

TIL197, TIL198, TIL199  
TIL197A, TIL198A, TIL199A  
TIL197B, TIL198B, TIL199B



## HIGH DENSITY MOUNTING PHOTODARLINGTON OPTICALLY COUPLED ISOLATORS

### APPROVALS

- UL recognised, File No. E91231

### 'X' SPECIFICATION APPROVALS

- VDE 0884 approval pending
- Certified to EN60950 by the following Test Bodies :-  
Nemko - Certificate No. P96102022  
Fimko - Registration No. 192313-01..25  
Semko - Reference No. 9639052 01  
Demko - Reference No. 305969

### DESCRIPTION

The TIL197, TIL198, TIL199 series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo darlingtontons in space efficient dual in line plastic packages. The standard parts TIL197, TIL198, TIL199 are tested for a CTR of 500% minimum. Parts with the suffix A or B are tested for a CTR of 1000 and 1500% minimum respectively.

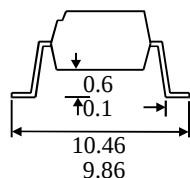
### FEATURES

- Options :-  
10mm lead spread - add G after part no.  
Surface mount - add SM after part no.  
Tape&reel - add SMT&R after part no.
- High Current Transfer Ratio (500%min)
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- All electrical parameters 100% tested
- Custom electrical selections available

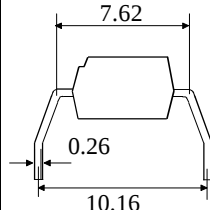
### APPLICATIONS

- Computer terminals
- Industrial systems controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedances

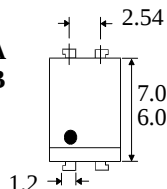
#### OPTION SM SURFACE MOUNT



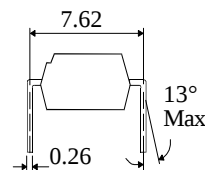
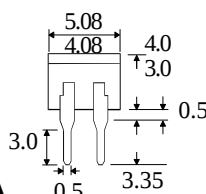
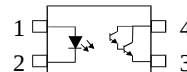
#### OPTION G 10MM LEAD SPREAD



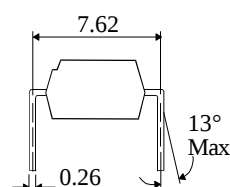
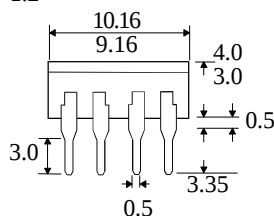
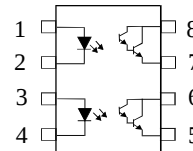
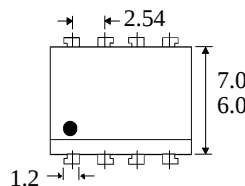
#### TIL197 TIL197A TIL197B



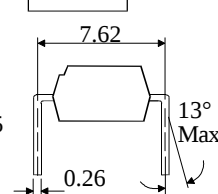
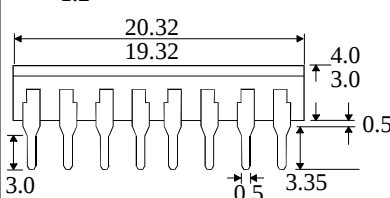
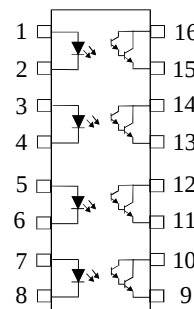
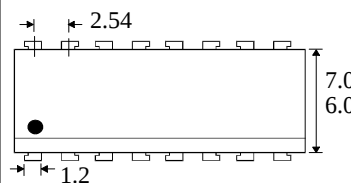
#### Dimensions in mm



#### TIL198 TIL198A TIL198B



#### TIL199 TIL199A TIL199B



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**ABSOLUTE MAXIMUM RATINGS**  
(25°C unless otherwise specified)

Storage Temperature \_\_\_\_\_ -55°C to + 125°C  
Operating Temperature \_\_\_\_\_ -55°C to + 100°C  
Lead Soldering Temperature  
(1/16 inch (1.6mm) from case for 10 secs) 260°C

**INPUT DIODE**

Forward Current \_\_\_\_\_ 50mA  
Reverse Voltage \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 70mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 35V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 150mW

**POWER DISSIPATION**

Total Power Dissipation \_\_\_\_\_ 200mW  
(derate linearly 2.67mW/°C above 25°C)

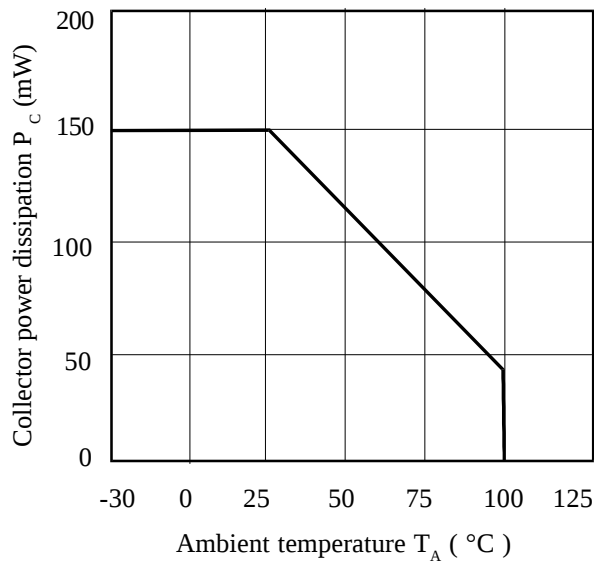
**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

| PARAMETER |                                                                                                                           | MIN                 | TYP | MAX                  | UNITS                 | TEST CONDITION                                                                                                       |
|-----------|---------------------------------------------------------------------------------------------------------------------------|---------------------|-----|----------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------|
| Input     | Forward Voltage ( $V_F$ )                                                                                                 | 5                   | 1.2 | 1.4                  | V                     | $I_F = 20\text{mA}$<br>$I_R = 10\mu\text{A}$<br>$V_R = 5\text{V}$                                                    |
|           | Reverse Voltage ( $V_R$ )                                                                                                 |                     |     | 10                   | V                     |                                                                                                                      |
|           | Reverse Current ( $I_R$ )                                                                                                 |                     |     |                      | $\mu\text{A}$         |                                                                                                                      |
| Output    | Collector-emitter Breakdown ( $BV_{CEO}$ )<br>( Note 2 )                                                                  | 35                  |     | 100                  | V                     | $I_C = 0.5\text{mA}$                                                                                                 |
|           | Emitter-collector Breakdown ( $BV_{ECO}$ )                                                                                | 6                   |     |                      | V                     | $I_E = 100\mu\text{A}$                                                                                               |
|           | Collector-emitter Dark Current ( $I_{CEO}$ )                                                                              |                     |     |                      | nA                    | $V_{CE} = 10\text{V}$                                                                                                |
| Coupled   | Current Transfer Ratio (CTR) (Note 2)<br>TIL197, TIL198, TIL199<br>TIL197A, TIL198A, TIL199A<br>TIL197B, TIL198B, TIL199B | 500<br>1000<br>1500 | 0.8 | 7500<br>7500<br>7500 |                       | $2\text{mA } I_F, 1\text{V } V_{CE}$<br>$2\text{mA } I_F, 1\text{V } V_{CE}$<br>$2\text{mA } I_F, 1\text{V } V_{CE}$ |
|           | Collector-emitter Saturation Voltage $V_{CE(SAT)}$                                                                        |                     |     | 1.0                  | V                     | $2\text{mA } I_F, 10\text{mA } I_C$                                                                                  |
|           | Input to Output Isolation Voltage $V_{ISO}$                                                                               | 5300<br>7500        |     |                      | $V_{RMS}$<br>$V_{PK}$ | See note 1<br>See note 1                                                                                             |
|           | Input-output Isolation Resistance $R_{ISO}$                                                                               | $5 \times 10^{10}$  |     |                      | $\Omega$              | $V_{IO} = 500\text{V}$ (note 1)                                                                                      |
|           | Output Rise Time $t_r$                                                                                                    |                     |     | 100                  | $\mu\text{s}$         | $V_{CC} = 10\text{V},$<br>$I_C = 10\text{mA}, R_L = 100\Omega$                                                       |
|           | Output Fall Time $t_f$                                                                                                    |                     |     | 100                  | $\mu\text{s}$         |                                                                                                                      |

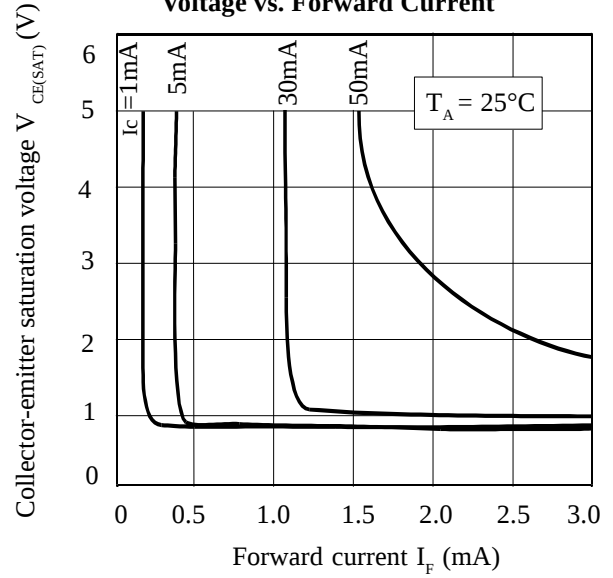
Note 1 Measured with input leads shorted together and output leads shorted together.

Note 2 Special Selections are available on request. Please consult the factory.

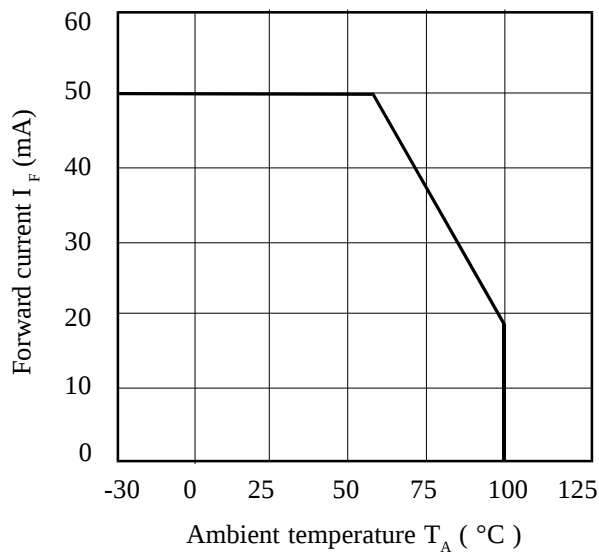
**Collector Power Dissipation vs. Ambient Temperature**



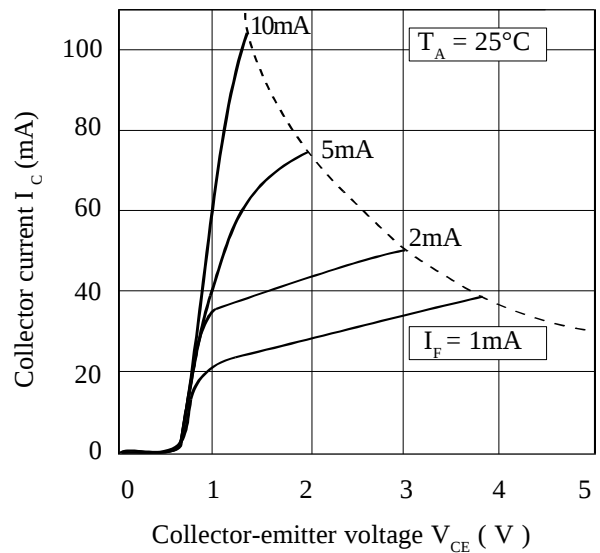
**Collector-emitter Saturation Voltage vs. Forward Current**



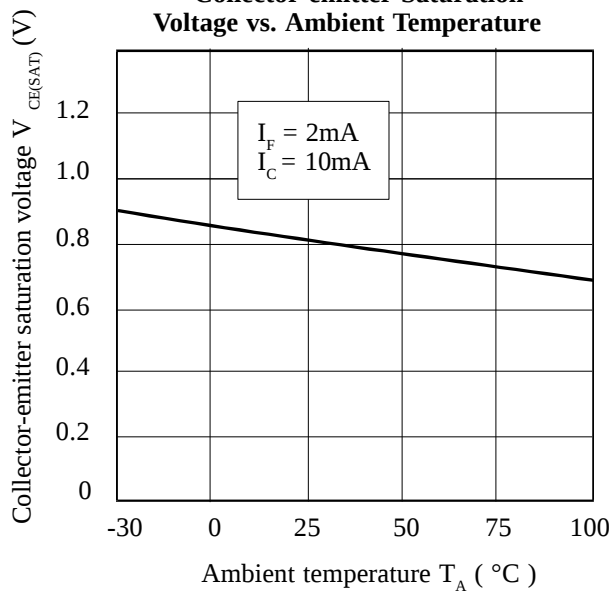
**Forward Current vs. Ambient Temperature**



**Collector Current vs. Collector-emitter Voltage**



**Collector-emitter Saturation Voltage vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Ambient Temperature**

