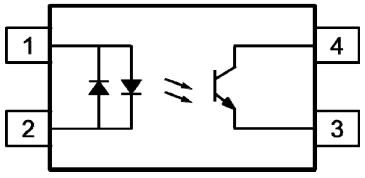
IS1600

DESCRIPTION

The IS1600 is an optically coupled isolator consists of two infrared emitting diodes in reverse parallel connection and optically coupled to an NPN silicon photo transistor.

This device belongs to Isocom Compact Range of Optocouplers.



1 Anode / Cathode
2 Cathode / Anode
3 Emitter
4 Collector

FEATURES

- Half Pitch 1.27mm
- High AC Isolation voltage 3750V_{RMS}
- Wide Operating Temperature Range -55°C to 100°C
- Pb Free and RoHS Compliant
- UL Approval E91231, Model AHP

APPLICATIONS

- Ring Detection on Telephone Lines
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedances

ORDER INFORMATION

- Available in Tape and Reel with 1000pcs per reel

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C)

Stresses exceeding the absolute maximum ratings can cause permanent damage to the device.
Exposure to absolute maximum ratings for long periods of time can adversely affect reliability.

Input

Forward Current	±50mA
Peak Forward Current (t=10µs)	±1A
Power Dissipation No Derating required up to T_A = 100°C	70mW

Output

Collector to Emitter Voltage V_{CEO}	80V
Emitter to Collector Voltage V_{ECO}	6V
Power Dissipation	150mW
Power Dissipation Derating Factor (above T_A = 80°C)	3.7mW/°C

Total Package

Isolation Voltage	3750V_{RMS}
Total Power Dissipation	200mW
Operating Temperature	-55 to 100 °C
Storage Temperature	-55 to 125 °C
Lead Soldering Temperature (10s)	260°C

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e-mail : sales@isocom.com.hk

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

INPUT

Parameter	Symbol	Test Condition	Min	*Typ.	Max	Unit
Forward Voltage	V_F	I_F = ±20mA		1.2	1.4	V
Terminal Capacitance	C_{IN}	V = 0V, f = 1KHz		50	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	*Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F =0 mA	80			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 0.01mA, I_F = 0mA	6			V
Collector-Emitter Dark Current	I_{CEO}	V_{CE} = 20V, I_F = 0mA			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	I_F = ±1mA, V_{CE} = 5V	20		300	%
CTR Symmetry		I_F = ±1mA, V_{CE} = 5V	0.5		2.0	
Collector – Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = ±20mA, I_C = 1mA		0.1	0.2	V
Floating Capacitance	C_f	V = 0V, f = 1MHz		0.6	1.0	pF
Output Rise Time	t_r	V_{CE} = 2V, Ic = 2mA, R_L = 100Ω			18	µs
Output Fall Time	t_f				18	

ISOLATION

Parameter	Symbol	Test Condition	Min	*Typ.	Max	Unit
Input to Output Isolation Voltage	V_{ISO}	AC 1 minute, RH = 40% to 60% Note 1	3750			V_{RMS}
Input to Output Isolation Resistance	R_{ISO}	V_{IO}= 500V, RH = 40% to 60% Note 1	$5x10^{10}$	$1x10^{11}$		Ω

Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%

* : Typical Values at T_A = 25°C

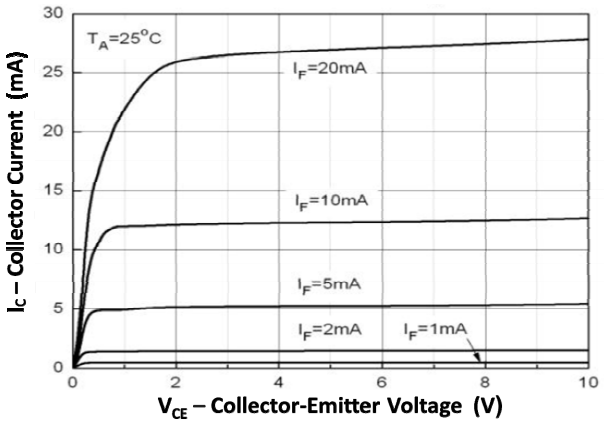


Fig 1 Collector Current vs Collector-Emitter Voltage (1)

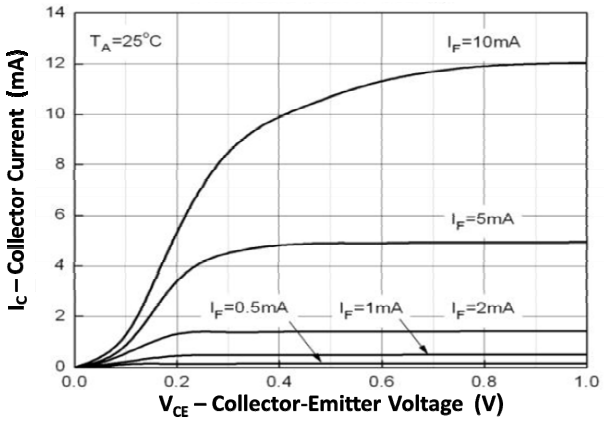


Fig 2 Collector Current vs Collector-Emitter Voltage (2)

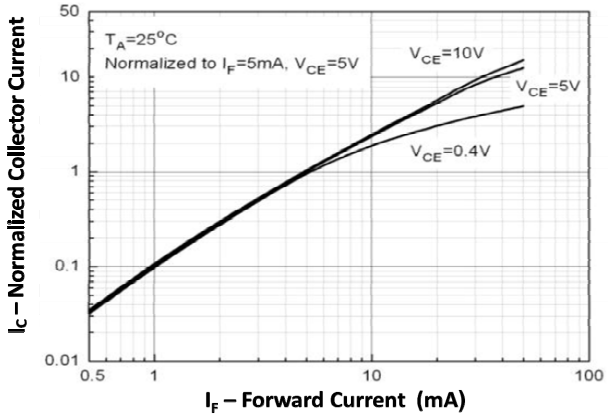


Fig 3 Normalized Collector Current vs Forward Current

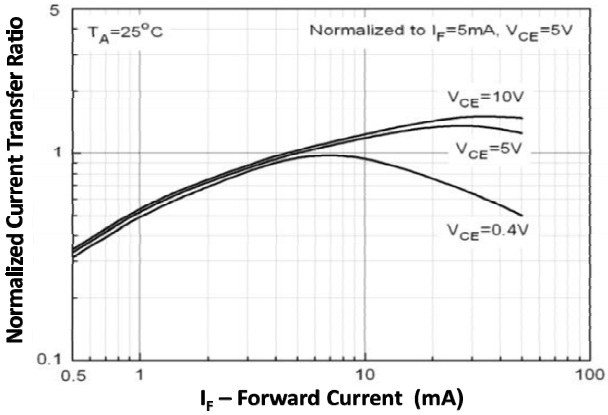


Fig 4 Normalized Current Transfer Ratio vs Forward Current

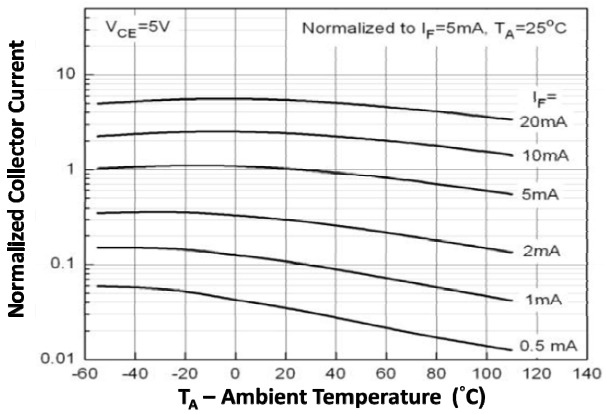


Fig 5 Normalized Collector Current vs Ambient Temperature

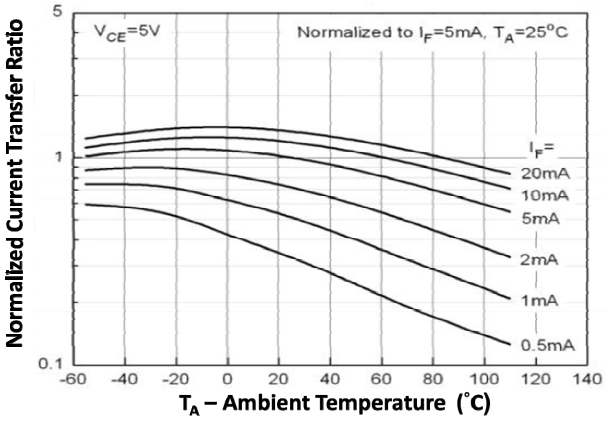


Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature

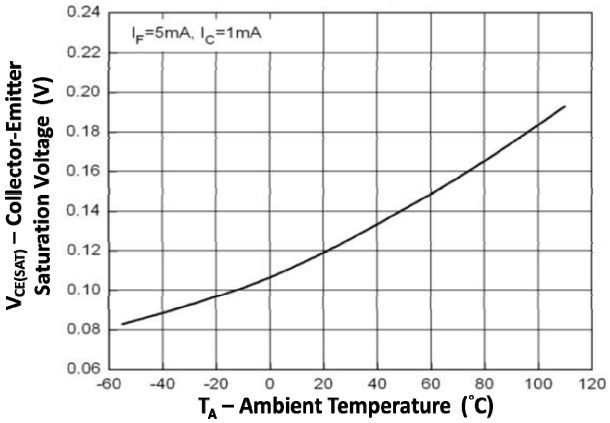


Fig 7 Collector-Emitter Saturtion Voltage vs Ambient Temperature

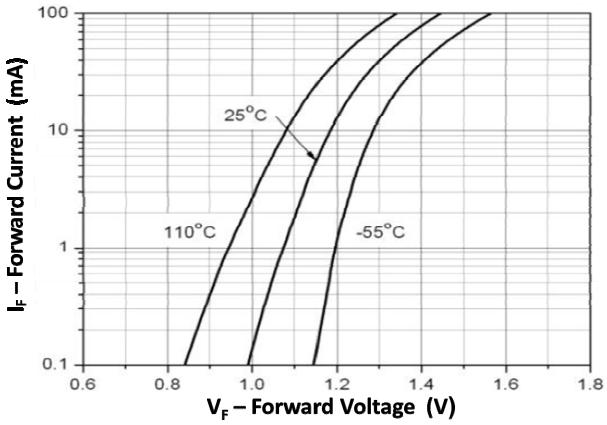


Fig 8 Forward Current vs Forward Voltage

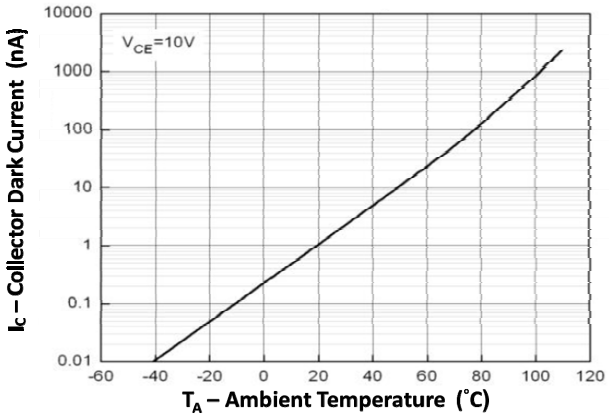


Fig 9 Collector Dark Current vs Ambient Temperature

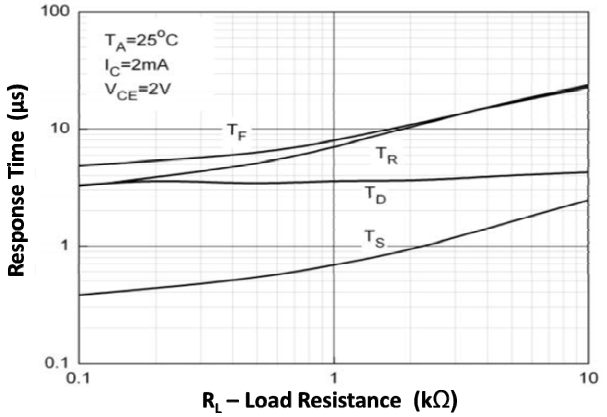
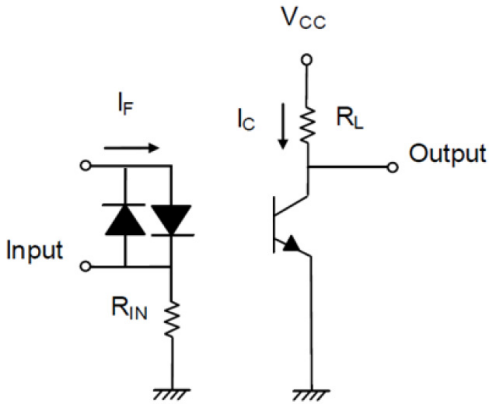
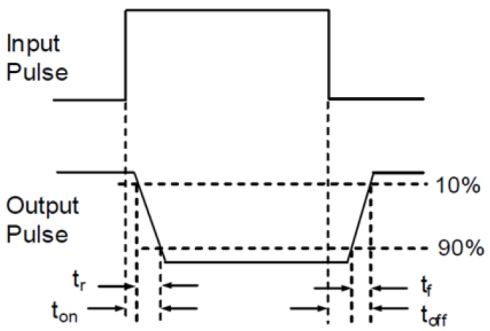


Fig 10 Response Time vs Load Resistance



Switching Time Test Circuit



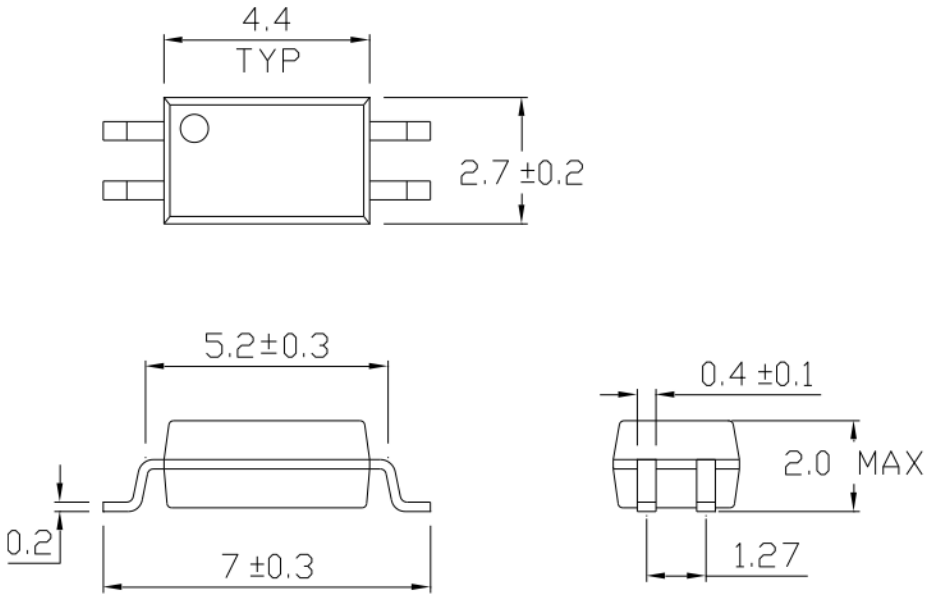
ORDER INFORMATION

IS1600			
After PN	**PN**	**Description**	**Packing quantity**
None	IS1600	Surface Mount Tape & Reel	1000 pcs per reel

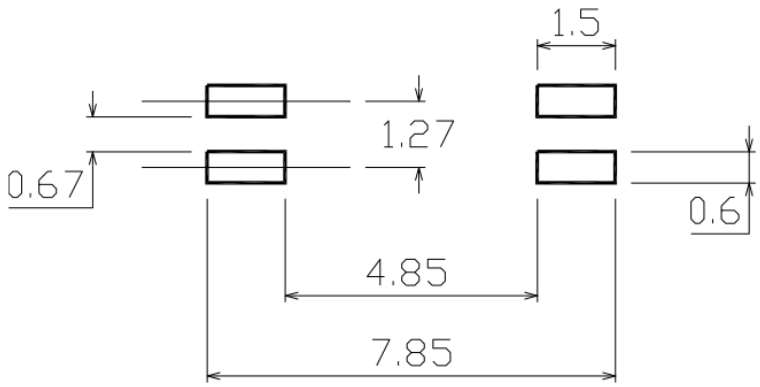
DEVICE MARKING

AHP1	denotes Device Part Number
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code

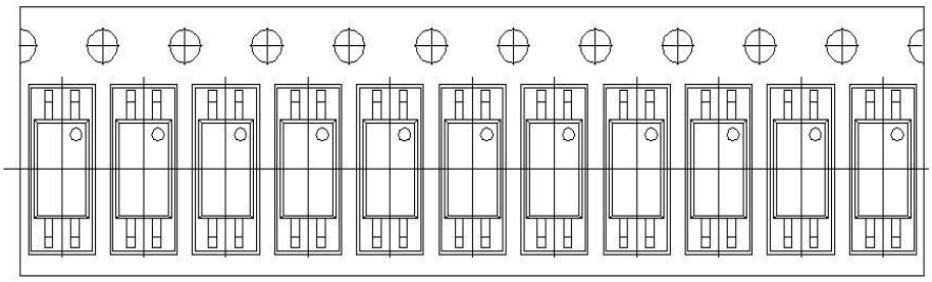
PACKAGE DIMENSIONS (mm)



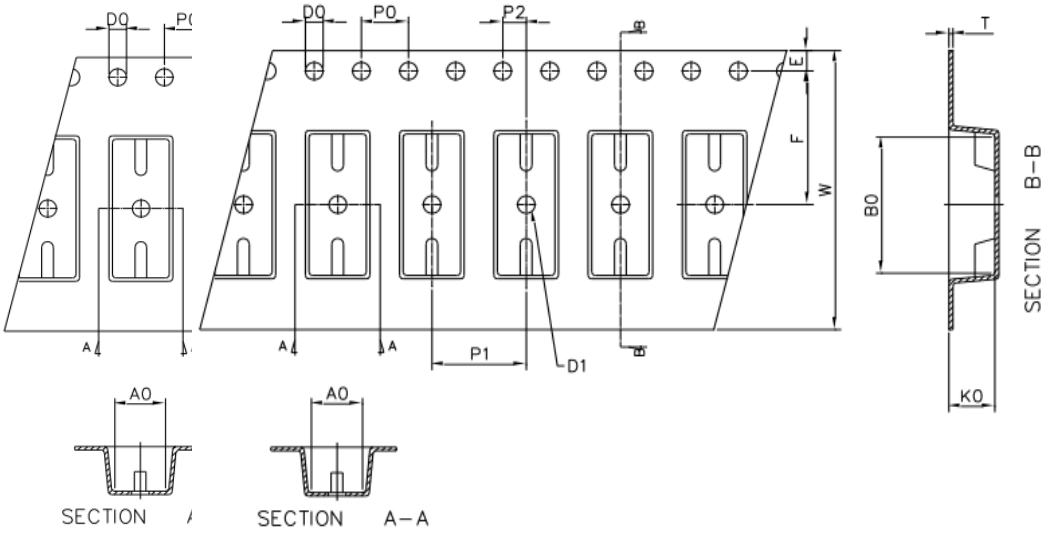
RECOMMENDED SOLDER PAD LAYOUT (mm)



TAPE AND REEL PACKAGING

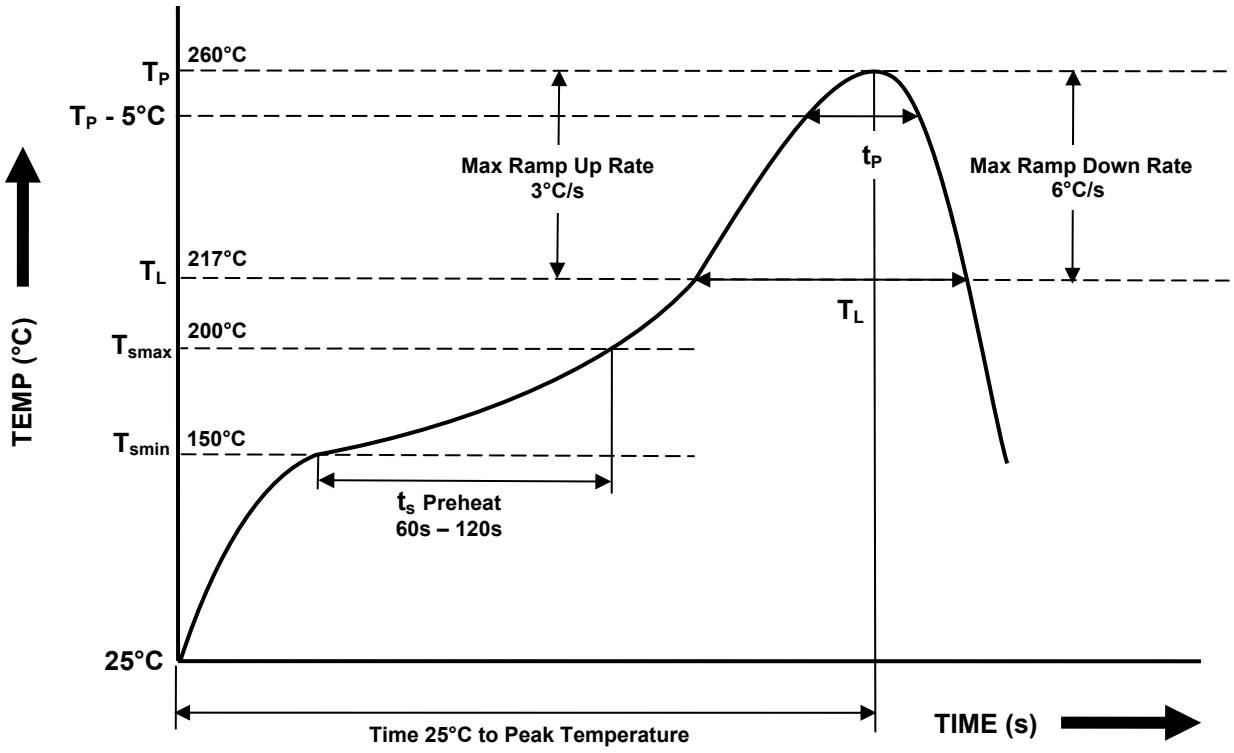


Direction of Feed from Reel



Dimension No.	**A0**	**B0**	**D0**	**D1**	**E**	**F**
Dimension(mm)	3.00±0.10	7.45±0.10	1.50+0.1/-0	1.50±0.10	1.75±0.10	5.5±0.10
Dimension No.	**P0**	**P1**	**P2**	**t**	**W**	**K0**
Dimension (mm)	4.00±0.15	4.00±0.10	2.00±0.10	0.30±0.05	12.1±0.2	2.45±0.1

IR REFLOW SOLDERING TEMPERATURE PROFILE
One Time Reflow Soldering is Recommended.
Do not immerse device body in solder paste.



Profile Details	Conditions
Preheat - Min Temperature (T_{SMIN}) - Max Temperature (T_{SMAX}) - Time T_{SMIN} to T_{SMAX} (t_s)	 150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature (T_P – 5°C) - Time maintained above T_L (t_L) - Ramp Up Rate (T_L to T_P) - Ramp Down Rate (T_P to T_L)	 260°C 217°C 30s 60s 3°C/s max 6°C/s max
Average Ramp Up Rate (T_{smax} to T_P)	3°C/s max
Time 25°C to Peak Temperature	8 minutes max

ISOCOM COMPONENTS

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