



# H11C4/H11C5/H11C6

## Photo SCR Optocoupler

### FEATURES

- Turn On Current ( $I_{FT}$ ), 5.0 mA Typical
- Gate Trigger Current ( $I_{GT}$ ), 20 mA Typical
- Surge Anode Current, 5.0 A
- Blocking Voltage, 400 V Gate Trigger Voltage ( $V_{GT}$ ), 0.6 V Typical
- Isolation Voltage, 5300  $V_{RMS}$
- Solid State Reliability
- Standard DIP Package
- Underwriters Lab File #E52744

### DESCRIPTION

The H11C4/H11C5/H11C6 are optically coupled SCRs with a Gallium Arsenide infrared emitter and a silicon photo SCR sensor. Switching can be achieved while maintaining a high degree of isolation between triggering and load circuits. These optocouplers can be used in SCR triac and solid state relay applications where high blocking voltages and low input current sensitivity are required.

The H11C4 and H11C5 are identical and have a maximum turn-on-current of 11 mA. The H11C6 has a maximum of 14 mA.

### Maximum Ratings

#### Emitter

Peak Reverse Voltage ..... 6.0 V  
 Continuous Forward Current ..... 60 mA  
 Peak Forward Current (1.0 ms, 1% Duty Cycle) ... 3.0 A  
 Power Dissipation at 25°C ..... 100 mW  
 Derate Linearly from 25°C ..... 1.33 mW/°C

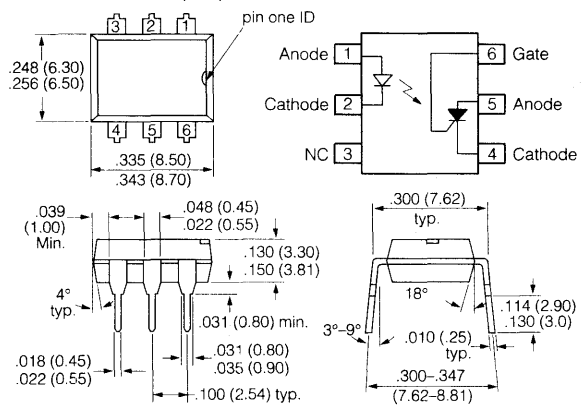
#### Detector

Reverse Gate Voltage ..... 6.0 V  
 Anode Voltage (DC or AC Peak) ..... 400 V  
 RMS Forward Current ..... 300 mA  
 Surge Anode Current (10 ms duration) ..... 5.0 A  
 Peak Forward Current (100  $\mu$ s, 1% Duty Cycle) ... 10 A  
 Surge Gate Current (5.0 ms duration) ..... 200 mA  
 Power Dissipation, 25°C case ..... 1000 mW  
 Derate Linearly from 25°C ..... 13.3 mW/°C

#### Package

Isolation Test Voltage ..... 5300  $V_{RMS}$   
 (between emitter and detector referred to  
 Standard Climate 23°C/50%RH, DIN 50014)  
 Creepage .....  $\geq 7.0$  mm  
 Clearance .....  $\geq 7.0$  mm  
 Comparative Tracking Index per  
 DIN IEC 112/VEDE 0303, part 1 ..... 175  
 Isolation Resistance  
 $V_{IO}=500$  V,  $T_A=25^\circ\text{C}$  .....  $\geq 10^{12}$   $\Omega$   
 $V_{IO}=500$  V,  $T_A=100^\circ\text{C}$  .....  $\geq 10^{11}$   $\Omega$   
 Total Package Dissipation ..... 400 mW  
 Derate Linearly from 25°C ..... 5.3 mW/°C  
 Operating Temperature Range ..... -55°C to +100°C  
 Storage Temperature Range ..... -55°C to +150°C  
 Lead Soldering Time at 260°C ..... 10 sec.

Dimensions in Inches (mm)



### Characteristics $T_A=25^\circ\text{C}$

| Parameters                                      | Sym      | Min. | Typ.       | Max.     | Unit     | Condition   |
|---|----------|------|------------|----------|----------|---|
| <b>Emitter</b>                                  |          |      |            |          |          |   |
| Forward Voltage                                 | $V_F$    | —    | 1.2        | 1.5      | V        | $I_F=10$ mA   |
| Reverse Current                                 | $I_R$    | —    | —          | 10       | $\mu$ A  | $V_R=3.0$ V   |
| Capacitance                                     | $C_O$    | —    | 50         | —        | pF       | $V_R=0$ , $f=1.0$ MHz   |
| <b>Detector</b>                                 |          |      |            |          |          |   |
| Forward Blocking Voltage                        | $V_{DM}$ | 400  | —          | —        | V        | $R_{GK}=10$ K $\Omega$<br>$T_A=100^\circ\text{C}$<br>$I_d=150$ $\mu$ A        |
| Reverse Blocking Voltage                        | $V_{DM}$ | 400  | —          | —        | V        |   |
| On-state Voltage                                | $V_t$    | —    | 1.1        | 1.3      | V        | $I_T=300$ mA  |
| Holding Current                                 | $I_H$    | —    | —          | 500      | $\mu$ A  | $R_{GK}=27$ K $\Omega$<br>$V_{FX}=50$ V                                       |
| Gate Trigger Voltage                            | $V_{GT}$ | —    | 0.6        | 1.0      | V        | $V_{FX}=100$ V<br>$R_{GK}=27$ K $\Omega$<br>$R_L=10$ K $\Omega$               |
| Forward Leakage Current                         | $I_R$    | —    | 150        | —        | $\mu$ A  | $R_{GK}=10$ K $\Omega$<br>$V_{RM}=400$ V<br>$I_F=0$ , $T_A=100^\circ\text{C}$ |
| Reverse Leakage Current                         | $I_R$    | —    | 150        | —        | $\mu$ A  | $R_{GK}=10$ K $\Omega$<br>$V_{RX}=400$ V<br>$I_F=0$ , $T_A=100^\circ\text{C}$ |
| Gate Trigger Current                            | $I_{GT}$ | —    | 20         | 50       | $\mu$ A  | $V_{FX}=100$ V<br>$R_{GK}=27$ K $\Omega$<br>$R_L=10$ K $\Omega$               |
| Capacitance<br>Anode to Gate<br>Gate to Cathode | —        | —    | 20<br>350  | —        | pF<br>pF | $V=0$ , $f=1.0$ MHz   |
| <b>Package</b>                                  |          |      |            |          |          |   |
| Turn-On Current<br>H11C4/H11C5<br>H11C6         | $I_{FT}$ | —    | —          | 20<br>30 | mA<br>mA | $V_{DM}=50$ V<br>$R_{GK}=10$ K $\Omega$                                       |
| Turn-On Current<br>H11C4/H11C5<br>H11C6         | $I_{FT}$ | —    | 5.0<br>7.0 | 11<br>14 | mA<br>mA | $V_{DM}=100$ V<br>$R_{GK}=27$ K $\Omega$                                      |