

IS127

DESCRIPTION

The IS127 is an optically coupled isolator consisting of an infrared light emitting diode and a high voltage NPN silicon photo darlington which has an integral base-emitter resistor to optimise switching speed and elevated temperature characteristics in a space efficient Mini Flat package.

FEATURES

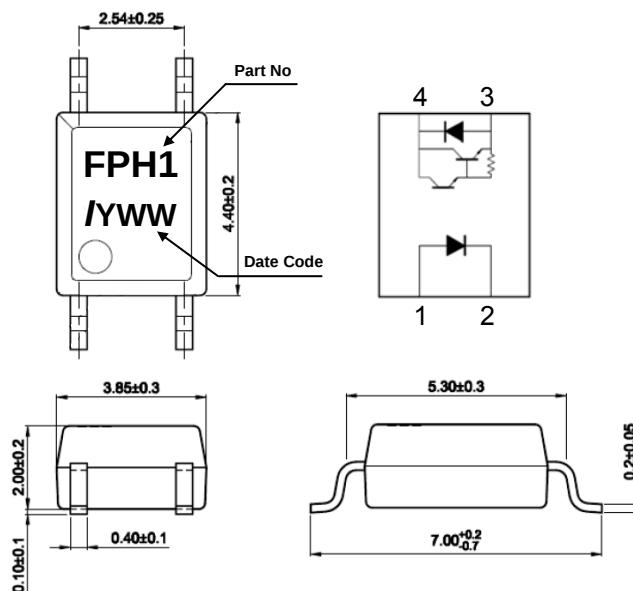
- Low Profile Package
- AC Isolation Voltage 3750V_{RMS}
- CTR Minimum 1000%
- High Collector-Emitter Voltage V_{CEO} 300V
- Wide Operating Temperature Range -55°C to +110°C
- Lead Free and RoHS Compliant
- UL File E91231 Package Code "FPH1"

APPLICATIONS

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

ORDER INFORMATION

- Available in Tape and Reel with 750 pieces per reel



ABSOLUTE MAXIMUM RATINGS

Input Diode

Forward Current	50mA
Reverse Voltage	6V
Power dissipation	70mW

Output Transistor

Collector to Emitter Voltage BV _{CEO}	300V
Emitter to Collector Voltage BV _{ECO}	0.1V
Collector Current	150mA
Power Dissipation	150mW

Total Package

Operating Temperature	-55 to +110 °C
Storage Temperature	-55 to +150 °C
Total Power Dissipation	170mW
Lead Soldering Temperature (for 10s)	260°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	$I_F = 10\text{mA}$		1.2	1.4	V
Reverse Leakage	I_R	$V_R = 4\text{V}$			10	μA
Terminal Capacitance	C_t	$V = 0\text{V}, f = 1\text{KHz}$		30	250	pF

OUTPUT

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector-Emitter breakdown Voltage	BV_{CEO}	$I_C = 0.1\text{mA}, I_F = 0\text{mA}$	300			V
Emitter-Collector breakdown Voltage	BV_{ECO}	$I_E = 10\mu\text{A}, I_F = 0\text{mA}$	0.1			V
Collector-Emitter Dark Current	I_{CEO}	$V_{CE} = 200\text{V}, I_F = 0\text{mA}$			200	nA

COUPLED

Parameter	Symbol	Test Condition	Min	Typ.	Max	Unit
Current transfer ratio	CTR	$I_F = 1\text{mA}, V_{CE} = 2\text{V}$	1000			%
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 100\text{mA}$			1.2	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	5×10^{10}			Ω
Output Rise Time	t_r	$V_{CE} = 2\text{V}, I_C = 20\text{mA},$ $R_L = 100\Omega$		100	300	μs
Output Fall Time	t_f	$V_{CE} = 2\text{V}, I_C = 20\text{mA},$ $R_L = 100\Omega$		20	100	μs

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

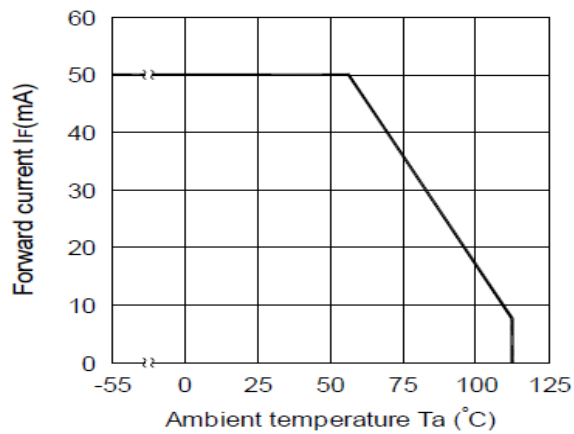


Fig 1 Forward Current vs T_A

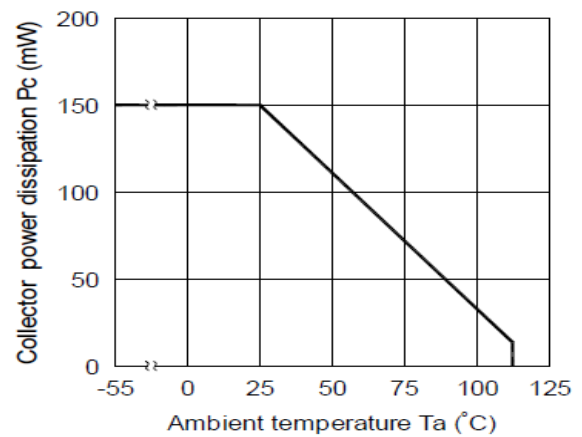


Fig 2 Collector Power Dissipation vs T_A

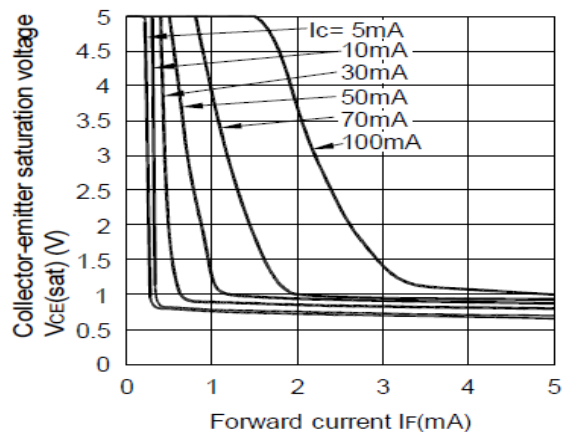


Fig 3 Collector-emitter Saturation Voltage vs Forward Current

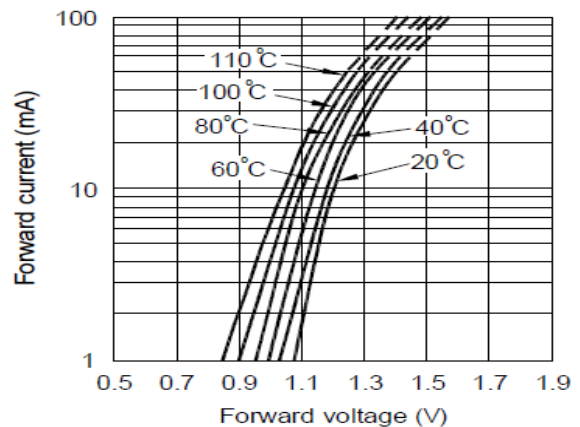


Fig 4 Forward Current vs Forward Voltage

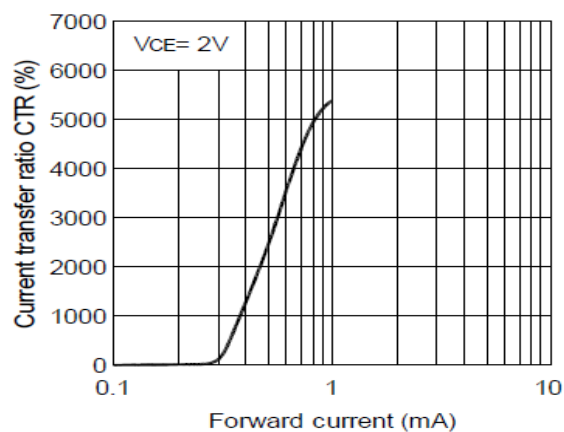


Fig 5 Current Transfer Ratio vs Forward Current

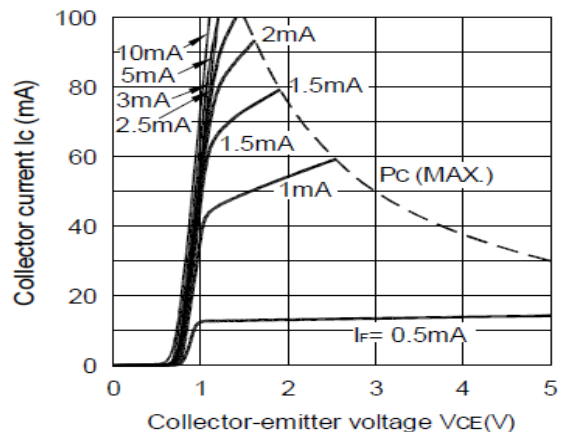


Fig 6 Collector Current vs Collector-Emitter Voltage



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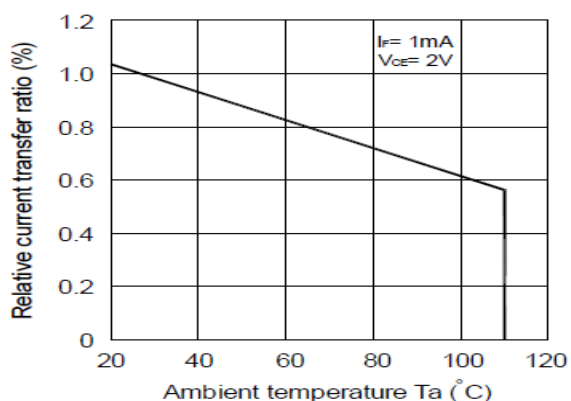


Fig 7 Relative CTR vs T_A

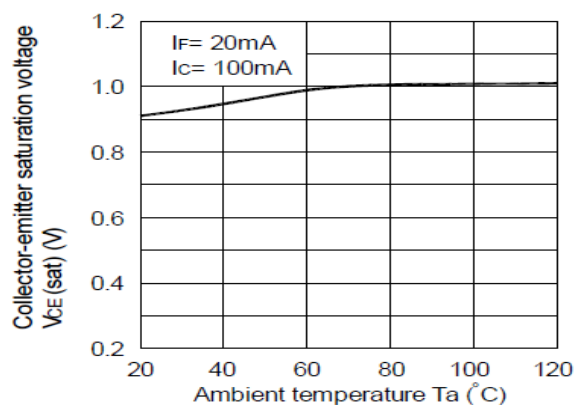


Fig 8 Collector-Emitter Saturation Voltage vs T_A

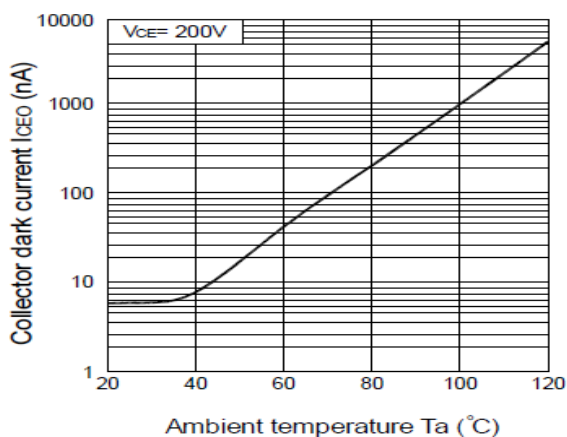


Fig 9 Collector Dark Current vs T_A

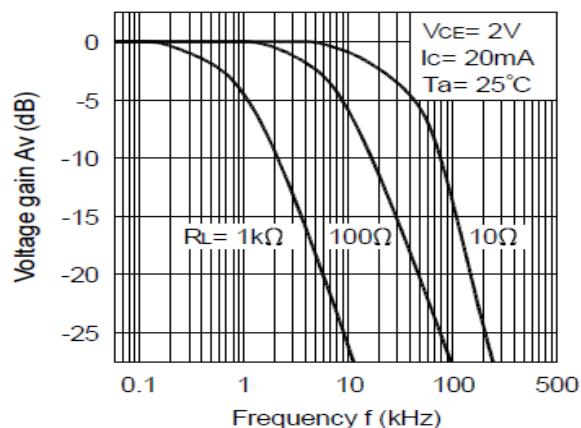


Fig 10 Frequency Response

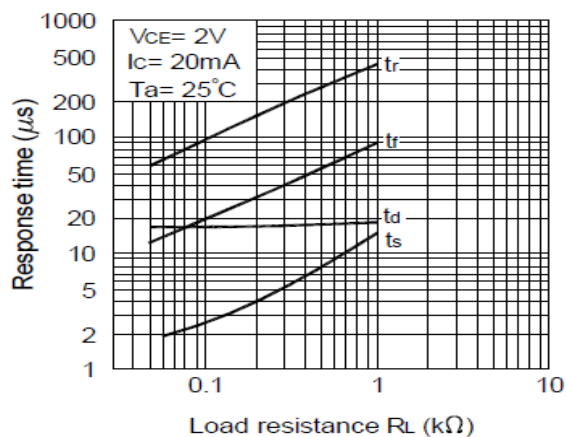
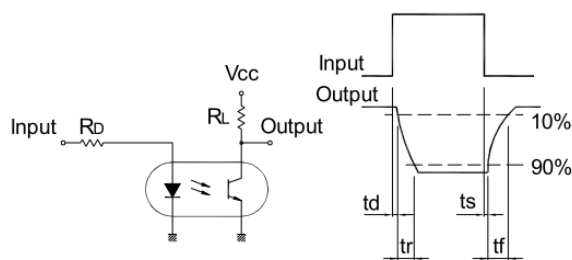


Fig 11 Response Time vs Load Resistance



Response Time Test Circuit



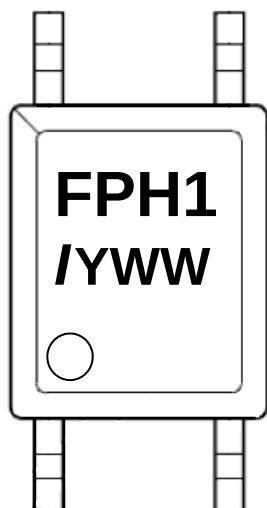
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STANDARD PACKING QUANTITY

IS127			
After PN	PN	Description	Packing quantity
None	IS127	Surface Mount Tape & Reel	750 pcs per reel

DEVICE MARKING

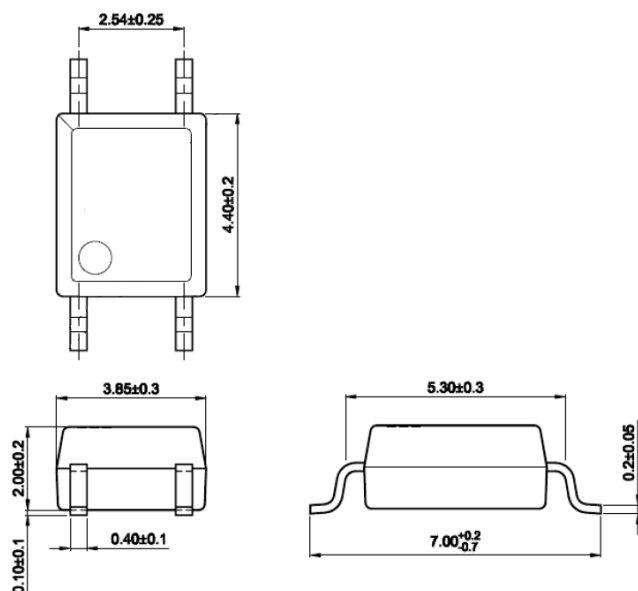


FPH1 denotes Device Part Number where “#” is internal control number
/ denotes Isocom
Y denotes 1 digit Year code
WW denotes 2 digit Week code

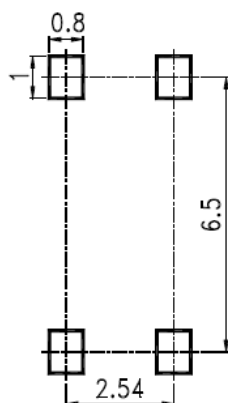


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PACKAGE DIMENSIONS (mm)



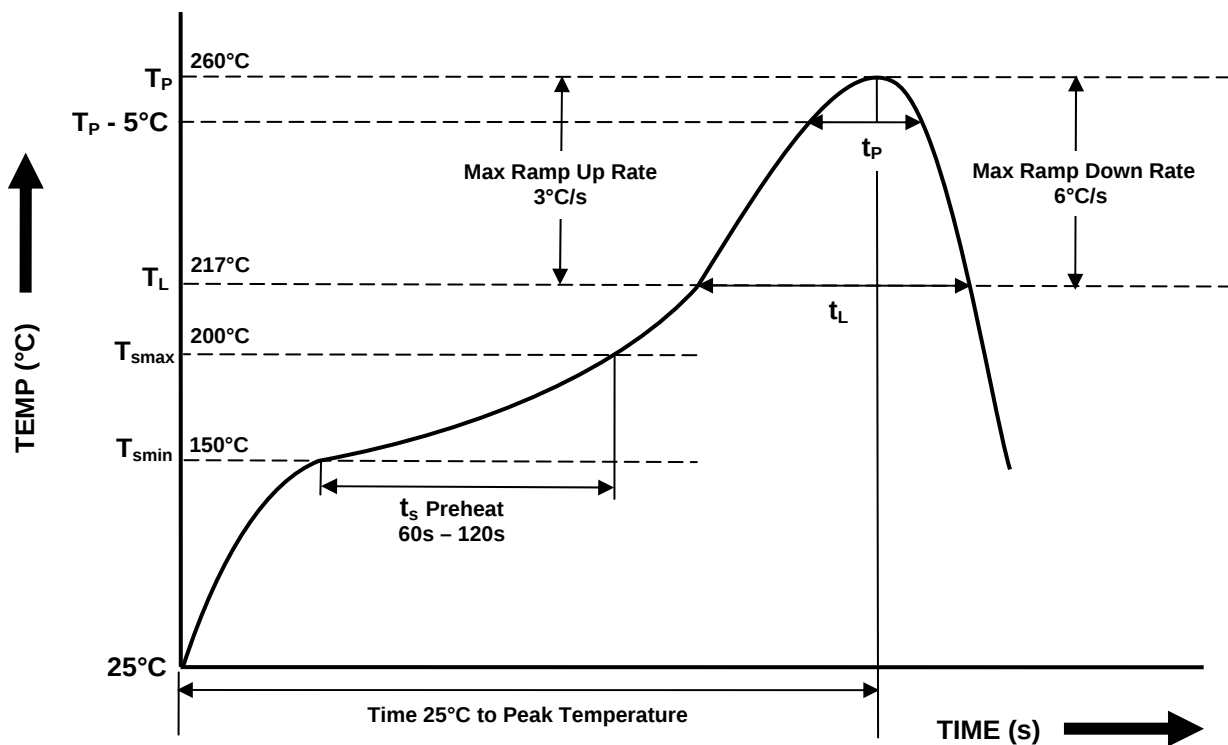
RECOMMENDED SOLDER PAD LAYOUT (mm)





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

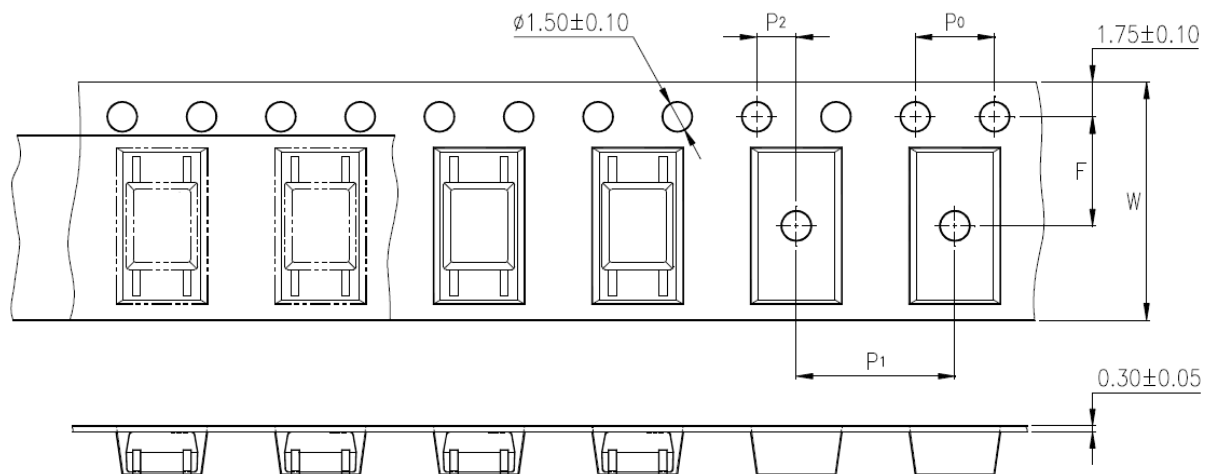


Profile Details	Conditions
Preheat - Min Temperature (T_{smin}) - Max Temperature (T_{smax}) - Time T_{smin} to T_{smax} (t_s)	150°C 200°C 60s - 120s
Soldering Zone - Peak Temperature (T_P) - Liquidous Temperature (T_L) - Time within 5°C of Actual Peak Temperature ($T_P - 5^\circ\text{C}$) - Time maintained 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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TAPE AND REEL PACKAGING (mm)



Description	Symbol	Dimensions in mm (inches)
Tape wide	W	12 ± 0.3 (.47)
Pitch of sprocket holes	P_0	4 ± 0.1 (.15)
Distance of compartment	F	5.5 ± 0.1 (.217)
Distance of compartment	P_2	2 ± 0.1 (.079)
Distance of compartment to compartment	P_1	8 ± 0.1 (.315)



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NOTES :

- Isocom is continually improving the quality, reliability, function or design and Isocom reserves the right to make changes without further notices.
- The products shown in this publication are designed for the general use in electronic applications such as office automation equipment, communications devices, audio/visual equipment, electrical application and instrumentation.
- For equipment/application where high reliability or safety is required, such as space applications, nuclear power control equipment, medical equipment, etc., please contact our sales representatives.
- 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.