



## IS1600 AC Input ( Compact Range )

### DESCRIPTION

The IS1600 is an optically coupled isolator consisting of two infrared light emitting diodes in inverse parallel and an NPN silicon photo transistor. It belongs to Isocom's Compact range of opto-couplers

### FEATURES

- Low profile package ( half pitch )
- Bi-Directional input
- AC Isolation test voltage 3750V<sub>RMS</sub>
- Low coupling capacitance typically 0.3pF
- CTR selections available
- Wide temperature range
- Lead free

### APPLICATIONS

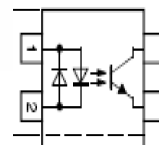
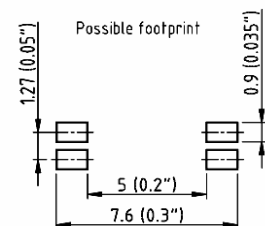
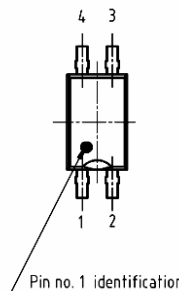
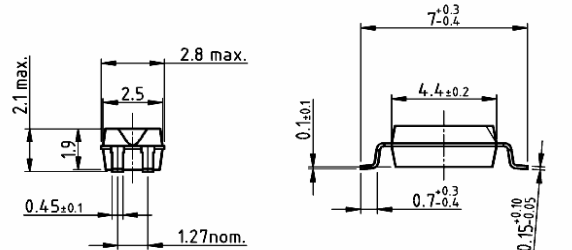
- Power Supply Feedback Voltage/Current
- Industrial system controllers
- Measuring instruments
- Ring detection on telephone lines
- Signal transmission between systems of different potentials and impedance

### ORDER INFORMATION

- Available in Tape and Reel with 3000 pieces per reel

### MARKING INFORMATION

Please note that the device will be marked with the generic part number "AHP1" the date code will also be marked on the device.



### ABSOLUTE MAXIMUM RATINGS

#### Input Diode

Forward Current	±60mA
Reverse Voltage	6V
Power dissipation	100mW

#### Output Transistor

Collector to Emitter Voltage	70V
Emitter to Collector Voltage	7V
Collector Current	50mA
Power Dissipation	150mW

#### Total Package

Isolation test Voltage	3750V <sub>RMS</sub>
Operating Temperature	-40 to 100 C
Storage Temperature	-40 to 100 C

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### ELECTRICAL CHARACTERISTICS

Ambient Temperature = 25°C unless otherwise specified

#### INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	$V_F$	$I_F = 50\text{mA}$		1.25	1.6	V
Reverse Leakage	$I_R$	$V_R = 6\text{V}$			10	$\mu\text{A}$
Junction Capacitance	$C_j$	$V_R = 0\text{V}, f = 1 \text{ MHz}$		50		pF

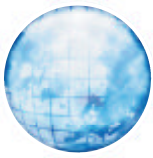
#### OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector—Emitter breakdown Voltage	$BV_{CEO}$	$I_C = 100\mu\text{A}$	70			V
Emitter—Collector breakdown Voltage	$BV_{ECO}$	$I_E = 100\mu\text{A}$	7			V
Collector 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	$I_F = 5\text{mA}, V_{CE} = 5\text{V}$	80		300	%
Collector—Emitter saturation Voltage	$V_{CEsat}$	$I_F = 10\text{mA}, I_C = 1\text{mA}$			0.3	V
Input to output isolation Voltage	$V_{ISO}$	See note 1	3750			$V_{RMS}$
Output rise time	$t_r$	$V_S = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$		3.0		$\mu\text{S}$
Output fall time	$t_f$	$V_S = 5\text{V}, I_C = 2\text{mA}, R_L = 100\Omega$		3.0		$\mu\text{S}$
Cut off frequency	$f_c$	$I_F = 10\text{mA}, V_{CE} = 5\text{V}, R_L = 100\Omega$		100		kHz
Coupling Capacitance	$C_k$	$f = 1 \text{ MHz}$		0.3		pF

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



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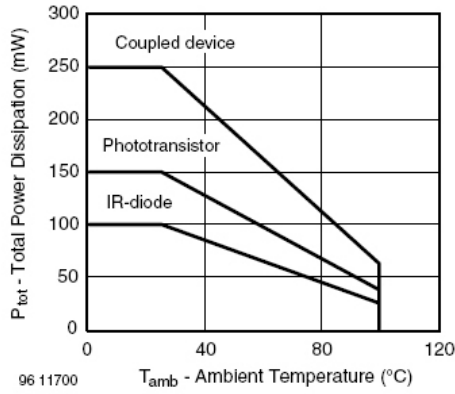


Figure 4. Total Power Dissipation vs. Ambient Temperature

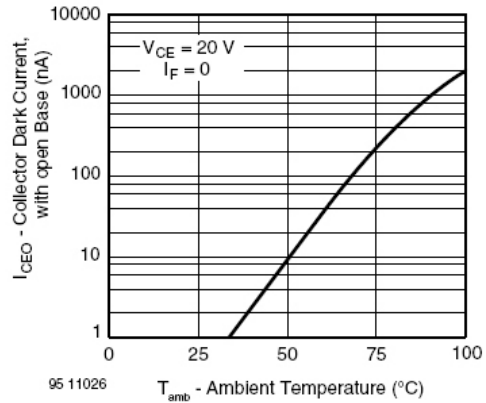


Figure 7. Collector Dark Current vs. Ambient Temperature

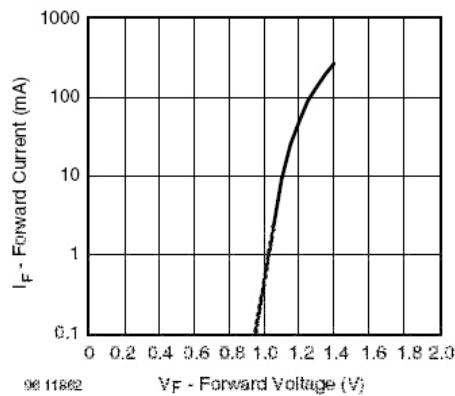


Figure 5. Forward Current vs. Forward Voltage

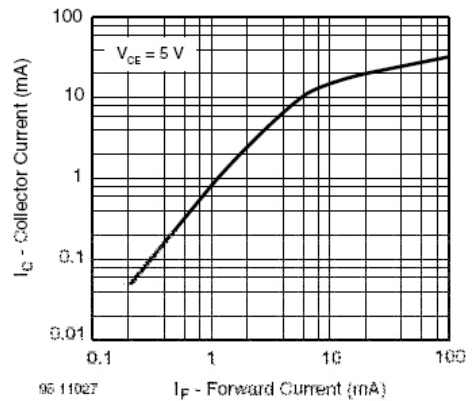


Figure 8. Collector Current vs. Forward Current

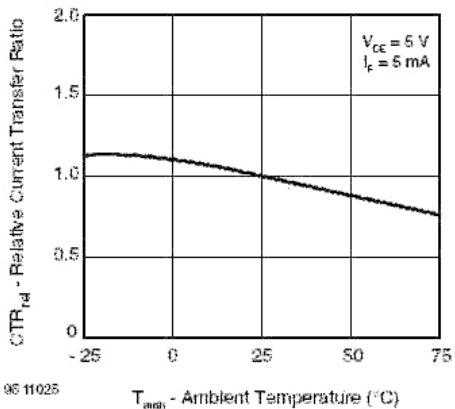


Figure 6. Relative Current Transfer Ratio vs. Ambient Temperature

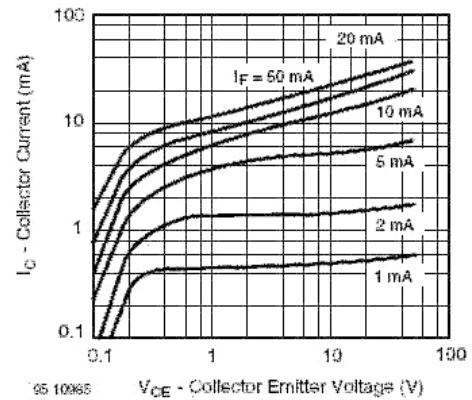
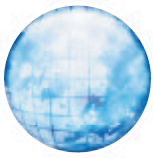


Figure 9. Collector Current vs. Collector Emitter Voltage



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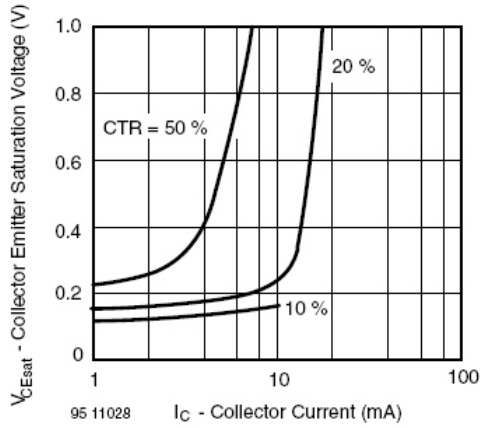


Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

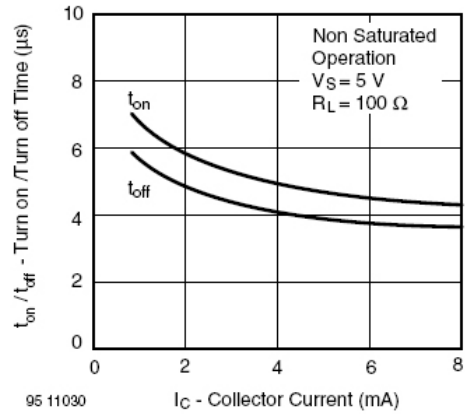


Figure 13. Turn on/off Time vs. Collector Current

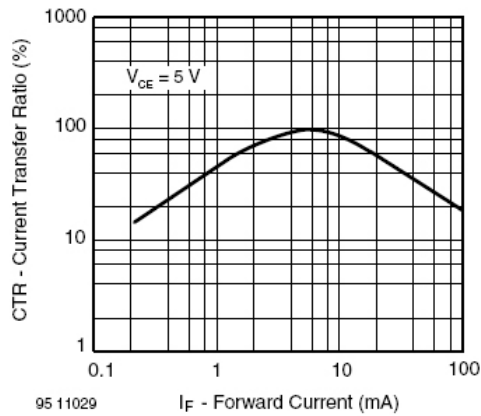


Figure 11. Current Transfer Ratio vs. Forward Current

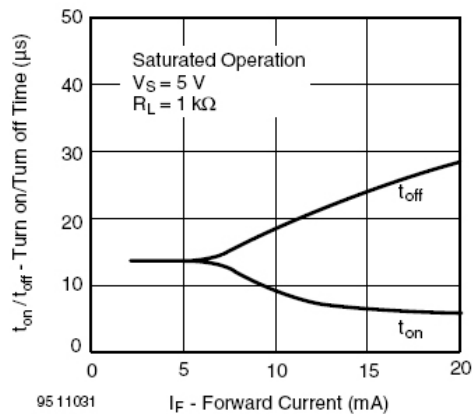


Figure 12. Turn on/off Time vs. Forward Current