward Voltage	$I_F=20mA$		1.3	1.5	V

$V_F/T_A$	Forward Voltage Temp Coefficient			-1.8		mV/°C
$V_R$	Reverse Voltage	$I_R=10\mu A$	3	25		V
$C_J$	Junction Capacitance	$V_F=0V, f=1MHz$		50		pF
<b>OUTPUT DETECTOR</b>						
	Breakdown Voltage					
$BV_{CEO}$	Collector to Emitter	$I_C=100\mu A, I_F=0$				
	MCA230, 231		30			V
	MCA255		55			V
$BV_{CBO}$	Collector to Base	$I_C=10\mu A, I_F=0$				
	MCA230, 231		30			V
	MCA255		55			V
$BV_{EBO}$	Emitter to Base	$I_E=10\mu A, I_F=0$	5			V
$I_{CEO}$	Collector Dark Current	$V_{CE}=10V, I_F=0$			100	nA
<b>TRANSFER CHARACTERISTICS</b>		<b>CONDITIONS</b>	<b>MIN</b>	<b>TYP</b>	<b>MAX</b>	<b>UNIT</b>
CTR	DC Current Transfer Ratio (collector-emitter)	$I_F=10mA,$ $V_{CE}=5V$				
	MCA230, MCA255		100			%
	MCA231		200			%
$V_{CE(SAT)}$	Saturation Voltage					
	MCA230, MCA255	$I_C=I_F=50mA$			1	V
	MCA231	$I_C=2mA, I_F=1mA$			1	V
		$I_C=10mA, I_F=5mA$			1	V
		$I_C=50mA, I_F=10mA$			1.2	V
<b>SWITCHING TIMES</b>						
	Non-Saturated					

$t_{ON}$	Turn-On Time			10		$\mu s$
$t_{OFF}$	Turn-Off Time			100		$\mu s$
$V_{ISO}$	Dielectric withstand test voltage	$I_{IO} = < 10\mu A$	3150			Vdc
$V_{ISO}$	Surge Insulation Voltage		3550			Vdc
$R_{ISO}$	Isolation Resistance	V 1.0=500Vdc	100			Gohm
$C_{ISO}$	Isolation Capacitance	f=1MHz		0.5		$\mu s$

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