

# MC024

MICROCOUPLER, PHOTOTRANSISTOR OUTPUT  
SIMILAR TO 4N55

# Mii

OPTOELECTRONIC PRODUCTS  
DIVISION

## Features:

- 2MHz bandwidth typical
- Small size saves real estate
- Large thick film gold bond pads
- High common mode rejection

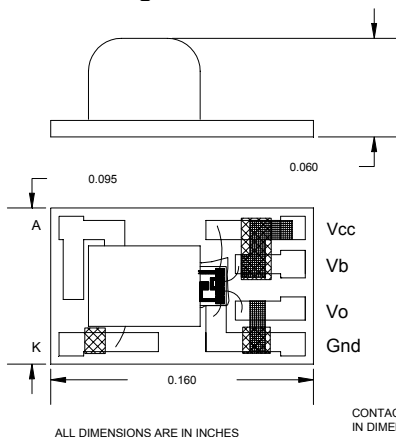
## Applications:

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

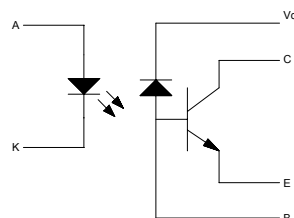
## DESCRIPTION

The **MC024** microcoupler is a single channel optocoupler consisting of an LED optically coupled to a light sensitive high speed 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



### Schematic Diagram



## ELECTRICAL CHARACTERISTICS

$T_a = -55^\circ\text{C}$  to  $125^\circ\text{C}$  unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Current Transfer Ratio	CTR	9	20		%	$I_F = 16\text{mA}$ , $V_O = 0.4\text{V}$ , $V_{CC} = 4.5\text{V}$	1
Logic High Output Current	$I_{OH}$		20	100	$\mu\text{A}$	$I_F = 250\mu\text{A}$ , $V_{CC} = V_O = 18\text{V}$	
High Level Output Current	$I_{CCH}$		0.2	10	$\mu\text{A}$	$I_F = 0$ , $V_{CC} = 18\text{V}$	
Low Level Supply Current	$I_{CCL}$		35	200	$\mu\text{A}$	$I_{F1} = I_{F2} = 20\text{mA}$ , $V_{CC} = 18\text{V}$	
Input Forward Voltage	$V_F$		1.5	1.8	V	$I_F = 20\text{mA}$	
Input Reverse Breakdown Voltage	$BV_R$	3			V	$I_R = 10\mu\text{A}$	
Propagation Delay Time To High Output Level	$t_{PLH}$		2	6	$\mu\text{s}$	$I_F = 16\text{mA}$ , $V_{CC} = 5\text{V}$ , $R_L = 8.2\text{k}\Omega$ , $C_L = 50\text{pF}$	
Propagation Delay Time To Low Output Level	$t_{PHL}$		0.4	2	$\mu\text{s}$	$I_F = 16\text{mA}$ , $V_{CC} = 5\text{V}$ , $R_L = 8.2\text{k}\Omega$ , $C_L = 50\text{pF}$	
Input Capacitance	$C_{IN}$		120		pF	$V_F = 0$ , $f = \text{MHz}$	
Capacitance (Input-Output)	$C_{I-O}$		1.5		pF	$f = 1\text{MHz}$ , $V_F = 0$	2
Resistance (Input-Output)	$R_{I-O}$		$10^{12}$		$\Omega$	$V_{I-O} = 500\text{Vdc}$	

### NOTES:

1. CURRENT TRANSFER RATIO is defined as the ratio of output collector current,  $I_O$ , to the forward LED input current,  $I_F$ , times 100%.
2. Measured between input pins shorted together and the output pins for that channel shorted together.

### RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	$I_{FL}$	0	2	$\mu\text{A}$
Supply Voltage	$V_{CC}$	2.0	18	V

### SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66024-400	Single Channel optocoupler, military operating range (-55° to +125°C)
66024-401	Single Channel optocoupler, full mil-temp (-55° to +125°C) with element evaluation