

IL1, IL2, IL5, IL74
 ILD1, ILD2, ILD5, ILD74
 ILQ1, ILQ2, ILQ5, ILQ74



HIGH DENSITY PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS

APPROVALS

- UL recognised, File No. E91231
 IL* Package 'FF' (marked I___ FF)
 ILD*/ILQ* Package 'GG' (marked I___ GG)

'X' SPECIFICATION APPROVALS

Add 'X' after part number

- VDE 0884 in 3 available lead form : -
 - STD
 - G form
 - SMD approved to CECC 00802

- BSI approved - Certificate No. 8001

DESCRIPTION

The IL*, ILD*, ILQ* series of optically coupled isolators consist of infrared light emitting diodes and NPN silicon photo transistors in space efficient dual in line plastic packages.

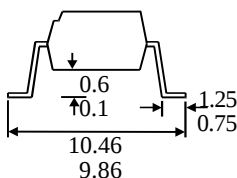
FEATURES

- Options :-
 10mm lead spread - add G after part no.
 Surface mount - add SM after part no.
 Tape&reel - add SMT&R after part no.
- Three package types
- High Current Transfer Ratio (50% min)
- High Isolation Voltage (5.3kV_{RMS}, 7.5kV_{PK})
- High BV_{CEO} (70V min)
 IL2, ILD2, ILQ2, IL5, ILD5, ILQ5

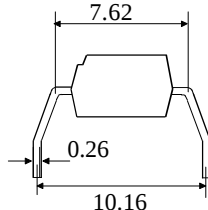
APPLICATIONS

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

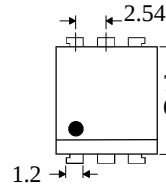
OPTION SM SURFACE MOUNT



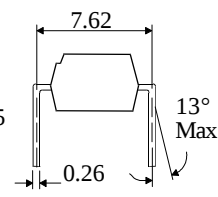
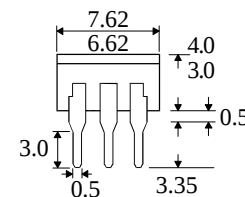
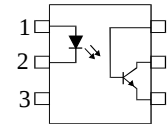
OPTION G



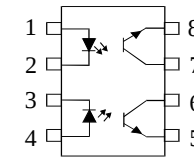
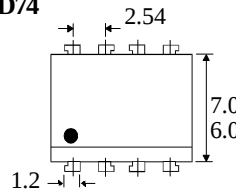
IL1
 IL2
 IL5
 IL74



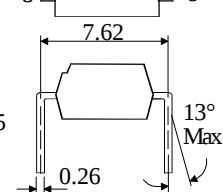
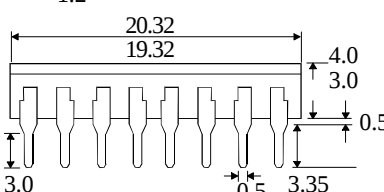
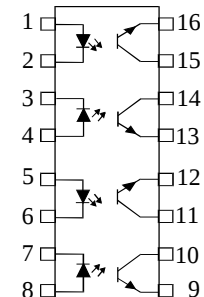
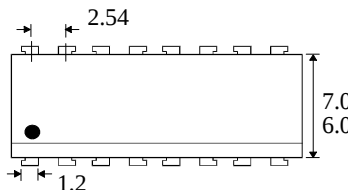
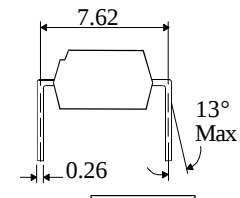
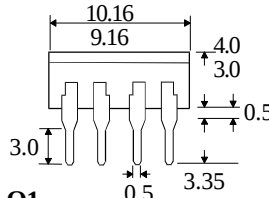
Dimensions in mm



ILD1
 ILD2
 ILD5
 ILD74



ILQ1
 ILQ2
 ILQ5
 ILQ74



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ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature _____ -40°C to + 125°C
Operating Temperature _____ -25°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}
IL2, ILD2, ILQ2, IL5, ILD5, ILQ5 _____ 70V
IL1, ILD1, ILQ1, IL74, ILD74, ILQ74 _____ 50V
Emitter-collector Voltage BV_{ECO} _____ 6V
Power Dissipation _____ 150mW

POWER DISSIPATION

Total Power Dissipation _____ 170mW
(derate linearly 2.67mW/°C above 25°C)

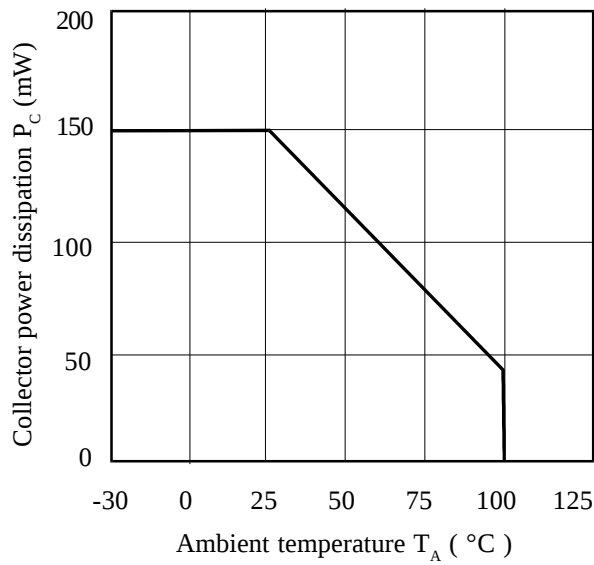
ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

PARAMETER		MIN	TYP	MAX	UNITS	TEST CONDITION
Input	Forward Voltage (V_F)		1.2	1.65	V	$I_F = 50\text{mA}$
	Reverse Current (I_R)			10	μA	$V_R = 4\text{V}$
Output	Collector-emitter Breakdown (BV_{CEO}) IL2, ILD2, ILQ2, IL5, ILD5, ILQ5	70			V	$I_C = 1\text{mA}$, (Note 2)
	IL1, ILD1, ILQ1, IL74, ILD74, ILQ74	50			V	$I_C = 1\text{mA}$, (Note 2)
	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	Current Transfer Ratio (CTR) (Note 2) IL1, ILD1, ILQ1	20		300	%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	IL2, ILD2, ILQ2	100		500	%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	IL5, ILD5, ILQ5	50		400	%	$10\text{mA } I_F, 10\text{V } V_{CE}$
	IL74, ILD74, ILQ74	12.5			%	$16\text{mA } I_F, 5\text{V } V_{CE}$
	Saturated Current Transfer Ratio IL1, ILD1, ILQ1		75		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IL2, ILD2, ILQ2		170		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IL5, ILD5, ILQ5		100		%	$10\text{mA } I_F, 0.4\text{V } V_{CE}$
	IL74, ILD74, ILQ74	12.5			%	$16\text{mA } I_F, 0.5\text{V } V_{CE}$
	Collector-emitter Saturation Voltage, $V_{CE(SAT)}$			0.4	V	$16\text{mA } I_F, 2\text{mA } I_C$
	Input to Output Isolation Voltage V_{ISO}	5300			V_{RMS}	See note 1
	Input to Output Isolation Voltage V_{ISO}	7500			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	5×10^{10}			Ω	$V_{IO} = 500\text{V}$ (note 1)
	Output Rise Time t_r		2		μs	$I_F = 10\text{mA}$
	Output Fall Time t_f		2		μs	$V_{CC} = 5\text{V}, R_L = 75\Omega$

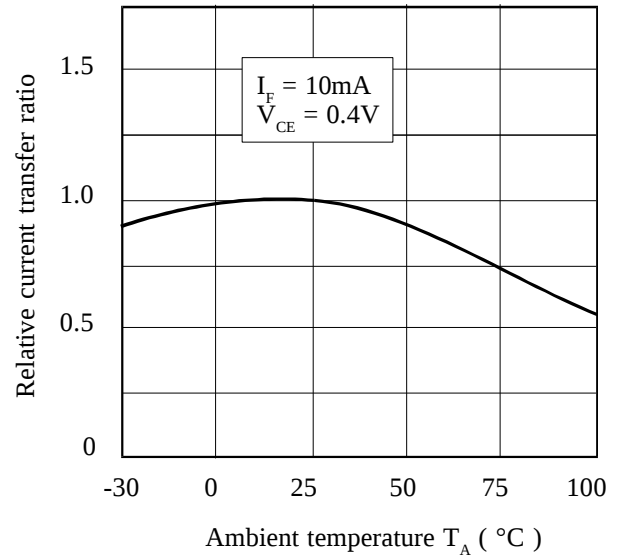
Note 1 Measured with input leads shorted together and output leads shorted together.

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

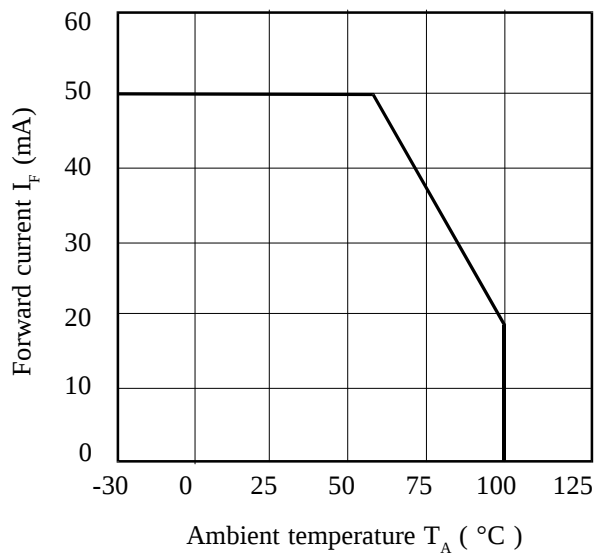
Collector Power Dissipation vs. Ambient Temperature



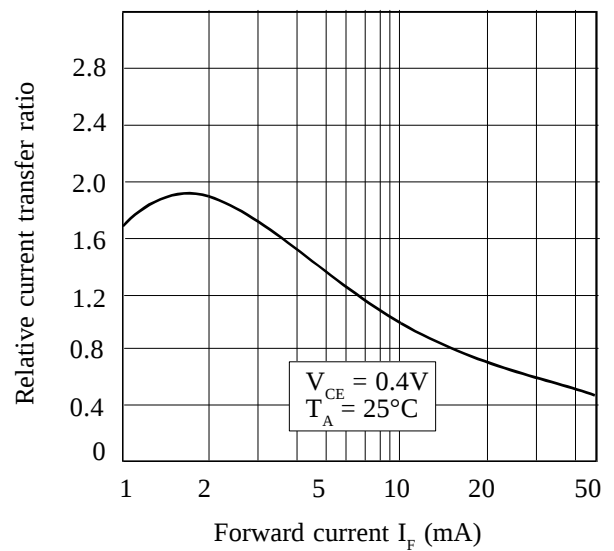
Relative Current Transfer Ratio vs. Ambient Temperature



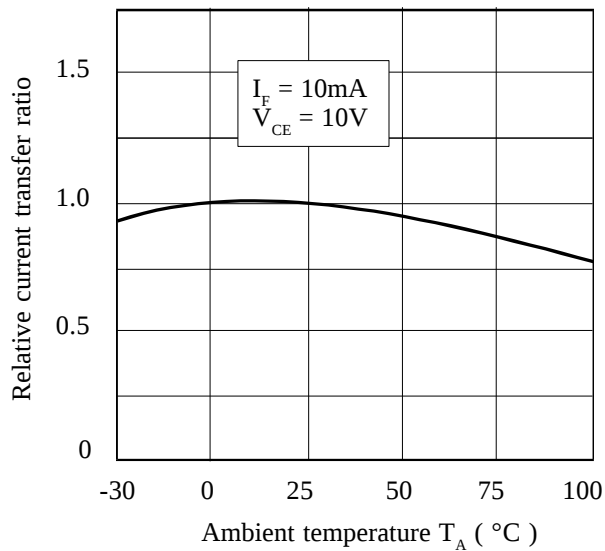
Forward Current vs. Ambient Temperature



Relative Current Transfer Ratio vs. Forward Current



Relative Current Transfer Ratio vs. Ambient Temperature



Relative Current Transfer Ratio vs. Forward Current

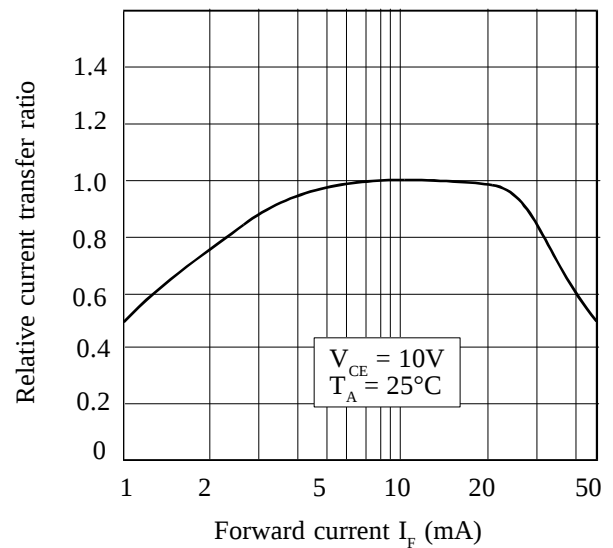


Fig.1 Forward Current
vs. Ambient Temperature

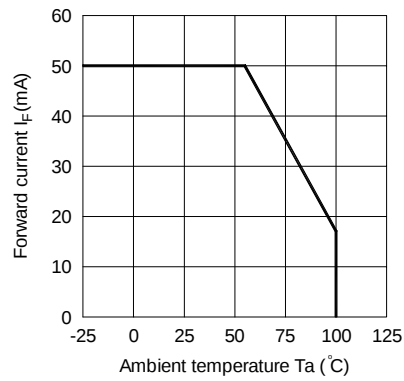


Fig.2 Collector Power Dissipation
vs. Ambient Temperature

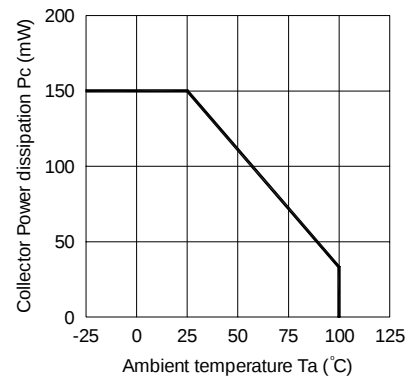


Fig.3 Collector-emitter Saturation
Voltage vs. Forward Current

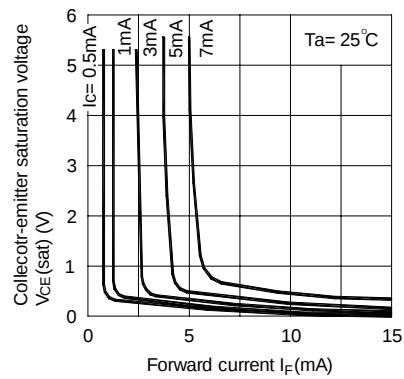


Fig.4 Forward Current vs. Forward
Voltage

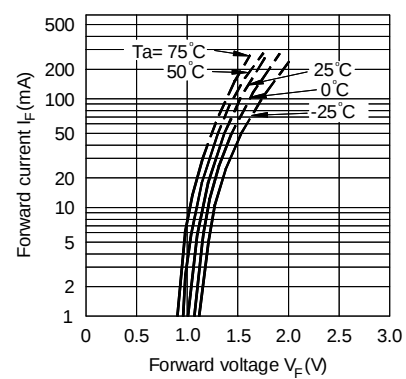


Fig.5 Current Transfer Ratio vs.
Forward Current

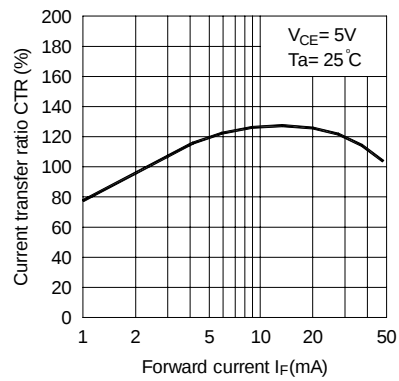


Fig.6 Collector Current vs.
Collector-emitter Voltage

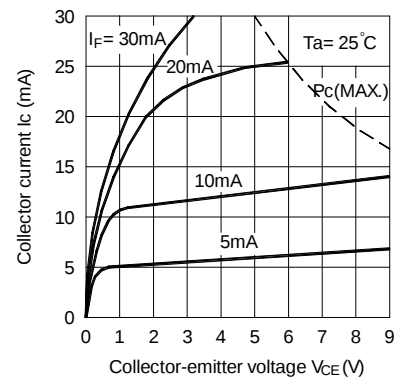


Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

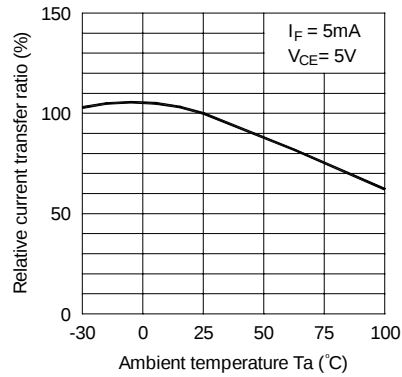


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

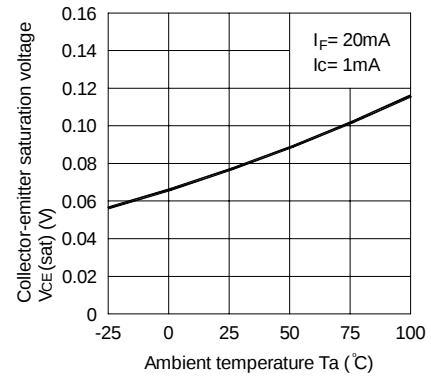


Fig.9 Collector Dark Current vs. Ambient Temperature

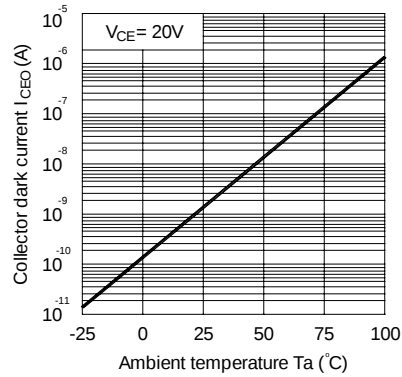


Fig.10 Response Time vs. Load Resistance

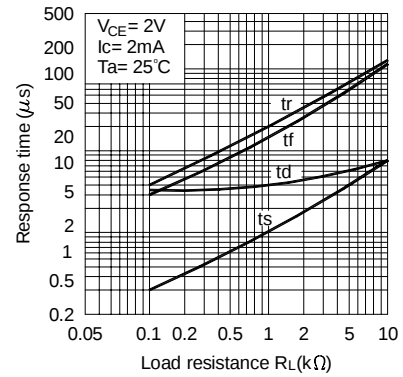
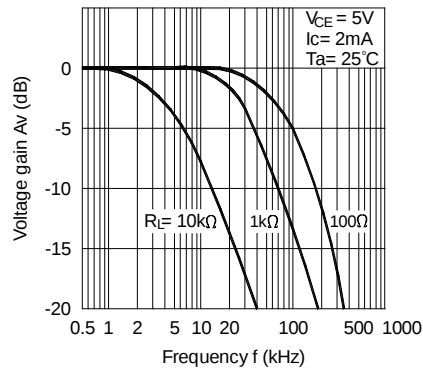
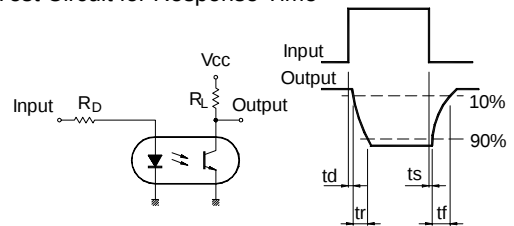


Fig.11 Frequency Response



Test Circuit for Response Time



Test Circuit for Frequency Response

