

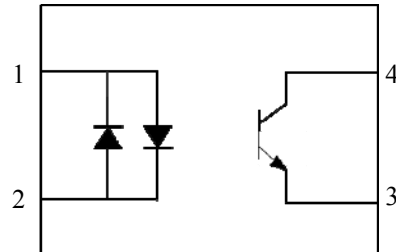


## IS280

### DESCRIPTION

The IS280 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.



### FEATURES

- Half Pitch 1.27mm
- High AC Isolation voltage 3750V<sub>RMS</sub>
- 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<sub>A</sub> = 25°C)

#### Input Diode

Forward Current	±50mA
Peak Forward Current (10us)	1A
Power dissipation	70mW

#### Output Transistor

Collector to Emitter Voltage V <sub>CEO</sub>	80V
Emitter to Collector Voltage V <sub>ECO</sub>	6V
Power Dissipation	150mW

#### Total Package

Isolation Voltage	3750V <sub>RMS</sub>
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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## IS280

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

#### INPUT

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

#### OUTPUT

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

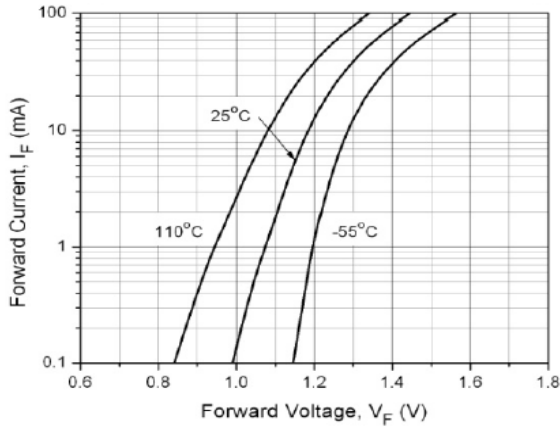
#### COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current Transfer Ratio	CTR	$I_F = \pm 1\text{mA}, V_{CE} = 5\text{V}$	20		300	%
CTR Symmetry		$I_F = \pm 1\text{mA}, V_{CE} = 5\text{V}$	0.5		2.0	
Collector—Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = \pm 20\text{mA}, I_C = 1\text{mA}$		0.1	0.2	V
Input to Output Isolation Voltage	$V_{ISO}$	See note 1	3750			$V_{RMS}$
Input to Output Isolation Resistance	$R_{ISO}$	$V_{IO} = 500\text{V}$ See note 1	$5 \times 10^{10}$	$1 \times 10^{11}$		$\Omega$
Floating Capacitance	$C_{IO}$	$V_F = 0\text{V}, f = 1\text{MHz}$		0.6	1.0	pF
Output Rise Time	$t_r$	$V_{CE} = 2\text{V}, I_C = 2\text{mA},$ $R_L = 100\Omega$		6	18	$\mu\text{s}$
Output Fall Time	$t_f$			6	18	$\mu\text{s}$

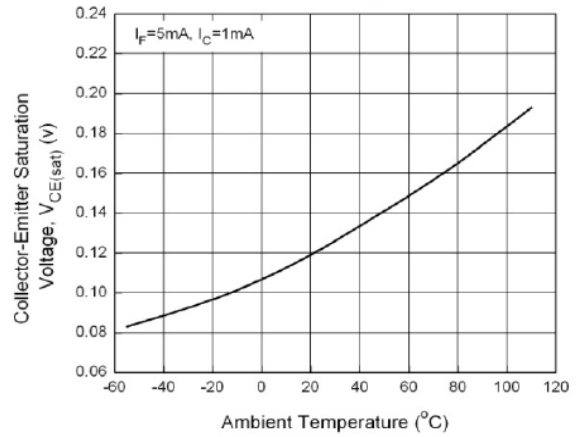
Note 1 : Measured with input leads shorted together and output leads shorted together, R.H 40% to 60%



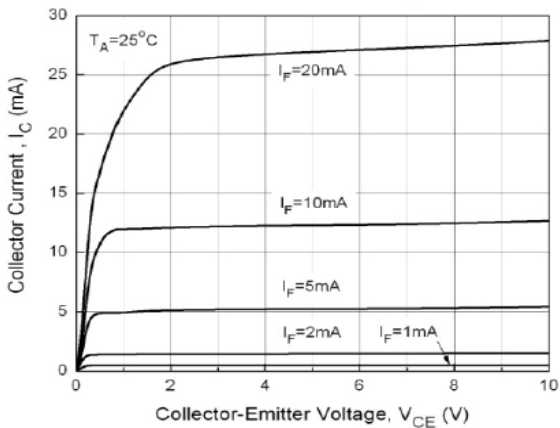
**IS280**



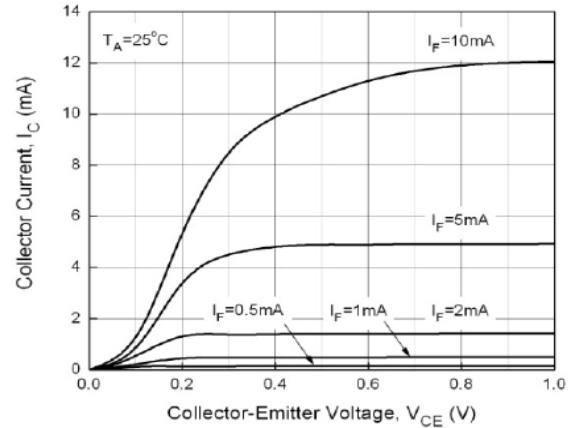
**Fig 1 Forward Current vs Forward Voltage**



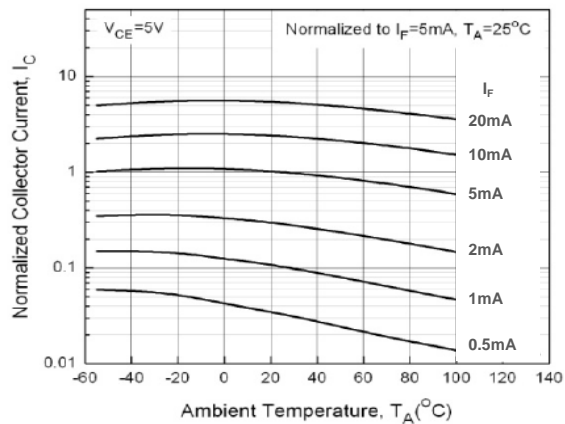
**Fig 2 Collector-Emitter Saturation Voltage vs Ambient Temperature**



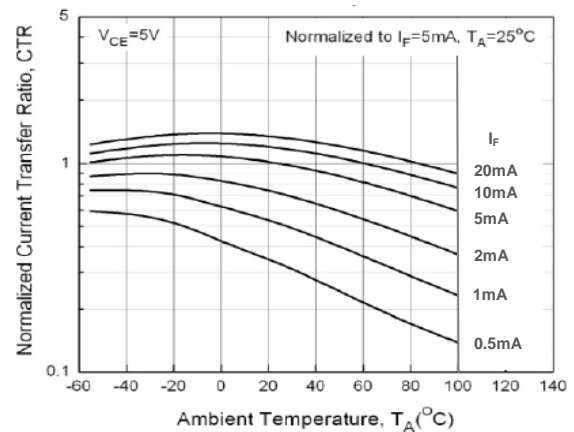
**Fig 3 Collector Current vs Collector-Emitter Voltage (1)**



**Fig 4 Collector Current vs Collector-Emitter Voltage (2)**



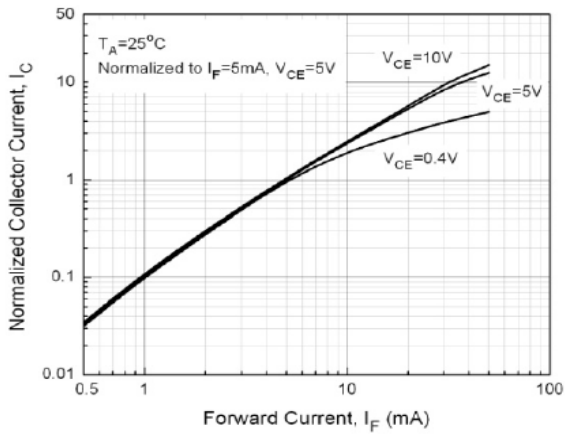
**Fig 5 Normalized Collector Current vs Ambient Temperature**



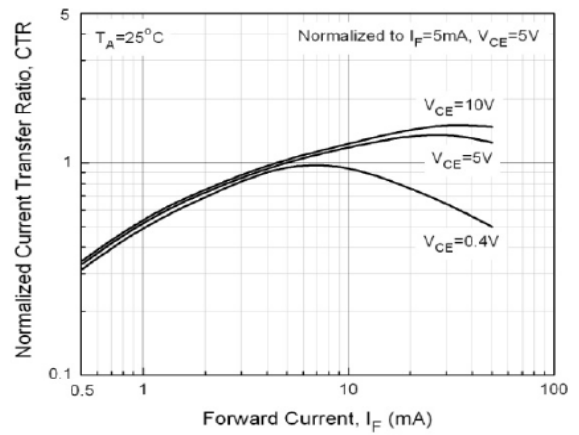
**Fig 6 Normalized Current Transfer Ratio vs Ambient Temperature**



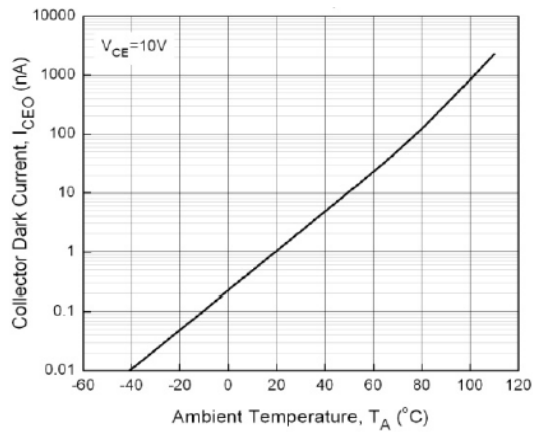
# IS280



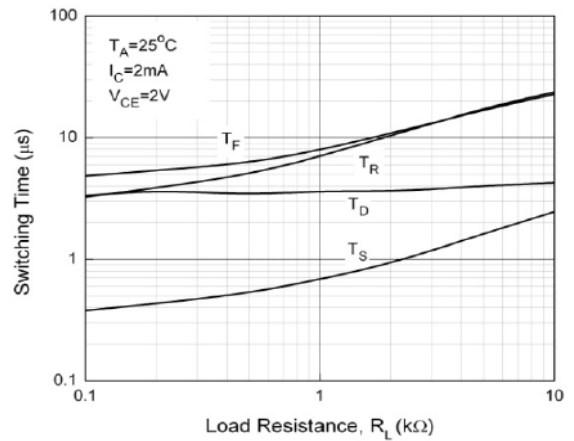
**Fig 7 Normalized Collector Current vs Forward Current**



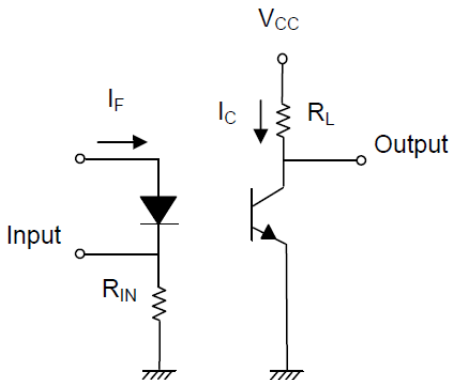
**Fig 8 Normalized Current Transfer Ratio vs Forward Current**



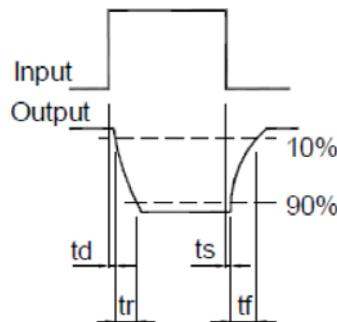
**Fig 9 Collector Dark Current vs Ambient Temperature**



**Fig 10 Switching Time vs Load Resistance**



**Switching Time Test Circuit**





## IS280

### ORDER INFORMATION

IS280			
After PN	PN	Description	Packing quantity
None	IS280	Surface Mount Tape & Reel	1000 pcs per reel

### DEVICE MARKING

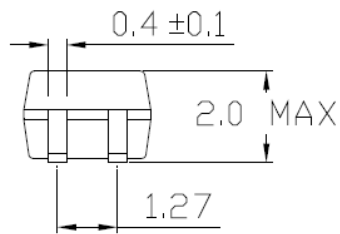
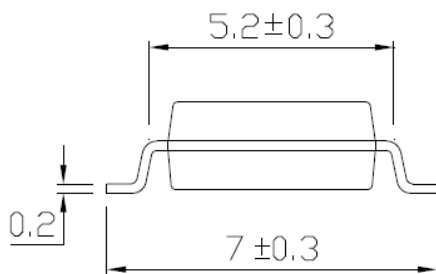
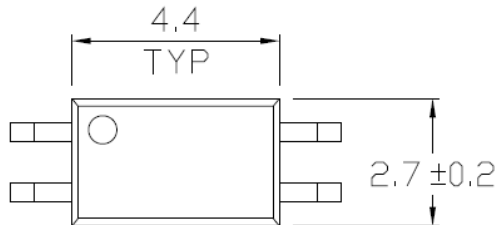


AHP1 denotes Device Part Number  
I denotes Isocom  
Y denotes 1 digit Year code  
WW denotes 2 digit Week code

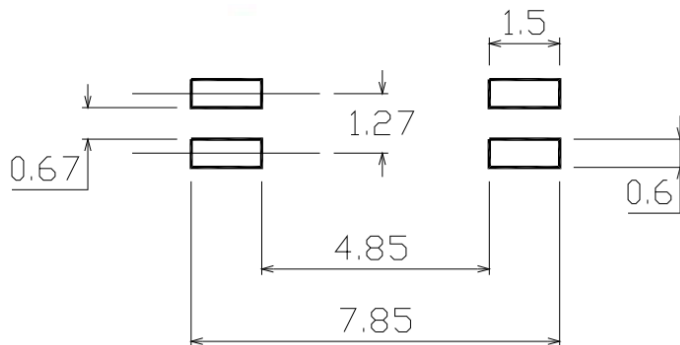


## IS280

### PACKAGE DIMENSIONS (mm)

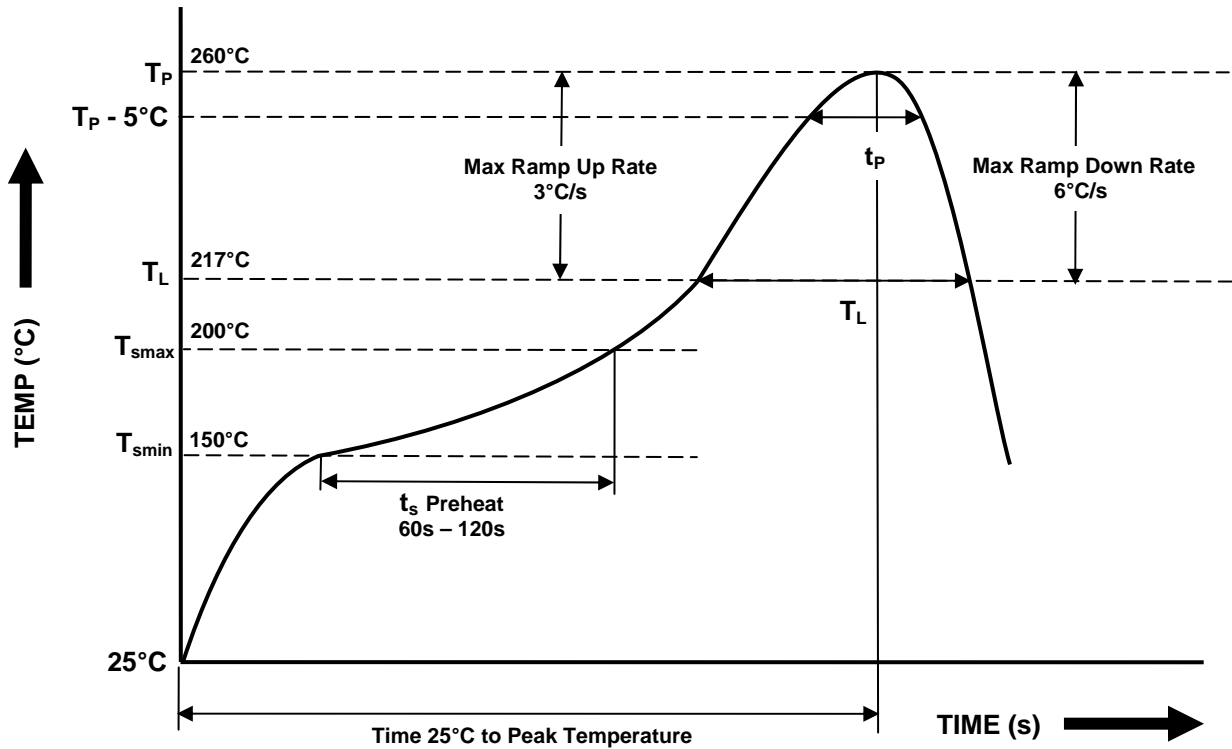


### RECOMMENDED SOLDER PAD LAYOUT (mm)





**IR REFLOW SOLDERING TEMPERATURE PROFILE**  
(One Time Reflow Soldering is Recommended)

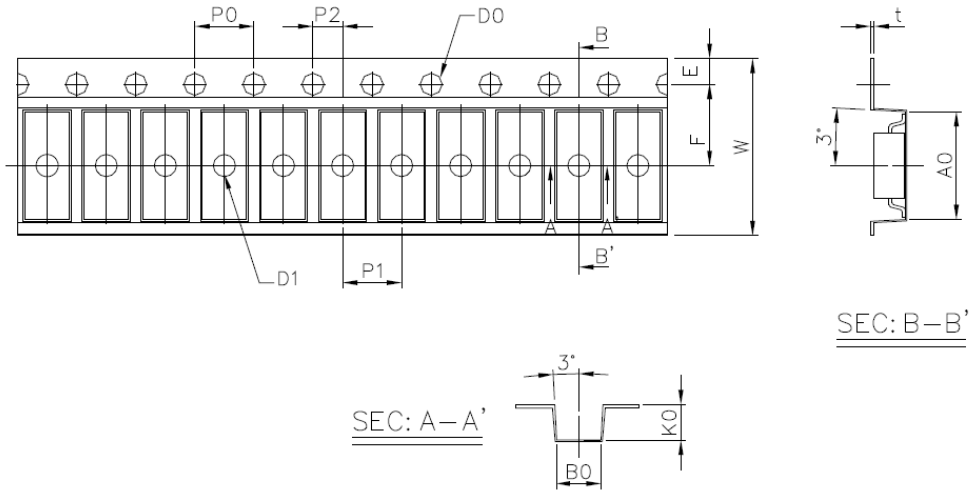


Profile Details	Conditions
<b>Preheat</b> - Min Temperature ( $T_{SMIN}$ ) - Max Temperature ( $T_{SMAX}$ ) - Time $T_{SMIN}$ to $T_{SMAX}$ ( $t_s$ )	150°C 200°C 60s - 120s
<b>Soldering Zone</b> - Peak Temperature ( $T_P$ ) - Liquidous Temperature ( $T_L$ ) - Time within 5°C of Actual Peak Temperature ( $T_P - 5^\circ\text{C}$ ) - 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



**IS280**

**TAPE AND REEL PACKAGING**



Dimension No.	<b>A</b>	<b>B</b>	<b>Do</b>	<b>D1</b>	<b>E</b>	<b>F</b>
Dimension (mm)	3.0 ± 0.1	7.3 ± 0.1	1.5 + 0.1/-0	1.5 ± 0.1	1.75 ± 0.1	5.5 ± 0.1
Dimension No.	<b>Po</b>	<b>P1</b>	<b>P2</b>	<b>t</b>	<b>W</b>	<b>K</b>
Dimension (mm)	4.0 ± 0.15	4.0 ± 0.1	2.0 ± 0.1	0.25 ± 0.03	12.0 ± 0.2	2.4 ± 0.1





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- When requiring a device for any "specific" application, please contact our sales for advice.
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- Do not immerse device body in solder paste.



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