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

OPTICALLY COUPLED ISOLATOR PHOTOTRANSISTOR OUTPUT

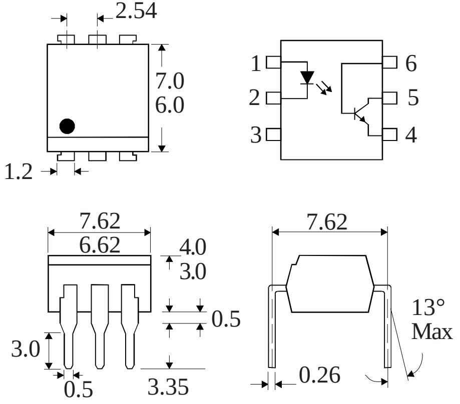
APPROVALS

- 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

Dimensions in mm



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$_{RMS}$,7.5kV$_{PK}$)

APPLICATIONS

- DC motor controllers
- Industrial systems controllers
- 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	6V
Power Dissipation	105mW

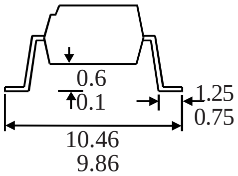
OUTPUT TRANSISTOR

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

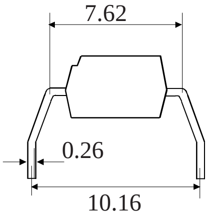
POWER DISSIPATION

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

OPTION SM
SURFACE MOUNT



OPTION G



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ELECTRICAL CHARACTERISTICS (T_A= 25°C Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.4	V	I_F = 16mA
	Reverse Current (I_R)			10	µA	V_R=6V
Output	Collector-emitter Breakdown (BV_{CEO})	30			V	I_C = 1mA (note 2)
	Collector-base Breakdown (BV_{CBO})	70			V	I_C = 100µA
	Emitter-collector Breakdown (BV_{ECO})	6			V	I_E = 100µA
	Collector-emitter Dark Current (I_{CEO})			50	nA	V_{CE}=10V
Coupled	On-state Collector Current ($I_C$on)					
	TIL111, TIL114	20			%	16mA I_F , 0.4V V_{CE}
	TIL116	20			%	10mA I_F , 10V V_{CE}
	TIL117	50			%	10mA I_F, 10V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$					
	TIL111, TIL114			0.4	V	16mA I_F, 2mA I_C
	TIL116			0.4	V	15mA I_F, 2.2mA I_C
	TIL117			0.4	V	10mA I_F, 0.5mA I_C
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
		7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Output Rise Time, tr		2	7	µs	V_{CC} = 5V , I_F = 10mA
	Output Fall Time, tf		2	8	µs	R_L = 75Ω 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.

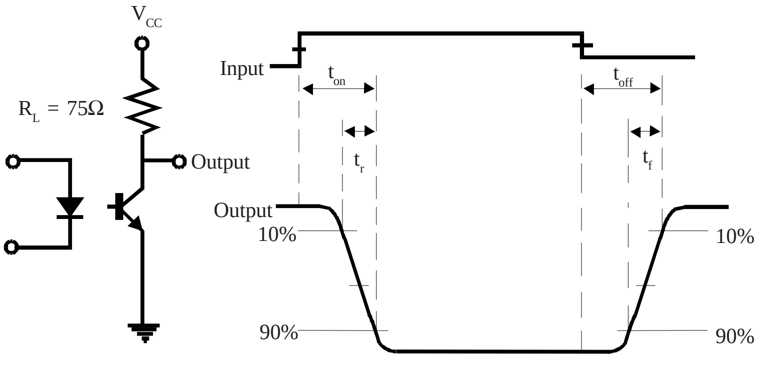
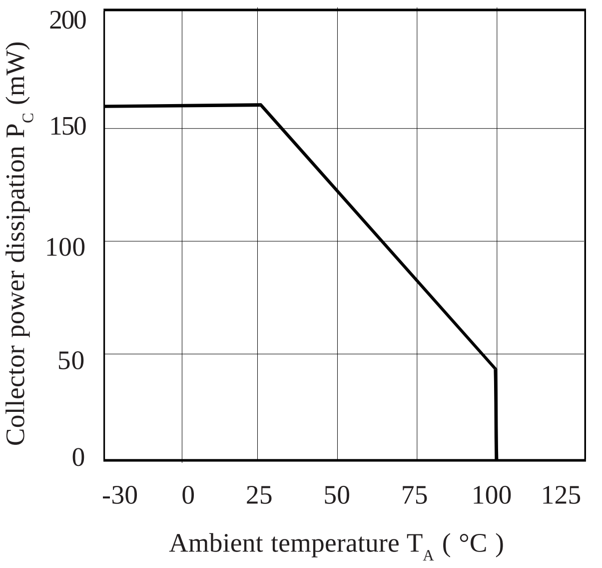
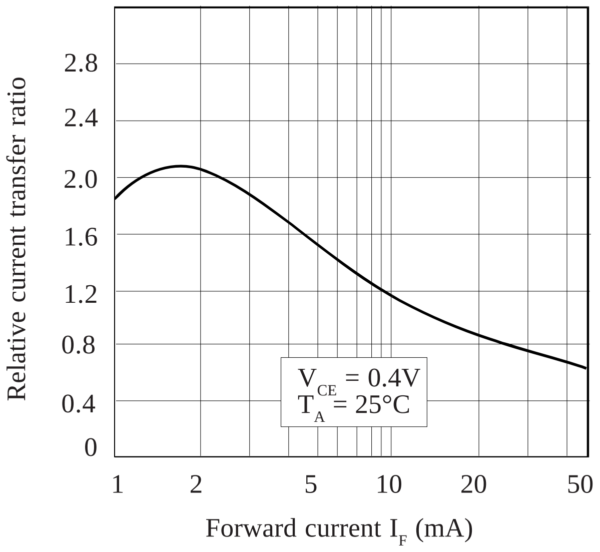


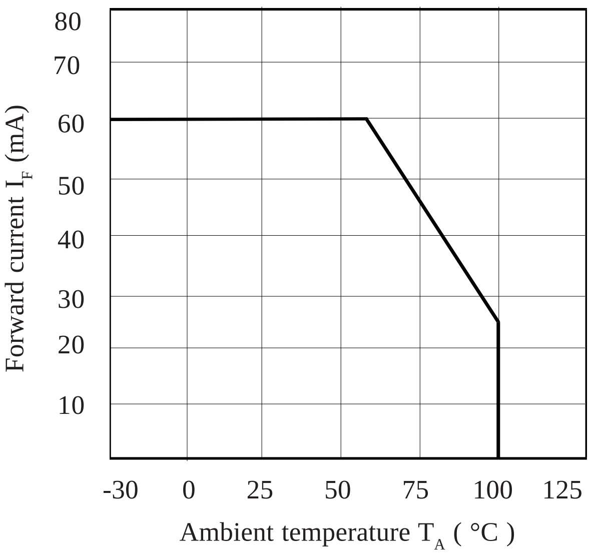
FIG 1



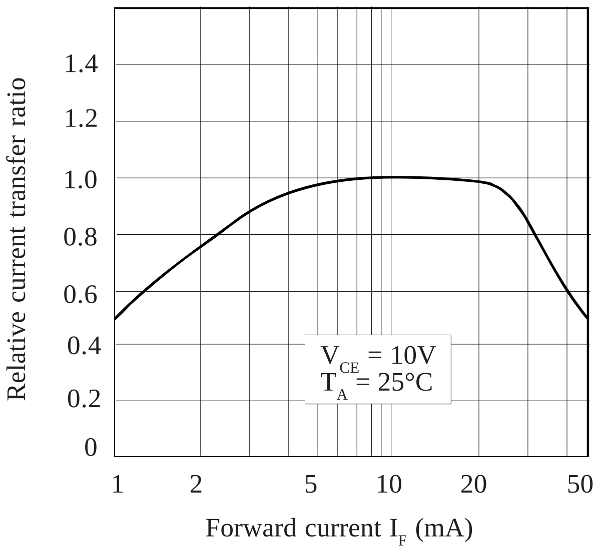
Collector Power Dissipation vs. Ambient Temperature



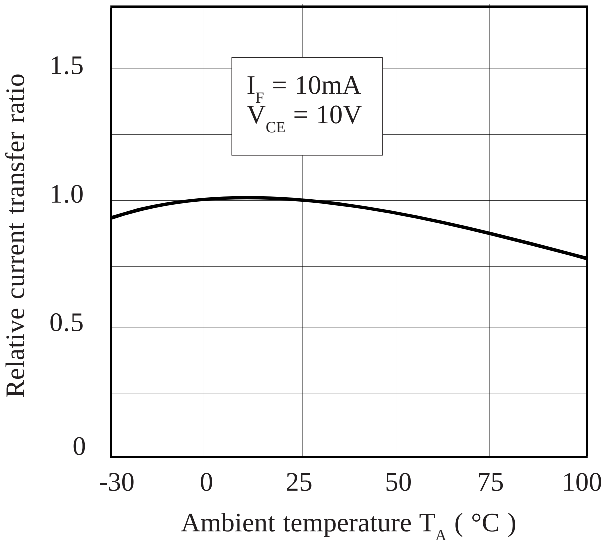
Relative Current Transfer Ratio vs. Forward Current (TIL111, TIL114)



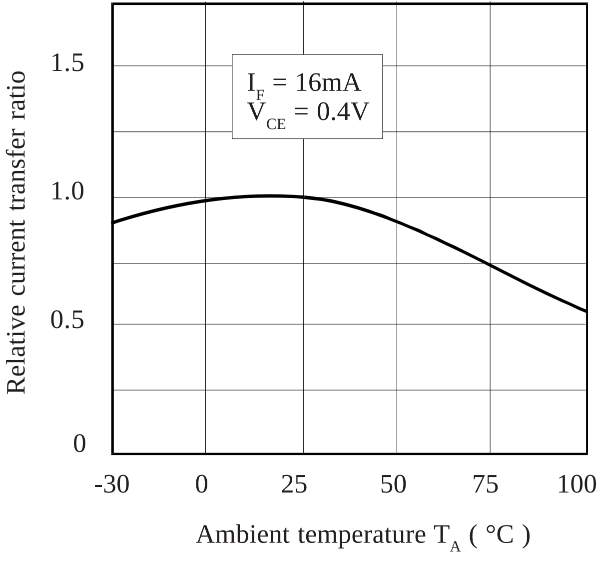
Forward Current vs. Ambient Temperature



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)