

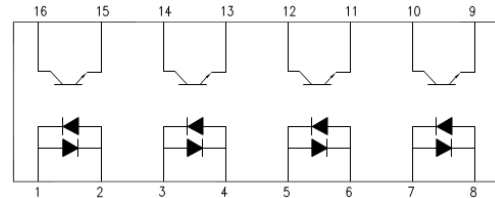


## IS2805-4

### DESCRIPTION

The IS2805-4 is a four channel optically coupled isolator. Each channel consists of 2 infrared emitting diodes connected in reverse parallel 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 110°C
- Pb Free and RoHS Compliant
- UL Approval Pending

### 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<sub>A</sub> = 25°C)

#### Input Diode

Forward Current	±50mA
Power dissipation	65mW

#### Output Transistor

Collector to Emitter Voltage BV <sub>CEO</sub>	80V
Emitter to Collector Voltage BV <sub>ECO</sub>	7V
Collector Current	50mA
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 1UD, 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 mansion,  
36 Tai Yau Street, San Po Kong, Kowloon, Hong Kong.  
Tel: +852 2995 9217 Fax : +852 8161 6292  
e-mail: sales@isocom.com.hk



## IS2805-4

### 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	$C_{IN}$	$V_F = 0\text{V}$ , $f = 1\text{MHz}$		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	$I_{CEO}$	$V_{CE} = 50\text{V}$ , $I_F = 0\text{mA}$			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
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	$C_f$	$V = 0\text{V}$ , $f = 1\text{MHz}$		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	$t_f$	$V_{CE} = 2\text{V}$ , $I_C = \pm 2\text{mA}$ , $R_L = 100\Omega$		4	18	$\mu\text{s}$

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

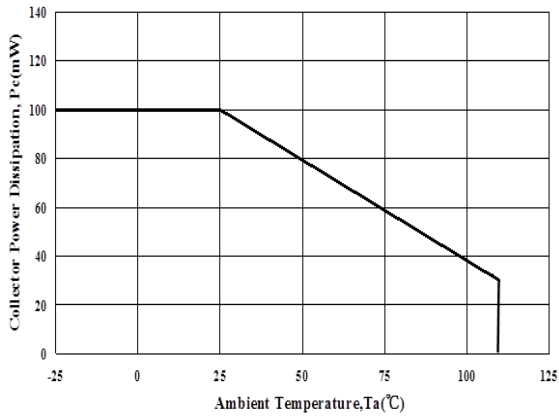


Fig 1 Collector Power Dissipation vs  $T_A$

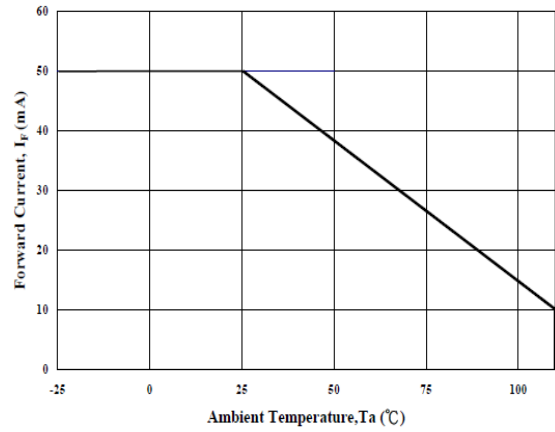


Fig 2 Forward Current vs  $T_A$

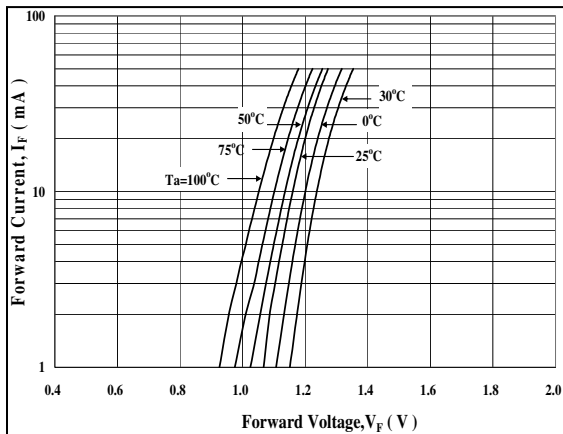


Fig 3 Forward Current vs Forward Voltage

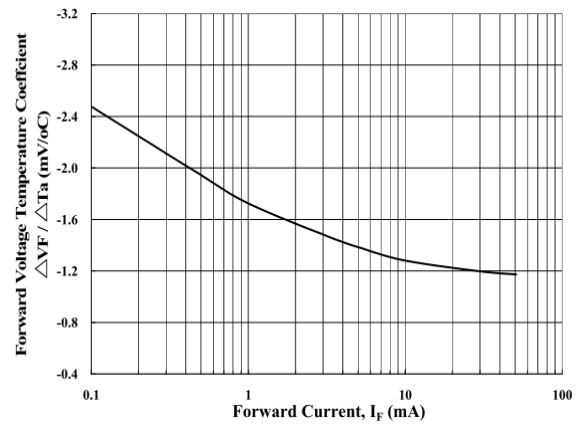


Fig 4 Forward Current Temperature Coefficient vs Forward Current

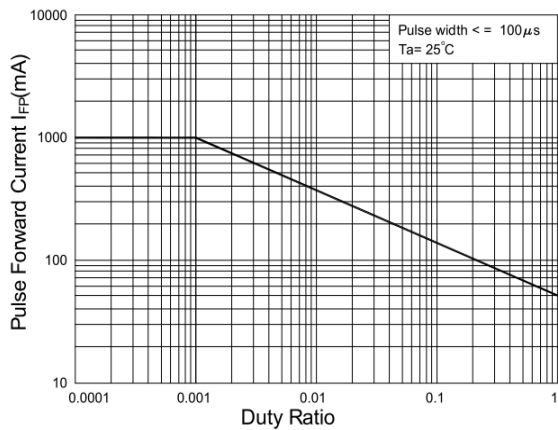


Fig 5 Pulse Forward Current vs Duty Cycle

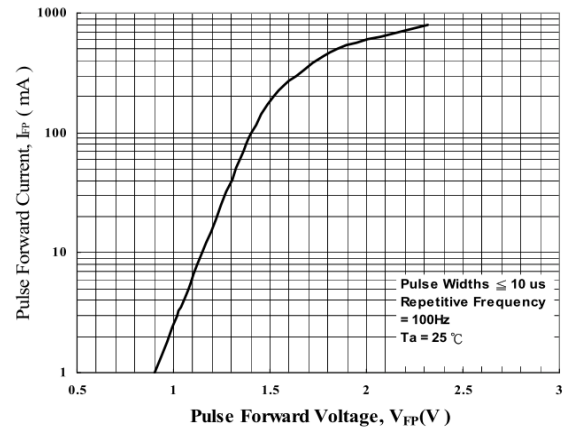
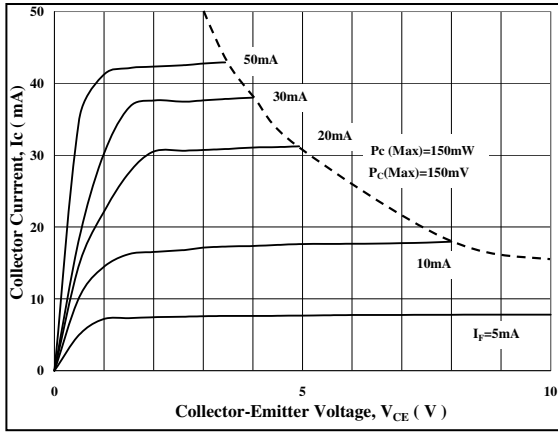
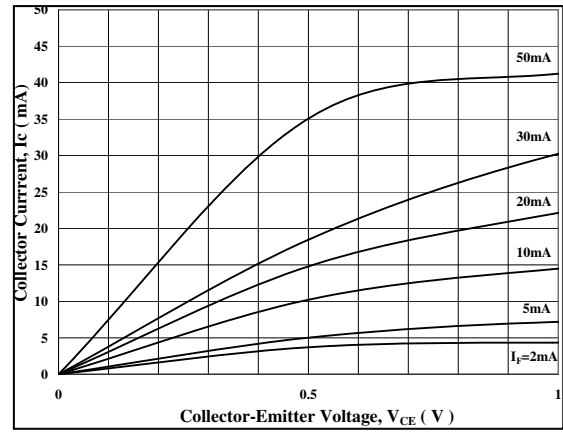


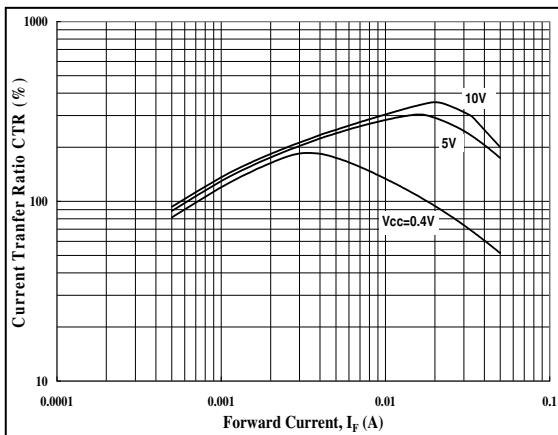
Fig 6 Pulse Forward Current vs Pulse Forward Voltage



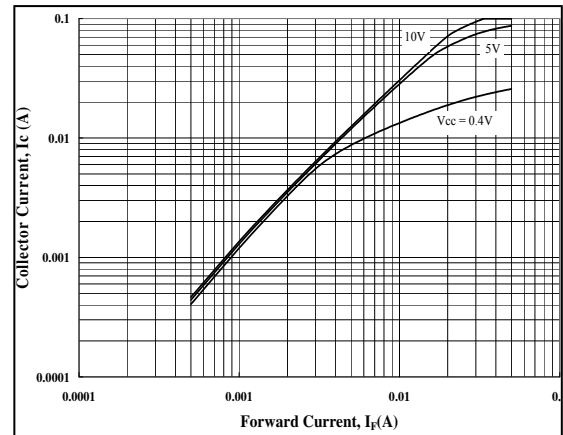
**Fig 7 Collector Current vs Collector-Emitter Voltage**



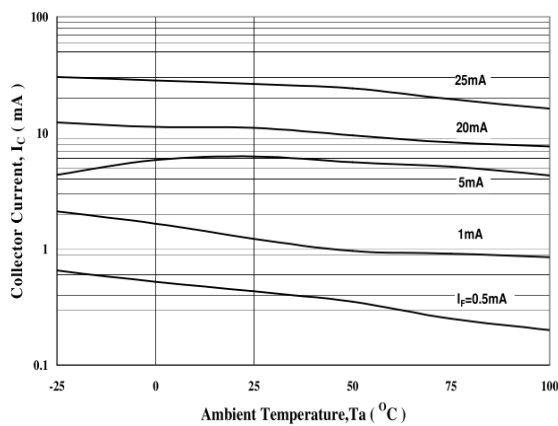
**Fig 8 Collector Current vs Low Collector-Emitter Voltage**



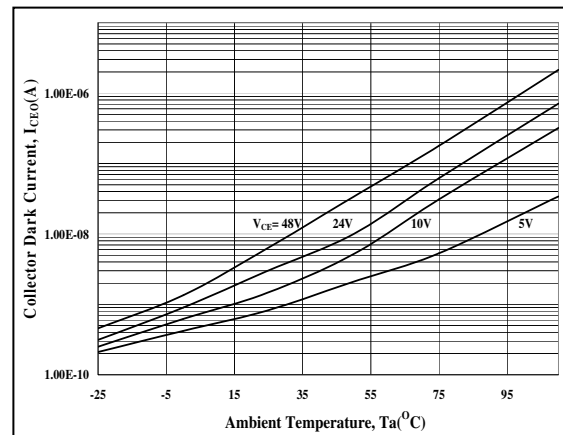
**Fig 9 CTR vs Forward Current**



**Fig 10 Collector Current vs Forward Current**



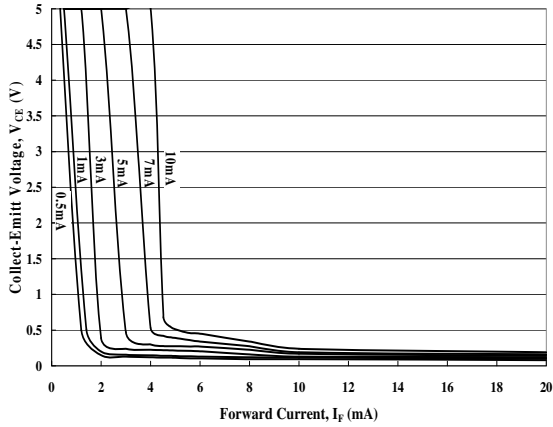
**Fig 11 Collector Current vs  $T_A$**



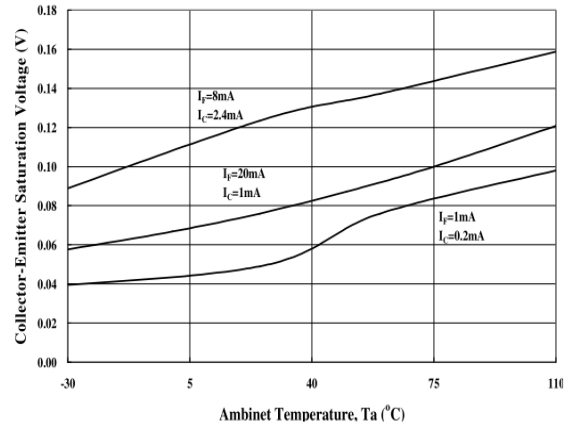
**Fig 12 Collector Dark Current vs  $T_A$**



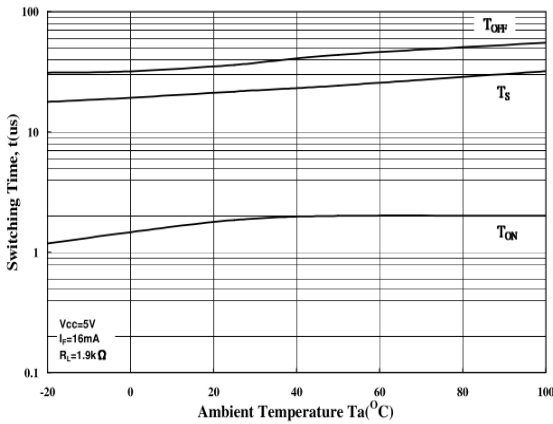
# IS2805-4



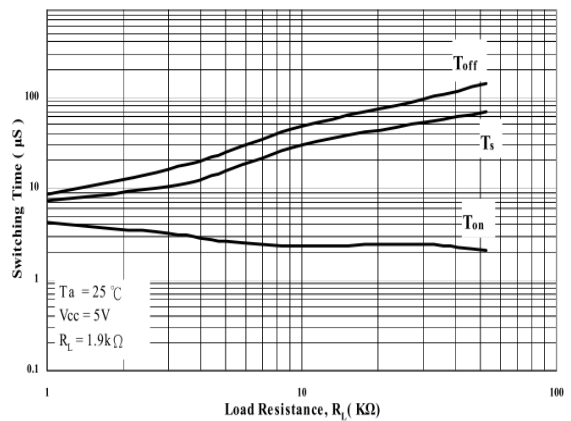
**Fig 13 Collector-Emitter Saturation Voltage vs Forward Current**



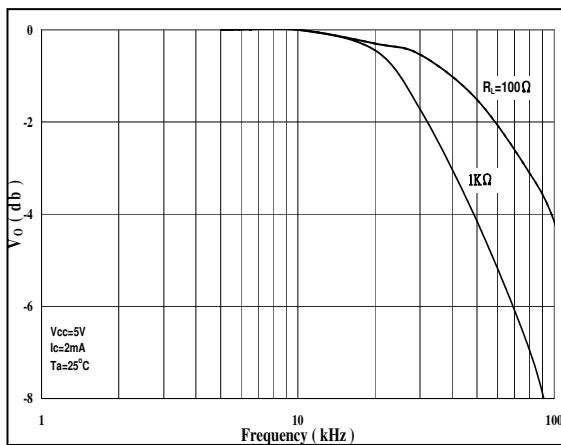
**Fig 14 Collector-Emitter Saturation Voltage vs T<sub>A</sub>**



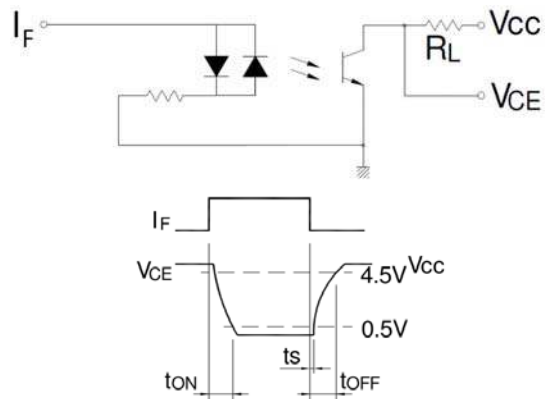
**Fig 15 Switching Time vs T<sub>A</sub>**



**Fig 16 Switching Time vs Load Resistance**



**Fig 11 Frequency Response**



**Switching Time Test Circuit**

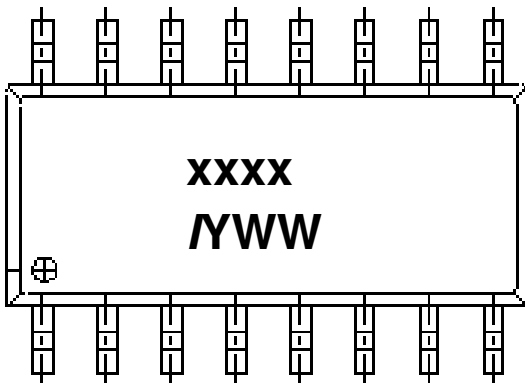


## IS2805-4

### ORDER INFORMATION

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

### Device Marking

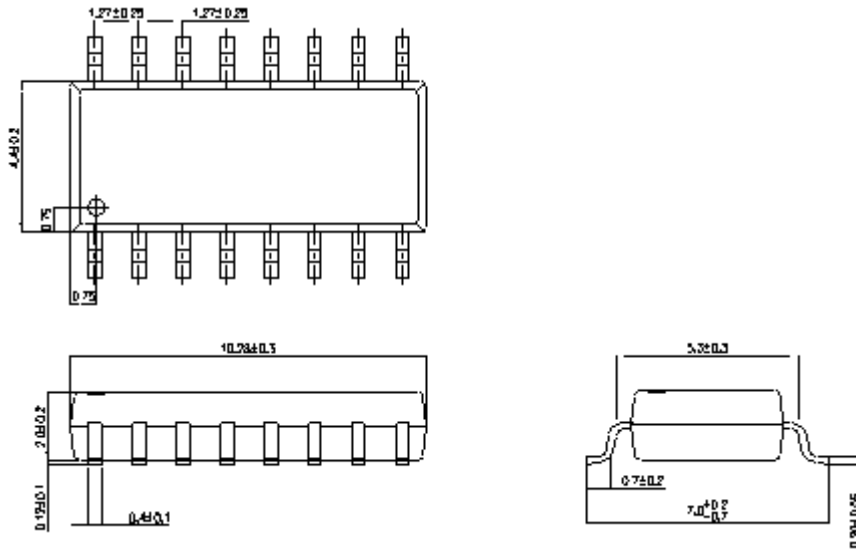


Xxxx denotes Device Part Number  
Y denotes 1 digit Year code  
WW denotes 2 digit Week code  
/ denotes Isocom

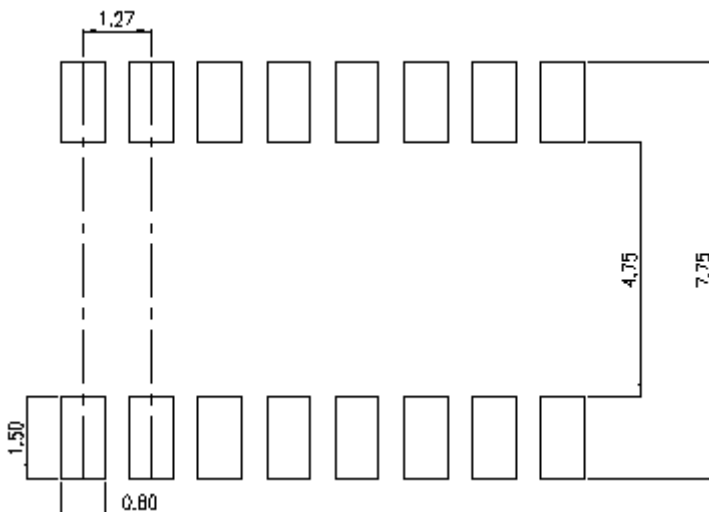


## IS2805-4

### PACKAGE DIMENSIONS (mm)



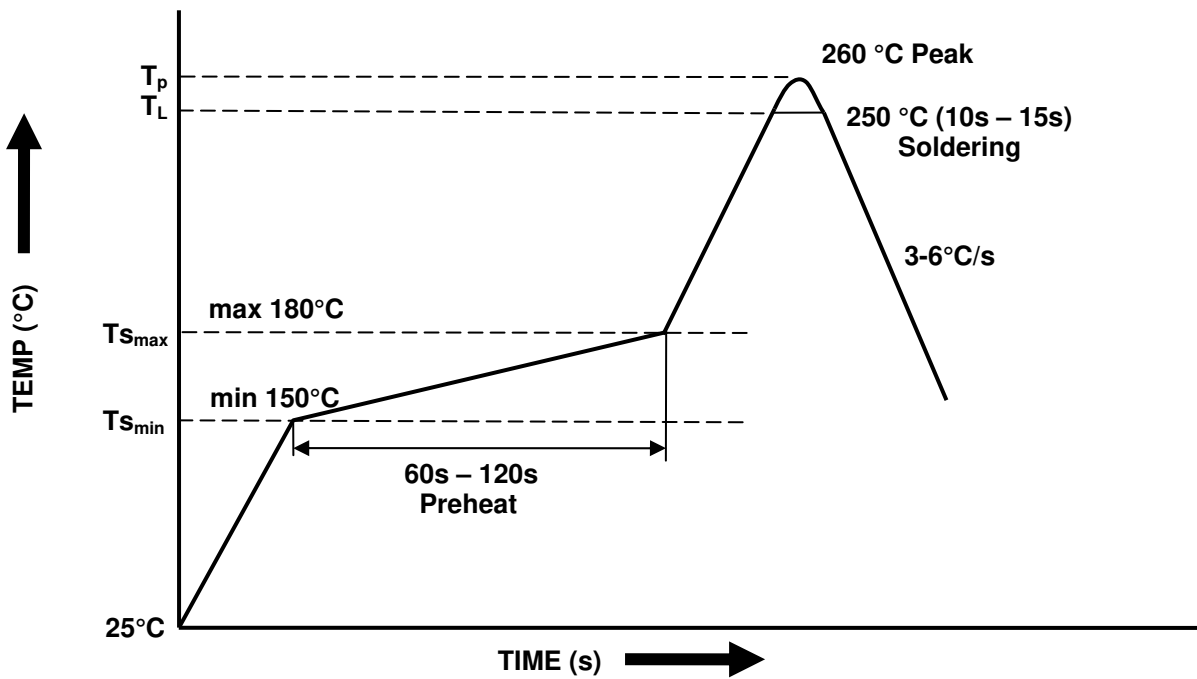
### Recommended Solder Pad Layout (mm)





**IS2805-4**

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



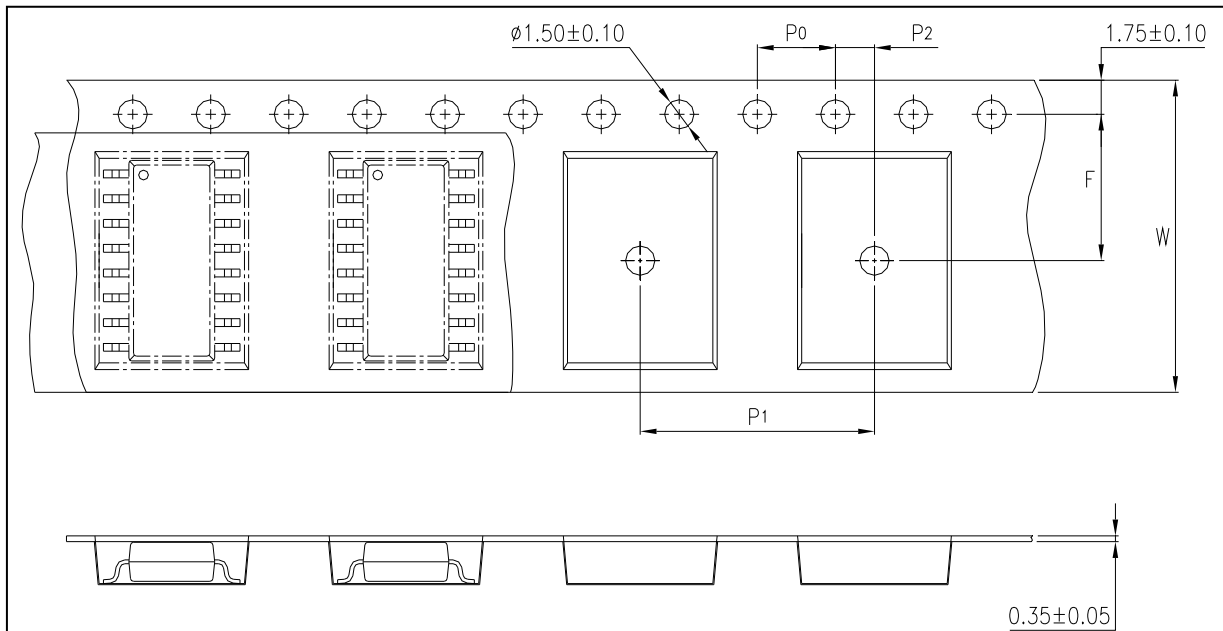
Profile item	Conditions
Preheat	
- Temperature Min (T <sub>Smin</sub> )	150°C
- Temperature Max (T <sub>Smax</sub> )	180°C
- Time (min to max) (ts)	90±30°C
Soldering zone	
- Temperature (T <sub>L</sub> )	250°C
- Time (t <sub>L</sub> )	10~15 sec
Peak Temperature (T <sub>P</sub> )	260°C
Ramp-down rate	3~6°C / sec





## IS2805-4

### Tape and Reel Packaging



Description	Symbol	Dimension in mm (inches)
Tape wide	<b>W</b>	16 ± 0.3 (.47)
Pitch of sprocket holes	<b>P<sub>0</sub></b>	4 ± 0.1 (.15)
Distance of compartment	<b>F</b> <b>P<sub>2</sub></b>	7.5 ± 0.1 (.217) 2 ± 0.1 (.079)
Distance of compartment to compartment	<b>P<sub>1</sub></b>	12 ± 0.1 (.63)

