

TIL111X, TIL114X, TIL116X, TIL117X  
TIL111, TIL114, TIL116, TIL117



# ISOCOM

COMPONENTS



## OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

### APPROVALS

- UL recognised, File No. E91231  
Package Code " GG "

### 'X' SPECIFICATION APPROVALS

- VDE 0884 in 3 available lead form :-  
- STD  
- G form  
- SMD approved to CECC 00802
- TIL111 Certified to EN60950 by :-  
Nemko - Certificate No. P01102464

### DESCRIPTION

The TIL111, TIL114, TIL116, TIL117 series of optically coupled isolators consist of infrared light emitting diode and NPN silicon photo transistor in a standard 6 pin dual in line plastic package.

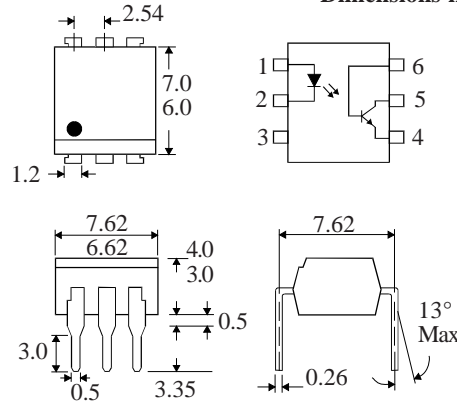
### FEATURES

- 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 Isolation Voltage (5.3kV<sub>RMS</sub>, 7.5kV<sub>PK</sub>)

### APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- Signal transmission between systems of different potentials and impedances

### Dimensions in mm



### 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 \_\_\_\_\_ 6V  
Power Dissipation \_\_\_\_\_ 105mW

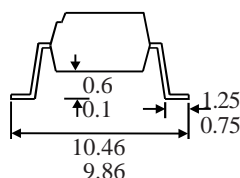
### OUTPUT TRANSISTOR

Collector-emitter Voltage  $BV_{CEO}$  \_\_\_\_\_ 30V  
Collector-base Voltage  $BV_{CBO}$  \_\_\_\_\_ 70V  
Emitter-collector Voltage  $BV_{ECO}$  \_\_\_\_\_ 6V  
Collector Current \_\_\_\_\_ 50mA  
Power Dissipation \_\_\_\_\_ 160mW

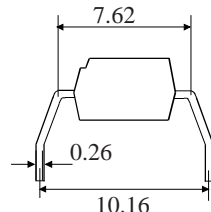
### POWER DISSIPATION

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

### OPTION SM SURFACE MOUNT



### OPTION G



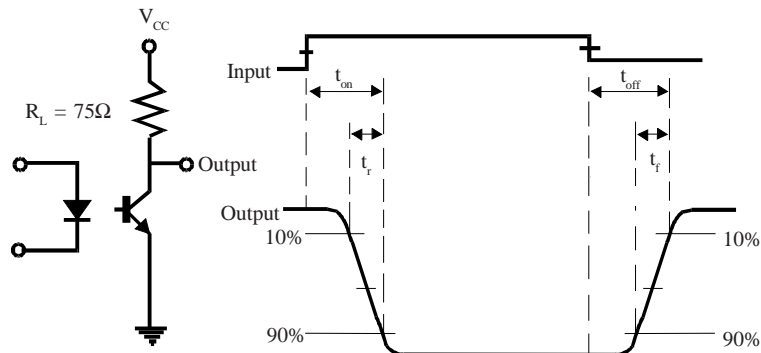
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**ELECTRICAL CHARACTERISTICS (  $T_A = 25^\circ\text{C}$  Unless otherwise noted )**

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage ( $V_F$ )		1.2	1.4	V	$I_F = 16\text{mA}$
	Reverse Current ( $I_R$ )			10	$\mu\text{A}$	$V_R = 6\text{V}$
Output	Collector-emitter Breakdown ( $BV_{CEO}$ )	30			V	$I_C = 1\text{mA}$ ( note 2 )
	Collector-base Breakdown ( $BV_{CBO}$ )	70			V	$I_C = 100\mu\text{A}$
	Emitter-collector Breakdown ( $BV_{ECO}$ )	6			V	$I_E = 100\mu\text{A}$
	Collector-emitter Dark Current ( $I_{CEO}$ )			50	nA	$V_{CE} = 10\text{V}$
Coupled	On-state Collector Current ( $I_{C(on)}$ )					
	TIL111, TIL114	20			%	$16\text{mA } I_F, 0.4\text{V } V_{CE}$
	TIL116	20			%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	TIL117	50			%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	TIL111, TIL114			0.4	V	$16\text{mA } I_F, 2\text{mA } I_C$
	TIL116			0.4	V	$15\text{mA } I_F, 2.2\text{mA } I_C$
	TIL117			0.4	V	$10\text{mA } I_F, 0.5\text{mA } I_C$
	Input to Output Isolation Voltage $V_{ISO}$	5300				See note 1
		7500			$V_{RMS}$	See note 1
Input-output Isolation Resistance $R_{ISO}$	$5 \times 10^{10}$			$V_{PK}$	$V_{IO} = 500\text{V}$ (note 1)	
Output Rise Time, $t_r$		2	7	$\mu\text{s}$	$V_{CC} = 5\text{V}, I_F = 10\text{mA}$	
Output Fall Time, $t_f$		2	8	$\mu\text{s}$	$R_L = 75\Omega$ 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.

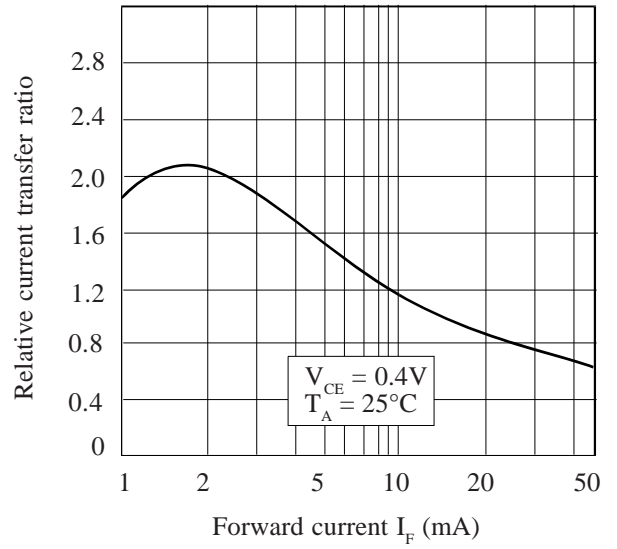


**FIG 1**

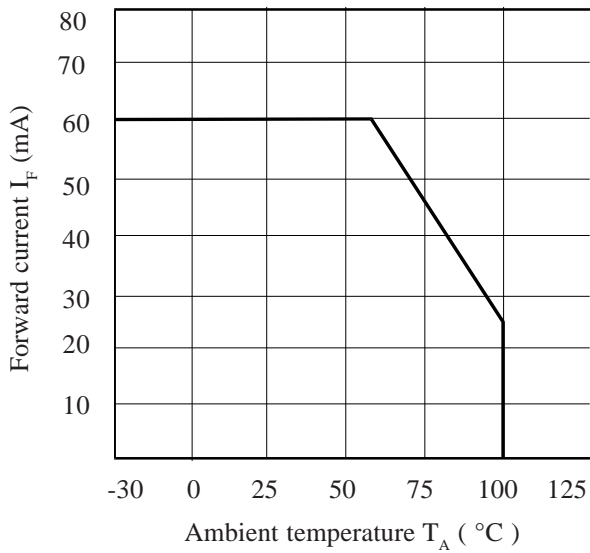
**Collector Power Dissipation vs. Ambient Temperature**



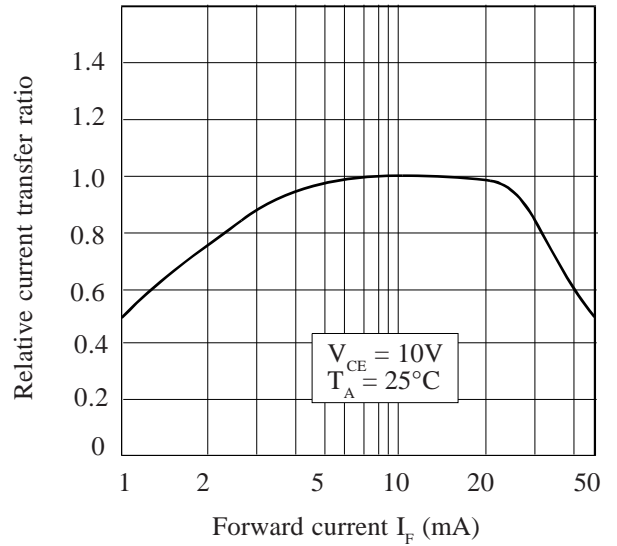
**Relative Current Transfer Ratio vs. Forward Current ( TIL111, TIL114 )**



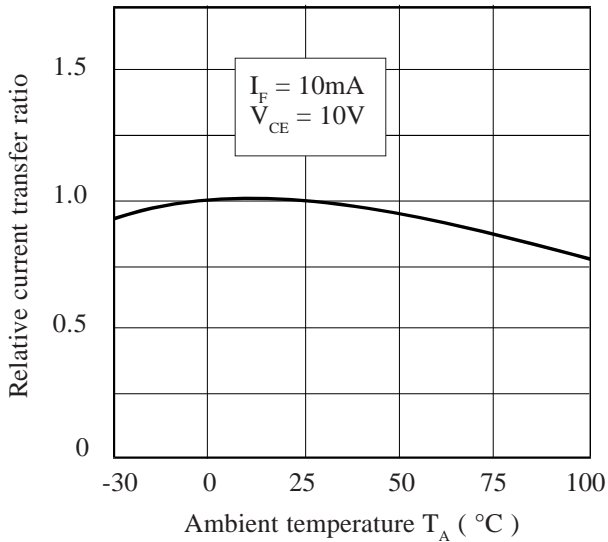
**Forward Current vs. Ambient Temperature**



**Relative Current Transfer Ratio vs. Forward Current ( TIL116, TIL117 )**



**Relative Current Transfer Ratio vs. Ambient Temperature ( TIL116, TIL117 )**



**Relative Current Transfer Ratio vs. Ambient Temperature ( TIL111, TIL114 )**

