

MC022

MICROCOUPLER, SMALL TRANSISTOR OUTPUT

Mii

OPTOELECTRONIC
PRODUCTS{PRIVATE }
DIVISION

Rev A 8/2/02

Features:

- Small phototransistor output
- Small size saves real estate
- Large thick film gold bond pads
- Element evaluation on request

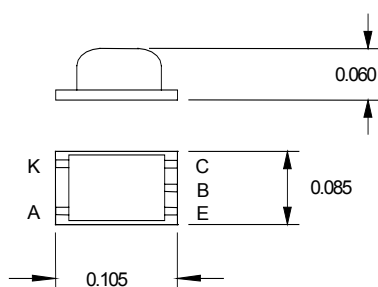
Applications:

- Eliminate ground loops
- Level shifting
- Line receiver
- Solid state switching
- Switching power supplies

DESCRIPTION

The **MC022** microcoupler is a single channel optocoupler consisting of an LED optically coupled to a light sensitive silicon phototransistor. Each microcoupler is provided with full 100% DC testing (+125°C test option upon request) or 100% element evaluation. All microcouplers are capable of operating over the full military temperature range.

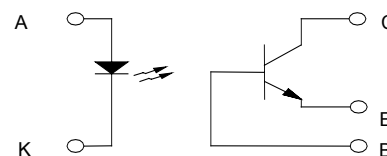
Package Dimensions



ALL TOLERANCES +/- .005

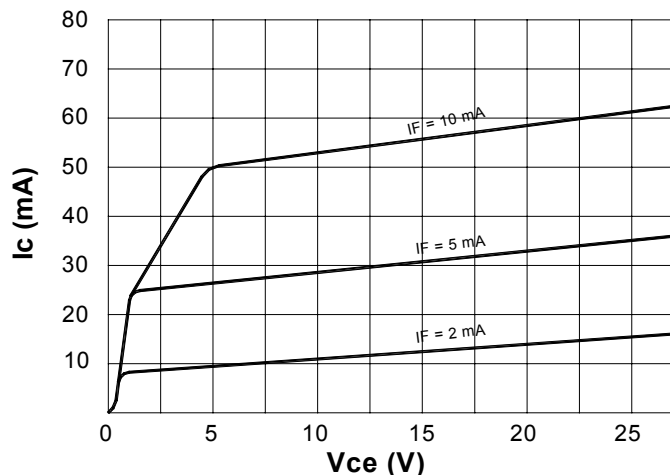
DIMENSIONS ARE IN INCHES

Schematic Diagram



TYPICAL PERFORMANCE CURVES

COLLECTOR CURRENT vs. COLLECTOR-EMITTER VOLTAGE
(TYPICAL, $T_a = 25^\circ\text{C}$)



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ELECTRICAL CHARACTERISTICS

$T_A = 25^\circ\text{C}$ unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Reverse Current	I_R			100	μA	$V_R = 2\text{V}$	
Input-to-Output Internal Resistance	R_{IO}	10^{11}			Ω	$V_{IN-OUT} = 1\text{kV}$	1
Input-to-Output Capacitance	C_{IO}		2.5	5	pF	$V_{CC} = 5.5\text{V}$, $I_F = 20\text{mA}$	
Input Forward Voltage	V_F		1.5	1.75	V	$I_F = 20\text{mA}$	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3	V	$I_F = 20\text{mA}$, $I_C = 10\mu\text{A}$, $I_B = 0$	
Collector-Base Breakdown Voltage	$V_{BR_{CBO}}$	50			V	$I_C = 100\mu\text{A}$, $I_B = 0$, $I_F = 0$	
Collector-Emitter Breakdown Voltage	$V_{BR_{CEO}}$	50			V	$I_C = 1\text{mA}$, $I_B = 0$, $I_F = 0$	
Emitter-Base Breakdown Voltage	$V_{BR_{EBO}}$	7			V	$I_C = 0$, $I_E = 10\text{ }0\mu\text{A}$, $I_F = 0$	
On State Collector Current	$I_{C(ON)}$	10	25		mA	$I_F = 10\text{mA}$, $V_{CE} = 5\text{V}$, $I_B = 0$	
Off-State Collector Current	I_D			100	nA	$I_F = 0\text{mA}$, $V_{CE} = 30\text{V}$, $I_B = 0$	
Rise Time (Phototransistor Mode)	t_r		10	25	μs	$I_F = 5\text{mA}$, $V_{CE} = 10\text{V}$, $R_L = 100\Omega$	
Fall Time (Phototransistor Mode)	t_f		10	25	μs	$I_F = 5\text{mA}$, $V_{CE} = 10\text{V}$, $R_L = 100\Omega$	

NOTE 1: These parameters are measured between all phototransistor leads shorted together and both input diode leads shorted together.

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current	I_F	1	50	mA
Supply Voltage	V_{CE}	5	30	V
Operating Temperature	T_A	-55	125	$^\circ\text{C}$