

## FEATURES

- 600 V Blocking Voltage
- 7 mA Maximum Trigger Current
- Isolation Voltage, 3750 VAC, t=1 sec.
- Isolation Materials per UL94

## APPLICATIONS

- High Current Triac Driver
- Solid State Relays
- Switch Small AC Loads

## DESCRIPTION

The IL440 consists of a GaAs infrared emitter optically coupled to a silicon planar triac chip with a non-zero crossing network. The two semiconductors are assembled in a 6 pin dual-in-line plastic package. The output detector is capable of blocking up to 600 volts which permits control of off-line voltages up to 240 VAC. The IL440 can handle currents up to 100 mA<sub>RMS</sub>.

## Maximum Ratings

### Emitter

Reverse Voltage .....	5 V
Forward Current .....	60 mA
Surge Current (P.W.<10 μs).....	3 A
Power Dissipation.....	100 mW
Junction Temperature.....	100 °C

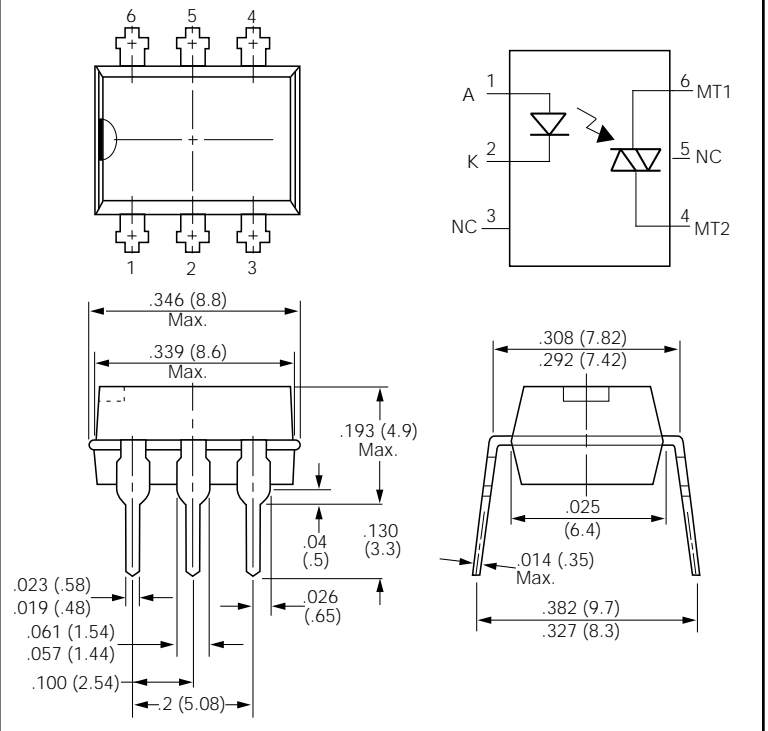
### Detector

Peak Off-state Voltage.....	600 V
On-state RMS Current .....	100 mA
Peak Surge Current (t <sub>p</sub> ≤10 ms).....	1.2 A
Peak On-state Current.....	2 A
Power Dissipation.....	300 mW
Junction Temperature.....	125 °C

### Package

Isolation Voltage, 1 sec. ....	3750 VAC
per Standard Climate 23°C/50% RH, DIN 50014	
Creepage .....	≥7 mm
Clearance.....	≥7 mm
Isolation Resistance	
V <sub>IO</sub> =500 V, T <sub>A</sub> =25°C .....	≥10 <sup>12</sup> Ω
V <sub>IO</sub> =500 V, T <sub>A</sub> =100°C .....	≥10 <sup>11</sup> Ω
Total Power Dissipation, T <sub>A</sub> =25°C .....	330 mW
Storage Temperature Range .....	-55°C to +125°C
Operating Temperature Range.....	-40°C to +100°C
Junction Temperature.....	100°C
Lead Soldering Temperature	
(2 mm from case, t<10 s.) .....	260°C

Package Dimensions in inches (mm)



## Maximum Safety Ratings

This device is used for protective separation against electrical shock within the maximum safety ratings. This must be ensured by protective circuits in the applications.

Parameter	Symbol	Max.	Unit	Test Condition
<b>Emitter</b>				
Forward Current	I <sub>F</sub>	130	mA	
<b>Detector</b>				
Power Dissipation	P <sub>D</sub>	300	mW	T <sub>A</sub> ≤25°C
<b>Coupled Device</b>				
Rated Impulse Voltage Sample Test	V <sub>IOTM</sub>	6	kV	t <sub>T1</sub> = 10 s, t <sub>test</sub> =60 s

**Electrical Characteristics,  $T_A=25^\circ\text{C}$** 

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
<b>Emitter</b>						
Forward Voltage	$V_F$		1.25	1.6	V	$I_F=50\text{ mA}$
Breakdown Voltage	$V_{BR}$	5			V	$I_R=10\ \mu\text{A}$
Junction Capacitance	$C_J$		50		pF	$V_R=0\text{ V}$ , $f=1\text{ MHz}$
<b>Detector</b>						
Off-state Output Terminal Voltage	$V_{DRM}$	600			V	$I_{DRM}=500\text{ nA}$
Peak On-state Voltage	$V_{TM}$		1.5	3	V	$I_{TM}=100\text{ mA}$ , $I_{FT}=30\text{ mA}$
Critical Rate of Rise of Off-state Voltage	$(dv/dt)_{Cr}$		50		V/ $\mu\text{s}$	$I_F=0$ , $V_S=240\text{ V}_{RMS}$
	$(dv/dt)_{CrQ}$	0.13	0.25		V/ $\mu\text{s}$	$I_F=30\text{ mA}$ , $V_S=60\text{ V}_{RMS}$
<b>Coupled Device</b>						
Input Trigger Current	$I_{FT}$		5	7	mA	$V_T=6\text{ V}$ , $R_L=150\ \Omega$
Holding Current	$I_H$			1	mA	$I_F\geq 10\text{ mA}$ , $V_S\geq 3\text{ V}$