



**NON BASE LEAD  
OPTICALLY COUPLED ISOLATOR  
PHOTODARLINGTON OUTPUT**

**APPROVALS**

- UL recognised, File No. E91231

**DESCRIPTION**

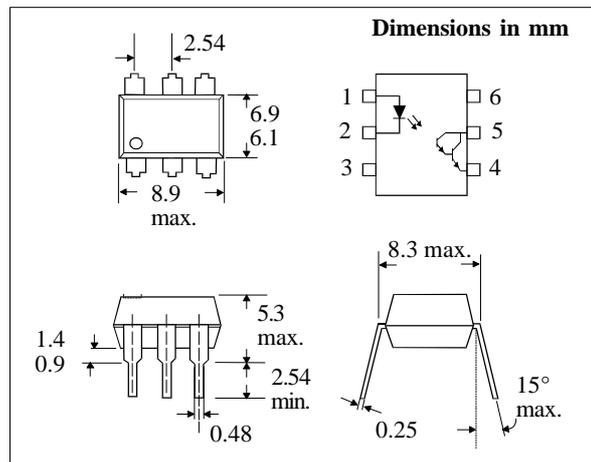
The TIL119 is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photodarlington in a standard 6pin dual in line plastic package with the base pin unconnected.

**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
- High Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)
- Basepin unconnected for improved noise immunity in high EMI environment
- High sensitivity to low input drive current
- Custom electrical selections available

**APPLICATIONS**

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



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

Storage Temperature	-55°C to + 150°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**

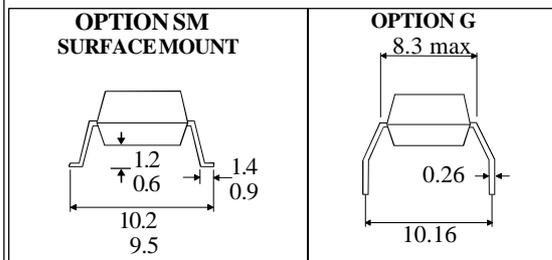
Forward Current	60mA
Reverse Voltage	5V
Power Dissipation	120mW

**OUTPUT TRANSISTOR**

Collector-emitter Voltage $BV_{CEO}$	30V
Emitter-collector Voltage $BV_{ECO}$	5V
Power Dissipation	150mW

**POWER DISSIPATION**

Total Power Dissipation	250mW
(derate linearly 3.3mW/°C above 25°C)	



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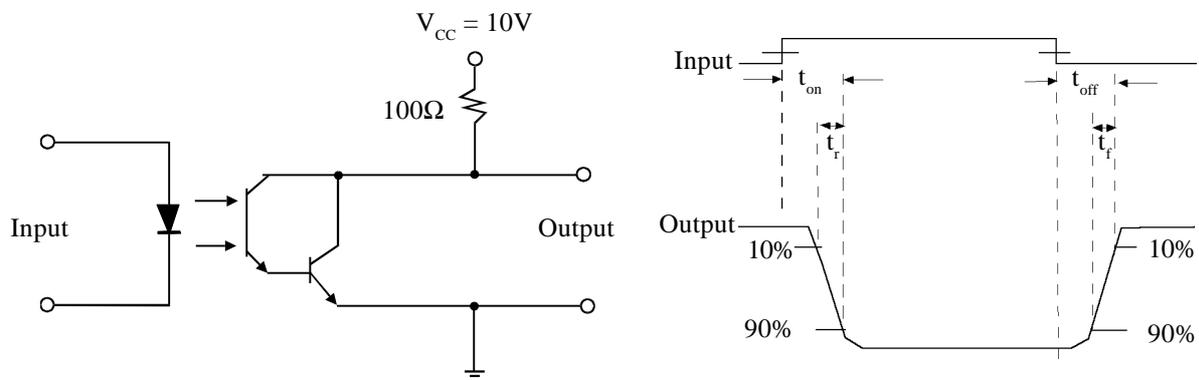


**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

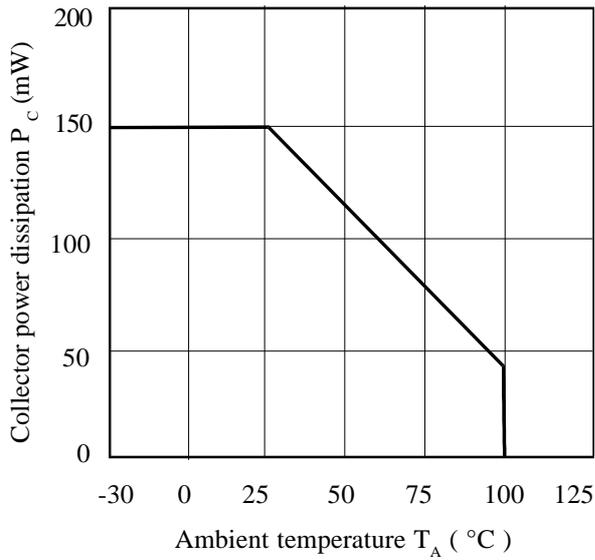
PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.5	V	$I_F = 10\text{mA}$ $I_R = 10\mu\text{A}$ $V_R = 3\text{V}$
	Reverse Voltage ( $V_R$ )	3			V	
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	
Output	Collector-emitter Breakdown ( $BV_{CEO}$ )	30			V	$I_C = 1\text{mA}$ (note 2) $I_E = 100\mu\text{A}$ $V_{CE} = 10\text{V}$
	Emitter-collector Breakdown ( $BV_{ECO}$ )	5			V	
	Collector-emitter Dark Current ( $I_{CEO}$ )			100	nA	
Coupled	Output Collector Current ( $I_C$ )(Note 2)	30			mA	$10\text{mA } I_F, 1\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			1.0	V	$10\text{mA } I_F, 30\text{mA } I_C$
	Input to Output Isolation Voltage $V_{ISO}$	5300 7500			$V_{RMS}$ $V_{PK}$	(note 1) (note 1)
	Input-output Isolation Resistance $R_{ISO}$	$10^{11}$			$\Omega$	$V_{IO} = 500\text{V}$ (note 1)
	Output Rise Time $t_r$ Output Fall Time $t_f$		300 300		$\mu\text{s}$ $\mu\text{s}$	$V_{CC}=10\text{V}, I_{C(on)}=2.5\text{mA},$ $R_L = 100\Omega$ , fig.1

- 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.

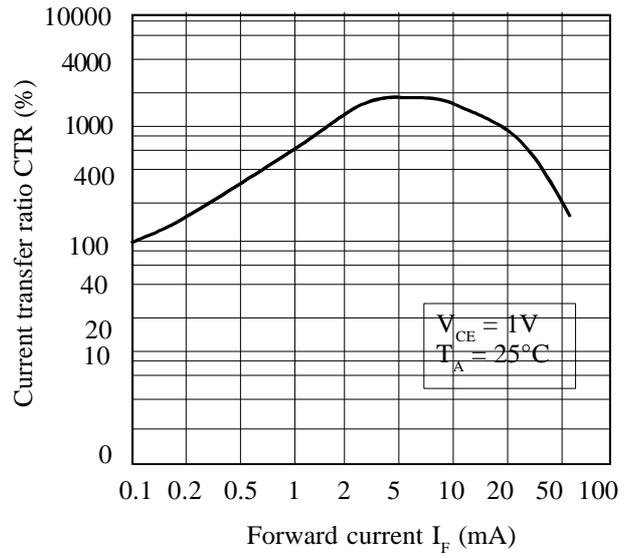
**FIGURE 1**



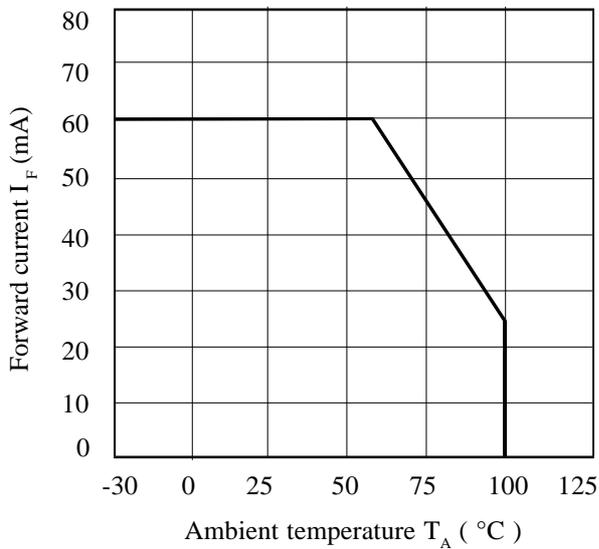
**Collector Power Dissipation vs. Ambient Temperature**



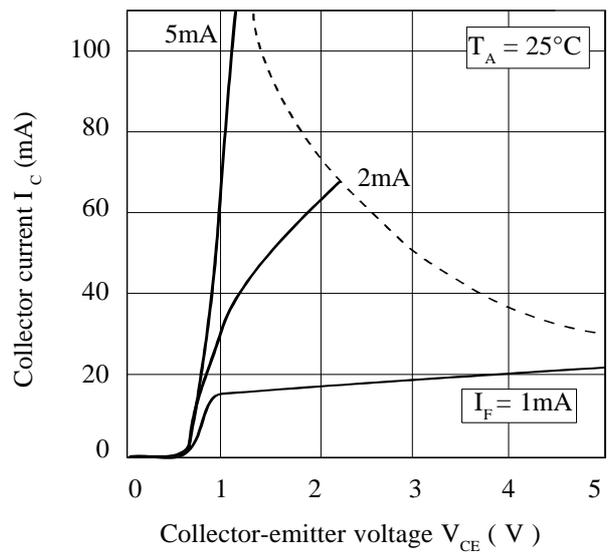
**Current Transfer Ratio vs. Forward Current**



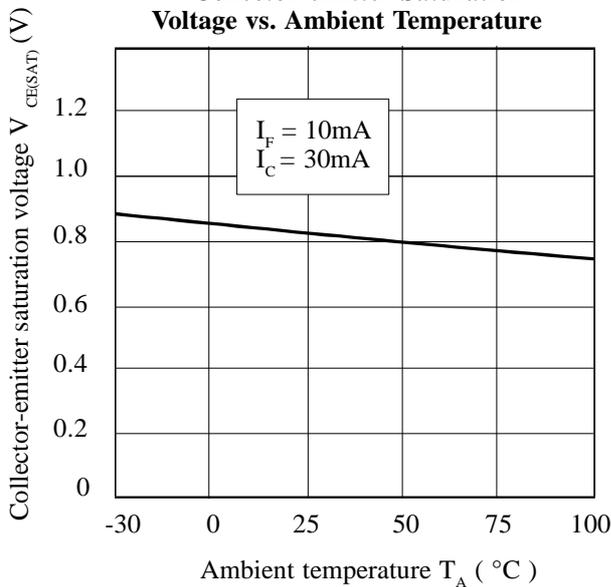
**Forward Current vs. Ambient Temperature**



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



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



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

