

Description

The IS127 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar high voltage darlington phototransistor detector in a plastic SOP4 package.

With the robust coplanar double mold structure, IS127 series provide the most stable isolation feature.

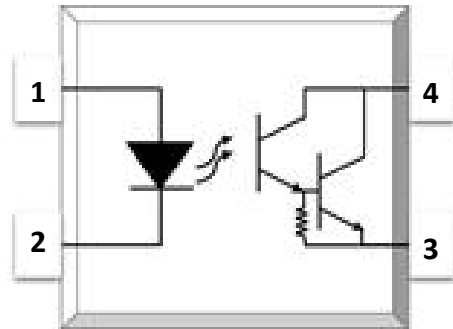
Features

- High isolation 3750 VRMS
 - CTR flexibility available see order information
 - DC input with transistor output
 - Operating temperature range - 55 °C to 100 °C
 - REACH compliance
 - Halogen free
 - MSL class 1
 - Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC - GB4943.1, GB8898
 - cUL- CSA Component Acceptance
- Service Notice No. 5A

Applications

- Sequence controller
- Telephone/FAX
- System appliances, measuring instrument
- Programmable logic controller

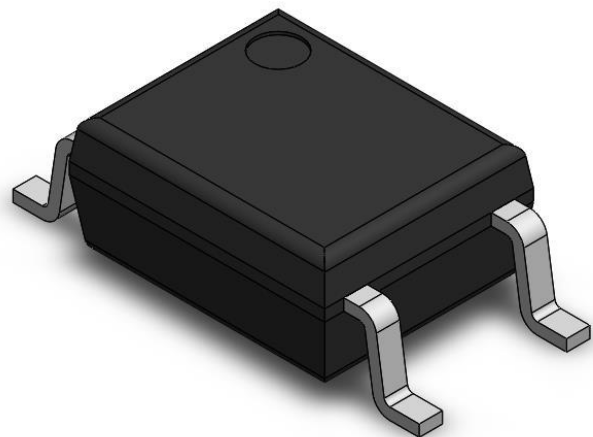
SCHEMATIC

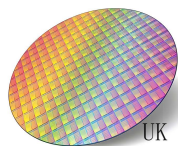


PIN DEFINITION

1. Anode
2. Cathode
3. Emitter
4. Collector

PACKAGE OUTLINE





ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT	NOTE
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current	I_{FP}	1	A	1
Reverse Voltage	V_R	6	V	
Input Power Dissipation	P_I	100	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	350	V	
Emitter - Collector Voltage	V_{ECO}	0.1	V	
Collector Current	I_C	150	mA	
Output Power Dissipation	P_O	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	200	mW	
Isolation Voltage	V_{iso}	3750	V _{rms}	2
Operating Temperature	T_{opr}	-55~110	°C	
Storage Temperature	T_{stg}	-55~125	°C	
Soldering Temperature	T_{sol}	260	°C	

Note 1. 100μs pulse, 100Hz frequency

Note 2. AC For 1 Minute, R.H. = 40 ~ 60%

ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

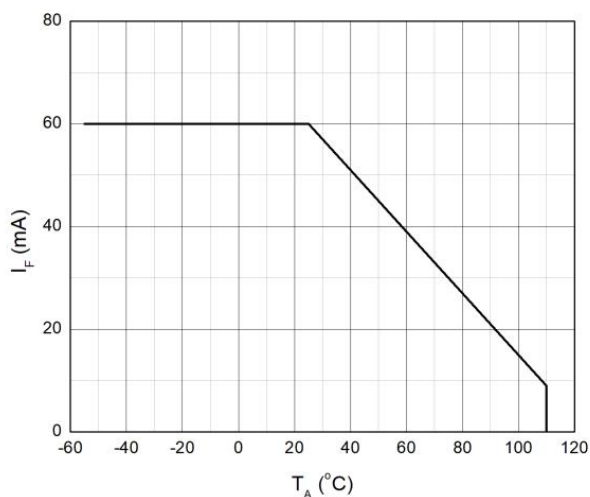
PARAMETER	SYMBOL	MIN	TYP.	MAX.	UNIT	TEST CONDITION	NOTE
INPUT							
Forward Voltage	V _F	-	1.24	1.4	V	IF=10mA	
Reverse Current	I _R	-	-	10	μA	VR=6V	
Input Capacitance	C _{in}	-	10	-	pF	V=0, f=1kHz	
OUTPUT							
Collector Dark Current	I _{CEO}	-	-	200	nA	VCE=200V, IF=0	
Collector-Emitter Breakdown Voltage	BV _{CEO}	350	-	-	V	IC=0.1mA, IF=0	
Emitter-Collector Breakdown Voltage	BV _{ECO}	0.1	-	-	V	IE=0.1mA, IF=0	
TRANSFER CHARACTERISTICS							
Current Transfer Ratio	CTR	1000	-	15000	%	IF=1mA, VCE=2V	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	-	-	1.2	V	IF=20mA, IC=100mA	
Isolation Resistance	R _{ISO}	10 ¹²	10 ¹⁴	-	Ω	DC500V, 40 ~ 60% R.H.	
Floating Capacitance	C _{IO}	-	0.6	1	pF	V=0, f=1MHz	
Cut-off Frequency	f _c	-	6	-	kHz	VCE=2V, IC=2mA RL=100Ω, -3dB	3
Response Time (Rise)	t _r	-	91.5	300	μs	VCE=2V, IC=20mA RL=100Ω	4
Response Time (Fall)	t _f	-	21.4	100	μs		4

Note 3. Fig.12&13

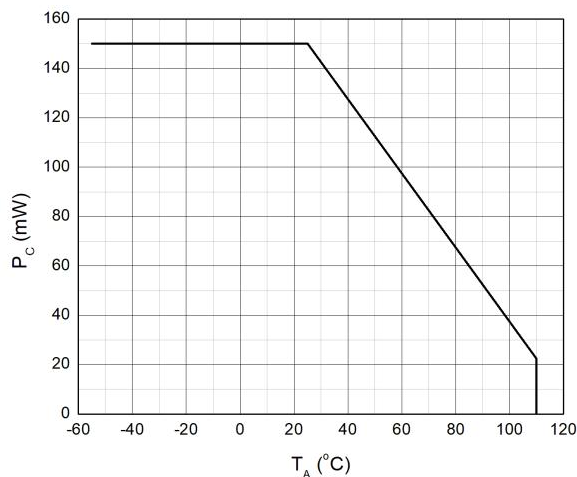
Note 4. Fig.14

CHARACTERISTIC CURVES

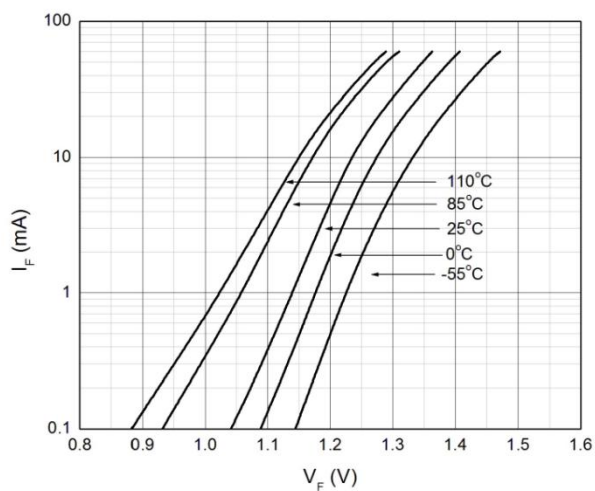
**Fig.1 Forward Current
vs. Ambient Temperature**



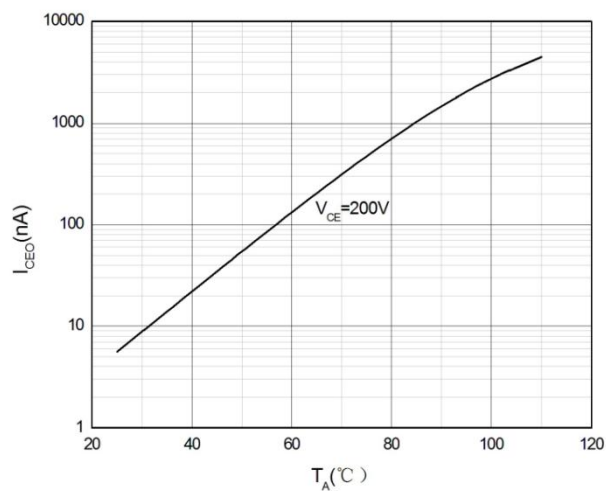
**Fig.2 Collector Power Dissipation
vs. Ambient Temperature**



**Fig.3 Forward Current
vs. Forward Voltage**

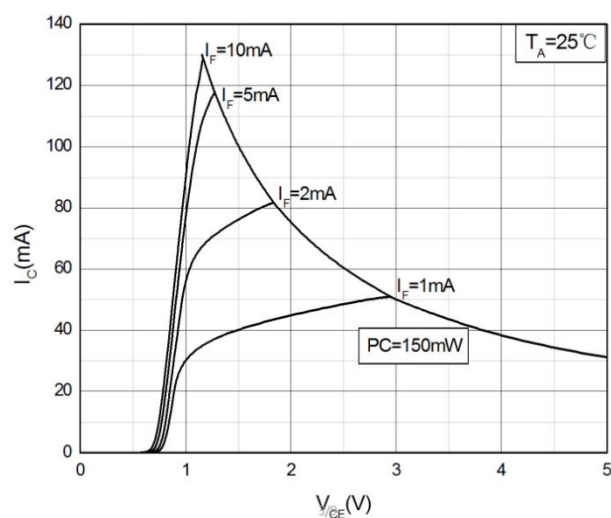
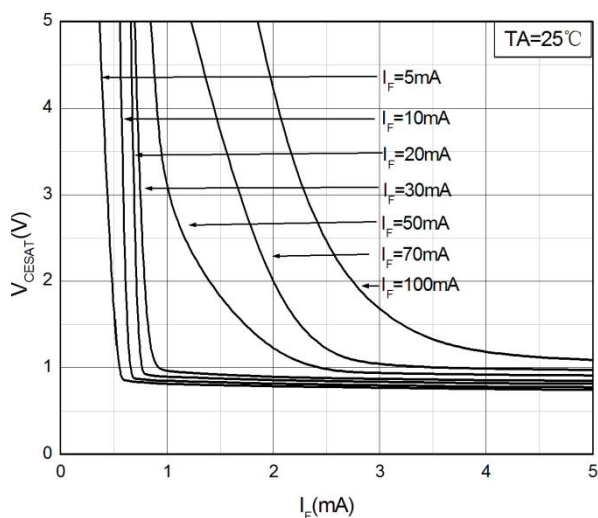
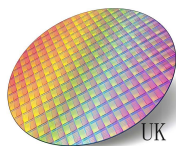


**Fig.4 Collector Dark Current
vs. Ambient Temperature**



**Fig.5 Collector-emitter Saturation Voltage
vs. Forward Current**

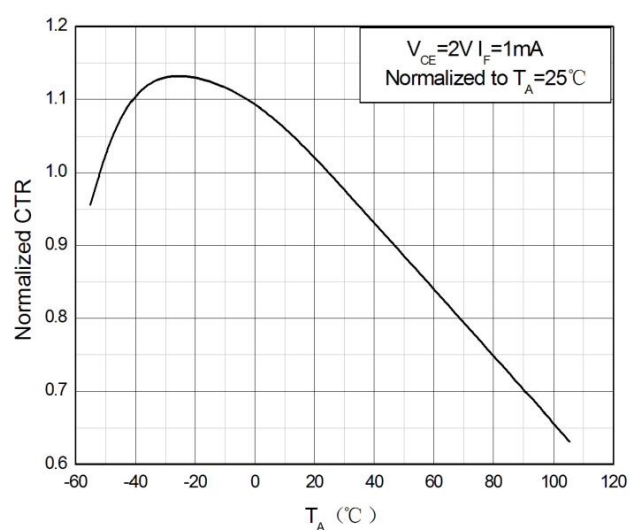
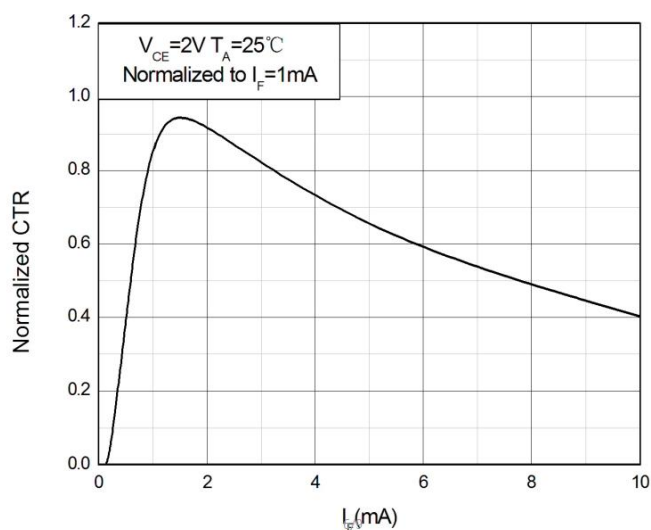
**Fig.6 Collector Current
vs. Collector-emitter Voltage**



CHARACTERISTIC CURVES

**Fig.7 Normalized Current Transfer Ratio
vs. Forward Current**

**Fig.8 Normalized Current Transfer Ratio
vs. Ambient Temperature**



**Fig.9 Collector-emitter Saturation Voltage
vs. Ambient Temperature**

**Fig.10 Switching Time
vs. Load Resistance**

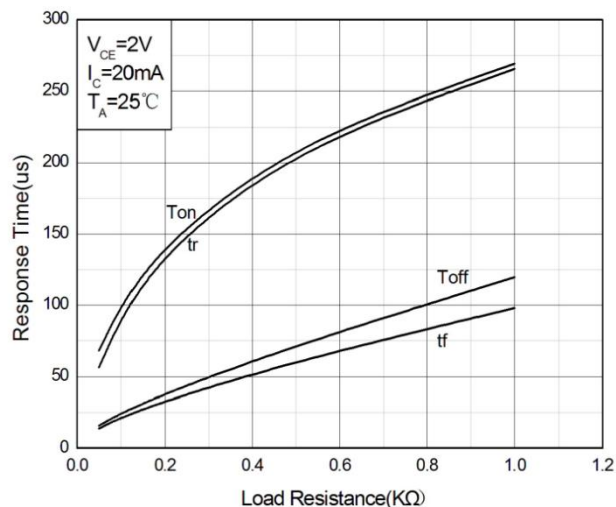
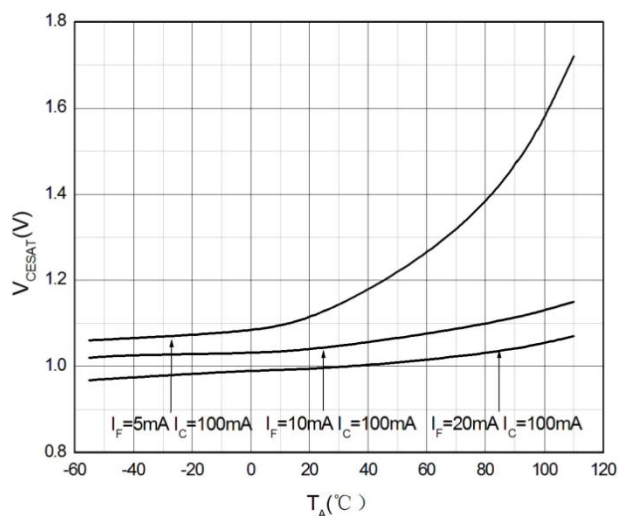
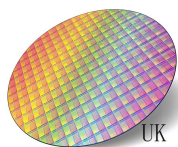
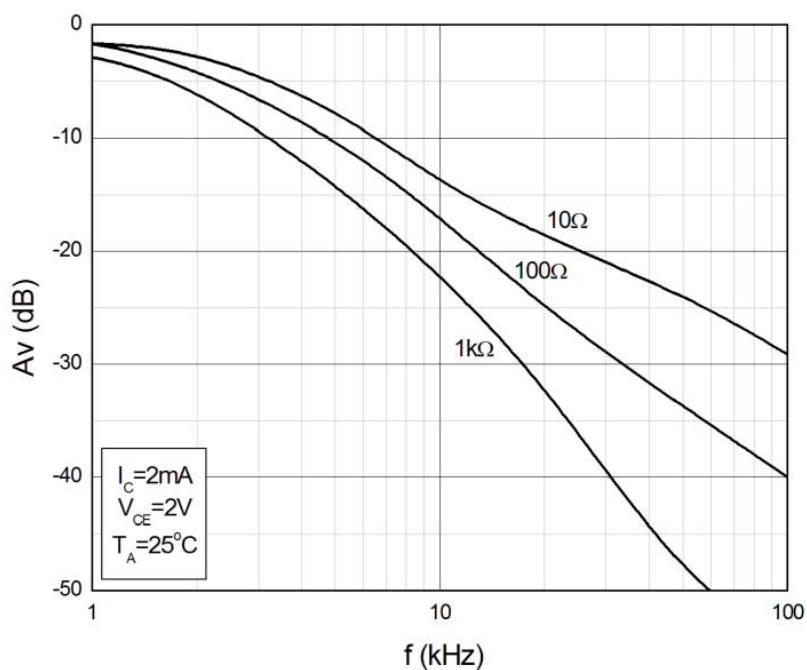


Fig.11 Frequency Response



TEST CIRCUITS

Fig.12 Test Circuits of Response Time

Fig.13 Curves of Response Time

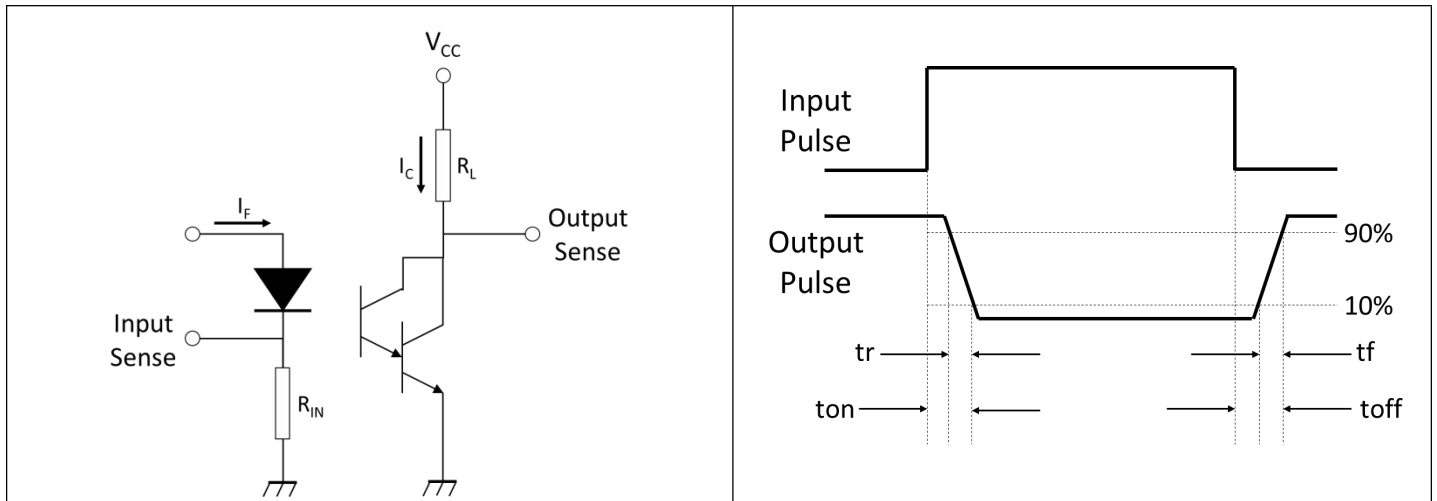
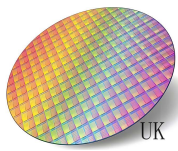
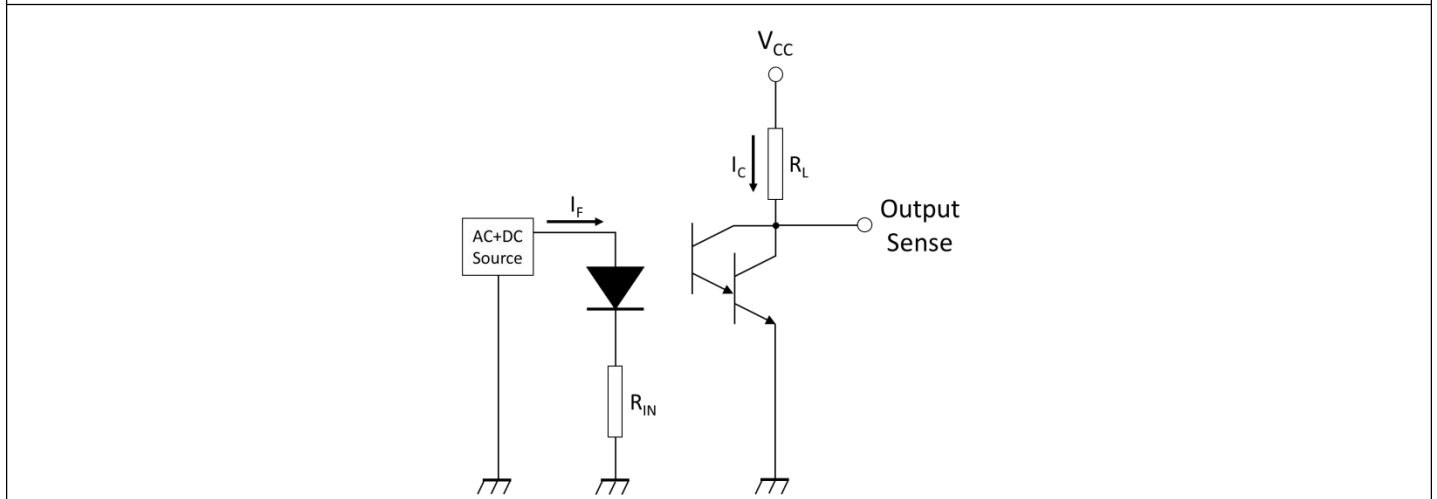
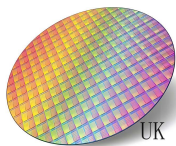
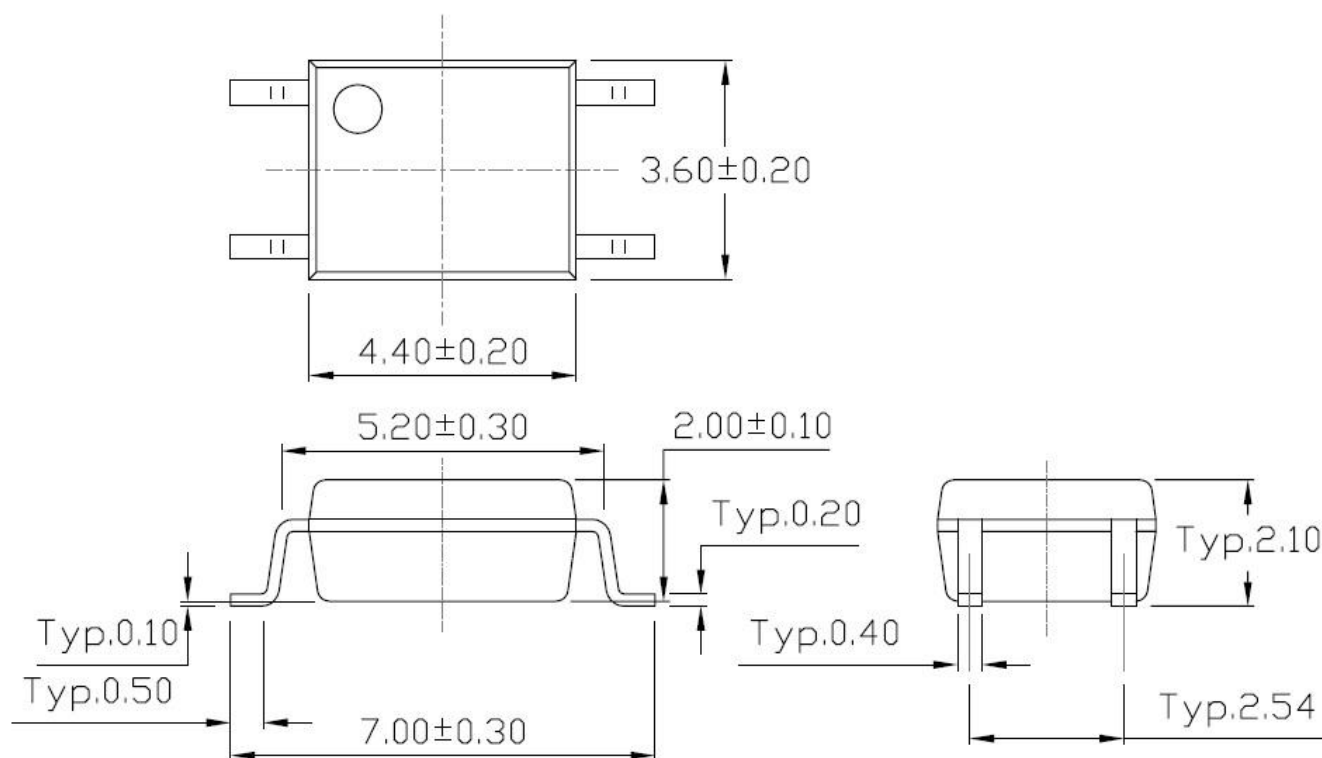


Fig.14 Test Circuits of Frequency Response

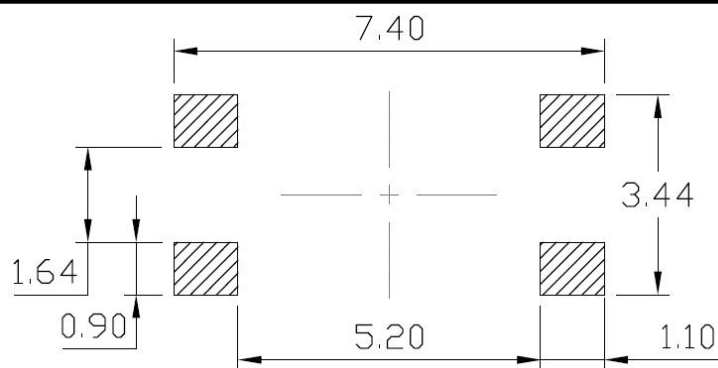


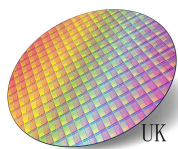


PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)



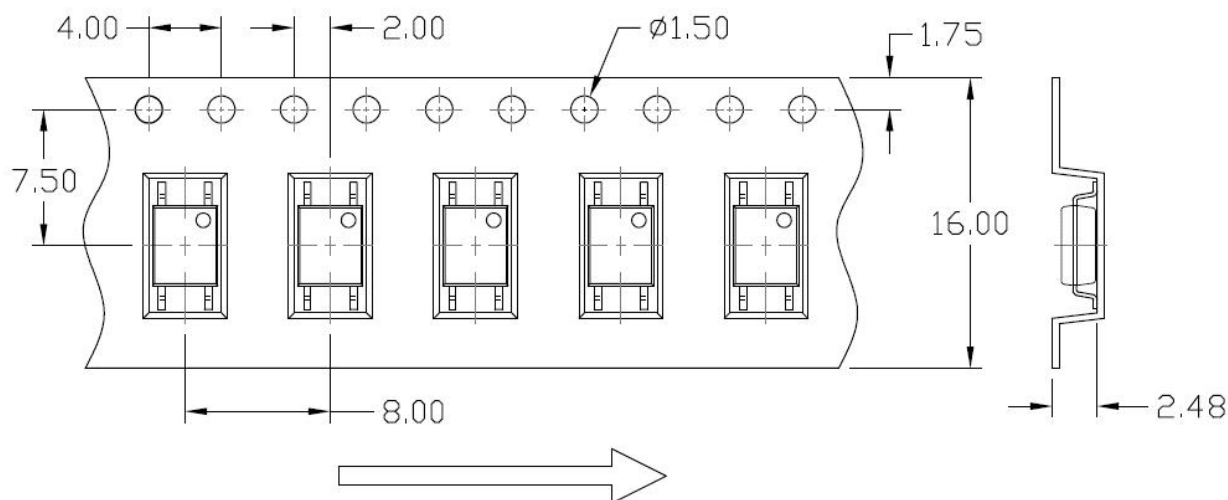
Recommended Solder Mask (Dimensions in mm unless otherwise stated)



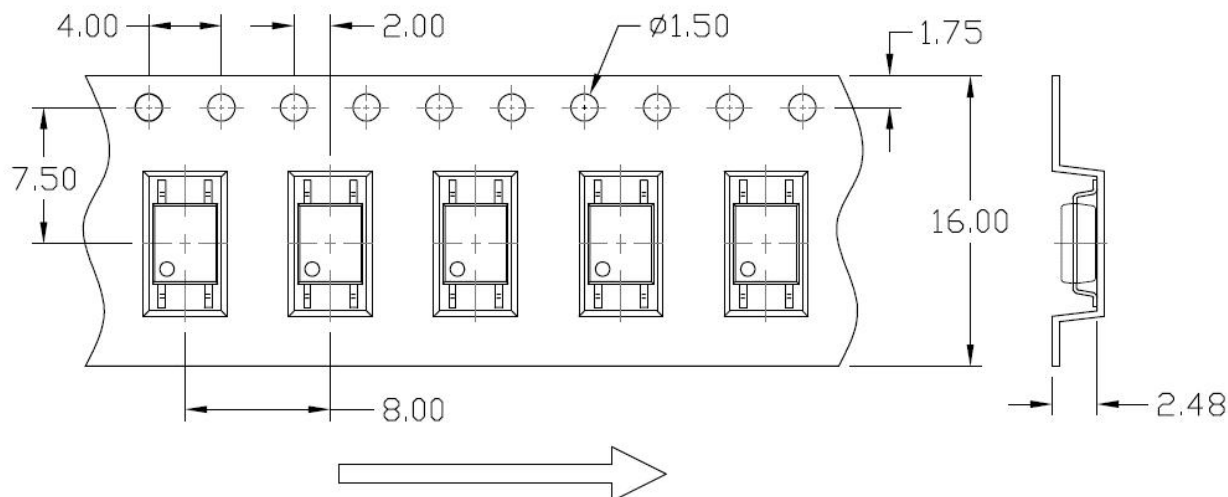


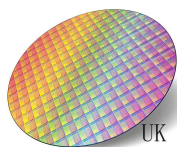
CARRIER TAPE SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option T1



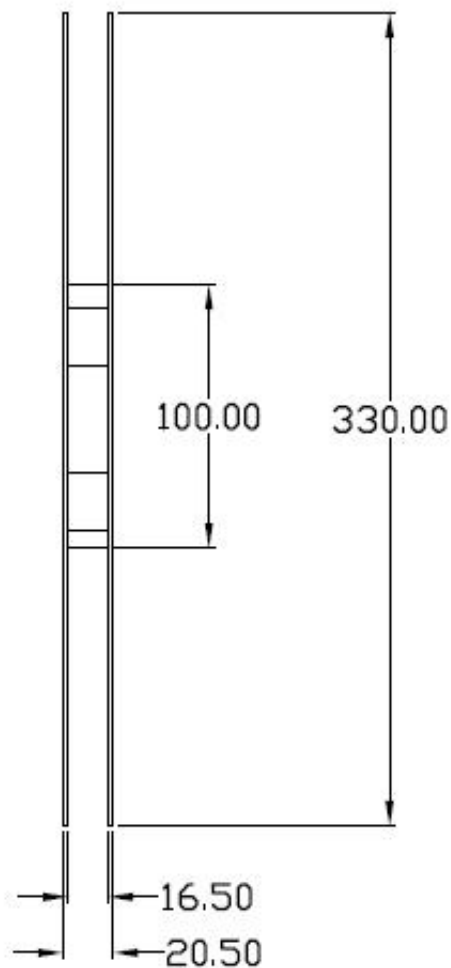
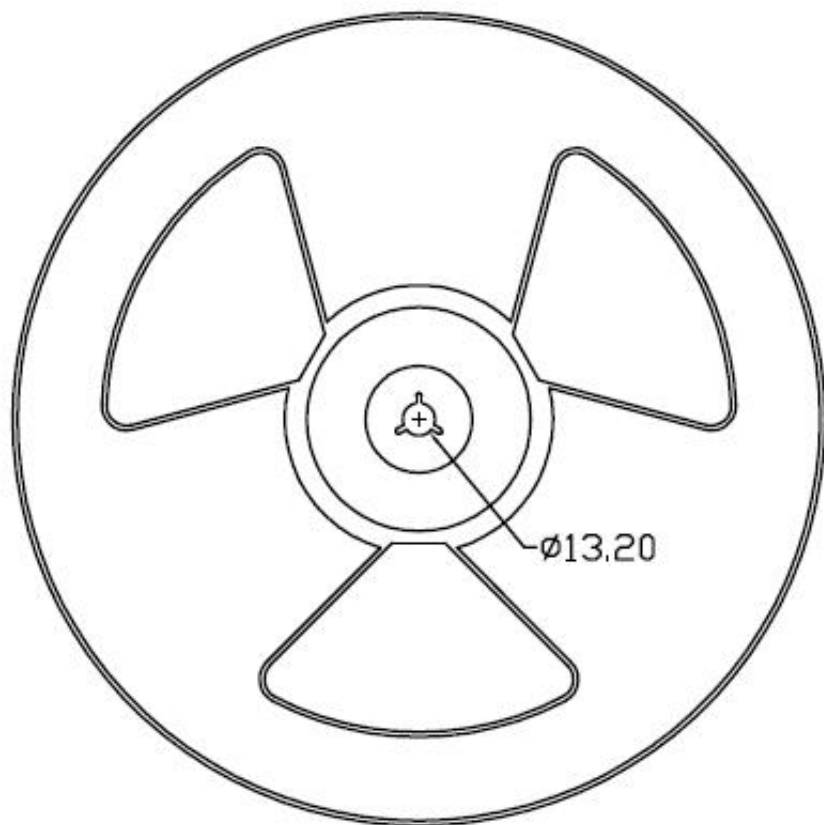
Option T2





REEL SPECIFICATIONS (Dimensions in mm unless otherwise stated)

Option T1 & T2



ORDERING AND MARKING INFORMATION

MARKING INFORMATION



I : Company Abbr.

FPH1 : Part Number

Y : Fiscal Year

WW : Work Week

ORDERING INFORMATION

LABEL INFORMATION

IS127-Z

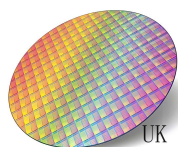
IS127 – Part Number

Z – Tape and Reel Option

(None=T1 IS127T2=T2)

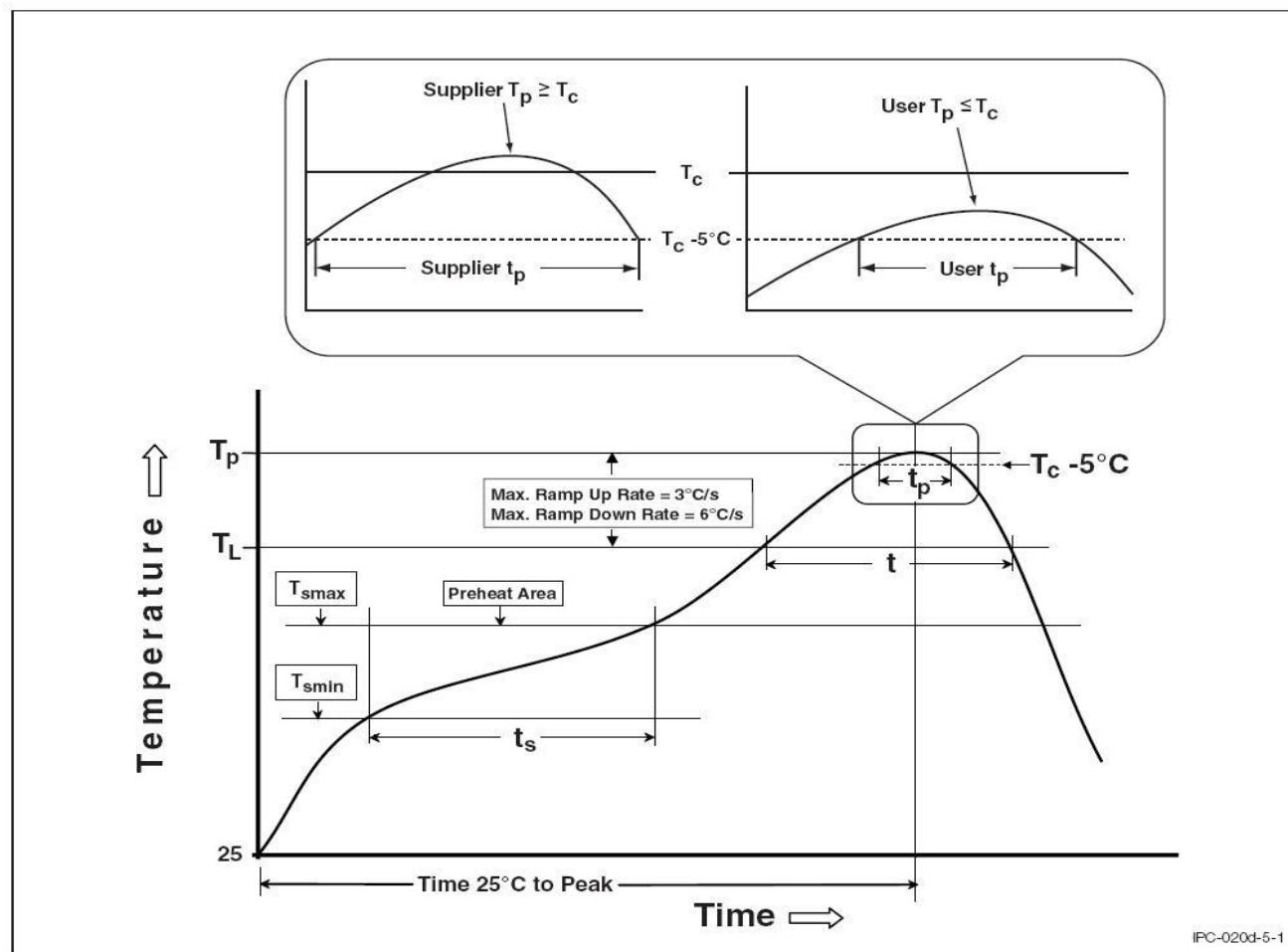
PACKING QUANTITY

Option	Quantity	Quantity – Inner box	Quantity – Outer box
T1	3000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 45k Units
T2	3000 Units/Reel	3 Reels/Inner box	5 Inner box/Outer box = 45k Units

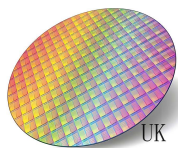


REFLOW INFORMATION

REFLOW PROFILE



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	100	150°C
Temperature Max. (T _{smax})	150	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds	60-120 seconds
Ramp-up Rate (t _L to t _P)	3°C/second max.	3°C/second max.
Liquidous Temperature (T _L)	183°C	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (t _P) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.



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- This product is not intended to be used for military, aircraft, automotive, medical, life sustaining or lifesaving applications or any other application which can result in human injury or death.
- Please contact ASG sales agent for special application request.
- Immerge unit's body in solder paste is not recommended.
- Parameters provided in datasheets may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated in each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify ASG's terms and conditions of purchase, including but not limited to the warranty expressed therein.
- Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.