66024	**4N55 DUAL CHANNEL, HERMETICALLY SEALED OPTOCOUPLER**	MICROPAC OPTOELECTRONIC PRODUCTS DIVISION

09/22/03

Features:	**Applications:**
• DSCC Approved 5962-8767901EX • 1500 Vdc isolation test voltage • TTL and CMOS compatible • 2MHz bandwidth typical • Faraday shield to provide high common mode rejection	• Military and space • Voltage level shifting • Isolated receiver input • Communication systems • Medical systems

DESCRIPTION

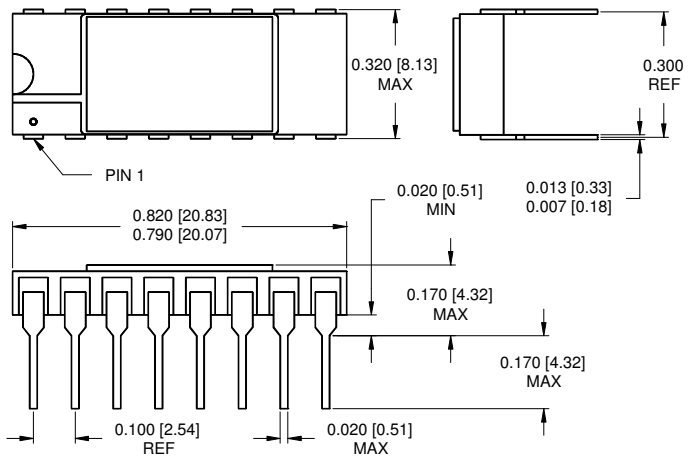
The ***66024*** optocoupler contains two completely isolated optocouplers in a hermetically sealed 16 pin dual inline package. Each channel provides high switching speeds while providing high isolation (1500V min) over the full military temperature range (-55° to +125°C). The 66024 is available in standard and MIL-PRF-38534 screened versions or tested to customer specifications.

ABSOLUTE MAXIMUM RATINGS

Peak Forward Input Current (1ms duration) (each channel) 40mA
Average Forward Input Current (each channel) (Note 1) 20mA
Input Power Dissipation (each channel) 40mW
Reverse Input Voltage (each channel) 5V
Supply voltage - V_{CC} (each channel) ..... 0.5 V to 20V
Output Current - I_O (each channel) 20mA
Output Power Dissipation (each channel) (Note 2) 50mW
Output Voltage - V_O (each channel) (Note 3) ..... 0.5 V to 20V
Base Current (each channel) 5mA
Storage Temperature ..... -65°C to +150°C
Operating Free-Air Temperature Range ..... -55°C to +125°C
Lead Soldering Temperature (10 seconds, 1/16" from case) ..... 260°C

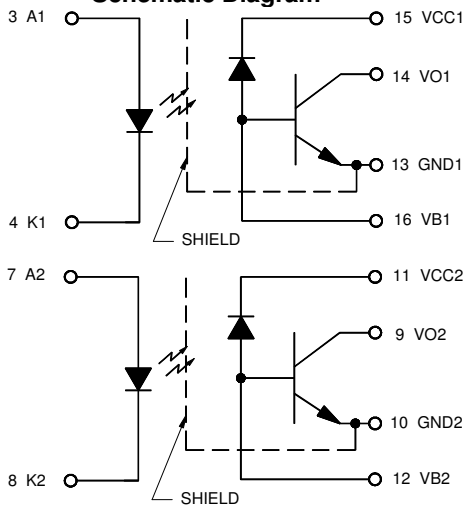
Notes:
1. Derate linearly at the rate of 0.2 mA/°C above 25°C.
2. Derate linearly at the rate of 0.5mW/°C above 25°C
3. The lowest total I_{ON} over temperature is achieved by keeping Vcc as low as possible, but greater than 2.0 V.

Package Dimensions



ALL DIMENSIONS ARE IN INCHES [MILLIMETERS].

Schematic Diagram



ELECTRICAL CHARACTERISTICS

T_a = -55°C to 125°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Current Transfer Ratio	CTR	9	20		%	I_F = 16mA, V_O = 0.4V , V_{CC} = 4.5V	1, 2
Output Leakage Current	I_{OH1}		30	250	µA	I_F = 250µA, V_{CC} = V_O = 18V I_F (other channel) = 20mA	1
Logic High Output Current	I_{OH}		10	100	µA	I_F = 0, V_{CC} = V_O = 18V I_F (other channel) = 20mA	1
High Level Output Current	I_{CCH}		0.1	10	µA	I_F = 0, V_{CC} = 18V I_F (other channel) = 20mA	1
Low Level Supply Current	I_{CCL}		35	200	µA	I_{F1} = I_{F2} = 20mA, V_{CC} = 18V	1
Input Forward Voltage	V_F		1.5	1.8	V	I_F = 20mA	1
Input Reverse Breakdown Voltage	BV_R	5			V	I_R = 10µA	1
Input-Output Insulation Leakage Current	$I_{I—O}$			1.0	µA	$V_{I—0}$ = 1500Vdc, Relative Humidity = 45% t_A = 25°C, t = 5s	4
Propagation Delay Time To High Output Level	t_{PLH}		1	6	µs	I_F = 16mA, V_{CC} = 5V, R_L = 8.2kΩ C_L = 50pF	1
Propagation Delay Time To Low Output Level	t_{PHL}		0.4	2	µs	I_F = 16mA, V_{CC} = 5V, R_L = 8.2kΩ C_L = 50pF	1

TYPICAL CHARACTERISTICS

T_a = 25°C, V_{CC} = 5V Each Channel

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Capacitance	C_{IN}		60		pF	V_F = 0, f = MHz	1
Capacitance (Input-Output)	C_{I-O}		1.5		pF	f = 1MHz, V_F = 0	1, 4
Capacitance (Input-Input)	C_{I-I}		0.55		pF	f = 1MHz	3
Input Diode Temperature Coefficient	$\frac{\Delta V_F}{\Delta T_A}$		-1.9		mV/°C	I_F = 18mA	1
Resistance (Input-Output)	R_{I-0}		10^{12}		Ω	$V_{I—O}$ = 500Vdc	1, 4
Input-Input Insulation Leakage Current	I_{I-I}		1		pA	Relative Humidity = 45% V_{I-I} = 500Vdc, t = 5s	3
Common Mode Transient immunity at High Output Level	CM_H	500	1000		V/µs	V_{CM} = 10V $_{P-P}$, R_L = 8.2kΩ, I_F = 0mA	1, 5
Common Mode Transient Immunity at Low Output Level	CM_L	500	1000		V/µs	V_{CM} = 10V $_{P-P}$, R_L = 8.2kΩ, I_F = 16mA	1, 6

NOTES:

1. Each channel.
2. CURRENT TRANSFER RATIO is defined as the ratio of output collector current, I_O, to the forward LED input current, I_F, times 100%.
3. Measured between each input pair shorted together.
4. Measured between input pins shorted together and the output pins for that channel shorted together.
5. CM_H is the maximum tolerable common mode transient to assure that the output will remain in a high logic state (ie. V_O > 2.0V).
6. CM_L is the maximum tolerable common mode transient to assure that the output will remain in a low logic state (ie. V_O < 0.8V).

RECOMMENDED OPERATING CONDITIONS:

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

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66024-001	DSCC Dwg 5962-8767901EX
66024-002	Military temperature range (-55° to +125°C)
66024-003	Commercial