

66163**SINGLE CHANNEL OPTOCOUPLER**

09/22/03

Features:

- High Reliability
- Base lead eliminated for improved noise immunity
- Rugged package
- Stability over wide temperature
- +500V electrical isolation

Applications:

- Eliminate ground loops
- Level shifting
- Line receiver
- Switching power supplies
- Motor control

DESCRIPTION

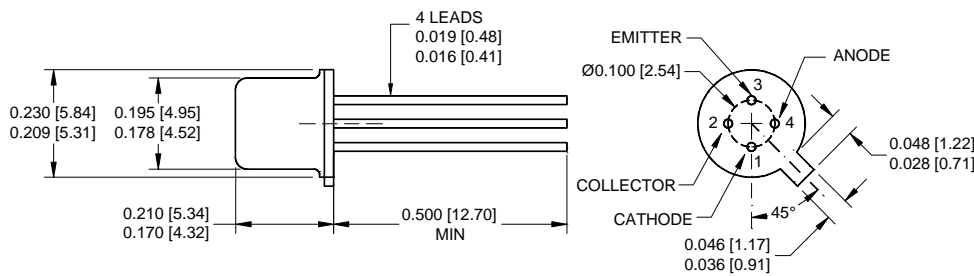
The **66163** contains a gallium arsenide infrared 880nm LED optically coupled to a silicon planar phototransistor. The optocoupler is built on a TO-46 header. The internal base connection has been eliminated for improved noise immunity.

ABSOLUTE MAXIMUM RATINGS

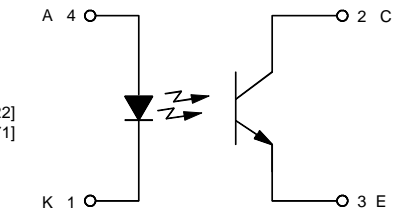
Input to Output Isolation Voltage (Note 3)	500V
Emitter-Collector Voltage	5V
Collector-Emitter Voltage	60V
Reverse Input Voltage	7V
Input Diode Continuous Forward Current (Note 1)	50mA
Peak Forward Input Current (Value applies for $t_w \leq 1\mu s$, PRR < 300 pps)	500mA
Continuous Collector Current	50mA
Continuous Transistor Power Dissipation (Note 2)	230mW
Storage Temperature	-65°C to +150°C
Operating Free-Air Temperature Range	-55°C to +125°C
Lead Solder Temperature (10 seconds, 1/16" from case)	260°C

Notes:

1. Derate linearly to 125°C free-air temperature at the rate of 0.5 mA/°C above 25°C.
2. Derate linearly to 125°C free-air temperature at the rate of 2.3 mW/°C above 25°C.
3. Measured with input diode leads shorted together and output leads shorted together.

Package Dimensions

ALL DIMENSIONS ARE IN INCHES [MILLIMETERS]

Schematic Diagram

ANODE ELECTRICALLY CONNECTED TO CASE.

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ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Input Diode Static Reverse Current	I _R			1	μA	V _R = 3V
Input Diode Static Forward Voltage	V _F		1.15	1.2	V	I _F = 2mA
Input Diode Static Forward Voltage	V _F		1.3	1.5	V	I _F = 50mA
Reverse Breakdown Voltage	B _{VR}	7	12		V	I _R = 100μA
Input Diode Capacitance	C _{IN}		25		pF	V = 0V, f = 1MHz

OUTPUT TRANSISTOR

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
Collector-Emitter Breakdown Voltage	V _{(BR)CEO}	50			V	I _C = 1mA, I _B = 0, I _F = 0
Emitter-Collector Breakdown Voltage	V _{(BR)ECO}	7			V	I _C = 0mA, I _E = 10μA, I _F = 0
Collector-Emitter Dark Current	I _{CEO1}			60	nA	V _{CE} = 50V, I _F = 0mA
	I _{CEO2}			10	nA	V _{CE} = 5V, I _F = 0mA

COUPLED CHARACTERISTICS

T_A = 25°C unless otherwise specified.

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS
On State Collector Current	I _{C(ON)}	4			mA	V _{CE} = 5V, I _F = 10mA
On State Collector Current	I _{C(ON)}	3		20	mA	V _{CE} = 0.4V, I _F = 10mA
On State Collector Current	I _{C(ON)}	2			mA	V _{CE} = 5V, I _F = 10mA, -55°C
Collector-Emitter Saturation Voltage	V _{CE(SAT)}			0.4	V	I _F = 50mA, I _C = 10mA
Isolation Resistance	R _{ISO}	10 ⁹			Ω	V _{IN-OUT} = 500V
Input to Output Capacitance	C _{IO}		2	2.5	pF	f = 1MHz
Delay Time	t _d		2	4	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Storage Time	t _s		0.2	0.5	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Rise Time	t _r		3	5	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω
Fall Time	t _f		4	5	μs	V _{CE} = 5V, I _F = 2mA, R _L = 100Ω

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I _{FL}	0	1	μA
Input Current, High Level	I _{FH}	2	10	mA
Supply Voltage	V _{CE}	5	50	V
Operating Temperature	T _A	-55	125	°C

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66163-001	Commercial
66163-101	Screened