IS357A

HIGH DENSITY MOUNTING PHOTOTRANSISTOR OPTICALLY COUPLED ISOLATORS

DESCRIPTION

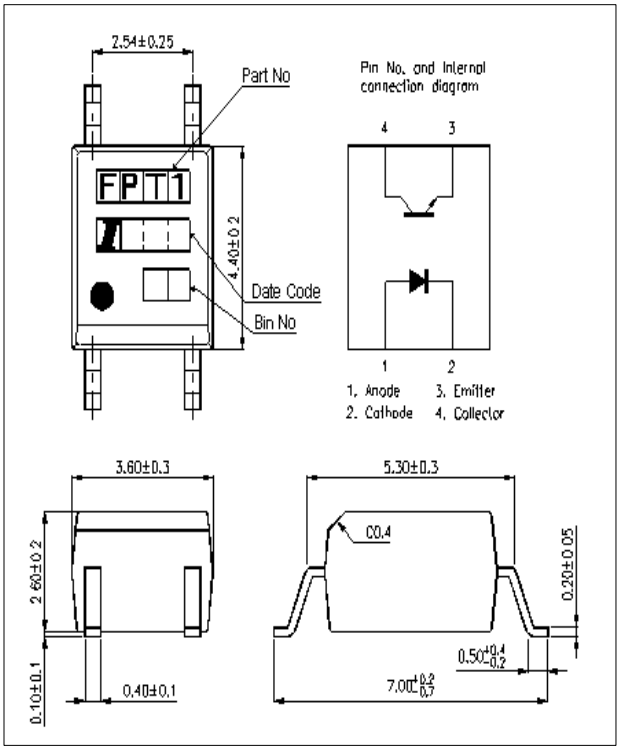
The IS357A is an optically coupled isolator consisting of an infrared light emitting diode and NPN silicon photo transistor in a space efficient dual in line plastic package.

FEATURES

- Current Transfer Ratio 80 - 160 %
- Isolation Voltage ($3.75kV_{RMS}$,$5.3kV_{PK}$)
- All electrical parameters 100% tested
- Custom electrical selections available
- Drop in replacement for Sharp PC357A

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

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)	80		160	%	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.
Note 2 Special Selections are available on request. Please consult the factory.

CHARACTERISTIC CURVES

Fig.1 Forword Current vs. Ambient Temperatute

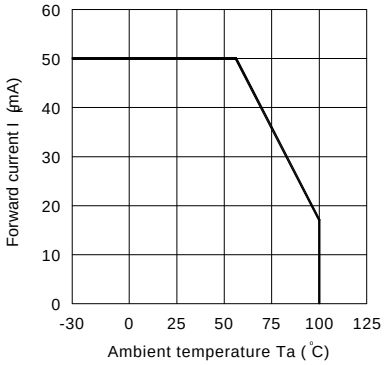


Fig.2 Collector Power Dissiption vs. Ambient Temperature

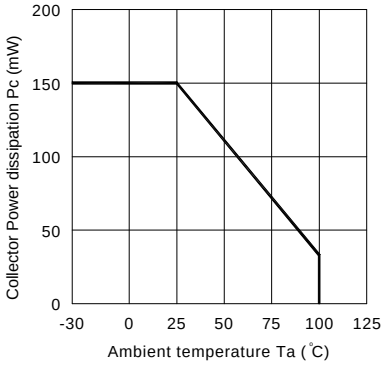


Fig.3 Collector-emitter Saturation Voltage vs. Forward Current

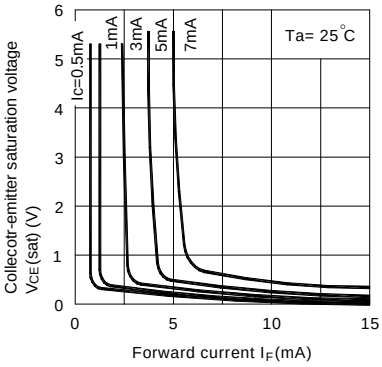


Fig.4 Forward Current vs. Forward Voltage

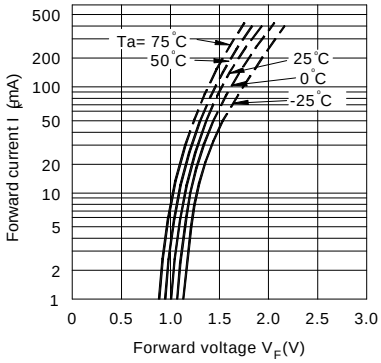


Fig.5 Current Transfer Ratio vs. Forward Current

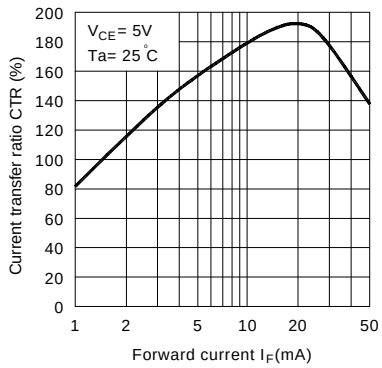
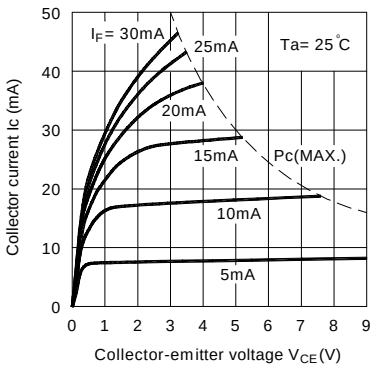


Fig.6 Collector Current vs. Collector-emitter Voltage



CHARACTERISTIC CURVES

Fig.7 Relative Current Transfer Ratio vs. Ambient Temperature

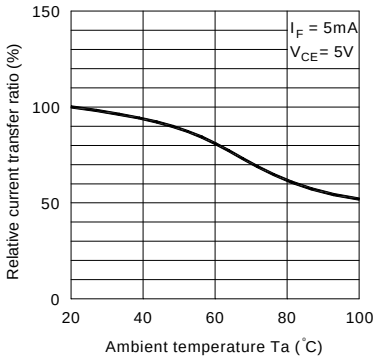


Fig.8 Collector-emitter Saturation Voltage vs. Ambient Temperature

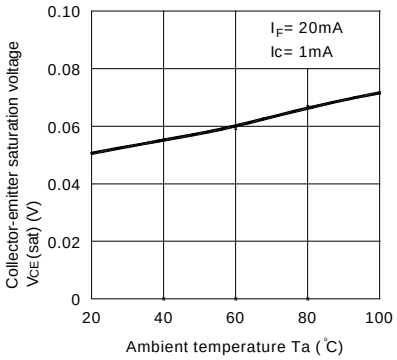


Fig.9 Collector Dark Current vs. Ambient Temperature

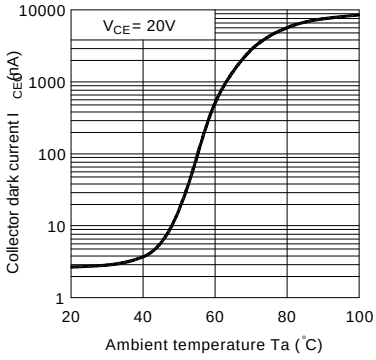


Fig.10 Response Time vs. Load Resistance

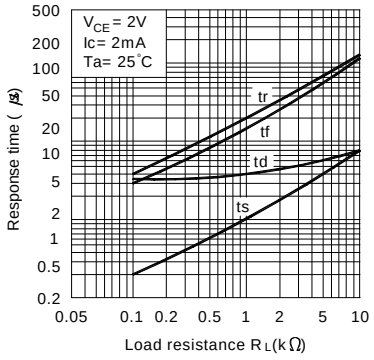
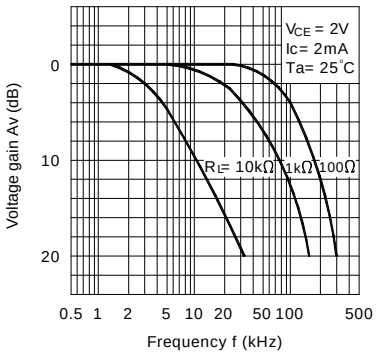
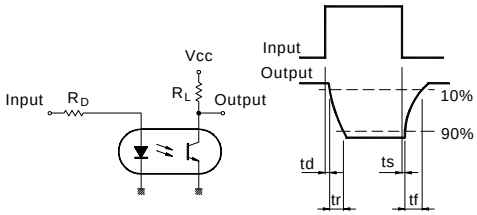


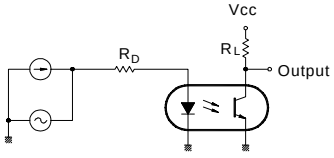
Fig.11 Frequency Response



Test Circuit for Response Time

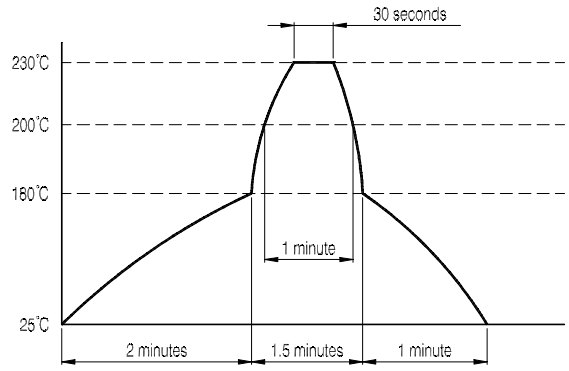


Test Circuit for Frequency Response



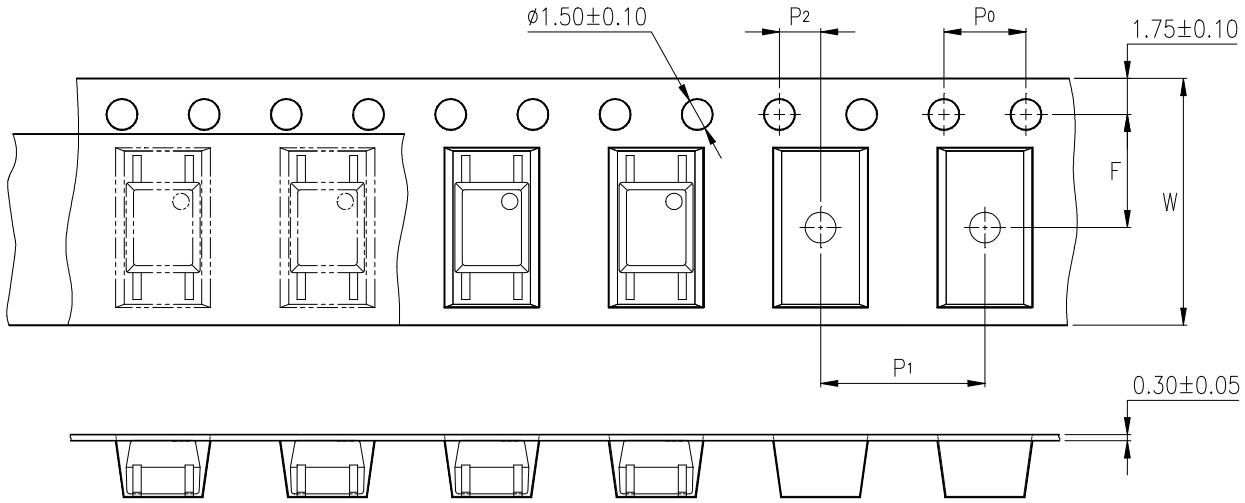
TEMPERATURE PROFILE OF SOLDERING REFLOW

(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).

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)