

66053**SINGLE-CHANNEL, LOW-INPUT CURRENT
LEADLESS CHIP CARRIER OPTOCOPLER****OPTOELECTRONIC PRODUCTS
DIVISION****Features:**

- Electrically similar to 6N140
- Hermetically sealed 24 Pin LCC
- High Current Transfer ratio: 1000% typical
- CTR and I_{OH} guaranteed over 55°C to + 125°C ambient temperature range
- Standard and high reliability screened parts available
- 1000 Vdc isolation test voltage
- Low input current requirement: 0.5mA
- Low output saturation voltage: 0.1V typical
- Low power consumption
- Leadless chip carrier package
- Faraday shield provides high common mode rejection

DESCRIPTION

The 66053 optocoupler contains an infrared LED optically coupled to a corresponding high gain darlington detector. This unique optocoupler provides high CTR and low leakage current over the full military temperature range (-55°C to + 125°C). The 66053 is a 24 pin hermetically sealed leadless chip carrier and is available in standard and screened versions or tested to customer specifications.

RECOMMENDED OPERATING CONDITIONS

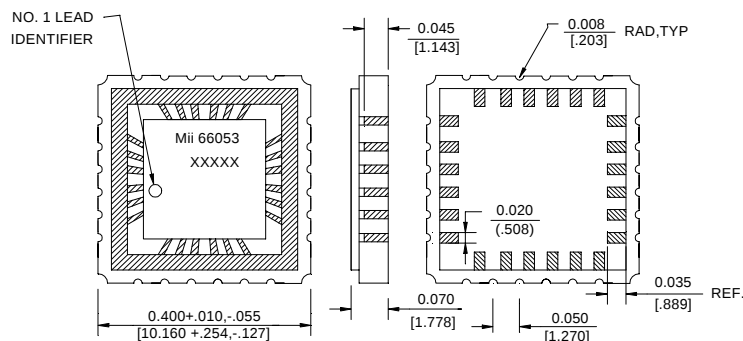
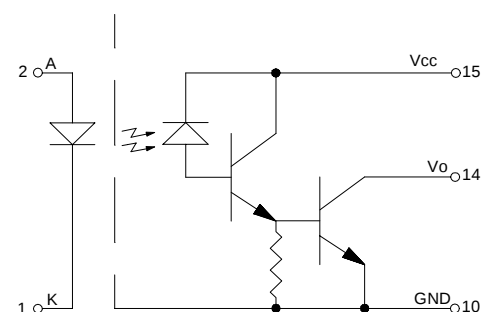
PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level Each Channel	I_{FL}		2	μA
Input Current, High Level Each Channel	I_{FH}	0.5	5	mA
Supply Voltage	V_{CC}	2.0	18	V

ABSOLUTE MAXIMUM RATINGS

Output current - I_O	40mA
Output voltage - V_O	-0.5 to 20V (1)
Supply voltage - V_{CC}	-0.5 to 20V (1)
Output power dissipation	50 mW (2)
Storage temperature	-65°C to +150°C
Operating temperature	-55°C to +125°C
Lead solder temperature	260°C for 10 sec.
Peak input current (<1ms duration)	20mA
Reverse input voltage - V_R	5V
Average input current - I_F	10mA (3)

Notes:

1. The lowest total I_{OH} over temperature is developed by keeping V_{CC} as low as possible, but greater than 2.0 volts. The negative voltage at the detector side should be applied to PIN 10.
2. Collector output power plus one fourth of the total supply power is total output power. Derate at 0.46mW/°C above 25°C.
3. Derate I_F at 0.05mA /°C above 25°C.

Package Dimensions**Schematic Diagram**

66053 SINGLE-CHANNEL, LOW-INPUT CURRENT, LEADLESS CHIP CARRIER OPTOCOUPLER, *Continued*

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	300	1000		%	I _F = 0.5mA, V _O = 0.4V, V _{CC} = 4.5V	1
		300	750		%	I _F = 1.6mA, V _O = 0.4V, V _{CC} = 4.5V	
		200	400		%	I _F = 5.0mA, V _O = 0.4V, V _{CC} = 4.5V	
Logic Low Output Voltage	V _{OL}		0.1 0.2	0.4 0.4	V V	I _F = 0.5mA, I _{OL} = 1.5mA, V _{CC} = 4.5V I _F = 5.0mA, I _{OL} = 10mA, V _{CC} = 4.5V	
Logic High Output Current	I _{OH}		.005	250	μA	I _F = 2μA V _O = V _{CC} = 18V	
Logic Low Supply Current	I _{CCL}		2	4	mA	I _F = 1.6mA V _{CC} = 18V	
Logic High Supply Current	I _{CCH}		.010	40	μA	I _F = 0 V _{CC} = 18V	
Input Forward Voltage	V _F		1.4	1.8	V	I _F = 1.6mA, T _A = 25°C	
Input Reverse Breakdown Voltage	BV _R	5			V	I _R = 10μA, T _A = 25°C	
Input-Output Insulation Leakage Current	I _{I-O}			1.0	μA	45% Relative Humidity, T _A = 25°C, t = 5s., V _{I-O} = 1000Vdc	2
Propagation Delay Time To Logic High at Output	t _{PLH}		6 4	60 30	μs μs	I _F = 0.5mA, R _L = 4.7kΩ, V _{CC} = 5.0V, I _F = 5mA, R _L = 680Ω, V _{CC} = 5.0V,	
Propagation Delay Time To Logic Low at Output	t _{PHL}		8 2	100 10	μs μs	I _F = 0.5mA, R _L = 4.7kΩ, V _{CC} = 5.0V, I _F = 5mA, R _L = 680Ω, V _{CC} = 5.0V,	
Common Mode Transient Immunity at High Output	CM _H	500	1000		V/μs	I _F = 0mA, R _L = 1.5kΩ, V _{CM} = 50V p-p, V _{CC} = 5.0V, T _A = 25°C	3
Common Mode Transient Immunity at Low Output	CM _L	500	1000		V/μs	I _F = 1.6mA, R _L = 1.5kΩ, V _{CM} = 50V p-p, V _{CC} = 5.0V, T _A = 25°C	4

**All typical values are at V_{CC} = 5V_A = 25°C

TYPICAL CHARACTERISTICS

T_A = 25°C, V_{CC} = 5V Each Channel

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Resistance (Input-Output)	R _{I-O}		10 ¹²		Ω	V _{I-O} = 500Vdc, T _A = 25°C	2
Capacitance (Input-Output)	C _{I-O}		1.5		pF	f = 1MHz, T _A = 25°C	2
Temperature Coefficient Of Forward Voltage	ΔV _F /ΔT _A		-1.8		mV/°C	I _F = 1.6mA	
Input Capacitance	C _{IN}		60		pF	f = 1MHz, V _F = 0, T _A = 25°C	

NOTES:

- CURRENT TRANSFER RATIO is defined as the ratio of output collector current, I_O, to the forward LED input current, I_F, times 100%.
- Device considered a two-terminal device. Pins 1 and 2 are shorted together and pins 10, 14, and 15 are shorted together.
- CM_H is the maximum tolerable common mode transient to assure that the output will remain in a high logic state (i.e. V_O > 2.0V).
- CM_L is the maximum tolerable common mode transient to assure that the output will remain in low logic state (i.e. V_O < 0.8V).