

**66024**

**4N55 DUAL CHANNEL, HERMETICALLY SEALED OPTOCOUPLER**

**Mii**  
OPTOELECTRONIC PRODUCTS  
DIVISION

**Features:**

- DSCC Approved 5962-8767901EX
- 1500 Vdc isolation test voltage
- TTL and CMOS compatible
- 2MHz bandwidth typical
- Faraday shield to provide high common mode rejection

**Applications:**

- Military and space
- Voltage level shifting
- Isolated receiver input
- Communication systems
- Medical systems

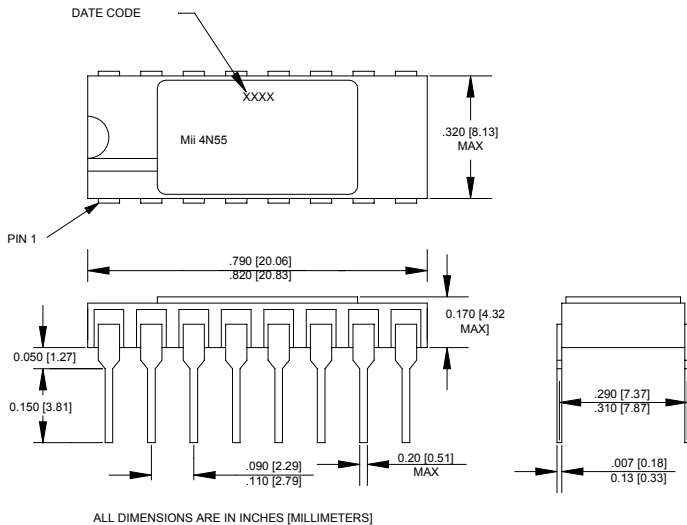
**DESCRIPTION**

The **66024** optocoupler contains two completely isolated optocouplers in a hermetically sealed dual in line package. Each channel provides high switching speeds while providing high isolation (1500V min) over the full military temperature range (-55° to +125°C). The 66024 is available in standard and MIL-PRF-38534 screened versions or tested to customer specifications.

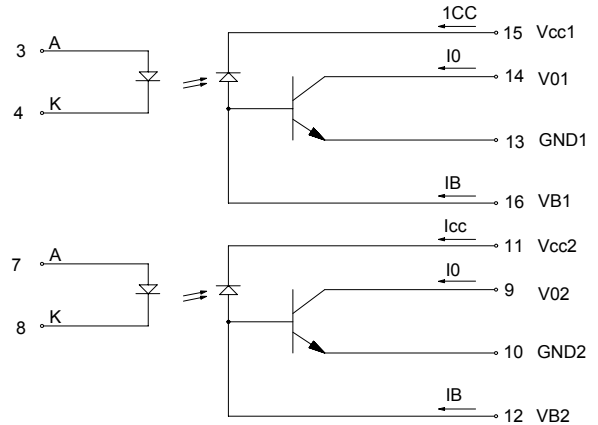
**ABSOLUTE MAXIMUM RATINGS**

Storage Temperature.....	-65°C to +150°C
Operating Free-Air Temperature Range .....	-55°C to +125°C
Lead Solder Temperature.....	260°C for 10s (1.6mm below seating plane)
Peak Forward Input Current .....	40mA (1ms duration)
Average Forward Input Current .....	20mA
Input Power Dissipation .....	40mW
Reverse Input Voltage (each channel) .....	5V
Supply voltage - V <sub>CC</sub> (each channel) .....	20V
Output Current - I <sub>O</sub> (each channel) .....	20mA
Output Power Dissipation (each channel)..(derate linearly at a rate of 1.4mW/°C above 100°C .....	50mW
Output Voltage - V <sub>O</sub> (each channel) .....	20V
Base Current (each channel).....	5mA

**Package Dimensions**



**Schematic Diagram**



**ELECTRICAL CHARACTERISTICS**T<sub>a</sub> = -55°C to 125°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Current Transfer Ratio	CTR	9	20		%	I <sub>F</sub> = 16mA, V <sub>O</sub> = 0.4V, V <sub>CC</sub> = 4.5V	1, 2
Output Leakage Current	I <sub>OH1</sub>		70	250	μA	I <sub>F</sub> = 250μA, V <sub>CC</sub> = V <sub>O</sub> = 18V I <sub>F</sub> (other channel) = 20mA	1
Logic High Output Current	I <sub>OH</sub>		20	100	μA	I <sub>F</sub> = 0, V <sub>CC</sub> = V <sub>O</sub> = 18V I <sub>F</sub> (other channel) = 20mA	1
High Level Output Current	I <sub>CCH</sub>		0.2	10	μA	I <sub>F</sub> = 0, V <sub>CC</sub> = 18V I <sub>F</sub> (other channel) = 20mA	1
Low Level Supply Current	I <sub>CCL</sub>		35	200	μA	I <sub>F1</sub> = I <sub>F2</sub> = 20mA, V <sub>CC</sub> = 18V	1
Input Forward Voltage	V <sub>F</sub>		1.5	1.8	V	I <sub>F</sub> = 20mA	1
Input Reverse Breakdown Voltage	BV <sub>R</sub>	3			V	I <sub>R</sub> = 10μA	1
Input-Output Insulation Leakage Current	I <sub>I-O</sub>			1.0	μA	V <sub>I-O</sub> = 1500Vdc, Relative Humidity = 45% t <sub>A</sub> = 25°C, t = 5s	3
Propagation Delay Time To High Output Level	t <sub>PLH</sub>		2	6	μs	I <sub>F</sub> = 16mA, V <sub>CC</sub> = 5V, R <sub>L</sub> = 8.2kΩ C <sub>L</sub> = 50pF	1
Propagation Delay Time To Low Output Level	t <sub>PHL</sub>		0.4	2	μs	I <sub>F</sub> = 16mA, V <sub>CC</sub> = 5V, R <sub>L</sub> = 8.2kΩ C <sub>L</sub> = 50pF	1

**TYPICAL CHARACTERISTICS**T<sub>a</sub> = 25°C, V<sub>CC</sub> = 5V Each Channel

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Capacitance	C <sub>IN</sub>		120		pF	V <sub>F</sub> = 0, f = MHz	1
Capacitance (Input-Output)	C <sub>I-O</sub>		1.5		pF	f = 1MHz, V <sub>F</sub> = 0	1, 4
Capacitance (Input-Input)	C <sub>I-I</sub>		0.55		pF	f = 1MHz	
Input Diode Temperature Coefficient	ΔV <sub>F</sub> ΔT <sub>A</sub>		-1.9		mV/°C	I <sub>F</sub> = 18mA	1
Resistance (Input-Output)	R <sub>I-O</sub>		10 <sup>12</sup>		Ω	V <sub>I-O</sub> = 500Vdc	1
Input-Input Insulation Leakage Current	I <sub>I-I</sub>		1		pA	Relative Humidity = 45% V <sub>I-I</sub> = 500Vdc, t = 5s	3
Common Mode Transient immunity at High Output Level	CM <sub>H</sub>	500	1000		V/μs	V <sub>CM</sub> = 10V P-P, R <sub>L</sub> = 8.2kΩ, I <sub>F</sub> = 0mA	1, 5
Common Mode Transient Immunity at Low Output Level	CM <sub>L</sub>	500	1000		V/μs	V <sub>CM</sub> = 10V P-P, R <sub>L</sub> = 8.2kΩ, I <sub>F</sub> = 16mA	1, 6

**NOTES:**

- Each channel.
- CURRENT TRANSFER RATIO is defined as the ratio of output collector current, I<sub>O</sub>, to the forward LED input current, I<sub>F</sub>, times 100%.
- Measured between each input pair shorted together.
- Measured between input pins shorted together and the output pins for that channel shorted together.
- CM<sub>H</sub> is the maximum tolerable common mode transient to assure that the output will remain in a high logic state (ie. V<sub>O</sub> > @.0V).
- CM<sub>L</sub> is the maximum tolerable common mode transient to assure that the output will remain in a low logic state (ie. V<sub>O</sub> < 0.8V).

**RECOMMENDED OPERATING CONDITIONS:**

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

**SELECTION GUIDE**

PART NUMBER	PART DESCRIPTION
66024-000	Dual Channel Optocoupler with 100% device screening
66024-001	DSCC Dwg 5962-8767901EX Dual Channel Optocoupler
66024-002	Dual Channel, Optocoupler tested over full military temperature range (-55° to +125°C)
66024-003	Dual Channel, commercial (0° to 70°C)