

Description

The H11G1 H11G2 H11G3 series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar darlington phototransistor detector in a plastic DIP6 package with different lead forming options.

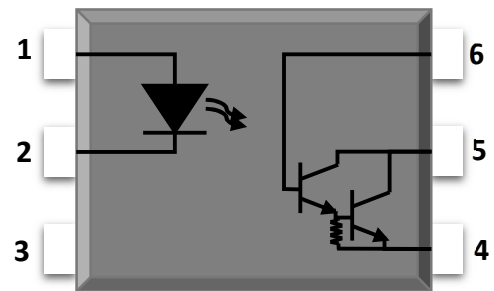
Features

- High isolation 5000 VRMS
- DC input with transistor output
- Operating temperature range - 55 °C to 110 °C
- RoHS & REACH Compliance
- 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

- Low power logic circuits
- Telecommunications equipment
- Portable electronics
- Interfacing coupling systems of different potentials and impedances

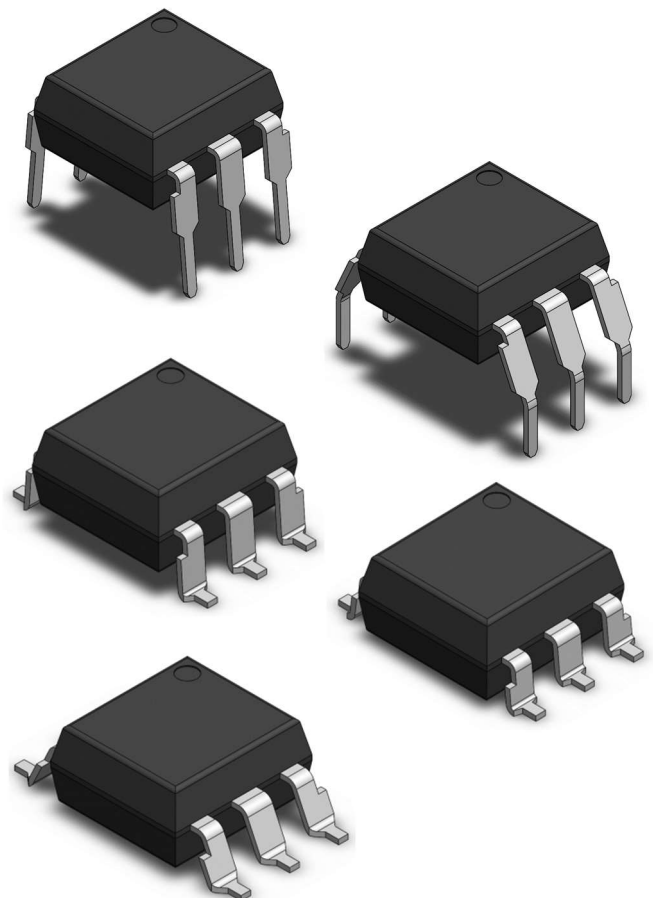
SCHEMATIC

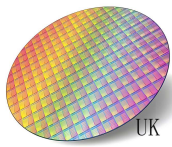


PIN DEFINITION

1.Anode	6.Base
2.Cathode	5.Collector
3.NC	4.Emitter

PACKAGE OUTLINE



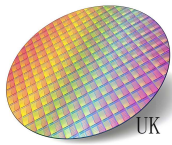


ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	VALUE	UNIT	NOTE
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current(t=10μs)	I_{FM}	1	A	1
Reverse Voltage	V_R	6	V	
Power Dissipation(TA=25°C)	P_D	120	mW	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	H11G1	100	V
		H11G2	80	
		H11G3	55	
Collector-Base Breakdown Voltage	V_{CBO}	H11G1	100	V
		H11G2	80	
		H11G3	55	
Emitter - Collector Voltage	V_{ECO}	7	V	
Emitter-Base Breakdown Voltage	V_{EBO}	7	V	
Collector Current	I_C	150	mA	
Power Dissipation(TA=25°C)	P_C	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	200	mW	
Isolation Voltage	V_{iso}	5000	Vrms	2
Operating Temperature	T_{opr}	-55~+110	°C	
Storage Temperature	T_{stg}	-55~+125	°C	
Soldering Temperature	T_{sol}	260	°C	

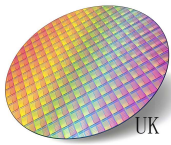
Note 1. AC For 1 Minute, R.H. = 40 ~ 60%

Note 2. For 10 seconds

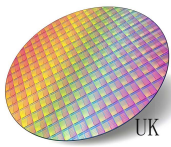


ELECTRICAL OPTICAL CHARACTERISTICS at Ta=25°C

PARAMETER	SYMBOL		MIN	TYP.	MAX	UNIT	TEST CONDITION	NOTE
INPUT								
Forward Voltage	VF	/	-	1.24	1.4	V	IF=10mA	
Reverse Current	IR		-	-	10	μA	VR=6V	
Input Capacitance	Cin		-	50	-	pF	V=0, f=1kHz	
OUTPUT								
Collector Dark Current	ICEO		-	-	100	nA	VCE=80V	H11G1
							VCE=60V	H11G2
							VCE=30V	H11G3
Collector-Emitter Breakdown Voltage	BVCEO	H11G1	100	-	-	V	IC=0.1mA	
		H11G2	80					
		H11G3	55					
Collector-Base Breakdown Voltage	BVCBO	H11G1	100	-	-	V	IC=0.1mA	
		H11G2	80					
		H11G3	55					
Emitter-Collector Breakdown Voltage	BVECO		7	-	-	V	IE=0.1mA	



TRANSFER CHARACTERISTICS								
Current Transfer Ratio	CTR	H11G1/2	500	-	/	%	IF=1mA, VCE=5V	
		H11G3	200	-	/			
		H11G1/2	1000	-	/			
Collector-Emitter Saturation Voltage	V _{CE(sat)}	H11G1/2	-	0.85	1	V	IF=16mA, IC=50mA	
		H11G1/2	-	0.75	1		IF=1mA, IC=1mA	
		H11G3	-	0.85	1.2		IF=20mA, IC=50mA	
Isolation Resistance	R _{io}		10 ¹¹	-	-	Ω	V _{io} =500Vdc.	
Floating Capacitance	C _{io}		-	0.8	-	pF	V=0, f=1MHz	
Response Time (Rise)	tr	H11G1	-	3	18	μs	VCE=2V, IC=2mA RL=100Ω	
Response Time (Fall)	tf	H11G1	-	4	18	μs		



CHARACTERISTIC CURVES

Fig.1 Forward Current vs. Ambient Temperature

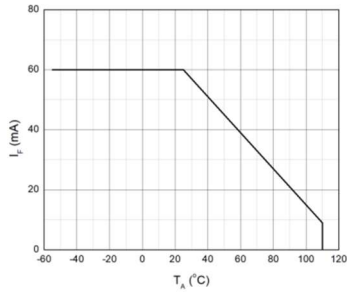


Fig.2 Collector Power Dissipation vs. Ambient Temperature

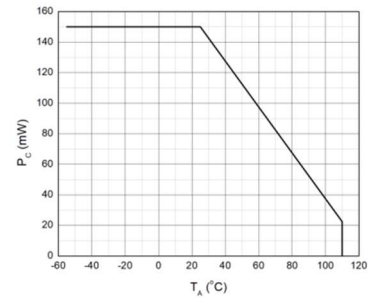


Fig.3 Forward Current vs. Forward Voltage

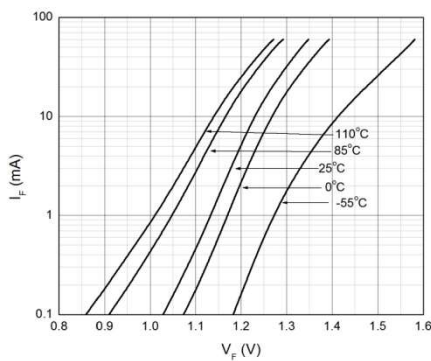


Fig.4 Collector Dark Current vs. Ambient Temperature

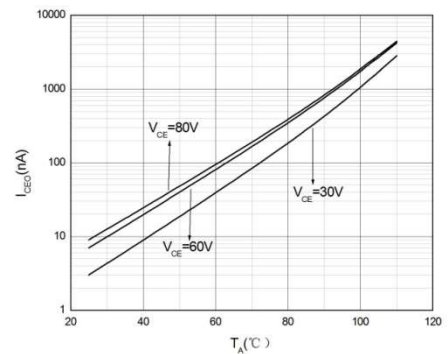


Fig.5 Collector Current vs. Collector-emitter Voltage

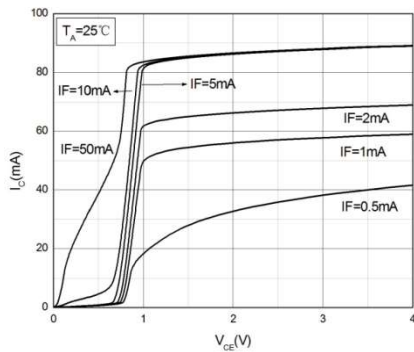
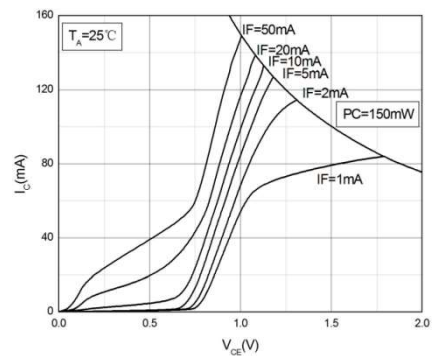
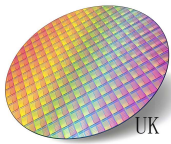


Fig.6 Collector Current vs. Collector-emitter Voltage





CHARACTERISTIC CURVES

Fig.7 Normalized Current Transfer Ratio vs. Forward Current

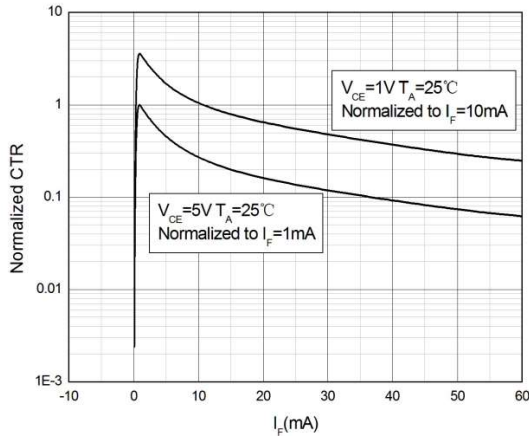


Fig.8 Normalized Current Transfer Ratio vs. Ambient Temperature

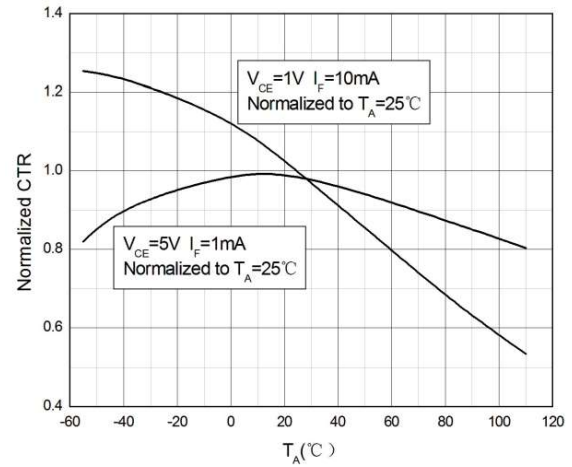


Fig.9 Collector-emitter Saturation Voltage vs. Ambient Temperature

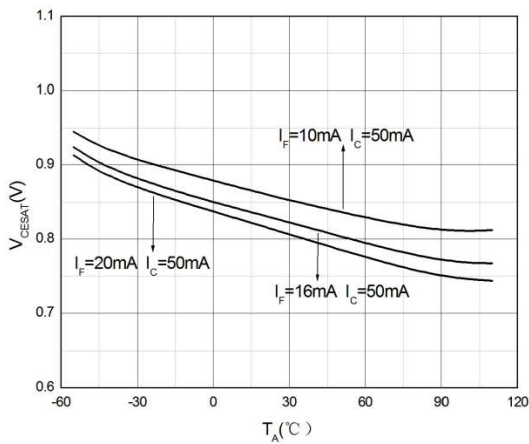
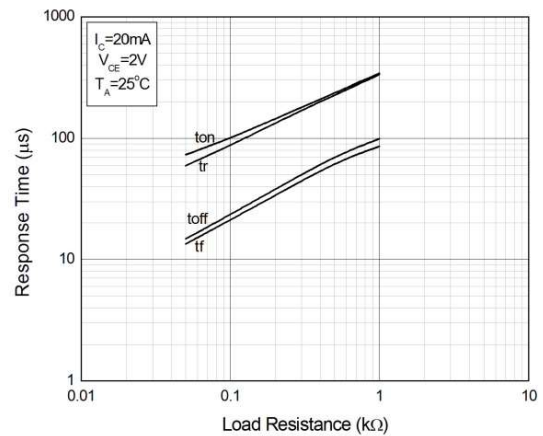
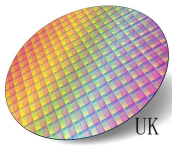


Fig.10 Switching Time vs. Load Resistance





TEST CIRCUITS

Fig.11 Test Circuits of Response Time

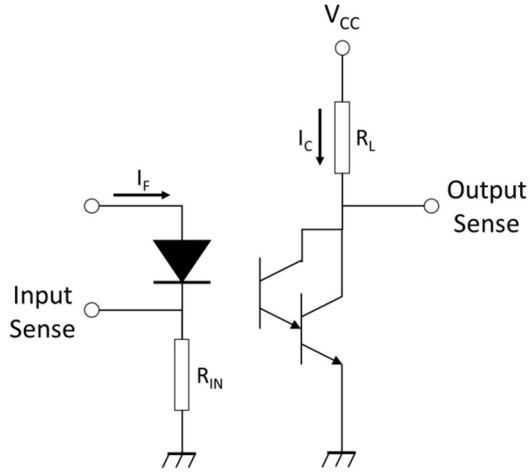


Fig.12 Curves of Response Time

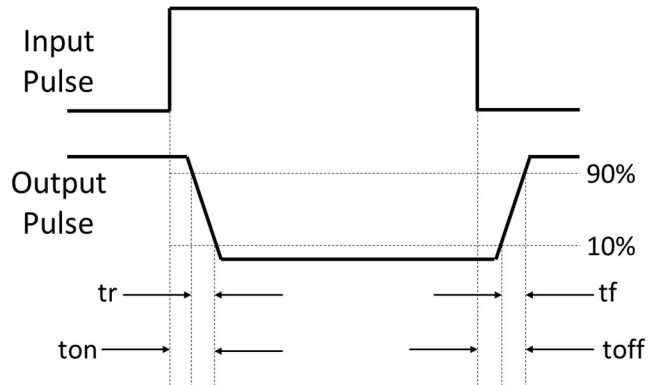
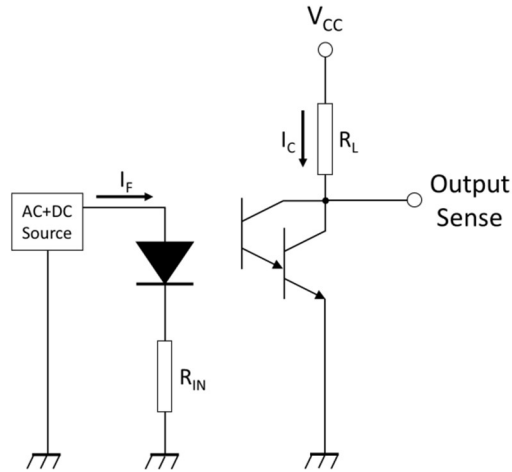
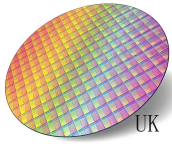


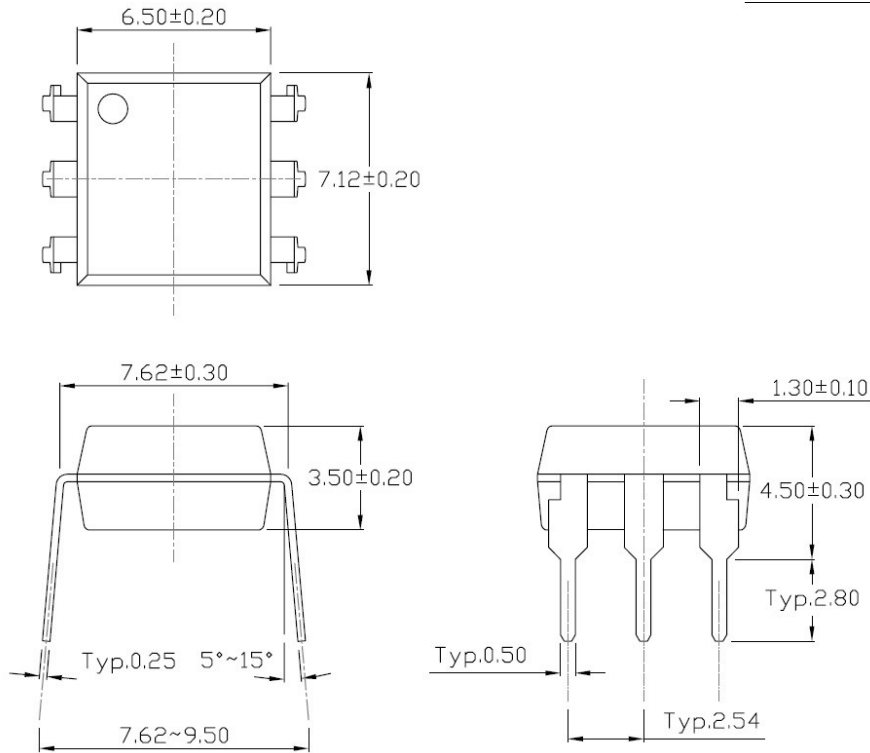
Fig.13 Test Circuits of Frequency Response



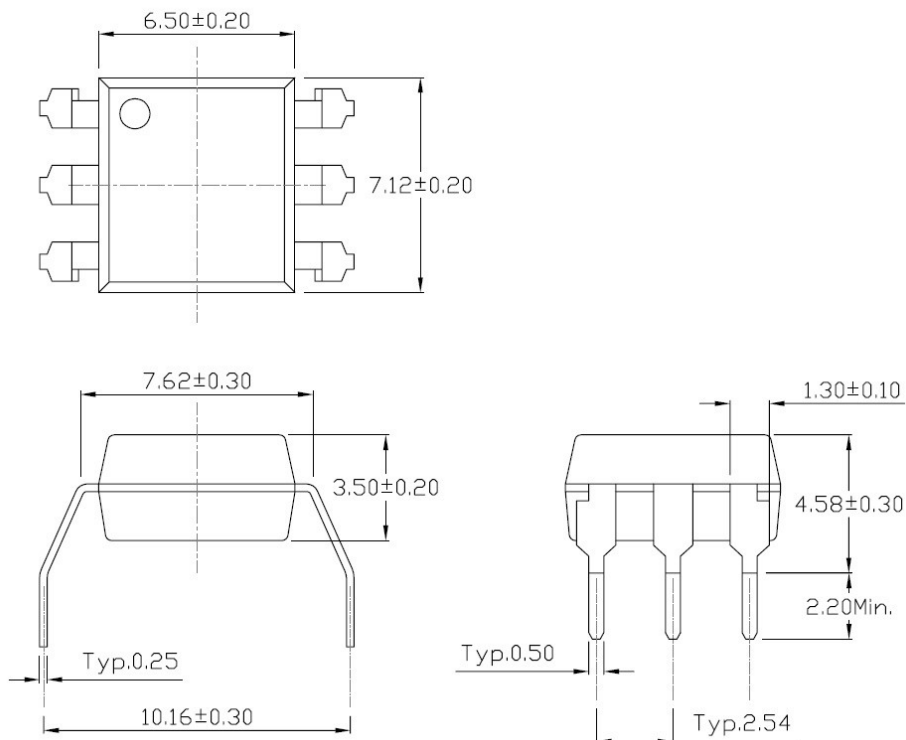


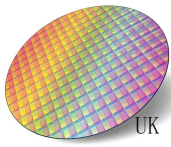
PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

Standard DIP – Through Hole (DIP Type)



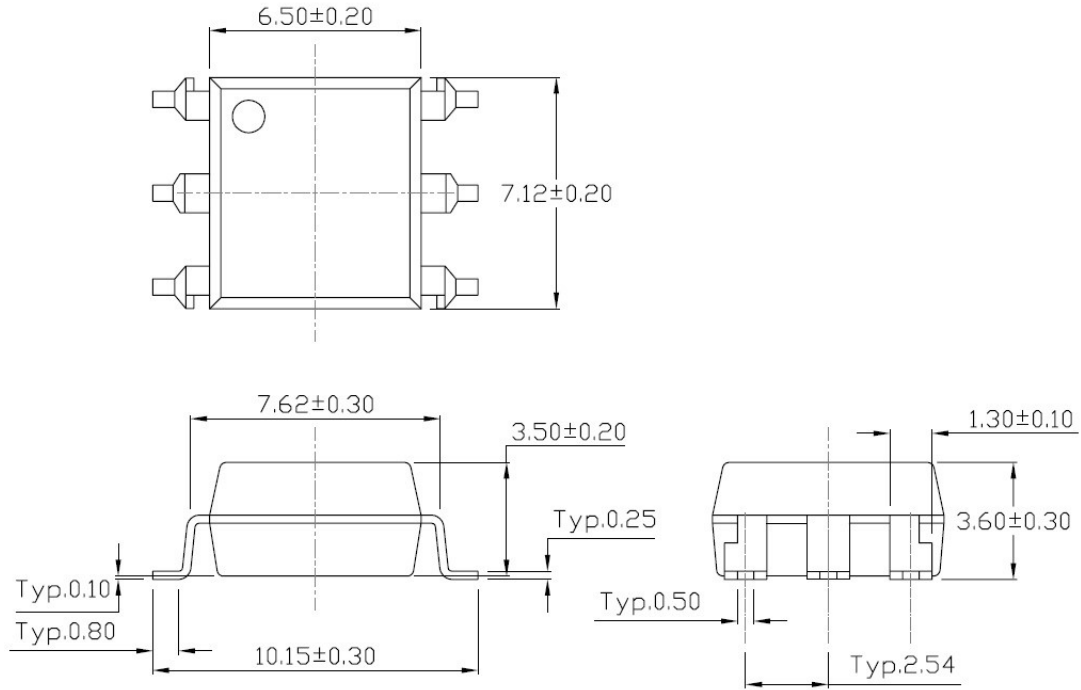
Gullwing (400mil) Lead Forming – Through Hole (M Type)

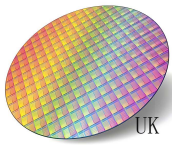




PACKAGE DIMENSIONS (Dimensions in mm unless otherwise stated)

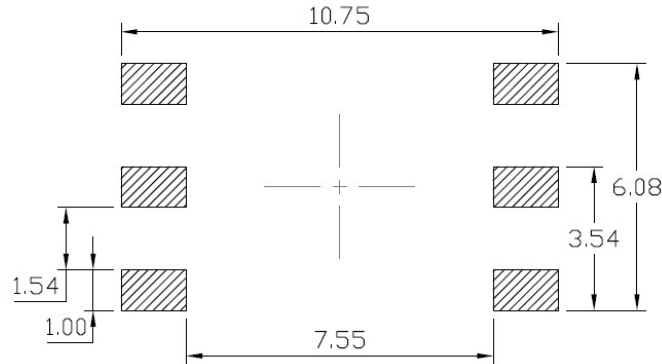
Surface Mount (Low Profile) Lead Forming (SL Type)





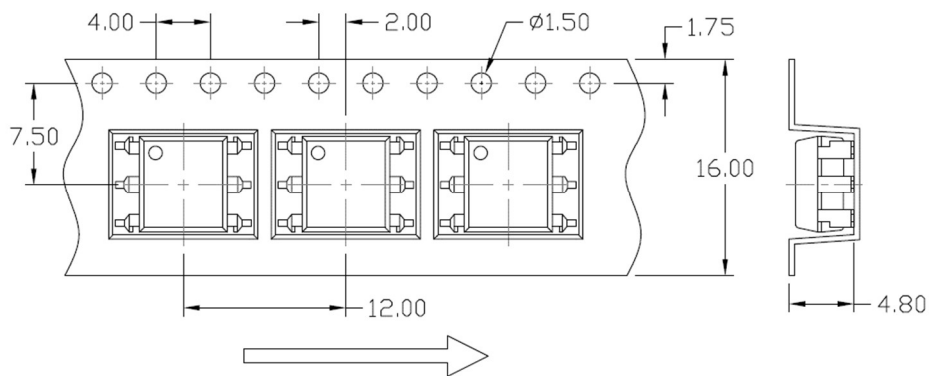
Recommended Solder Mask (Dimensions in mm unless otherwise stated)

Surface Mount Lead Forming & Surface Mount (Low Profile) Lead Forming

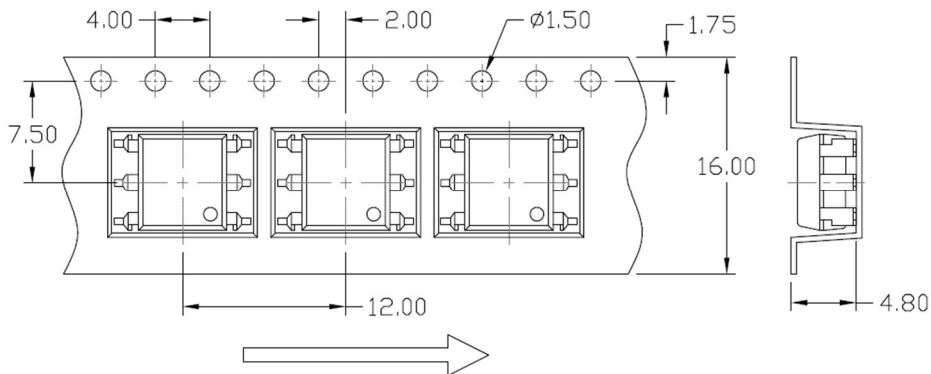


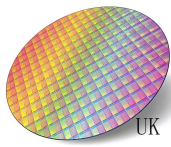
Carrier Tape Specifications (Dimensions in mm unless otherwise stated)

Option S(T1) & SL(T1)



Option S(T2) & SL(T2)





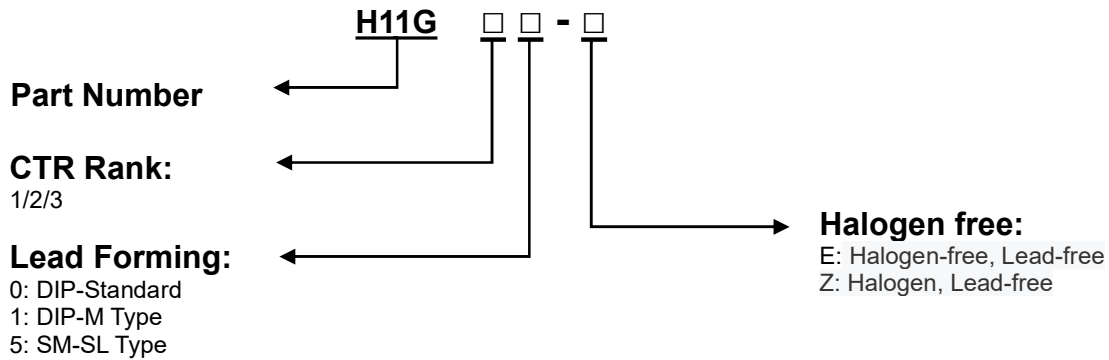
ORDERING AND MARKING INFORMATION

MARKING INFORMATION



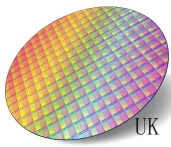
H11GX : Part Number & Rank
/ : Company Abbr.
YY : Fiscal Year
WW : Work Week
A : Manufacturing Code

ORDERING INFORMATION



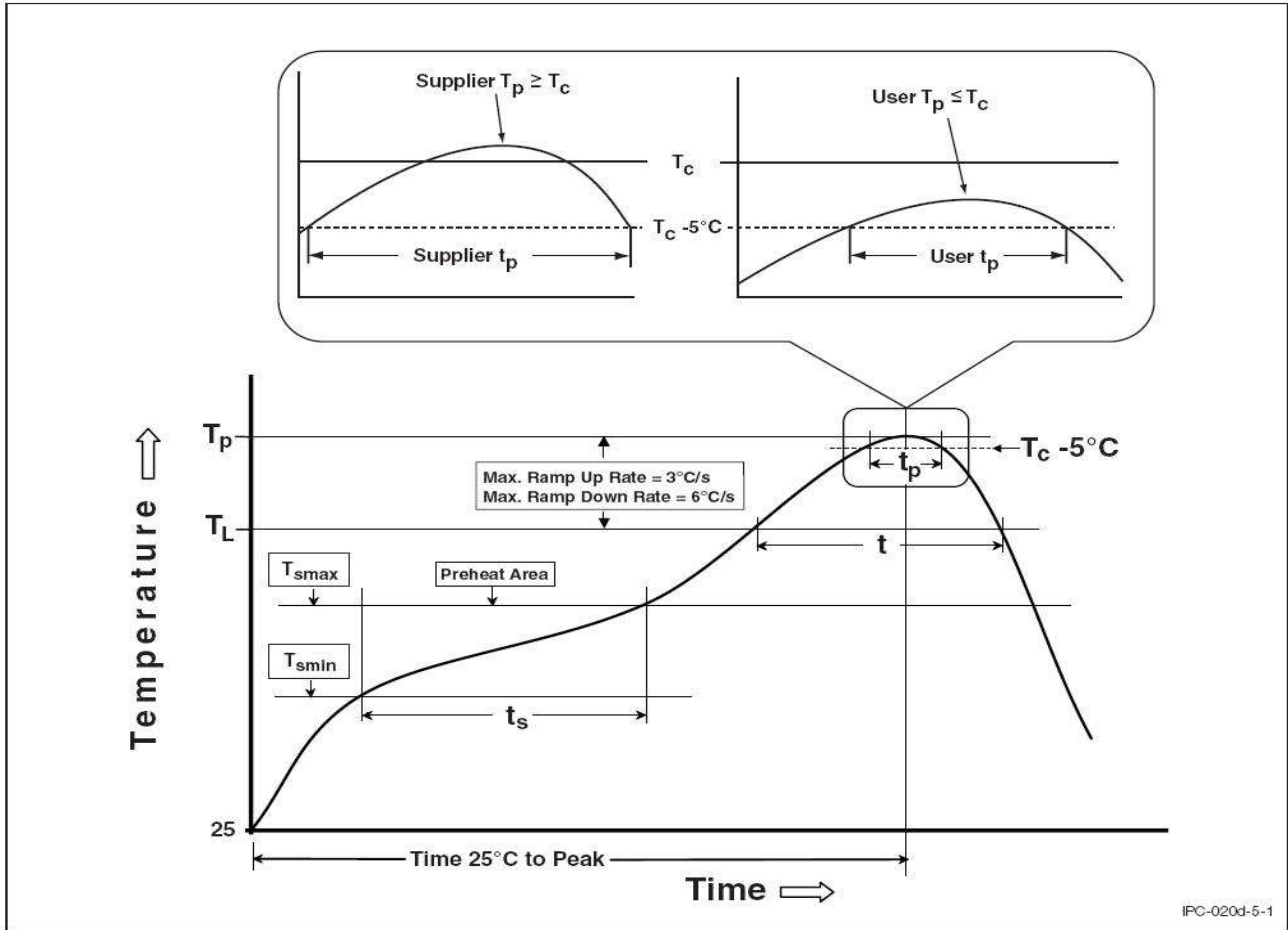
PACKING QUANTITY

Option	Description	Quantity
None	Standard 6 Pin Dip	50Units/Tube
M	Gullwing(400mil) Lead Forming	50Units/Tube
SL(T1)	Surface Mount Lead Forming(Low Profile) – With Option 1 Taping	1000 Units/Reel



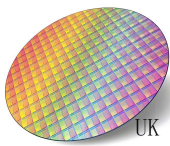
REFLOW INFORMATION

REFLOW PROFILE



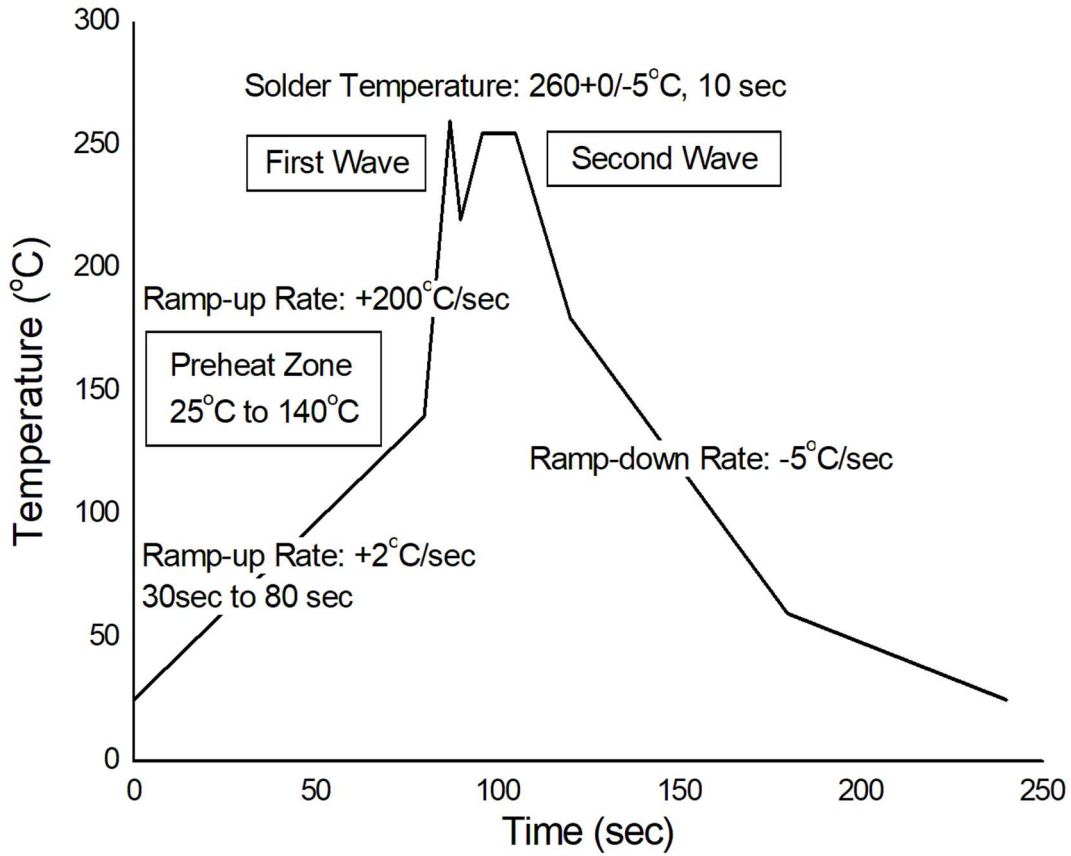
IPC-020d-5-1

Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmin)	100	150°C
Temperature Max. (Tsmax)	150	200°C
Time (ts) from (Tsmin to Tsmax)	60-120 seconds	60-120 seconds
Ramp-up Rate (tL to tP)	3°C/second max.	3°C/second max.
Liquidous Temperature (TL)	183°C	217°C
Time (tL) Maintained Above (TL)	60 – 150 seconds	60 – 150 seconds
Peak Body Package Temperature	235°C +0°C / -5°C	260°C +0°C / -5°C
Time (tP) within 5°C of 260°C	20 seconds	30 seconds
Ramp-down Rate (TP to TL)	6°C/second max	6°C/second max
Time 25°C to Peak Temperature	6 minutes max.	8 minutes max.



TEMPERATURE PROFILE OF SOLDERING

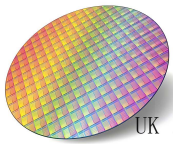
WAVE SOLDERING (JESD22-A111 COMPLIANT)



HAND SOLDERING BY SOLDERING IRON

Soldering Temperature	380+0/-5°C
Soldering Time	3 sec max.

- One time soldering is recommended for all soldering method.
- Do not solder more than three times for IR reflow soldering.



DISCLAIMER

- ASG is continually improving the quality, reliability, function and design. ASG reserves the right to make changes without further notices.
- The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed.
- ASG makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, ASG disclaims (a) any and all liability arising out of the application or use of any product, (b) any and all liability, including without limitation special, consequential or incidental damages, and (c) any and all implied warranties, including warranties of fitness for particular
- 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 purpose, non-infringement and merchantability.
- 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.