

FEATURES

- **CTR Minimum**
MCA230/255, 100%
MCA231, 200%
- **Isolation Test Voltage, 5300 VAC_{RMS}**
- **Coupling Capacitance, 0.5 pF**
- **Fast Rise Time, 10 μ s**
- **Fast Fall Time, 35 μ s**
- **Underwriters Lab File #E52744**
- **VDE #0884 Available with Option 1**

DESCRIPTION

The MCA230/231/255 are industry standard opto-couplers, consisting of a Gallium Arsenide infrared LED and a silicon photodarlington. These opto-couplers are constructed with a high voltage insulation, double molded packaging process which offers 7.5 KV withstand test capability.

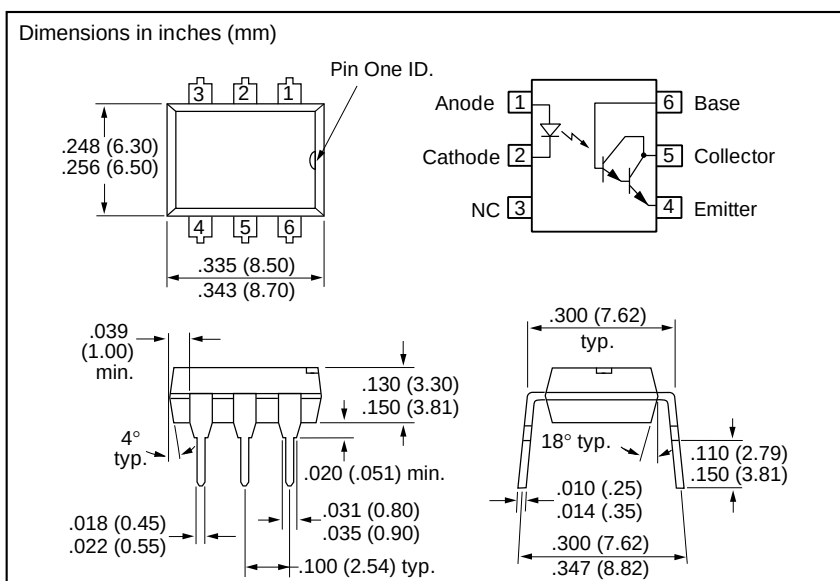
Maximum Ratings

Emitter

Reverse Voltage6 V
Continuous Forward Current 60 mA
Power Dissipation at 25°C.....135 mW
Derate Linearly from 25°C1.8 mW/°C
Detector
Collector-Emitter Breakdown Voltage
MCA230/23130 V
MCA25555 V
Emitter-Collector Breakdown Voltage7 V
Collector-Base Breakdown Voltage
MCA230/23130 V
MCA25555 V
Power Dissipation at 25°C.....210 mW
Derate Linearly from 25°C2.8 mW/°C

Package

Total Package Dissipation at 25°C
(LED plus Detector)260 mW
Derate Linearly from 25°C3.5 mW/°C
Storage Temperature -55°C to +150°C
Operating Temperature -55°C to +100°C
Lead Soldering Time at 260°C 10 sec.
Isolation Test Voltage5300 VAC_{RMS}
Isolation Resistance
V_{IO}=500 V, T_A=25°C.....10¹² Ω
V_{IO}=500 V, T_A=100°C.....10¹¹ Ω



Characteristics (T_A=25°C)

	Symbol	Min.	Typ.	Max.	Unit	Condition
Emitter						
Forward Voltage	V _F		1.1	1.5	V	I _F =50 mA
Reverse Current	I _R			10	μ A	V _R =3 V
Junction Capacitance	C _J		50		pF	V _R =3 V
Detector						
BV _{CEO} MCA230/231 MCA255		30 30			V	I _C =100 μ A, I _F =0 mA I _C =100 μ A, I _F =0 mA
BV _{ECO}		7			V	I _E =10 μ A, I _F =0 mA
BV _{CBO} MCA230/231 MCA55		30 55			V	I _C =10 μ A, I _F =0 mA I _C =10 μ A, I _F =0 mA
I _{CEO}				100	nA	V _{CE} =10 V, I _F =0 mA
Package						
V _{CEsat}				0.8 1.0 1.0 1.0 1.2	V	I _{CE} =2 mA, I _F =16 mA I _C =I _F =50 mA I _C =2 mA, I _F =1 mA I _C =10 mA, I _F =5 mA I _C =50 mA, I _F =10 mA
DC Current Transfer Ratio MCA230/255 MCA231	CTR CTR	100 200			% %	V _{CE} =5 V, I _F =10 mA V _{CE} =5 V, I _F =1 mA
Capacitance Input to Output	C _{IO}		0.5		pF	
Switching Times	t _{on} t _{off}		10 35		μ s μ s	R _L =100 Ω V _{CE} =10 V

Figure 1. Forward voltage versus forward current

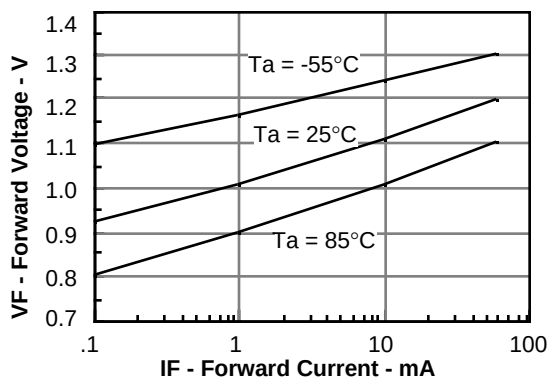


Figure 2. Normalized non-saturated and saturated CTR_{ce} at $T_A = 25^\circ\text{C}$ versus LED current

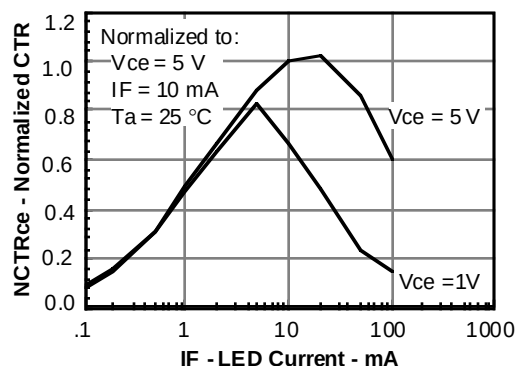


Figure 3. Normalized non-saturated and saturated collector-emitter current versus LED current

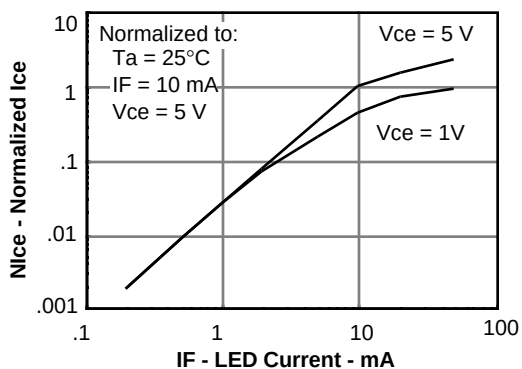


Figure 4. Normalized collector-base photocurrent versus LED current

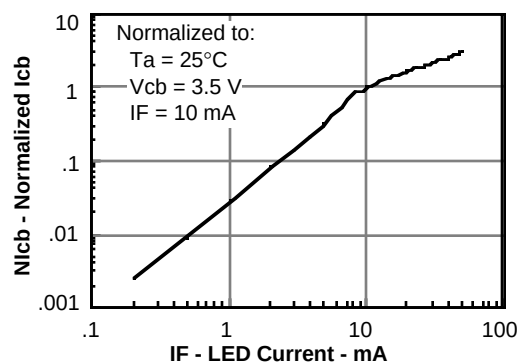


Figure 5. Non-saturated and saturated HFE versus base current

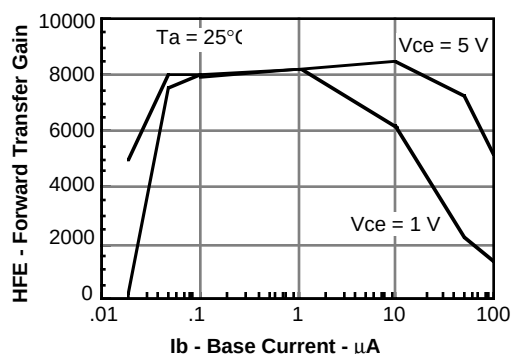


Figure 6. Low to high propagation delay versus collector load resistance and LED current

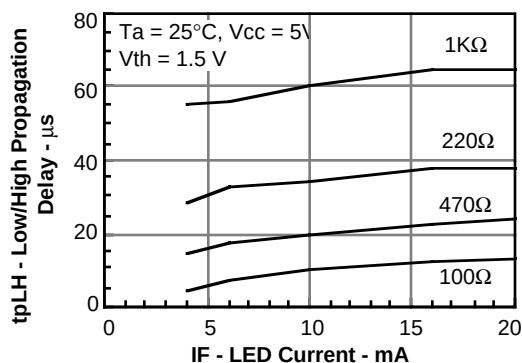


Figure 7. High to low propagation delay versus collector load resistance and LED current

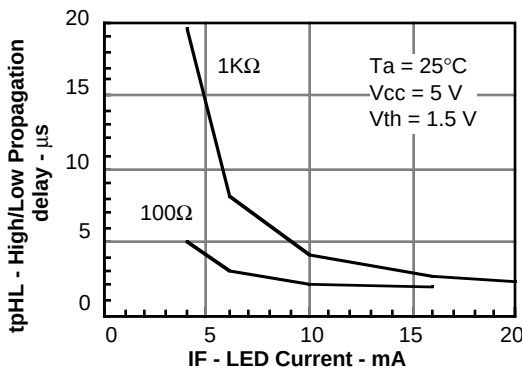


Figure 8. Switching timing waveform and schematic

