# IS2801-1 ( Compact Range )

## DESCRIPTION

The IS2801-1 is an optically coupled isolator consisting of an infrared light emitting diode and an NPN silicon photo transistor. It belongs to Isocom's Compact range of opto-couplers

## FEATURES

- Low profile package ( half pitch )
- AC Isolation test voltage 3750$V_{RMS}$
- Low coupling capacitance typically 0.3pF
- CTR selections available
- Wide temperature range
- Lead free
- Halogen Free

## APPLICATIONS

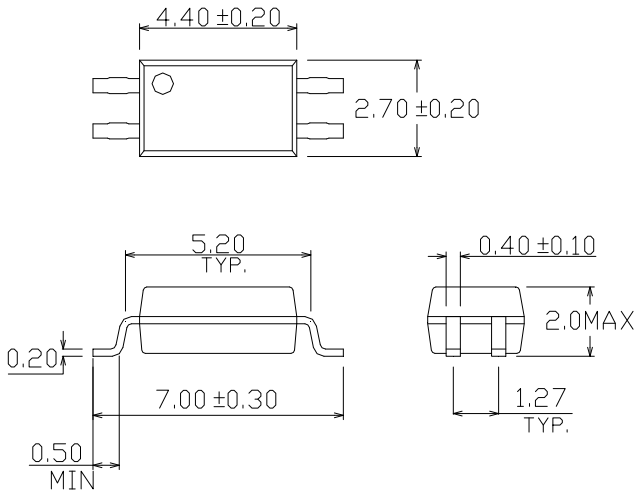
- Power Supply Feedback Voltage/Current
- Industrial system controllers
- Measuring instruments
- Signal transmission between systems of different potentials and impedance

## ORDER INFORMATION

- Available in Tape and Reel with 1000 & 5000 pieces per reel

## MARKING INFORMATION

Please note that the device will be marked with the generic part number "THP1" the date code will also be marked on the device.




## ABSOLUTE MAXIMUM RATINGS

**Input Diode**

| | |
|---|---|
| Forward Current | 60mA |
| Reverse Voltage | 6V |
| Power dissipation | 70mW |
| Derating Factor > 90°C | 2mW / °C |

**Output Transistor**

| | |
|---|---|
| Collector to Emitter Voltage | 80V |
| Emitter to Collector Voltage | 7V |
| Collector Current | 50mA |
| Power Dissipation | 150mW |
| Derating Factor > 70°C | 3.1mW / °C |

**Total Package**

| | |
|---|---|
| Isolation test Voltage | 3750$V_{RMS}$ |
| Operating Temperature | -55 to 110 C |
| Storage Temperature | -55 to 150 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 | $V_F$ | $I_F$ = 20mA | | 1.20 | 1.40 | V |
| Reverse Leakage | $I_R$ | $V_R$ = 4V | | | 10 | µA |
| Input Capacitance | $C_{in}$ | V = 0V, f = 1 KHz | | 30 | 250 | pF |

### OUTPUT

| Parameter | Symbol | Test Condition | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Collector—Emitter breakdown Voltage | $BV_{CEO}$ | $I_C$ = 100µA | 80 | | | V |
| Emitter—Collector breakdown Voltage | $BV_{ECO}$ | $I_E$ = 100µA | 7 | | | V |
| Collector 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 | $I_F$ = 5mA, $V_{CE}$ = 5V | 50 | | 600 | % |
| Collector—Emitter saturation Voltage | $V_{CEsat}$ | $I_F$ = 10mA, $I_C$ = 1mA | | 0.1 | 0.2 | V |
| Input to output isolation Voltage | $V_{ISO}$ | See note 1 | 3750 | | | $V_{RMS}$ |
| Output rise time | $t_r$ | $V_{ce}$ =2V,Ic = 2mA, Rl = 100Ω | | 5.0 | 18 | µS |
| Output fall time | $t_f$ | $V_{ce}$ =2V,Ic = 2mA, Rl = 100Ω | | 3.0 | 18 | µS |
| Cut off frequency | $f_c$ | $I_F$ = 10mA, $V_{CE}$ = 5V, $R_L$ = 100Ω | | 100 | | kHz |
| Coupling Capacitance | $C_k$ | f = 1 MHz | | 0.3 | | pF |

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

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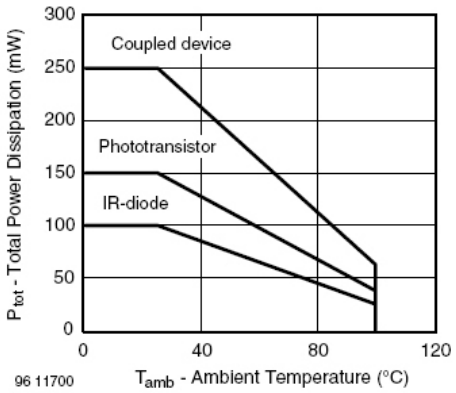


Figure 4.Total Power Dissipation vs. Ambient Temperature

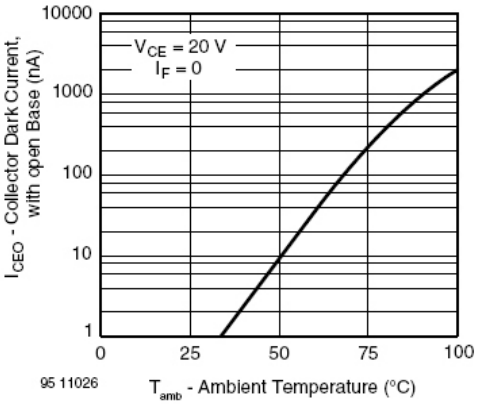


Figure 7. Collector Dark Current vs. Ambient Temperature

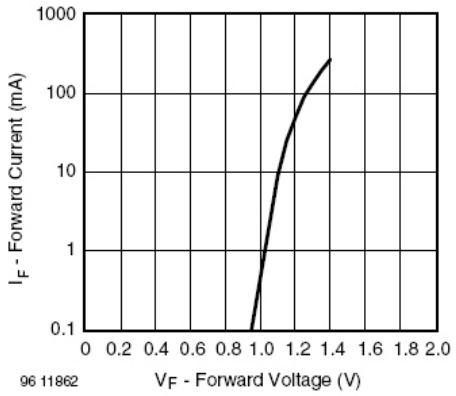


Figure 5. Forward Current vs. Forward Voltage

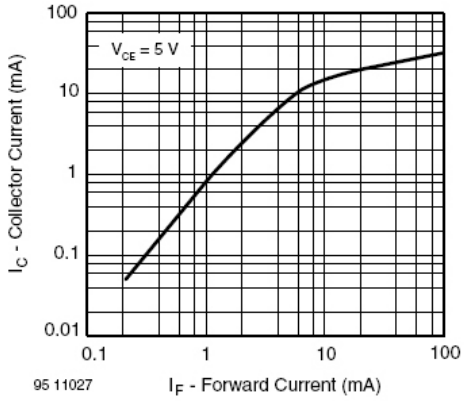


Figure 8. Collector Current vs. Forward Current

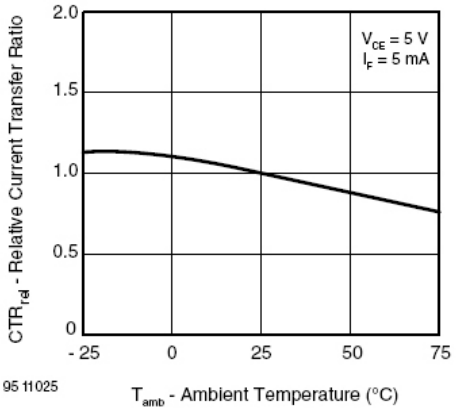


Figure 6. Relative Current Transfer Ratio vs. Ambient Temperature

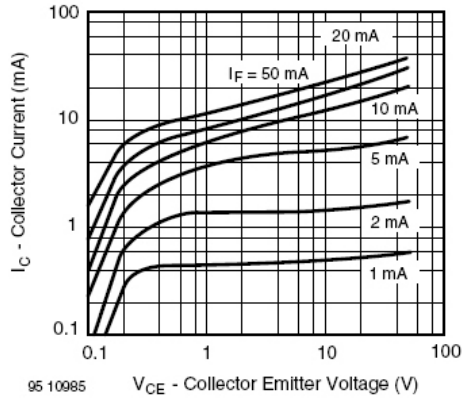


Figure 9. Collector Current vs. Collector Emitter Voltage

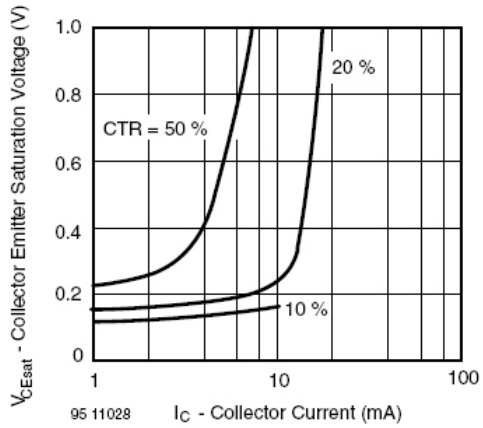


Figure 10. Collector Emitter Saturation Voltage vs. Collector Current

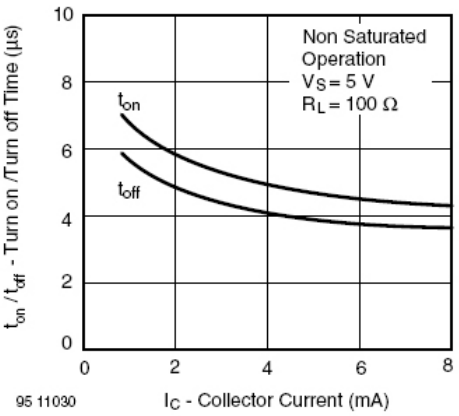


Figure 13. Turn on/off Time vs. Collector Current

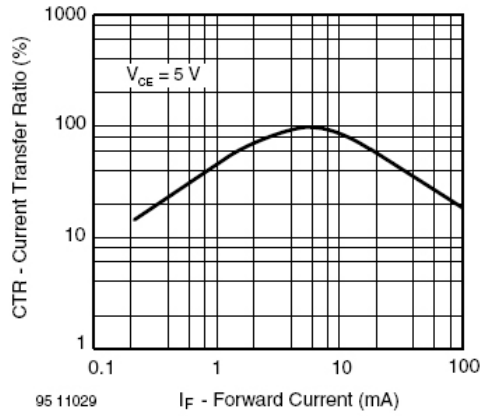


Figure 11. Current Transfer Ratio vs. Forward Current

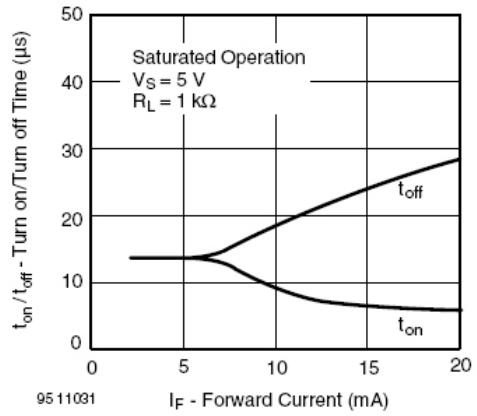


Figure 12. Turn on/off Time vs. Forward Current