

66116

Single Channel Optocoupler
Electrically Similar to 4N47-4N49
Coaxial or Bulkhead Mount packages

Mii
OPTOELECTRONIC PRODUCTS
DIVISION

Features:

- High reliability
- Base lead provided for conventional transistor biasing
- Very high gain, high voltage transistor
- Hermetically sealed for reliability and stability
- Stability over wide temperature range
- High voltage electrical isolation

Applications:

- Line Receivers
- Switchmode Power Supplies
- Signal ground isolation
- Process Control input/output isolation

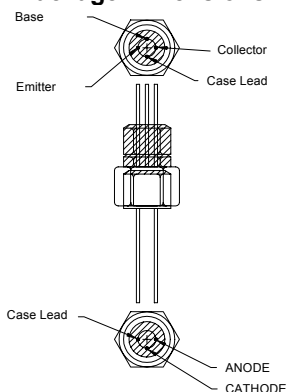
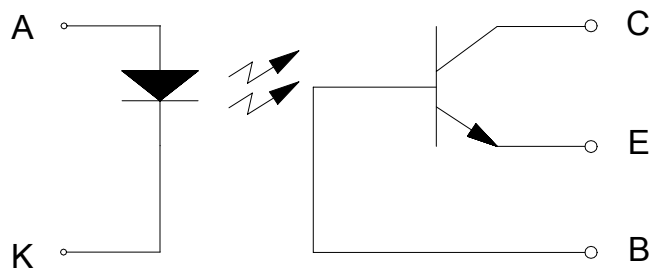
DESCRIPTION

Very high gain optocoupler utilizing GaAlAs infrared LED optically coupled to an N-P-N silicon phototransistor packaged in a hermetically sealed metal case. These devices can be tested to customer specifications, as well as to MIL-PRF-38534 H&K quality levels.

***ABSOLUTE MAXIMUM RATINGS**

Input to Output Voltage	±1kV
Collector-Base Voltage	45V
Collector-Emitter Voltage (See Note 1)	40V
Emitter-Base Voltage	7V
Input Diode Reverse Voltage	2V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 2)	40mA
Continuous Collector Current	50mA
Peak Diode Current (See Note 3)	1A
Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 4)	300mW
Operating Free-Air Temperature Range	-55°C to +125°C
Storage Temperature	-65°C to +125°C
Lead Temperature (1/16" (1.6mm) from case for 10 seconds)	240°C

* JEDEC registered data

Package Dimensions**Schematic Diagram****Notes:**

1. This value applies with the emitter-base diode open-circuited and the input-diode current equal to zero.
2. Derate linearly to 125°C free-air temperature at the rate of 0.67 mA/°C.
3. This value applies for $t_w \leq 1\mu s$. PRR < 300 pps.
4. Derate linearly to 125°C free-air temperature at the rate of 3 mW/°C.

ELECTRICAL CHARACTERISTICS $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Input Diode Static Reverse Current	I_R			100	μA	$V_R = 2\text{V}$	
Input Diode Static Forward Voltage	V_F	1 0.8 0.7	1.4	1.7 1.5 1.3	V	$I_E = 10\text{mA}$	
		-55°C +25°C +100°C					

OUTPUT TRANSISTOR $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	45			V	$I_C = 100\mu\text{A}$, $I_B = 0$, $I_F = 0$	
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	40			V	$I_C = 1\text{mA}$, $I_B = 0$, $I_F = 0$	
Emitter-Collector Breakdown Voltage	$V_{(BR)ECO}$	7			V	$I_C = 0$, $I_E = 100\mu\text{A}$, $I_F = 0$	

COUPLED CHARACTERISTICS $T_A = 25^\circ\text{C}$ Unless otherwise specified

PARAMETER	SYMBOL	MIN	TYP	MAX	UNITS	TEST CONDITIONS	NOTE
On State Collector Current	$I_{C(ON)}$	0.5 1 2		5 10	mA	$V_{CE} = 5\text{V}$, $I_B = 0$, $I_F = 1\text{mA}$	
		-XX1 -XX2 -XX3					
On State Collector Current	$I_{C(ON)}$	0.7 1.4 2.8			mA	$V_{CE} = 5\text{V}$, $I_B = 0$, $I_F = 2\text{mA}$	
		-55°C					
On State Collector Current	$I_{C(ON)}$	0.5 1 2			mA	$V_{CE} = 5\text{V}$, $I_B = 0$, $I_F = 2\text{mA}$	2
		-XX1 -XX2 -XX3					
Off State Collector Current	$I_{C(OFF)}$			100	nA	$V_{CE} = 20\text{V}$, $I_B = 0$, $I_F = 0\text{mA}$	
		+25°C					
Off State Collector Current	$I_{C(OFF)}$			100	μA	$V_{CE} = 20\text{V}$, $I_B = 0$, $I_F = 0\text{mA}$	
		+100°C					
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3 0.3 0.3	V	$I_C = 0.5\text{mA}$, $I_B = 0$, $I_F = 2\text{mA}$ $I_C = 1\text{mA}$, $I_B = 0$, $I_F = 2\text{mA}$ $I_C = 2\text{mA}$, $I_B = 0$, $I_F = 2\text{mA}$	
		-XX1 -XX2 -XX3					
Input to Output Resistance	R_{I-O}	10^{11}				$V_{IN-OUT} = 1\text{kV}$	1
Input to Output Capacitance	C_{I-O}			5	pF	$f = 1\text{MHz}$, $V_{IN-OUT} = 1\text{kV}$	1
Rise Time/ Fall Time	t_r / t_f			20	μs	$V_{CC} = 10\text{V}$, $I_F = 5\text{mA}$, $R_L = 100\Omega$	
Phototransistor Operation	t_r / t_f			25	μs		
	t_r / t_f			25	μs		
		-XX1 -XX2 -XX3					
Rise Time/ Fall Time	t_r / t_f			0.85	μs	$V_{CC} = 10\text{V}$, $I_F = 5\text{mA}$, $R_L = 100\Omega$	
Photodiode Operation	t_r / t_f			0.85	μs		
	t_r / t_f			0.85	μs		
		-XX1 -XX2 -XX3					

NOTES:

- These parameters are measured between all phototransistor leads shorted together and with both input diode leads shorted together.
- This parameter measured using pulse techniques $t_w = 100\mu\text{s}$, duty cycle $\leq 1\%$.

RECOMMENDED OPERATING CONDITIONS:

PARAMETER	SYMBOL	MIN	MAX	UNITS
Input Current, Low Level	I_{FL}	0	100	μA
Input Current, High Level	I_{FH}	2	10	mA
Supply Voltage	V_{CE}	5	10	V

SELECTION GUIDE

PART NUMBER	PART DESCRIPTION
66116-001	Single Channel, Commercial (0 to 70°C) Coaxial Packaging
66116-002	Single Channel, Commercial (0 to 70°C) Coaxial Packaging
66116-003	Single Channel, Commercial (0 to 70°C) Coaxial Packaging
66116-001B	Single Channel, Commercial (0 to 70°C) Bulkhead Packaging
66116-002B	Single Channel, Commercial (0 to 70°C) Bulkhead Packaging
66116-003B	Single Channel, Commercial (0 to 70°C) Bulkhead Packaging
66116-101	Single Channel, 100% screened, (-55 to +125°C) Coaxial Packaging
66116-102	Single Channel, 100% screened, (-55 to +125°C) Coaxial Packaging
66116-103	Single Channel, 100% screened, (-55 to +125°C) Coaxial Packaging
66116-101B	Single Channel, 100% screened, (-55 to +125°C) Bulkhead Packaging
66116-102B	Single Channel, 100% screened, (-55 to +125°C) Bulkhead Packaging
66116-103B	Single Channel, 100% screened, (-55 to +125°C) Bulkhead Packaging
66116-201	Single Channel, full mil-temp, (-55 to +125°C) Coaxial Packaging
66116-202	Single Channel, full mil-temp, (-55 to +125°C) Coaxial Packaging
66116-203	Single Channel, full mil-temp, (-55 to +125°C) Coaxial Packaging
66116-201B	Single Channel, full mil-temp, (-55 to +125°C) Bulkhead Packaging
66116-202B	Single Channel, full mil-temp, (-55 to +125°C) Bulkhead Packaging
66116-203B	Single Channel, full mil-temp, (-55 to +125°C) Bulkhead Packaging