66163	**SINGLE CHANNEL OPTOCOUPLERS DIRECT REPLACEMENT FOR 3C91C**	**OPTOELECTRONIC PRODUCTS DIVISION**

Features:	**Applications:**
• High Reliability • Base lead eliminated for improved noise immunity • Rugged package • Stability over wide temperature • +500V electrical isolation	• Eliminate ground loops • Level shifting • Line receiver • Switching power supplies • Motor control

DESCRIPTION

The ***66163*** contains a gallium arsenide infrared LED optically coupled to a silicon planar phototransistor. The optocoupler is built on a TO-46 header. The collector of the phototransistor is electrically connected to the case. This optocoupler is capable of transmitting signals between two galvanic sources. The potential difference between transmitter and receiver should not go over the maximum isolation voltage. The internal base connection has been eliminated for improved noise immunity.

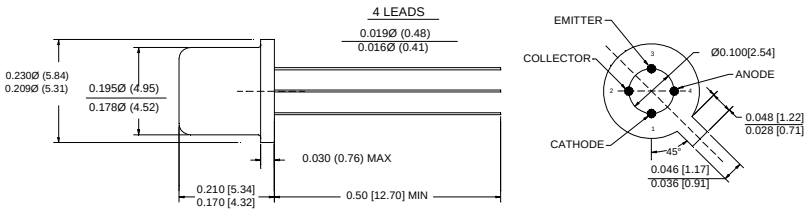
ABSOLUTE MAXIMUM RATINGS

Input to Output Voltage	500V
Emitter-Collector Voltage	5V
Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero)	60V
Reverse Input Voltage	7V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 1)	50mA
Peak Forward Input Current (Value applies for tw ≤ 1µs, PRR < 300 pps)	50mA
Continuous Collector Current	50mA
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 2)	300mW
Storage Temperature	-65°C to +150°C
Operating Free-Air Temperature Range	-55°C to +100°C
Lead Solder Temperature (10 seconds max.)	240°C

Notes:

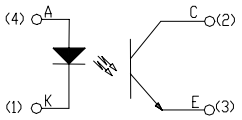
1. Derate linearly to 125°C free-air temperature at the rate of 0.67 mA/°C above 65°C.
2. Derate linearly to 125°C free-air temperature at the rate of 3 mW/°C.

Package Dimensions



DIMENSIONS ARE IN INCHES (MILLIMETERS)

Schematic Diagram



NOTE: ANODE ELECTRICALLY CONNECTED TO CASE

66163

SINGLE CHANNEL OPTOCOUPLER (Direct Replacement for 3C91C)

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	$V_{(BR)ECO}$	5			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			mA	V_{CE} = 0.4V, I_F = 10mA
On State Collector Current -55°C	$I_{C(ON)}$	2			mA	V_{CE} = 5V, I_F = 10mA
On State Collector Current -X07 -107	$I_{C(ON)}$	20			mA	V_{CE} = 5V, I_F = 10mA
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	Single Channel optocoupler, commercial (0° to 70°C)
66163-011	Single Channel optocoupler full military operating temperature range
66163-101	Single Channel optocoupler tested over full military temperature range with 100% device screening
66163-017	Single Channel optocoupler full military operating temperature range w/200% CTR
66163-107	Single Channel optocoupler tested over full military temperature range with 100% device screening w/200% CTR

MICROPAC INDUSTRIES, INC. OPTOELECTRONIC PRODUCTS DIVISION • 725 E.Walnut Str., Garland, TX 75040 • (972)272-3571 • Fax (972)487-6918
www.micropac.com E-MAIL: OPTOSALES @ MICROPAC.COM