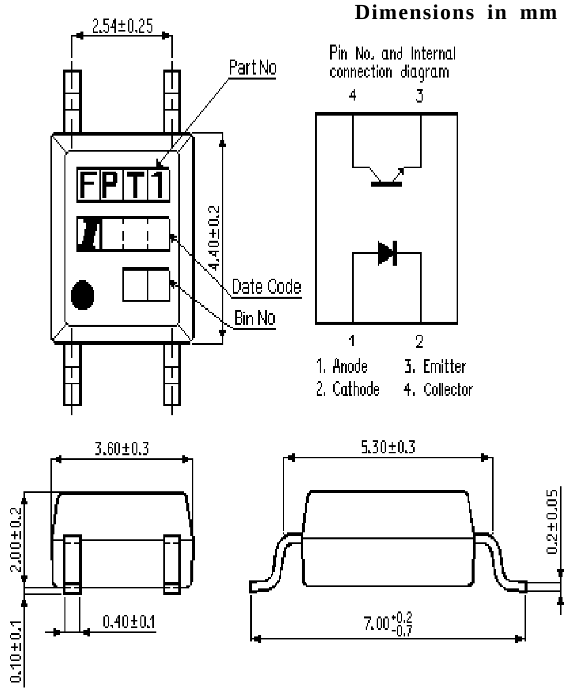
IS2701-1

HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS

Dimensions in mm



DESCRIPTION

The IS2701-1 is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photo transistor in a space efficient dual in line plastic package.

FEATURES

- Marked as FPT1.
- Current Transfer Ratio MIN. 50%
- Isolation Voltage (3.75kV$_{RMS}$,5.3kV$_{PK}$)
- All electrical parameters 100% tested
- Drop in replacement for NEC PS2701-1

APPLICATIONS

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

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ABSOLUTE MAXIMUM RATINGS
(25°C unless otherwise specified)

Storage Temperature	-40°C to + 125°C
Operating Temperature	-30°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

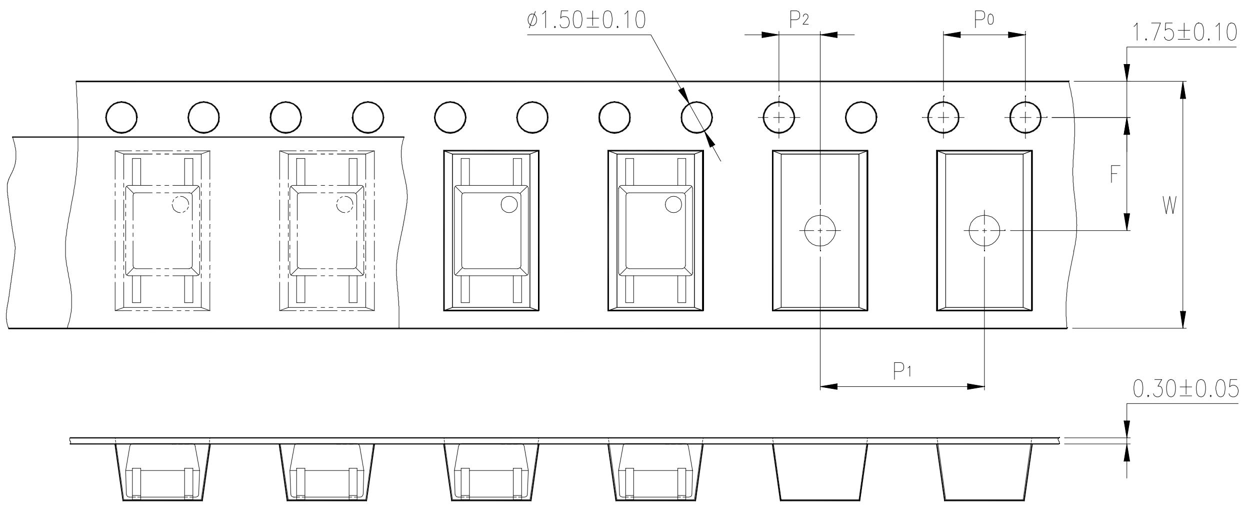
Total Power Dissipation (derate linearly 2.26mW/°C above 25°C)	170mW

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 = 20mA
	Reverse Voltage (V_R)	5			V	I_R = 10μA
	Reverse Current (I_R)			10	μA	V_R = 4V
Output	Collector-emitter Breakdown (BV_{CEO})	35			V	I_C = 0.5mA
	Emitter-collector Breakdown (BV_{ECO})	6			V	I_E = 0.1mA
	Collector-emitter Dark Current (I_{CEO})			100	nA	V_{CE} = 20V
Coupled	Current Transfer Ratio (CTR)	50		600	%	5mA I_F, 5V V_{CE}
	Optional CTR Grades: IS2701-1A	80		160	%	5mA I_F, 5V V_{CE}
	IS2701-1B	130		260	%	5mA I_F, 5V V_{CE}
	IS2701-1C	200		400	%	5mA I_F, 5V V_{CE}
	IS2701-1D	300		600	%	5mA I_F, 5V V_{CE}
	Collector-emitter Saturation Voltage $V_{CE(SAT)}$			0.2	V	20mA I_F, 1.0mA I_C
	Input to Output Isolation Voltage V_{ISO}	3750			V_{RMS}	See note 1
		5300			V_{PK}	See note 1
	Input-output Isolation Resistance R_{ISO}	$5x10^{10}$			Ω	V_{IO} = 500V (note 1)
	Output Rise Time tr		4	18	μs	V_{CE} = 2V ,
	Output Fall Time tf		3	18	μs	I_C = 2mA, R_L = 100Ω

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

TAPING DIMENSIONS



Description	Symbol	Dimensions in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F P_2	5.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	8 ± 0.1 (.315)

CHARACTERISTIC CURVES

Fig.1 Forword Current
vs. Ambient Temperatute

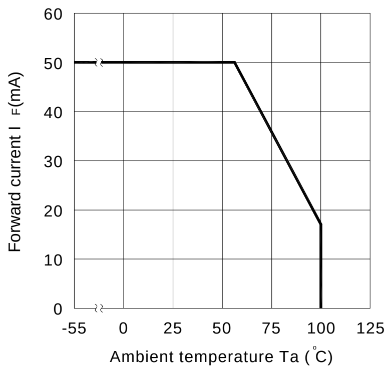


Fig.2 Collector Power Dissiption
vs. Ambient Temperature

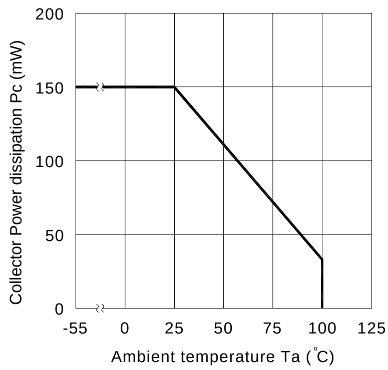


Fig.3 Collector-emitter Saturation
Voltage vs. Forward Current

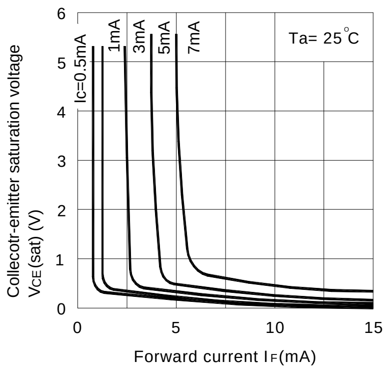


Fig.4 Forward Current vs. Forward
Voltage

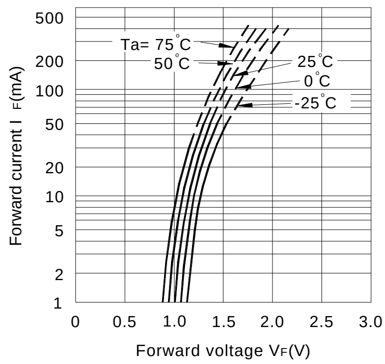


Fig.5 Current Transfer Ratio vs.
Forward Current

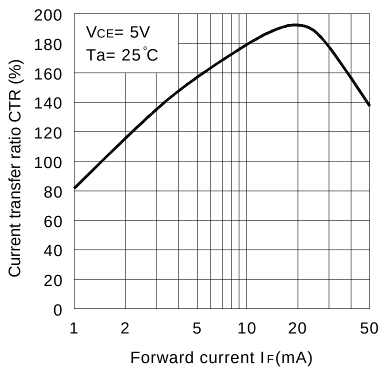
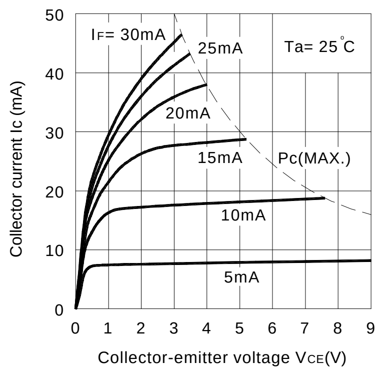


Fig.6 Collector Current vs.
Collector-emitter Voltage



CHARACTERISTIC CURVES

Fig.7 Relative Current Transfer Ratio
vs. Ambient Temperature

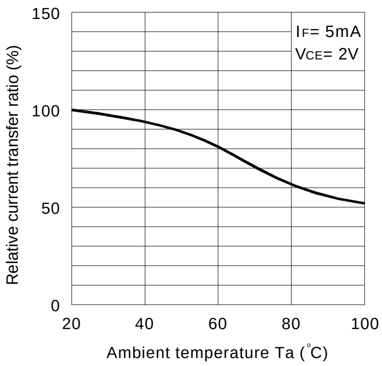


Fig.8 Collector-emitter Saturation Voltage
vs. Ambient Temperature

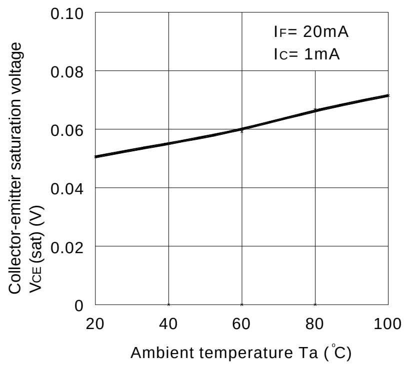


Fig.9 Collector Dark Current vs.
Ambient Temperature

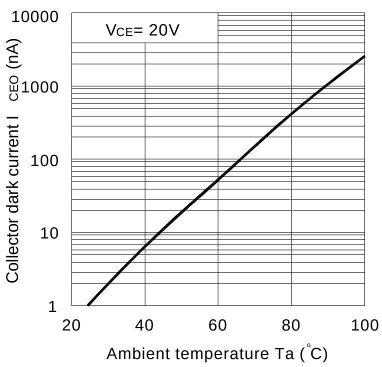


Fig.10 Response Time vs. Load
Resistance

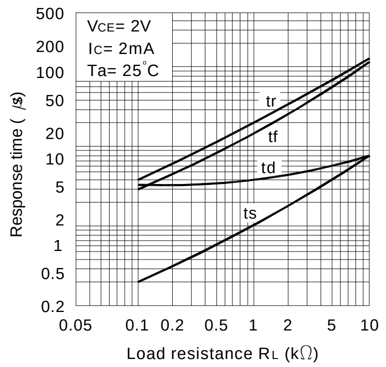
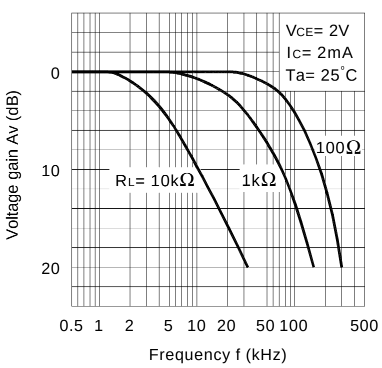
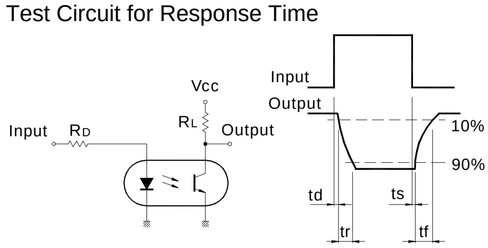


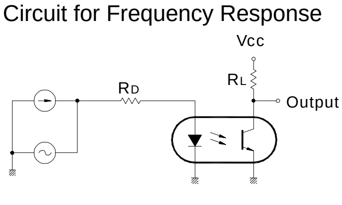
Fig.11 Frequency Response



Test Circuit for Response Time

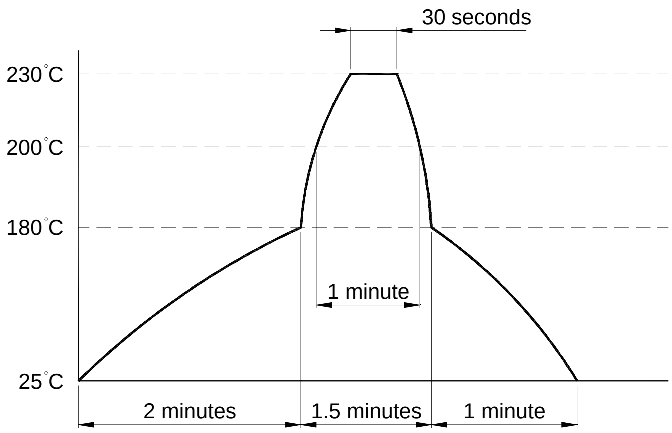


Test Circuit for Frequency Response



TEMPERATURE PROFILE OF SOLDERING REFLOW

(1) One time soldering reflow is recommended within the condition of temperature and time profile shown below.



(2) When using another soldering method such as infrated ray lamp, the temperature may rise partially in the mold of the device.
Keep the temperature on the package of the device within the condition of above (1).