

MTL3N261
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SINGLE CHANNEL OPTOCOUPLER



Features:

- High Reliability
- Base lead eliminated for improved noise immunity
- Rugged package
- Stability over wide temperature
- +1000V electrical isolation

Applications:

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

DESCRIPTION

The **MTL3N26X** series optocoupler contains a gallium arsenide infrared LED optically coupled to a silicon planar phototransistor. The optocoupler is built on a TO-46 header. The anode of the LED 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..... | 1000V |
| Emitter-Collector Voltage..... | .7V |
| Collector-Emitter Voltage (Value applies to emitter-base open-circuited & the input-diode equal to zero)..... | .40V |
| Reverse Input Voltage..... | .2V |
| Input Diode Continuous Forward Current at (or below) 65°C Free-Air Temperature (see note 1)..... | 40mA |
| Peak Forward Input Current (Value applies for $t_w \leq 1\mu s$, PRR < 300 pps)..... | 1A |
| Continuous Collector Current..... | 20mA |
| Continuous Transistor Power Dissipation at (or below) 25°C Free-Air Temperature (see Note 2)..... | 275mW |
| 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 100°C free-air temperature at the rate of 1.14 mA/°C above 65°C.
2. Derate linearly to 100°C free-air temperature at the rate of 7.8 mW/°C above 65°C.

RECOMMENDED OPERATING CONDITIONS:

| PARAMETER | SYMBOL | MIN | MAX | UNITS |
|---------------------------|----------|-----|-----|---------|
| Input Current, Low Level | I_{FL} | 0 | 1 | μA |
| Input Current, High Level | I_{FH} | 10 | 20 | mA |
| Supply Voltage | V_{CE} | 5 | 10 | V |

SELECTION GUIDE

| PART NUMBER | PART DESCRIPTION |
|----------------|--|
| MTL3N26X.001.X | Single Channel optocoupler, commercial (0° to +70°C operating temperature range) |
| MTL3N26X.002.X | Single Channel optocoupler, commercial (-40° to +85°C operating temperature range) |
| MTL3N26X.003.X | Single Channel optocoupler, commercial (-55° to +125°C operating temperature range) |
| MTL3N26X.004.X | Single Channel optocoupler, screened to JANTX level (-55° to +125°C operating temperature range) |

NOTE: X at end of part number represents lead finish. Replace with A for gold or S for solder.

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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 | | | 100 | | V _R = 2V |
| Input Diode Static Forward Voltage | V _F | | 1.15 | 1.3 | V | I _F = 10mA |

OUTPUT TRANSISTOR

T_A = 25°C unless otherwise specified.

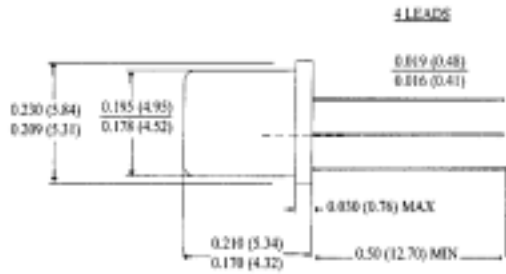
| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|-------------------------------------|----------------------|-----|-----|-----|-------|--|
| Collector-Emitter Breakdown Voltage | V _{(BR)CEO} | 40 | | | V | I _C = 1mA, I _B = 0, I _F = 0 |
| Emitter-Collector Breakdown Voltage | V _{(BR)ECO} | 7 | | | V | I _E = 100μA, I _F = 0 |
| Collector-Emitter Dark Current | I _{CEO} | | | 100 | nA | V _{CE} = 20V, I _F = 0mA |

COUPLED CHARACTERISTICS

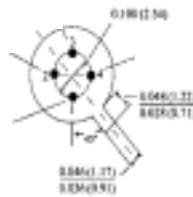
T_A = 25°C unless otherwise specified.

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNITS | TEST CONDITIONS |
|--------------------------------------|----------------------|-----------------|----------------|-------------------|-------|--|
| On State Collector Current | I _{C(ON)} | 0.5 1 2 | | | mA | V _{CE} = 5V, I _F = 1mA |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | | | 0.3 0.3 0.3 | V | I _F = 2mA, I _C = .05mA I _F = 2mA, I _C = 1.0mA I _F = 2mA, I _C = 2.0mA |
| Isolation Resistance | R _{ISO} | 10 ⁹ | | | Ω | V _{IN-OUT} = 1000V |
| Rise Time | t _r | | 10 15 25 | 20 20 25 | μs | V _{CE} = 10V, I _F = 5mA, R _L = 100Ω |
| Fall Time | t _f | | 10 10 15 | 20 20 25 | μs | V _{CE} = 10V, I _F = 5mA, R _L = 100Ω |

Package Dimensions



DIMENSIONS ARE IN INCHES (MILLIMETERS)



Schematic Diagram

