

DESCRIPTION

The IS2801-4 is a four channel optically coupled isolator each channel consists of an infrared emitting diode 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 3000V_{RMS}
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231 Package Code "THP4"

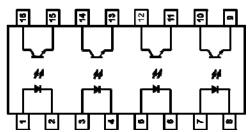
APPLICATIONS

- Hybrid Substrates with High Density Mounting
- Industrial System Controllers
- Measuring Instruments
- System Appliances

ORDER INFORMATION

 Available in Tape and Reel with 2000pcs 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
Reverse Voltage	6V
Power dissipation	70mW

Output

Output Current	50mA
Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV _{ECO}	7V
Power Dissipation	100mV

Total Package

Isolation Voltage	$3000V_{\text{RMS}}$
Total Power Dissipation	170mW
Operating Temperature	-55 to 110 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

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

INPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Forward Voltage	$V_{\rm F}$	$I_F = 20 \text{mA}$		1.2	1.4	V
Reverse Current	I_R	$V_R = 4V$			10	μΑ
Terminal Capacitance	C_{t}	$V_F = 0V$, $f = 1KHz$		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Collector-Emitter Breakdown Voltage	$\mathrm{BV}_{\mathrm{CEO}}$	$I_F = 0, I_C = 0.1 \text{mA}$	80			V
Emitter-Collector Breakdown Voltage	$\mathrm{BV}_{\mathrm{ECO}}$	$I_F = 0, I_E = 10\mu A$	7			V
Collector-Emitter Dark Current	I_{CEO}	$I_F = 0, V_{CE} = 48V$			100	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Current Transfer Ratio	CTR	$I_F = 5 \text{mA}, V_{CE} = 5 \text{V}$	50		600	%
Collector-Emitter Saturation Voltage	V _{CE(sat)}	$I_F = 8mA, I_C = 2.4mA$			0.4	V
Floating Capacitance	C_{f}	$V_{CE} = 0V$, $f = 1MHz$		0.6	1	pF
Output Rise Time	$t_{\rm r}$	$V_{CE} = 10V$,		2	18	μs
Output Fall Time	t_{f}	$Ic = 2mA,$ $R_L = 100\Omega$		3	18	
Turn-On Time	t_{ON}	<u>L</u>		3		
Turn-Off Time	$t_{ m OFF}$			3		
Turn-On Time	t_{ON}	$V_{CE} = 5V$,		2		Ī
Turn-Off Time	$t_{ m OFF}$	$Ic = 16mA,$ $R_{L} = 1.9k\Omega$		40		
Storage Time	$t_{ m S}$	L		25		

ISOLATION

Parameter	Symbol	Test Condition	Min	Тур.	Max	Unit
Input to Output Isolation Voltage	$V_{\rm ISO}$	RH = 40% - 60%, t = 1 min Note 1	3000			V_{RMS}
Input to Output Isolation Resistance	$R_{\rm ISO}$	RH = 40% - 60% , V_{IO} = $500V$ Note 1	5x10 ¹⁰	1x10 ¹¹		Ω



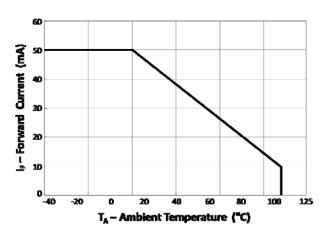


Fig 1 Forward Current vs TA

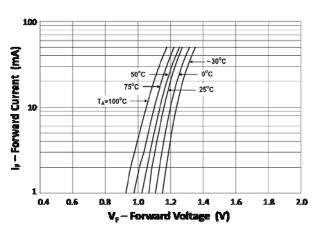


Fig 3 Forward Current vs Forward Voltage

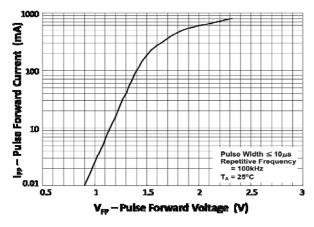


Fig 5 Pulse Forward Current vs Pulse Forward Voltage

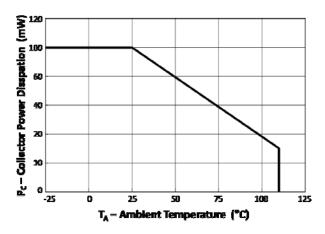


Fig 2 Collector Power Dissipation vs T_A

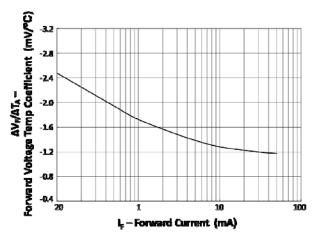


Fig 4 Forward Current Temperature Coefficient vs Forward Current

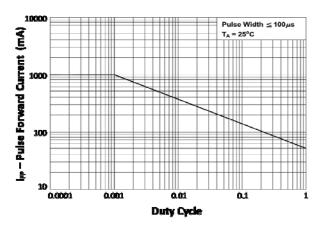


Fig 6 Pulse Forward Current vs Duty Cycle



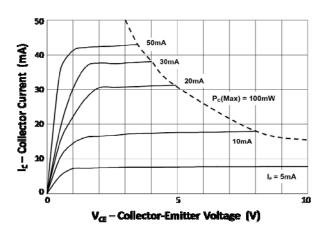


Fig 7 Collector Current vs Collector-Emitter Voltage

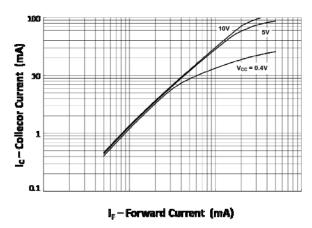


Fig 9 Collector Current vs Forward Current

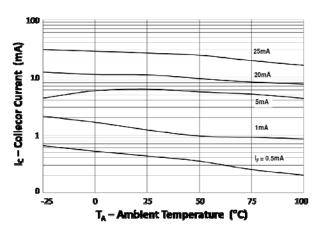


Fig 11 Collector Current vs T_A

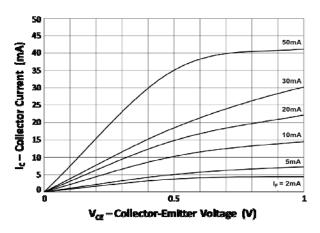


Fig 8 Collector Current vs Low Collector-Emitter Voltage

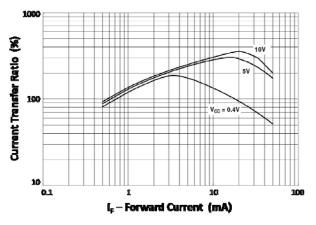


Fig 10 Current Transfer Ratio vs Forward Current

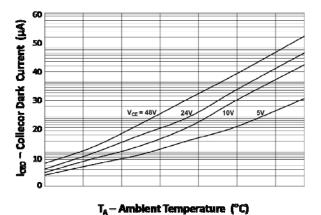


Fig 12 Collector Dark Current vs T_A



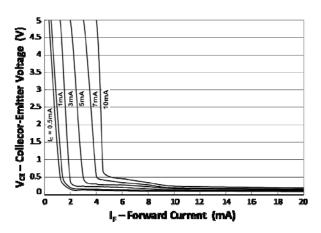


Fig 13 Collector-Emitter Voltage vs Forward Current

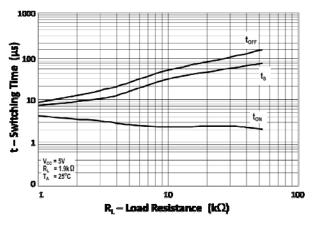


Fig 15 Switching Time vs Load Resistance

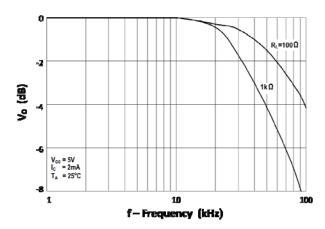


Fig 17 Frequency Response

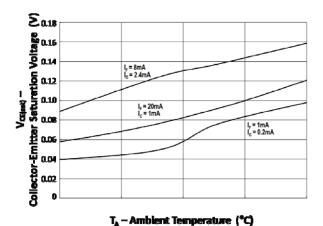


Fig 14 Collector-Emitter Saturation Voltage vs T_A

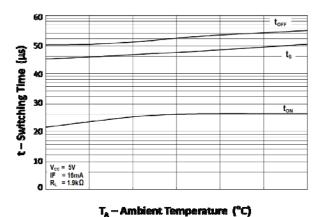
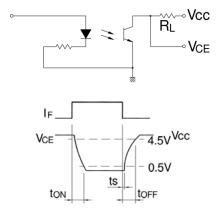


Fig 16 Switching Time vs T_A



Switching Time Test Circuit

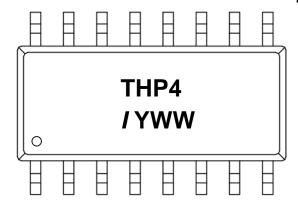


ORDER INFORMATION

	UL Approval		
After PN	PN	Description	Packing quantity
None	IS2801-4	Surface Mount Tape & Reel	2000 pcs per reel

DEVICE MARKING

Example : IS2801-4



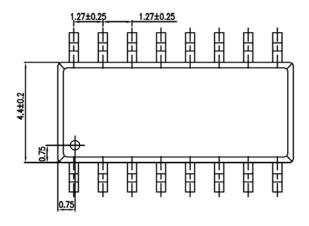
THP4 denotes Device Part Number

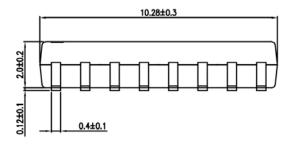
denotes Isocom

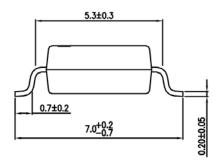
Y denotes 1 digit Year code WW denotes 2 digit Week code

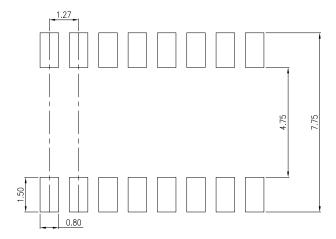


PACKAGE DIMENSIONS (mm)





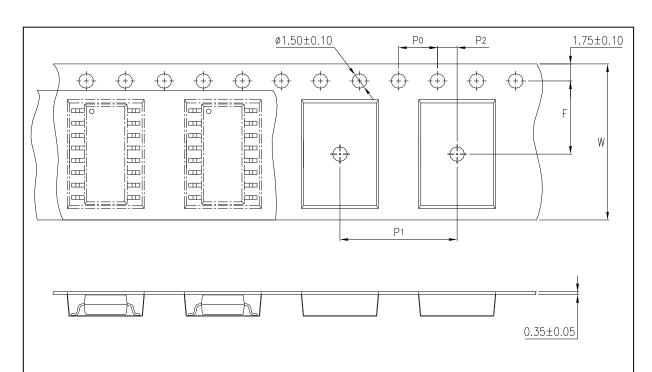




RECOMMENDED SOLDER PAD LAYOUT (mm)



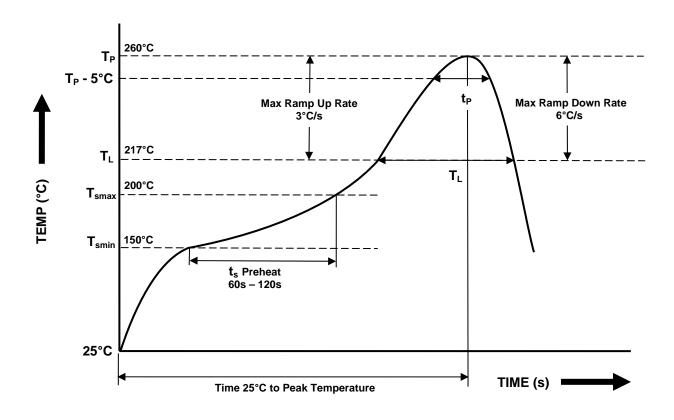
TAPE AND REEL PACKAGING



Description	Symbol	Dimension mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P ₀	4 ± 0.1 (0.15)
	F	7.5 ± 0.1 (0.295)
Distance of Compartment to Sprocket Holes	P ₂	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P ₁	12 ± 0.1 (0.47)



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



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
$\begin{tabular}{ll} \textbf{Soldering Zone} \\ - & \begin{tabular}{ll} - & \begin{tabular}{ll} \textbf{Peak Temperature } & \begin{tabular}{ll} - & \begin{tabular}{ll} \textbf{Peak Temperature } & \begin{tabular}{l$	260°C 10s max 217°C 30s max 60s - 100s 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



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- The contents described herein are subject to change without prior notice.
- Do not immerse unit's body in solder paste.



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