IS181

DESCRIPTION

The IS181 series of optocoupler consists of an infrared light emitting diode optically coupled to an NPN silicon photo transistor in a space efficient Mini Flat Package.

FEATURES

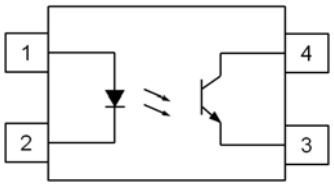
- Low Profile Package
- AC Isolation Voltage 3750V_{RMS}
- CTR Selections Available
- Wide Operating Temperature Range -55°C to +110°C
- Lead Free and RoHS Compliant
- UL File E91231 model “FPT1” and “FPT2”

APPLICATIONS

- Computer Terminals
- Industrial System Controllers
- Measuring Instruments
- Signal Transmission between Systems of Different Potentials and Impedance

ORDER INFORMATION

- Available in Tape and Reel with 3000 pieces per reel



1 Anode
2 Cathode
3 Emitter
4 Collector

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	
Collector to Emitter Voltage BV_{CEO}	80V
Emitter to Collector Voltage BV_{ECO}	6V
Collector Current	50mA
Power Dissipation	150mW
Total Package	
Isolation Voltage	3750V_{RMS}
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 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

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

INPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Forward Voltage	V_F	I_F = 20mA		1.2	1.4	V
Reverse Current	I_R	V_R = 4V			10	µA
Terminal Capacitance	C_t	V = 0V, f = 1KHz		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter Breakdown Voltage	BV_{CEO}	I_C = 0.1mA, I_F =0 mA	80			V
Emitter-Collector Breakdown Voltage	BV_{ECO}	I_E = 10µA, I_F = 0mA	6			V
Collector-Emitter 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	%
		Optional CTR Grades				
		IS181A	80		160	
		IS181B	130		260	
		IS181C	200		400	
		IS181D	300		600	
		IS181GR	100		300	
		IS181GB	100		600	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	I_F = 20mA, I_C = 1mA			0.2	V
Floating Capacitance	C_f	V = 0V, f = 1MHz		0.6	1	pF
Output Rise Time	t_r	V_{CE} = 2V, Ic = 2mA, R_L = 100Ω		4	18	µs
Output Fall Time	t_f	V_{CE} = 2V, Ic = 2mA, R_L = 100Ω		3	18	µs

ISOLATION

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Insulation Voltage	V_{ISO}	RH = 40% to 60%, t = 1 min,	3750			V
Input - Output Resistance	R_{I-O}	V_{I-O} = 500VDC	$5x10^{10}$			Ω

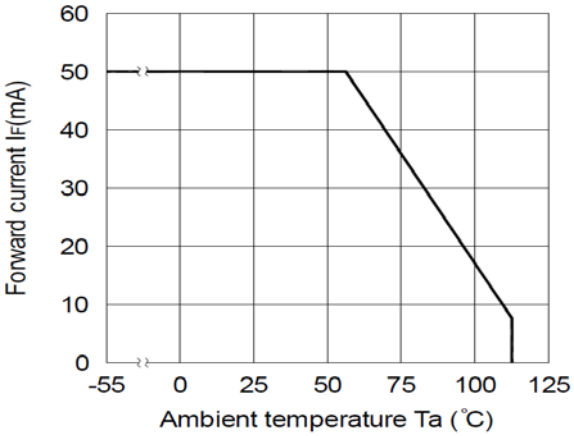


Fig 1 Forward Current vs T_A

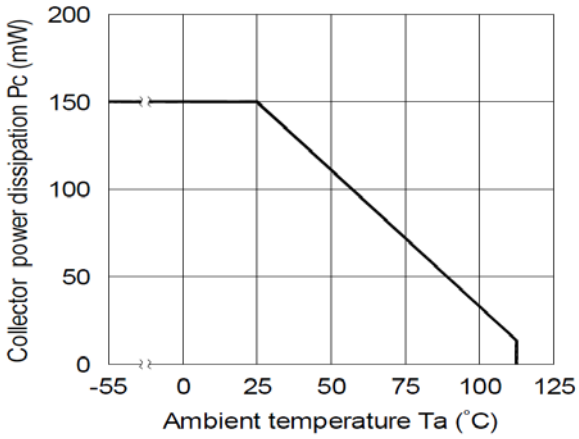


Fig 2 Collector Power Dissipation vs T_A

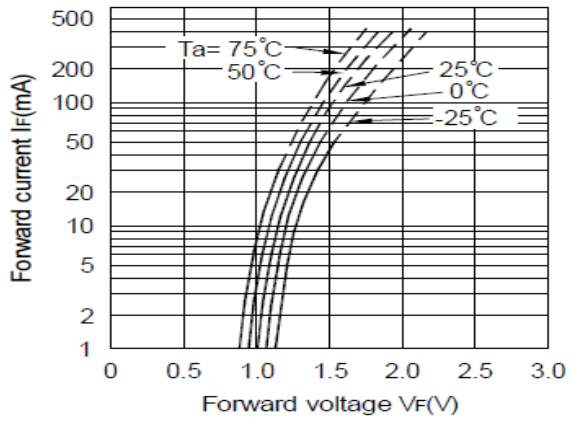


Fig 3 Forward Current vs Forward Voltage

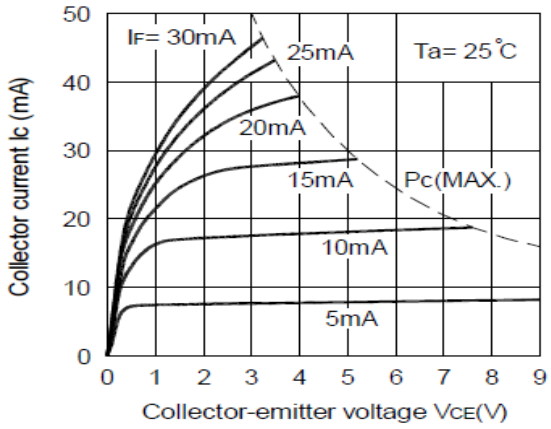


Fig 4 Collector Current vs Collector-Emitter Voltage

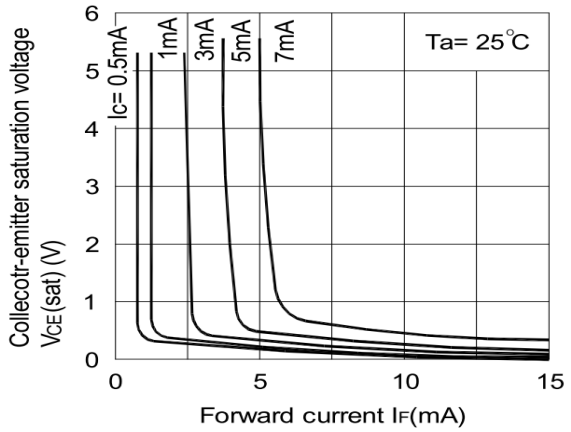


Fig 5 Collector-Emitter Saturation Voltage vs Forward Current

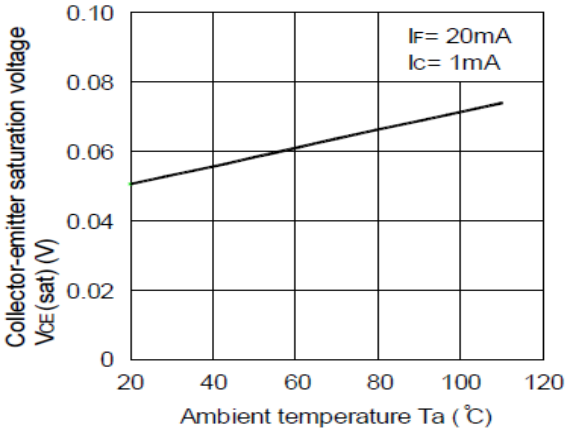


Fig 6 Collector-Emitter Saturation Voltage vs T_A

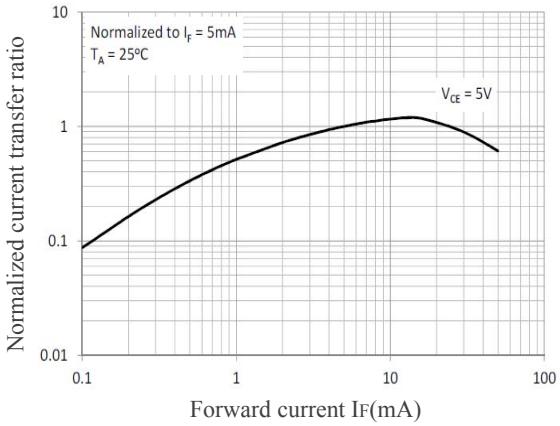


Fig 7 Normalized Current Transfer Ratio vs Forward Current

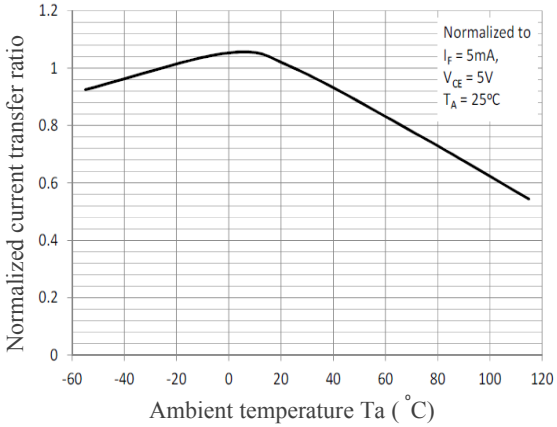


Fig 8 Normalized Current Transfer Ratio vs T_A

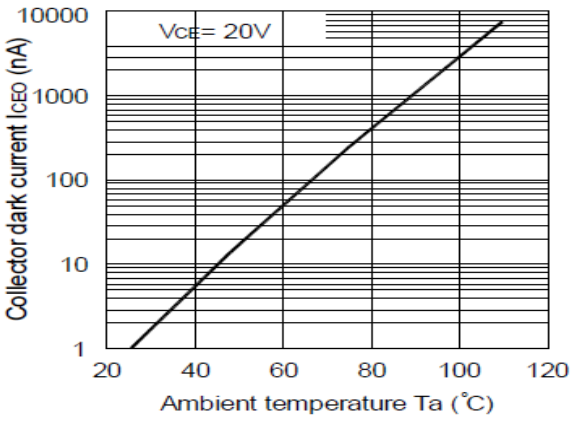


Fig 9 Collector Dark Current vs T_A

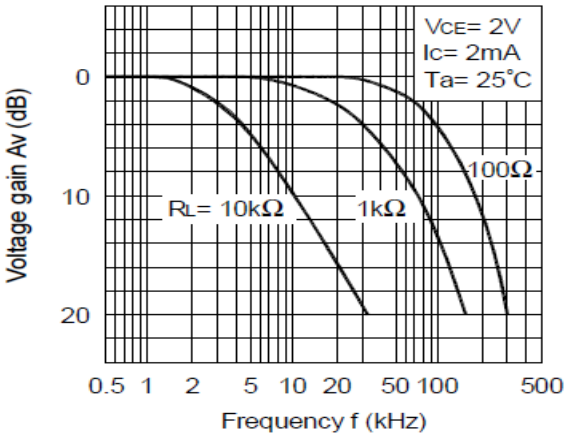


Fig 10 Frequency response

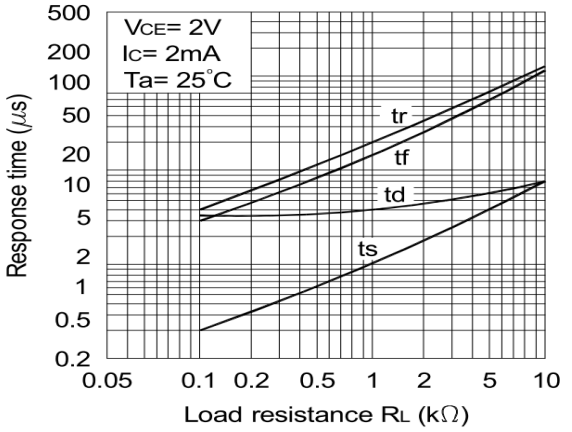
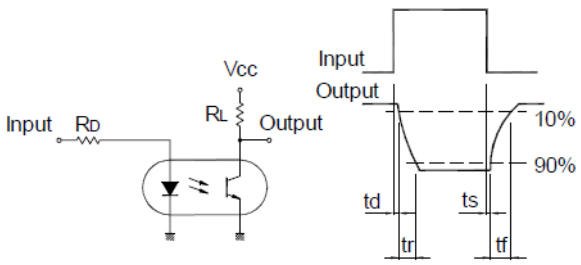


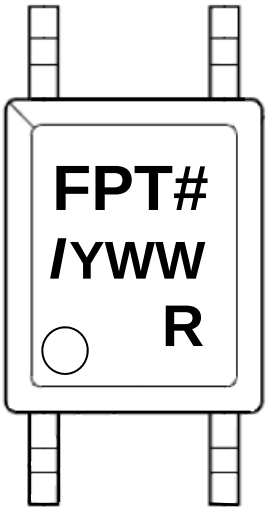
Fig 11 Response Time vs Load Resistance



ORDER INFORMATION

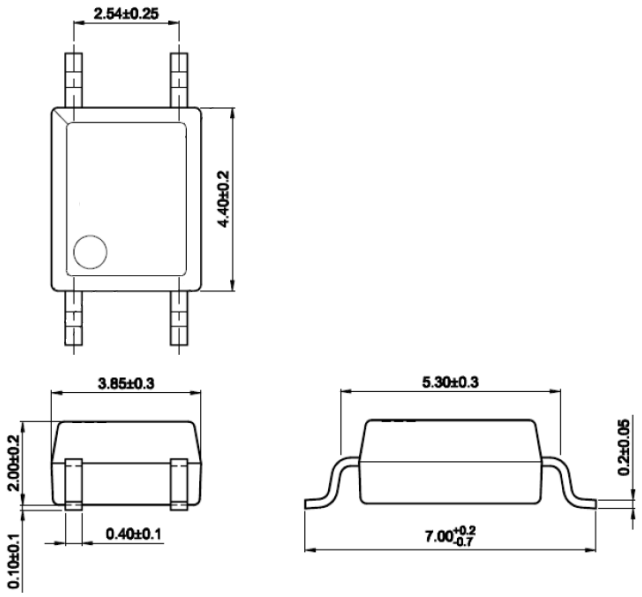
IS181			
After PN	**PN**	**Description**	**Packing quantity**
None	IS181	Surface Mount Tape & Reel	3000 pcs per reel
Any CTR Grade	IS181A, IS181B, IS181C, IS181D, IS181GR, IS181GB	Surface Mount Tape & Reel	3000 pcs per reel

DEVICE MARKING

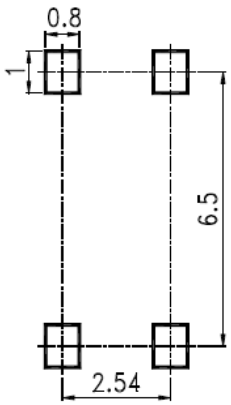


FPT#	denotes Device Part Number where “#” is internal control number which can be “1” or ‘2”
I	denotes Isocom
Y	denotes 1 digit Year code
WW	denotes 2 digit Week code
R	denotes CTR Grade

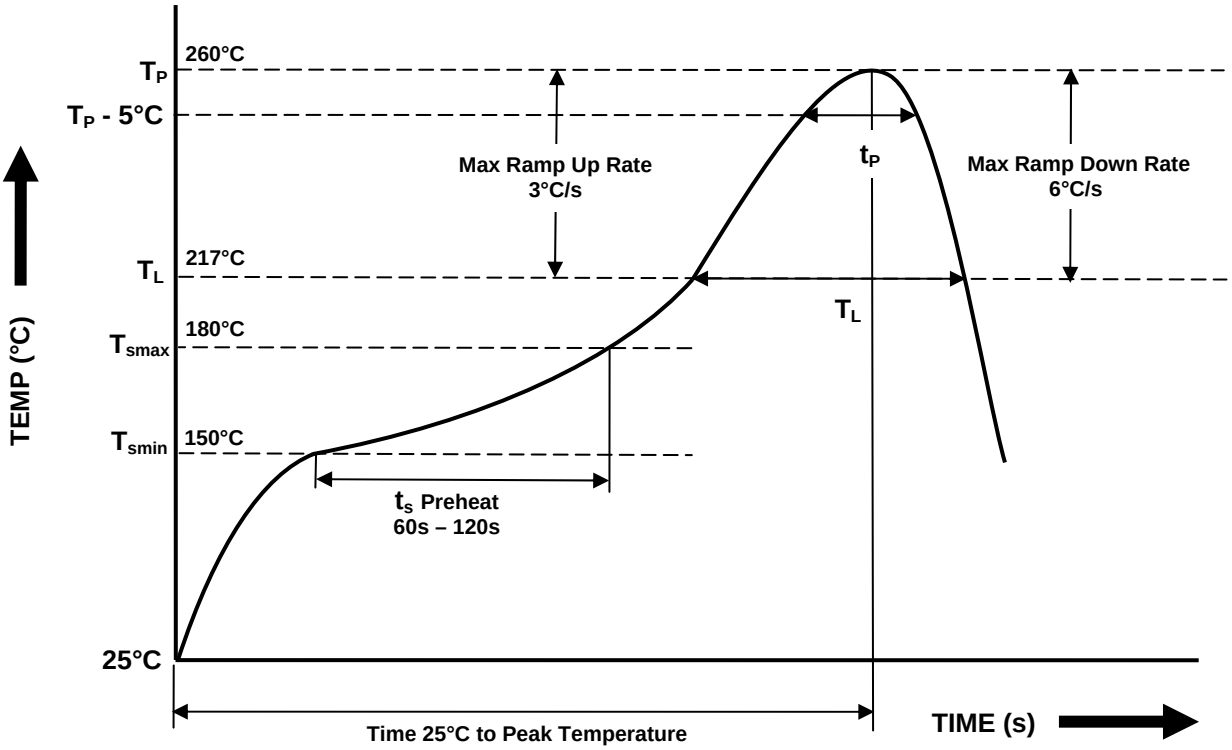
PACKAGE DIMENSIONS (mm)



RECOMMENDED SOLDER PAD LAYOUT (mm)

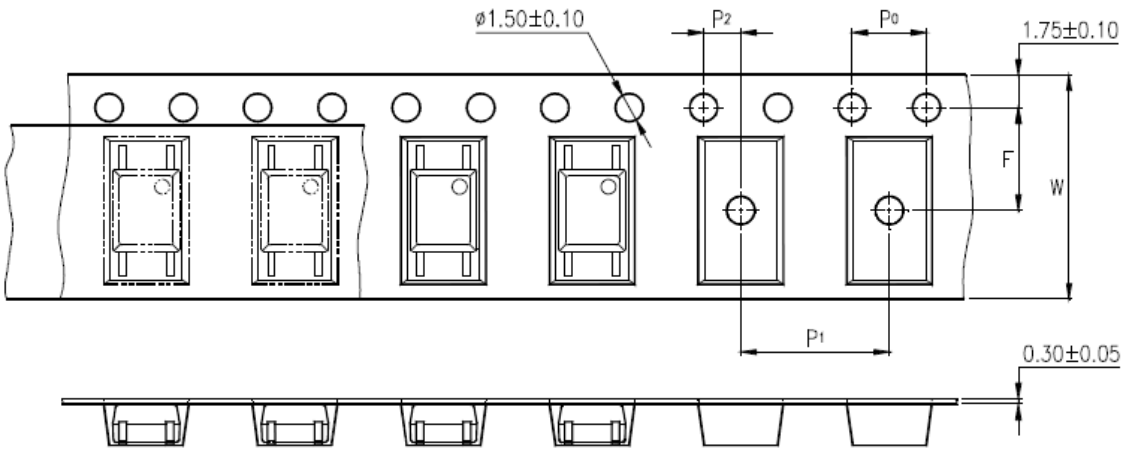


IR REFLOW SOLDERING TEMPERATURE PROFILE
(One Time Reflow Soldering is Recommended)



Profile Details	Conditions
Preheat	
- Min Temperature (T_{SMIN})	150°C
- Max Temperature (T_{SMAX})	180°C
- Time T_{SMIN} to T_{SMAX} (t_s)	60s - 120s
Soldering Zone	
- Peak Temperature (T_P)	260°C
- Liquidous Temperature (T_L)	217°C
- Time within 5°C of Actual Peak Temperature (T_P – 5°C)	20s
- Time maintained above T_L (t_L)	60s
- Ramp Up Rate (T_L to T_P)	3°C/s max
- Ramp Down Rate (T_P to T_L)	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

TAPE AND REEL PACKAGING



Description	Symbol	Dimension mm (inch)
Tape Width	W	12 ± 0.3 (0.47)
Pitch of Sprocket Holes	P_0	4 ± 0.1 (0.15)
Distance of Compartment to Sprocket Holes	F	5.5 ± 0.1 (0.217)
	P_2	2 ± 0.1 (0.079)
Distance of Compartment to Compartment	P_1	8 ± 0.1 (0.315)

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- When requiring a device for any ”specific” application, please contact our sales for advice.

- The contents described herein are subject to change without prior notice.

- Do not immerse device body in solder paste.

ISOCOM
COMPONENTS

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