

## IS2805-4



### DESCRIPTION

The IS2805-4 quad channel optocoupler each channel consists of two infrared emitting diodes in reverse parallel connection optically coupled to an NPN silicon photo transistor.

This device belongs to Isocom Compact Range of Optocouplers.

### FEATURES

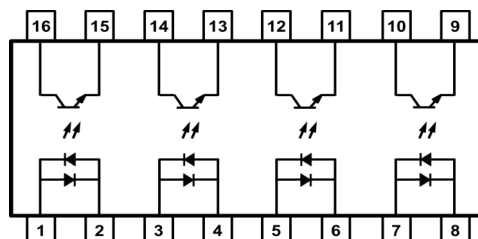
- Half Pitch 1.27mm
- High AC Isolation voltage 3750V<sub>RMS</sub>
- Wide Operating Temperature Range -55°C to 110°C
- Pb Free and RoHS Compliant
- UL Approval E91231 Model "AHP4"

### APPLICATIONS

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

### ORDER INFORMATION

- Available in Tape and Reel  
IS2805-4 : 2000pcs per reel



1, 3, 5, 7 Anode / Cathode    9, 11, 13, 15 Emitter  
2, 4, 6, 8 Cathode / Anode    10, 12, 14, 16 Collector

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 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
Power dissipation	65mW

#### Output

Collector to Emitter Voltage BV <sub>CEO</sub>	80V
Emitter to Collector Voltage BV <sub>ECO</sub>	7V
Collector Current	50mA
Junction Temperature	125°C
Power Dissipation	100mW

#### Total Package

Isolation Voltage	3750V <sub>RMS</sub>
Total Power Dissipation	170mW
Operating Temperature	-55 to 110 °C
Storage Temperature	-55 to 150 °C
Lead Soldering Temperature (10s)	260°C

#### ISOCOM COMPONENTS 2004 LTD

Unit 25B, Park View Road West, Park View Industrial Estate  
Hartlepool, Cleveland, TS25 1PE, United Kingdom  
Tel : +44 (0)1429 863 609 Fax : +44 (0)1429 863 581  
e-mail : sales@isocom.co.uk  
<http://www.isocom.com>

#### ISOCOM COMPONENTS ASIA LTD

Hong Kong Office  
Block A, 8/F, Wah Hing Industrial Mansions  
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong  
Tel : +852 2995 9217 Fax : +852 8161 6292  
e-mail : sales@isocom.com.hk

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### 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
Terminal Capacitance	$C_{IN}$	$V = 0\text{V}, f = 1\text{KHz}$		60		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	$BV_{ECO}$	$I_E = 10\mu\text{A}, I_F = 0\text{mA}$	7			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		400	%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = \pm 8\text{mA}, I_C = 2.4\text{mA}$			0.4	V
Floating Capacitance	$C_f$	$V_F = 0\text{V}, f = 1\text{MHz}$		0.8	1	pF
Output Rise Time	$t_r$	$V_{CE} = 2\text{V}$ $I_C = \pm 2\text{mA}$ $R_L = 100\Omega$		3	18	$\mu\text{s}$
Output Fall Time	$t_f$			4	18	

#### ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Isolation Voltage	$V_{ISO}$	R.H. = 40% to 60%, $t = 1\text{min}$ Note 1	3750			$V_{RMS}$
Input - Output Resistance	$R_{I-O}$	$V_{I-O} = 500\text{VDC}$ R.H. = 40% to 60% Note 1	$5 \times 10^{10}$	$1 \times 10^{11}$		$\Omega$

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

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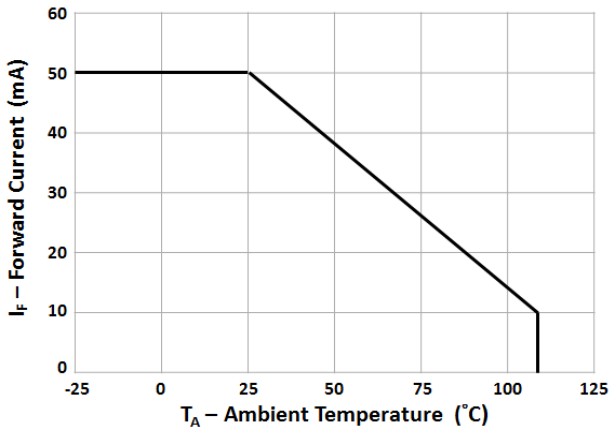


Fig 1 Forward Current vs Ambient Temperature

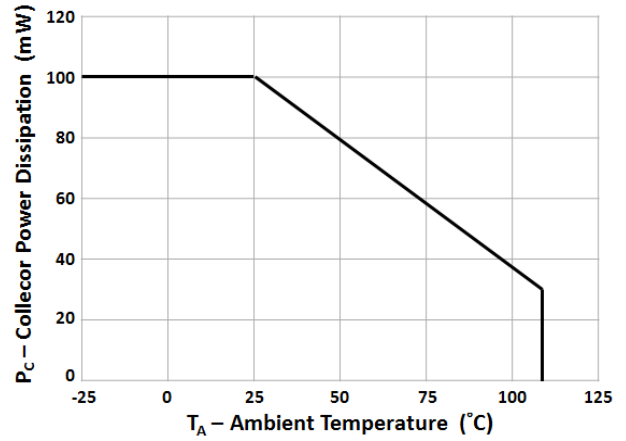


Fig 2 Output Power Dissipation vs Ambient Temperature

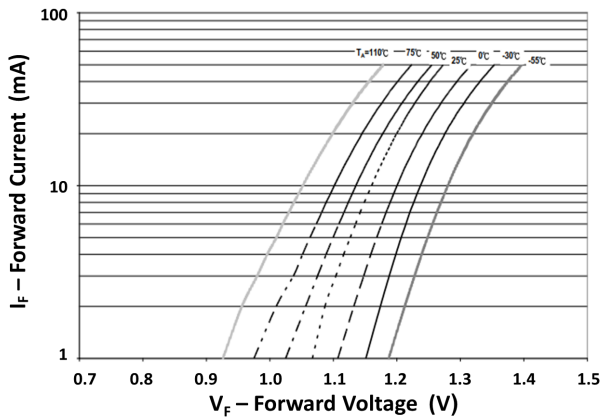


Fig 3 Forward Current vs Forward Voltage

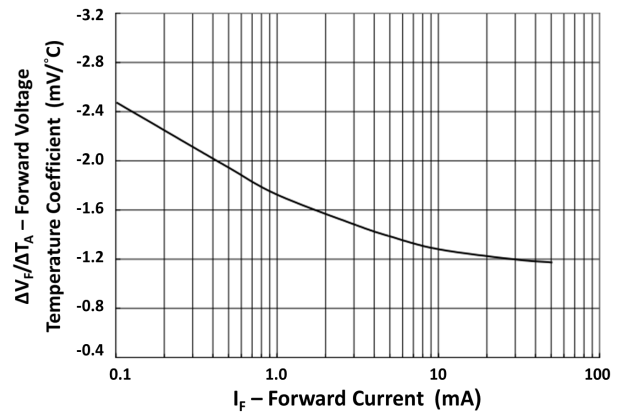


Fig 4 Forward Voltage Temperature Coefficient vs Forward Current

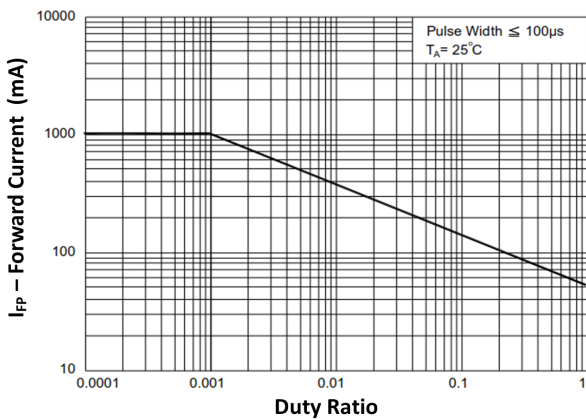


Fig 5 Pulsed Forward Current vs Duty Ratio

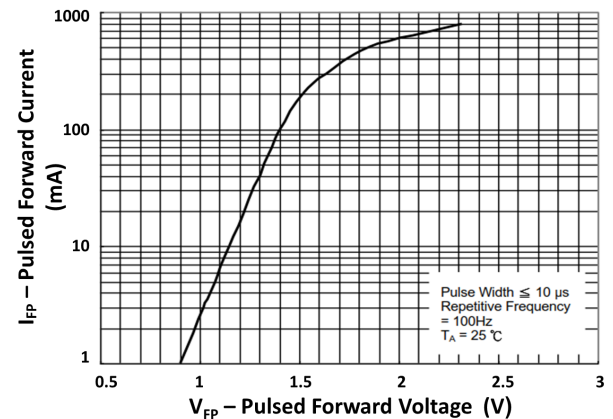


Fig 6 Pulsed Forward Current vs Pulsed Forward Voltage

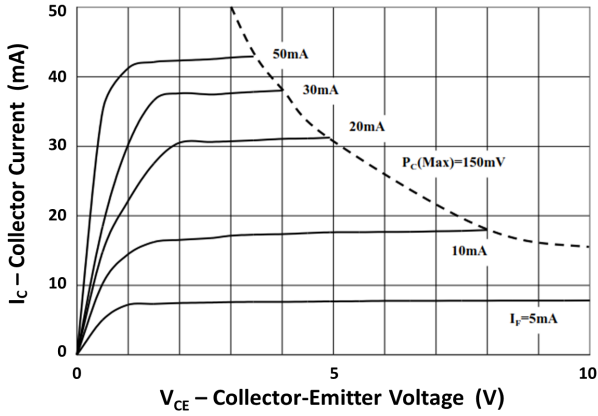


Fig 7 Collector Current vs Collector-Emitter Voltage (1)

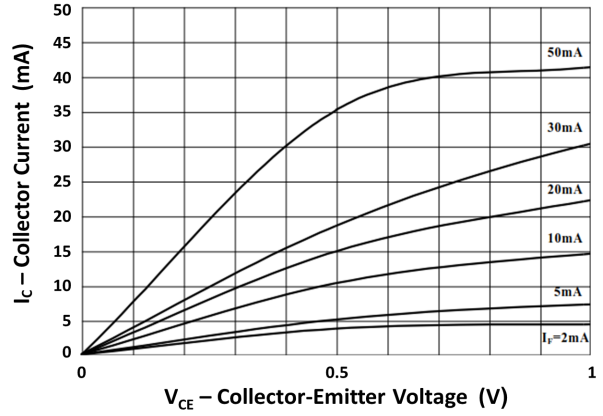


Fig 8 Collector Current vs Collector-Emitter Voltage (2)

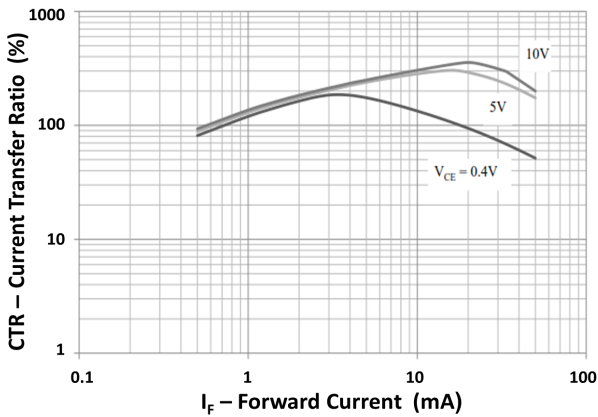


Fig 9 Current Transfer Ratio vs Forward Current

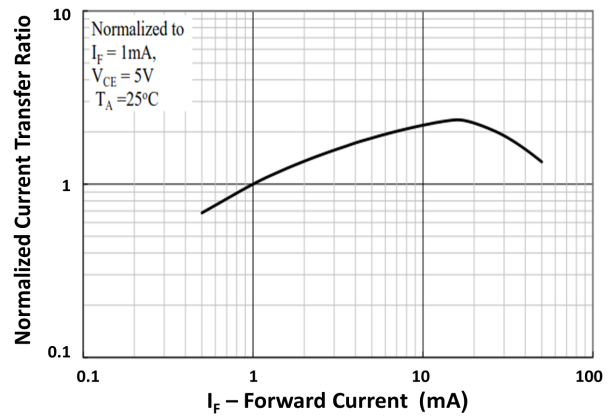


Fig 10 Normalized Current Transfer Ratio vs Forward Current

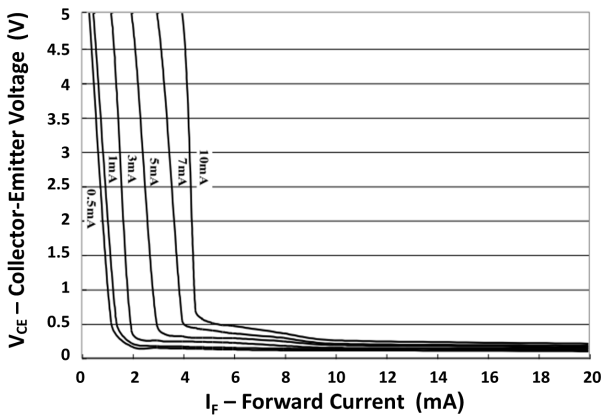


Fig 11 Collector-Emitter Voltage vs Forward Current

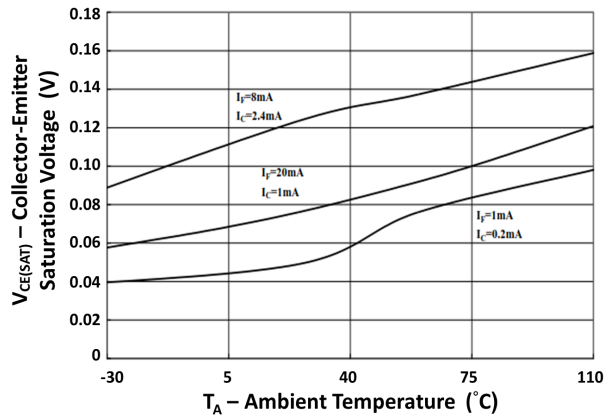


Fig 12 Collector-Emitter Saturation Voltage vs Ambient Temperature

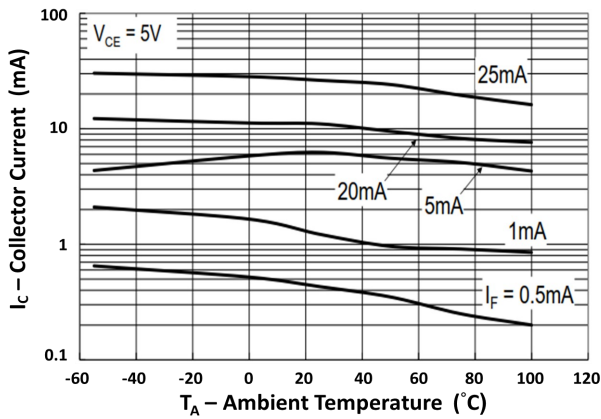


Fig 13 Collector Current vs Ambient Temperature

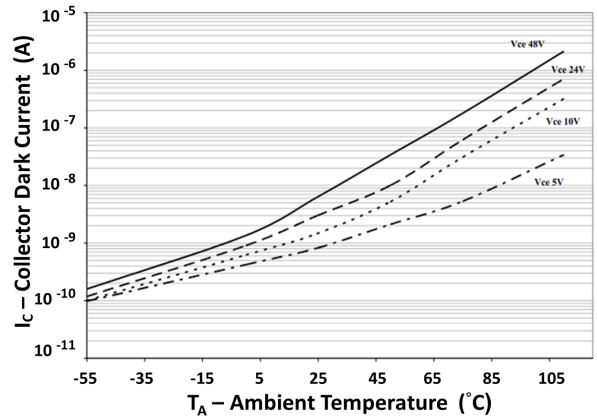


Fig 14 Collector Dark Current vs Ambient Temperature

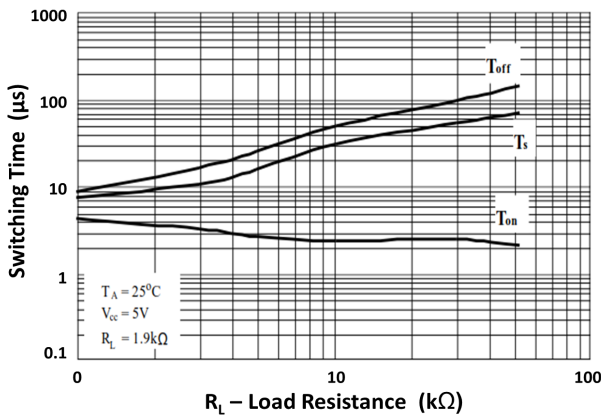


Fig 15 Switching Time vs Load Resistance

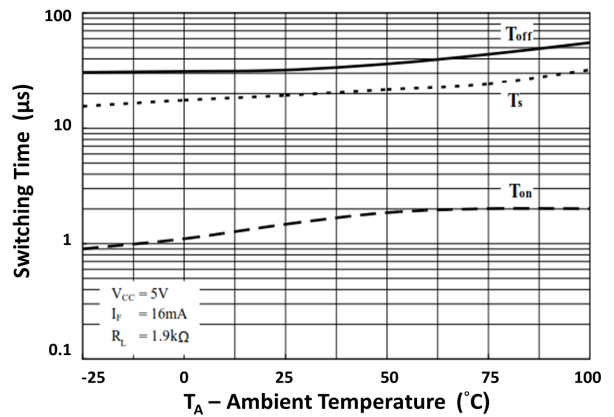


Fig 16 Switching Time vs Ambient Temperature

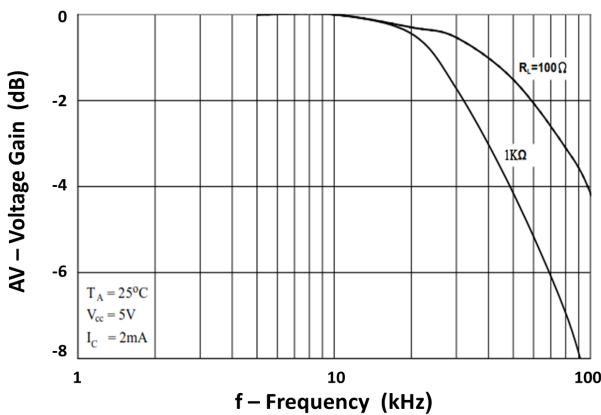
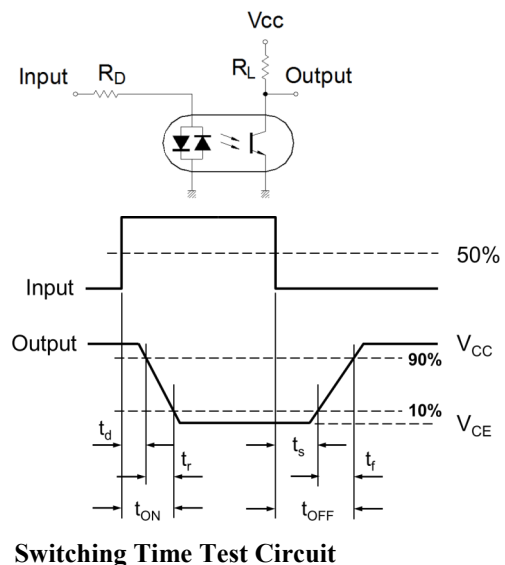


Fig 17 Frequency Response



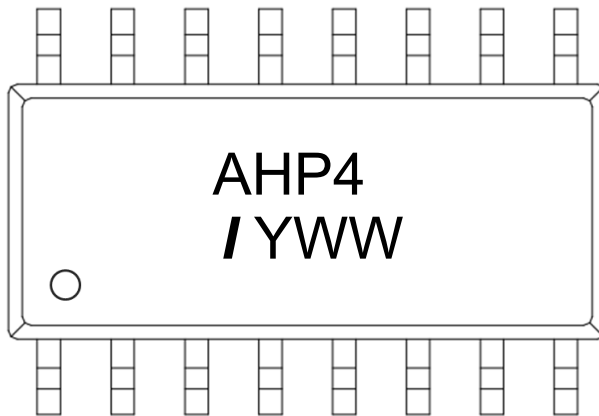
Switching Time Test Circuit

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### ORDER INFORMATION

IS2805-4			
After PN	PN	Description	Packing quantity
None	IS2805-4	Surface Mount Tape & Reel	2000 pcs per reel

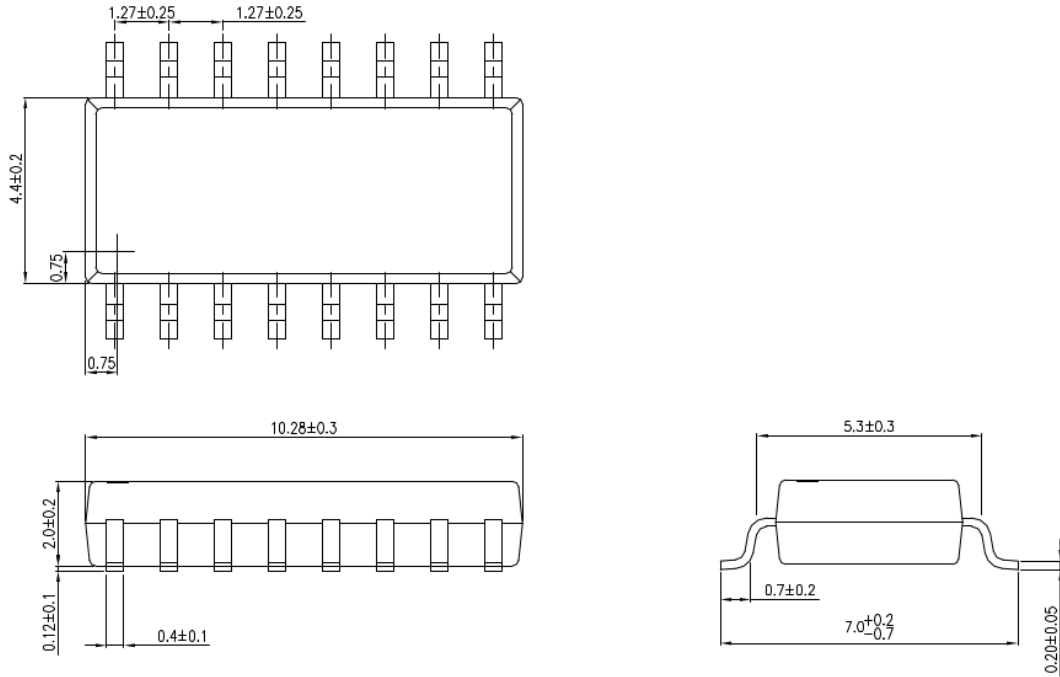
### DEVICE MARKING



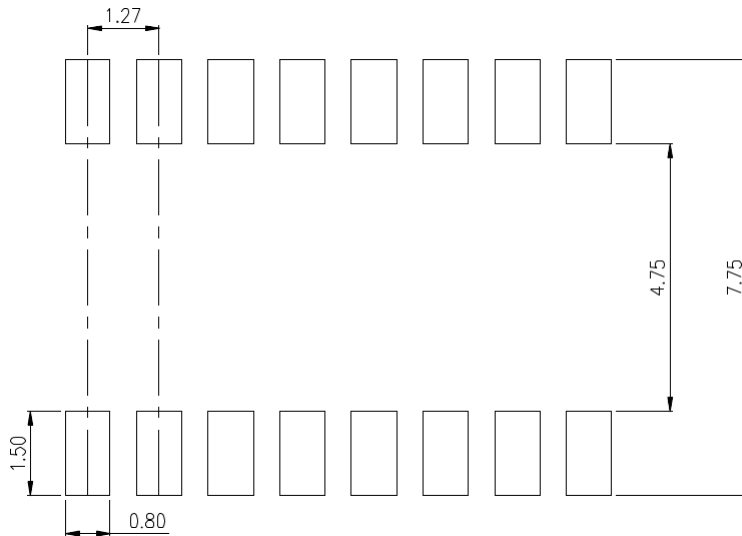
AHP4	IS2805-4
/	Isocom
Y	Year Code (A = 2010, B = 2011, etc.)
WW	2 digit Week Code

## IS2805-4

### PACKAGE DIMENSIONS (mm)

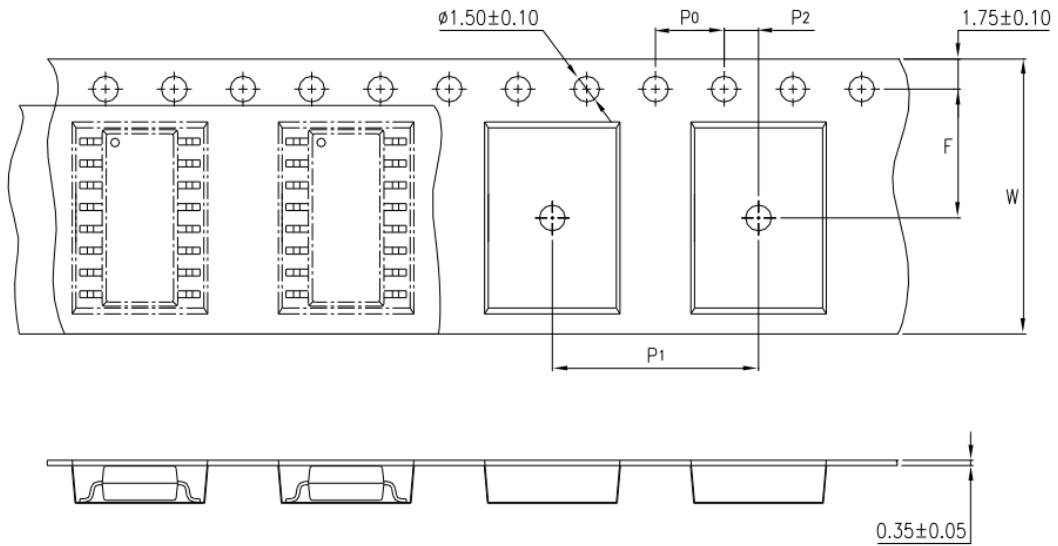


### RECOMMENDED SOLDER PAD LAYOUT (mm)



## IS2805-4

### TAPE AND REEL PACKAGING



Description	Dimension	mm (inch)
Tape Width	W	16 ± 0.3 (0.63)
Pitch of Sprocket Holes	P0	4 ± 0.1 (0.15)
Distance of Compartment	F	7.5 ± 0.1 (0.295)
	P2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P1	12 ± 0.1 (0.472)

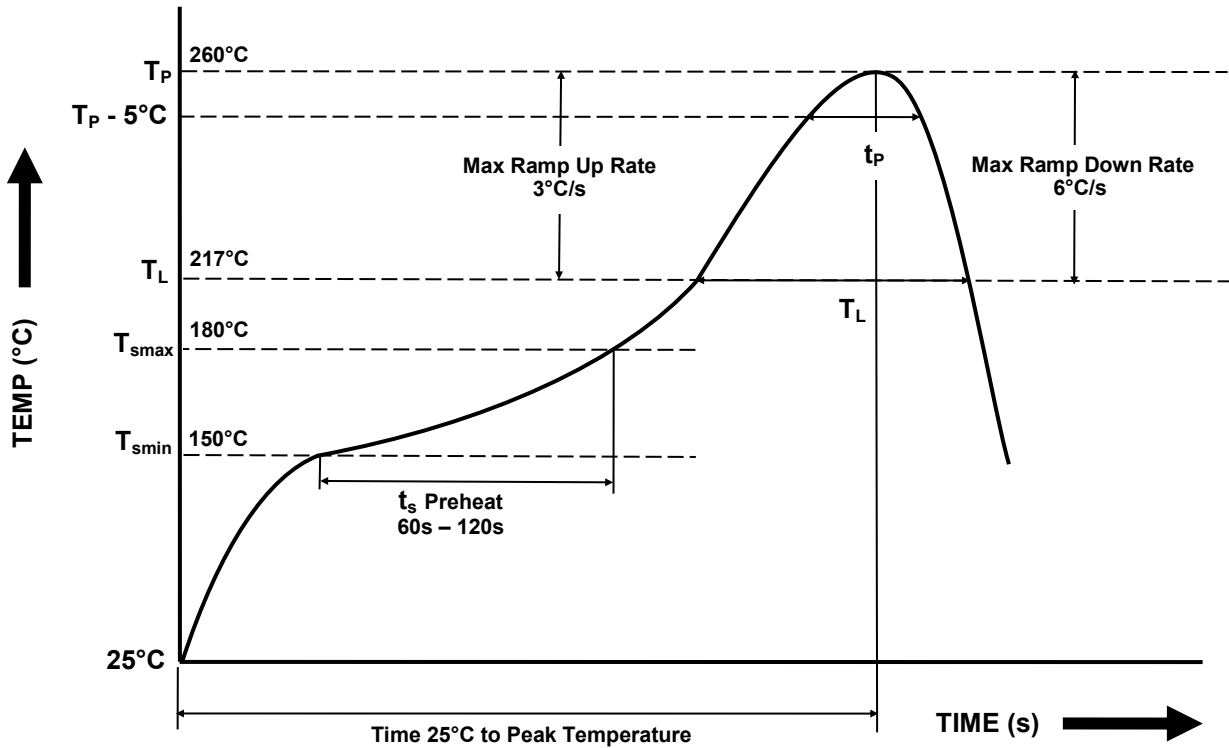




**IS2805-4**

**IR REFLOW SOLDERING TEMPERATURE PROFILE**

One Time Reflow Soldering is Recommended.  
Do not immerse device body in solder paste.



Profile Details	Conditions
<b>Preheat</b> - Min Temperature ( $T_{SMIN}$ ) - Max Temperature ( $T_{SMAX}$ ) - Time $T_{SMIN}$ to $T_{SMAX}$ ( $t_s$ )	150°C 180°C 60s - 120s
<b>Soldering Zone</b> - Peak Temperature ( $T_P$ ) - Liquidous Temperature ( $T_L$ ) - Time within 5°C of Actual Peak Temperature ( $T_P - 5^\circ C$ ) - 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 20s 60s 3°C/s max 3 - 6°C/s
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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