

**66116**

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



**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**

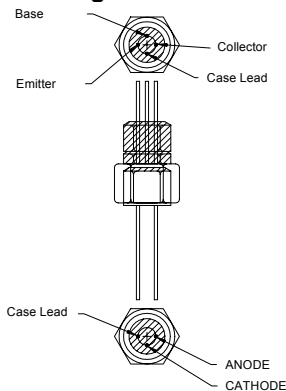
Very high gain optocoupler utilizing GaAlAs infrared LED optically coupled to an N-P-N silicon phototransistor packaged in a hermetically sealed metal case. These devices can be tested to customer specifications, as well as to MIL-PRF-38534 H&K quality levels.

**\*ABSOLUTE MAXIMUM RATINGS**

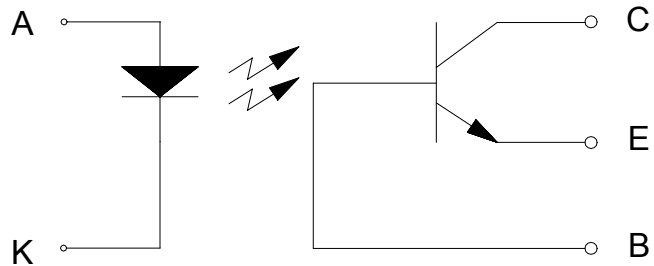
Input to Output Voltage .....	±1kV
Collector-Base Voltage .....	45V
Collector-Emitter Voltage (See Note 1) .....	40V
Emitter-Base Voltage .....	7V
Input Diode Reverse Voltage .....	2V
Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 2) .....	40mA
Continuous Collector 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	$\mu\text{A}$	$V_R = 2\text{V}$	
Input Diode Static Forward Voltage	$V_F$	1	1.4	1.7	V	$I_E = 10\text{mA}$	
		0.8		1.5			
		0.7		1.3			

**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		5	mA	$V_{CE} = 5\text{V}$ , $I_B = 0$ , $I_F = 1\text{mA}$	
		1		10			
		2					
On State Collector Current -55°C	$I_{C(ON)}$	0.7			mA	$V_{CE} = 5\text{V}$ , $I_B = 0$ , $I_F = 2\text{mA}$	
		1.4					
		2.8					
On State Collector Current +100°C	$I_{C(ON)}$	0.5			mA	$V_{CE} = 5\text{V}$ , $I_B = 0$ , $I_F = 2\text{mA}$	2
		1					
		2					
Off State Collector Current +25°C	$I_{C(OFF)}$			100	nA	$V_{CE} = 20\text{V}$ , $I_B = 0$ , $I_F = 0\text{mA}$	
Off State Collector Current +100°C	$I_{C(OFF)}$			100	$\mu\text{A}$	$V_{CE} = 20\text{V}$ , $I_B = 0$ , $I_F = 0\text{mA}$	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$			0.3	V	$I_C = 0.5\text{mA}$ , $I_B = 0$ , $I_F = 2\text{mA}$	
	$V_{CE(SAT)}$			0.3	V	$I_C = 1\text{mA}$ , $I_B = 0$ , $I_F = 2\text{mA}$	
	$V_{CE(SAT)}$			0.3	V	$I_C = 2\text{mA}$ , $I_B = 0$ , $I_F = 2\text{mA}$	
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 Phototransistor Operation	$t_r / t_f$			20	$\mu\text{s}$	$V_{CC} = 10\text{V}$ , $I_F = 5\text{mA}$ , $R_L = 100\Omega$	
	$t_r / t_f$			25	$\mu\text{s}$		
	$t_r / t_f$			25	$\mu\text{s}$		
Rise Time/ Fall Time Photodiode Operation	$t_r / t_f$			0.85	$\mu\text{s}$	$V_{CC} = 10\text{V}$ , $I_F = 5\text{mA}$ , $R_L = 100\Omega$	
	$t_r / t_f$			0.85	$\mu\text{s}$		
	$t_r / t_f$			0.85	$\mu\text{s}$		

**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	$\mu\text{A}$
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