

Features

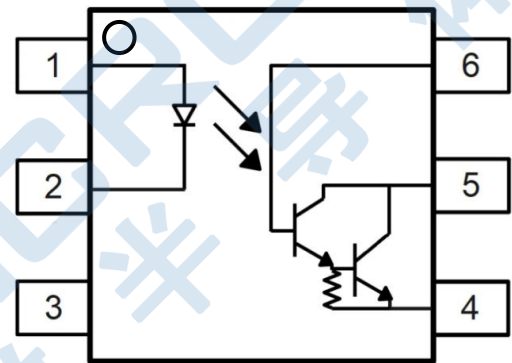
- High isolation 5000 V_{RMS}
- DC input with transistor output
- Operating temperature range - 40 °C to 110 °C
- RoHS & REACH Compliance
- MSL class 1
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC - GB4943.1

Applications

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

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.



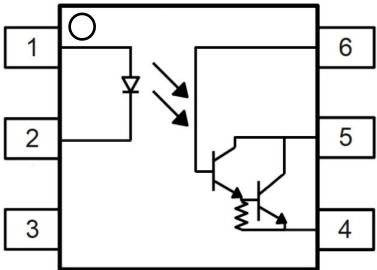
Ordering Information

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity		
	H11G10-E	DIP6	H11GX /YYWW A	Tube	500mm	65		
	H11G20-E							
	H11G30-E							
	H11G11-E	DIP6-M		H11GX /YYWW A	Tube	500mm	65	
	H11G21-E							
	H11G31-E							
	H11G15-E	DIP6-SL			H11GX /YYWW A	Reel	13 "	1000
	H11G25-E							
	H11G35-E							

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PIN CONFIGURATION AND FUNCTIONS

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

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	Note
INPUT				
Forward Current	I_F	60	mA	
Peak Forward Current($t=10\mu s$)	I_{FP}	1	A	1
Reverse Voltage	V_R	6	V	
Power Dissipation($T_A=25^\circ C$)	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($T_A=25^\circ C$)	P_C	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	200	mW	
Isolation Voltage	V_{iso}	5000	Vrms	2
Operating Temperature	T_{opr}	-40~110	$^\circ C$	
Storage Temperature	T_{stg}	-55~125	$^\circ C$	
Soldering Temperature	T_{sol}	260	$^\circ C$	

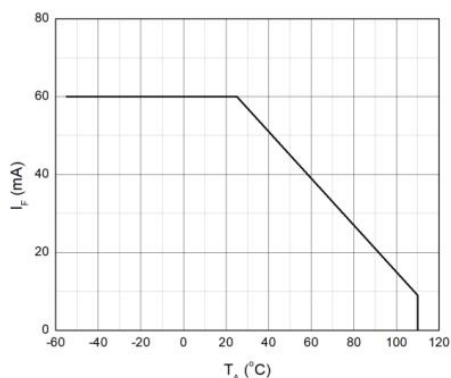
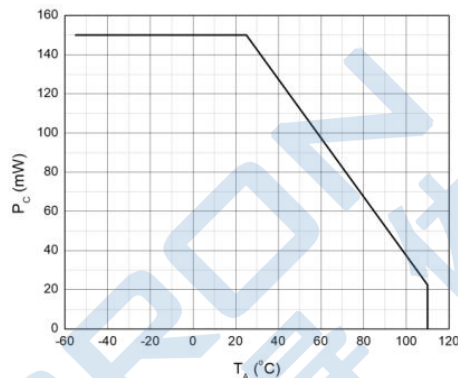
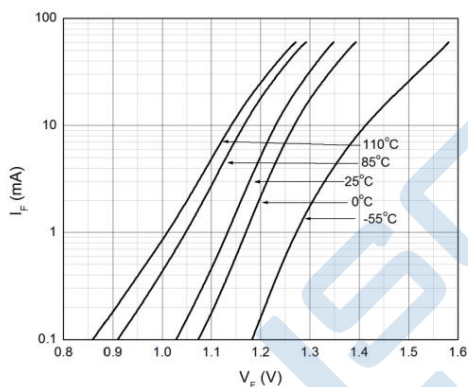
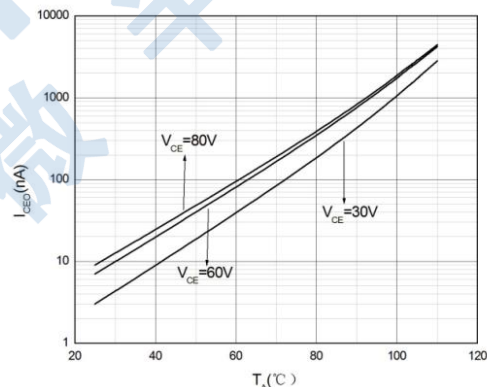
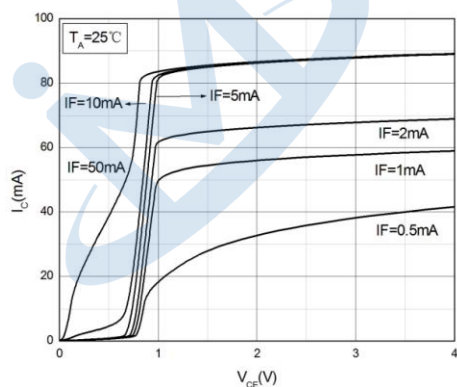
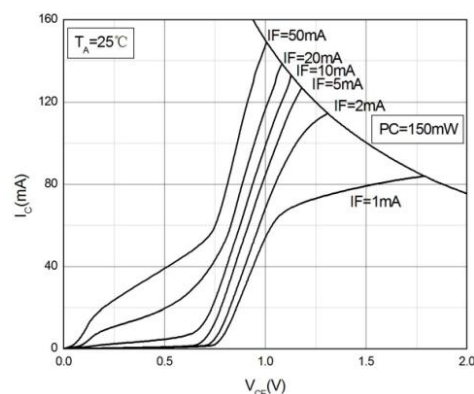
Note 1. AC For 1 Minute, R.H. = 40 ~ 60%

Note 2. For 10 seconds

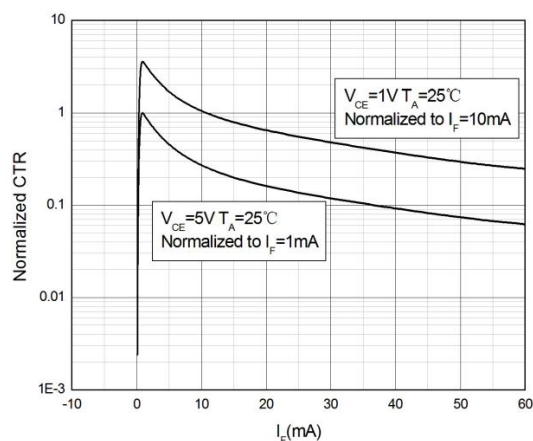
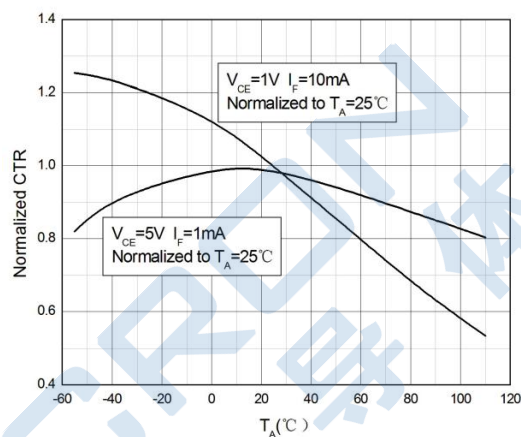
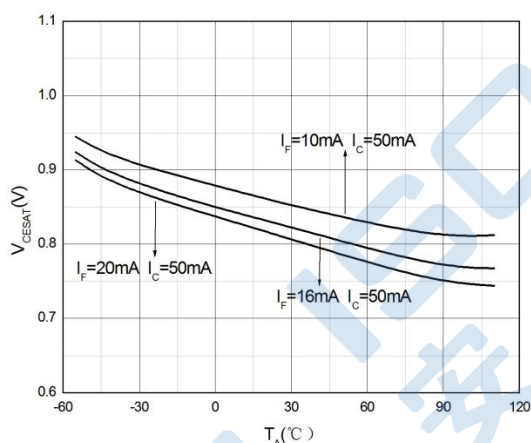
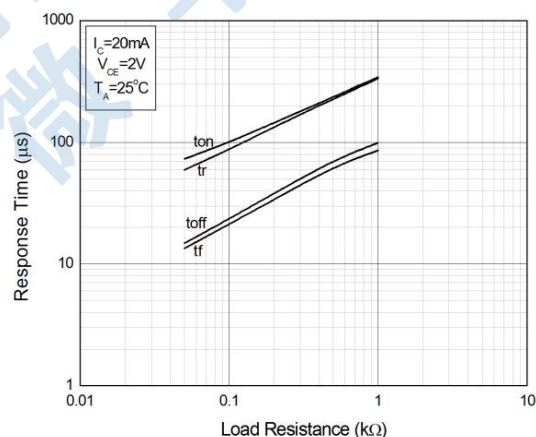
ELECTRICAL OPTICAL CHARACTERISTICS (T_a=25°C)

Parameter	Symbol	Min	Typ	Max	Unit	Test Condition
INPUT						
Forward Voltage	V _F	-	1.24	1.4	V	I _F =10mA
Reverse Current	I _R	-	-	10	μA	V _R =6V
Input Capacitance	C _{in}	-	50	-	pF	V=0, f=1kHz
OUTPUT						
Collector Dark Current	I _{CEO}	-	-	100	nA	V _{CE} =80V H11G1
						V _{CE} =60V H11G2
						V _{CE} =30V H11G3
Collector-Emitter Breakdown Voltage	BV _{CEO}	H11G1	100	-	V	I _C =0.1mA
		H11G2	80	-		
		H11G3	55	-		
Collector-Base Breakdown Voltage	BV _{CBO}	H11G1	100	-	V	I _C =0.1mA
		H11G2	80	-		
		H11G3	55	-		
Emitter-Base Breakdown Voltage	BV _{EBO}	7	-	-	V	I _E =0.1mA
TRANSFER CHARACTERISTICS						
Current Transfer Ratio	CTR	H11G1/2	500	-	/	I _F =1mA, V _{CE} =5V
		H11G3	200	-	/	
		H11G1/2	1000	-	/	I _F =10mA, V _{CE} =1V
Collector-Emitter Saturation Voltage	V _{CE(sat)}	H11G1/2	-	0.85	1	I _F =16mA, I _C =50mA
		H11G1/2	-	0.75	1	I _F =1mA, I _C =1mA
		H11G3	-	0.85	1.2	I _F =20mA, I _C =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)	t _r	H11G1	-	3	18	V _{CE} =2V, I _C =2mA R _L =100Ω
Response Time (Fall)	t _f	H11G1	-	4	18	

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

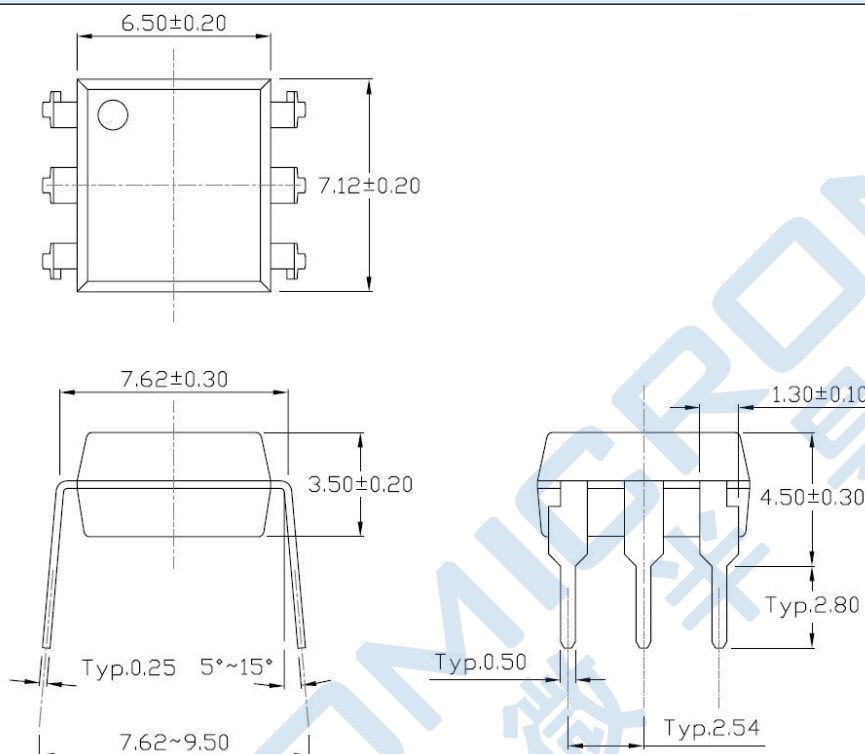
Fig.7 Normalized Current Transfer Ratio vs. Forward Current

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

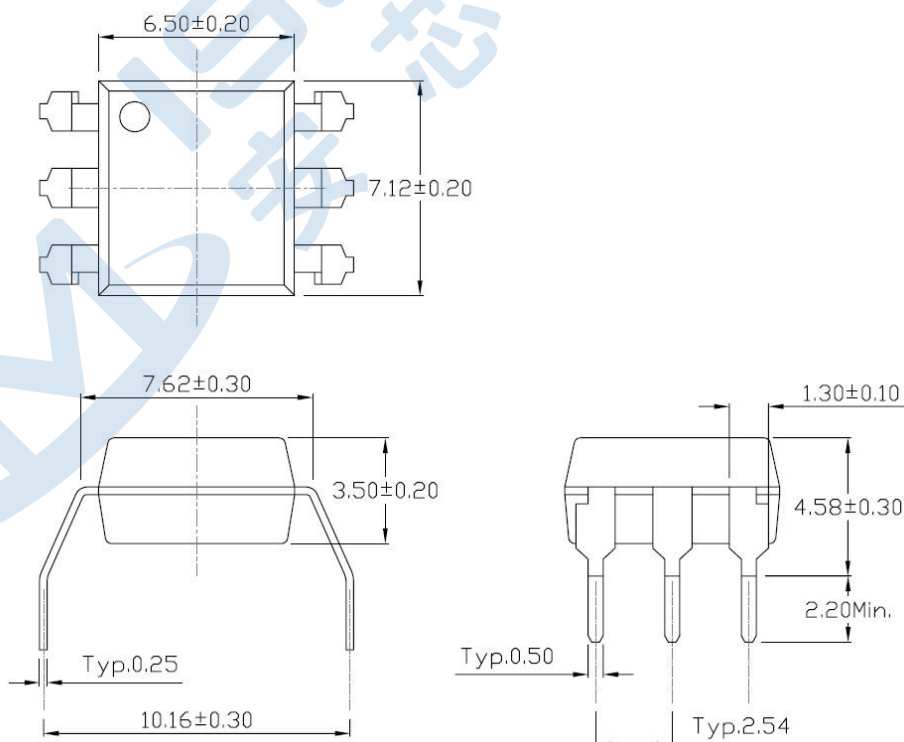
Fig.11 Test Circuits of Response Time	Fig.12 Curves of Response Time
Fig.13 Test Circuits of Frequency Response	

PACKAGE DIMENSIONS

Standard DIP – Through Hole (DIP Type)

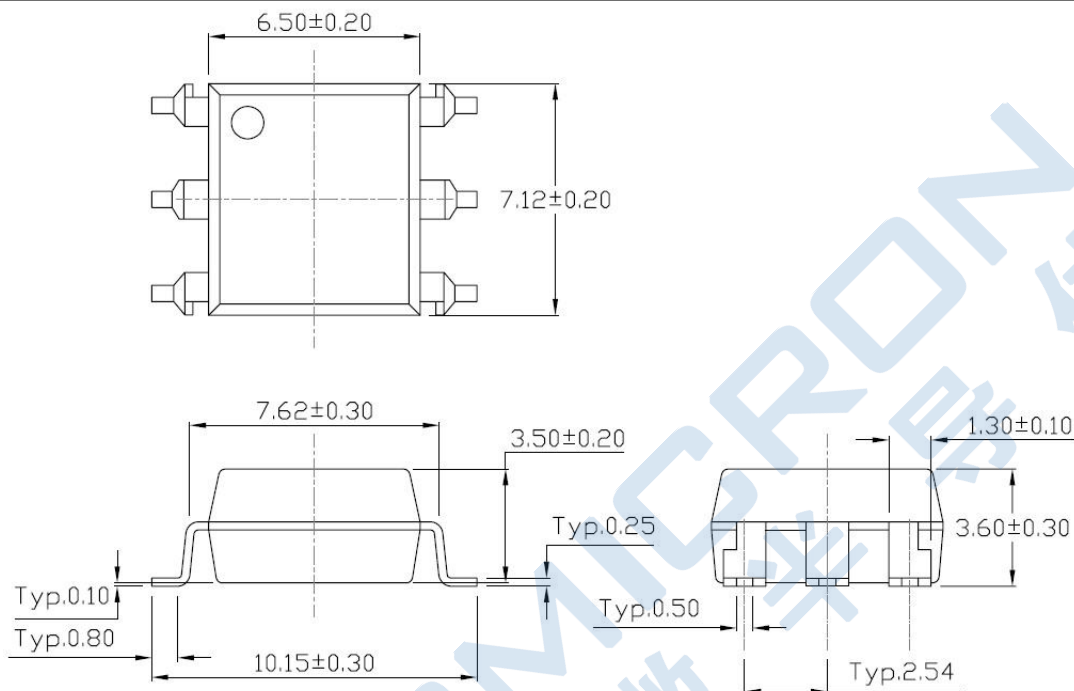


Gullwing (400mil) Lead Forming – Through Hole (M Type)



PACKAGE DIMENSIONS

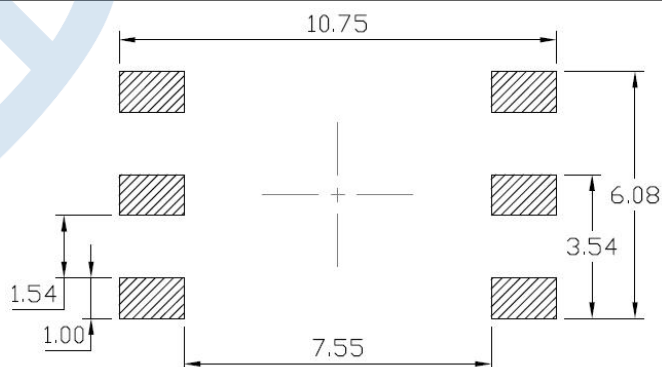
Surface Mount (Low Profile) Lead Forming (SL Type)



- Dimensions in mm unless otherwise stated

RECOMMENDED SOLDER MASK

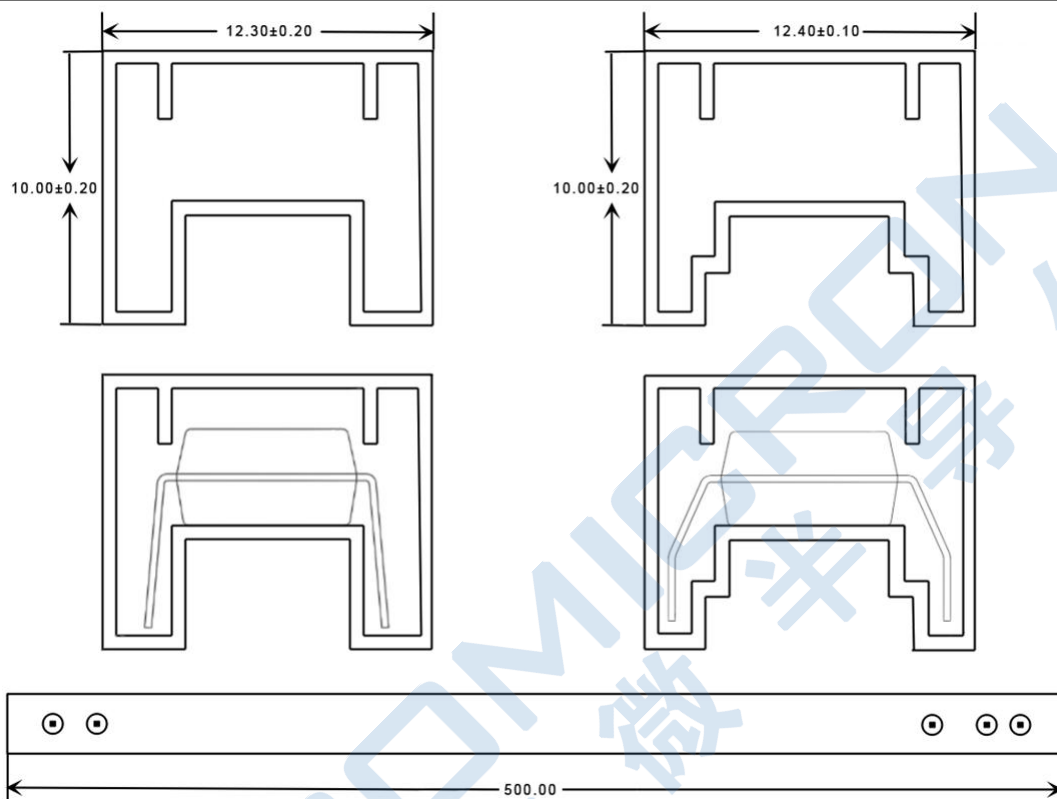
Surface Mount (Low Profile) Lead Forming



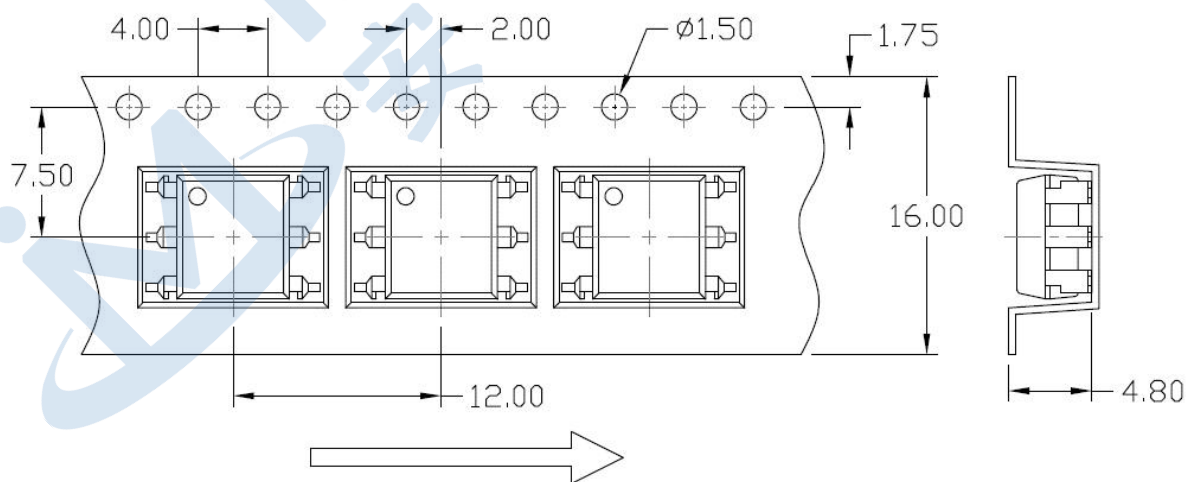
- Dimensions in mm unless otherwise stated

CARRIER TAPE SPECIFICATIONS

Option DIP6 & DIP6-M Type



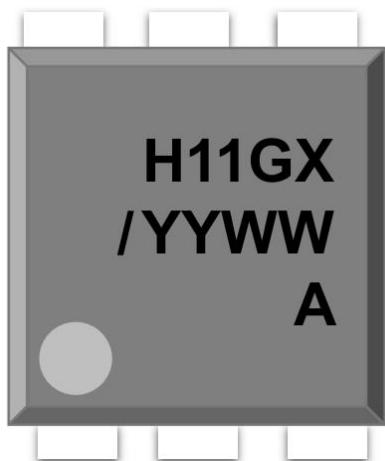
Option DIP6-SL



- Dimensions in mm unless otherwise stated

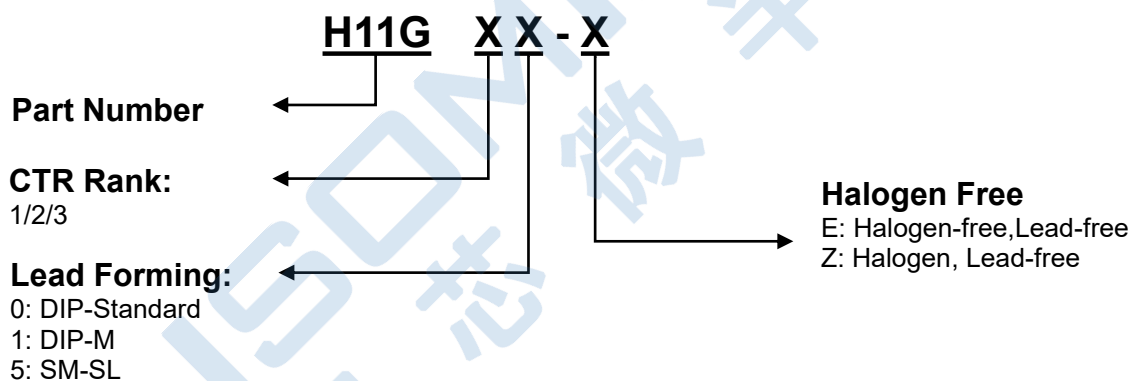
ORDERING AND MARKING INFORMATION

Marking Information



H11GX : Part Number & CTR Rank
/ : ISOMICRON
YY : Fiscal Year
WW : Work Week
A : Manufacturing Code

Order Code

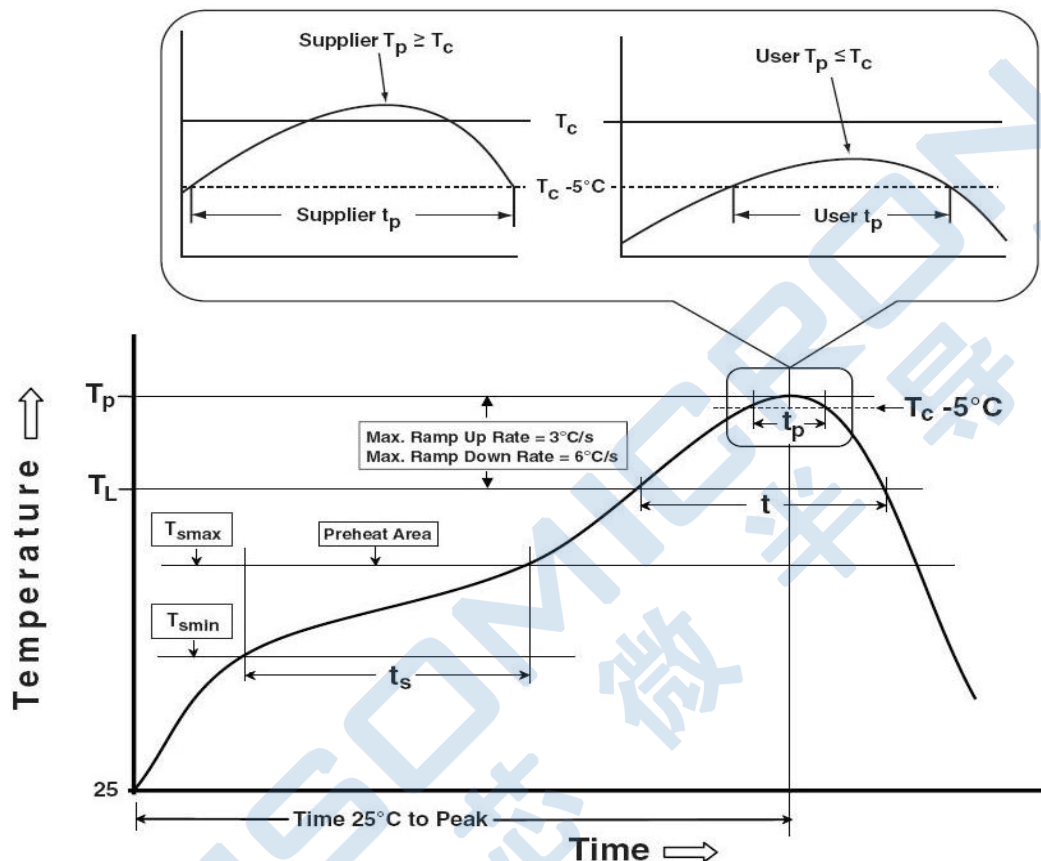


Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
DIP-Standard	65 Units/Tube	20 Tubes/Inner box	6 Inner box/Outer box = 7.8k Units
DIP-M	65 Units/Tube	20 Tubes/Inner box	6 Inner box/Outer box = 7.8k Units
SM-SL	1000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box = 10k Units

REFLOW INFORMATION

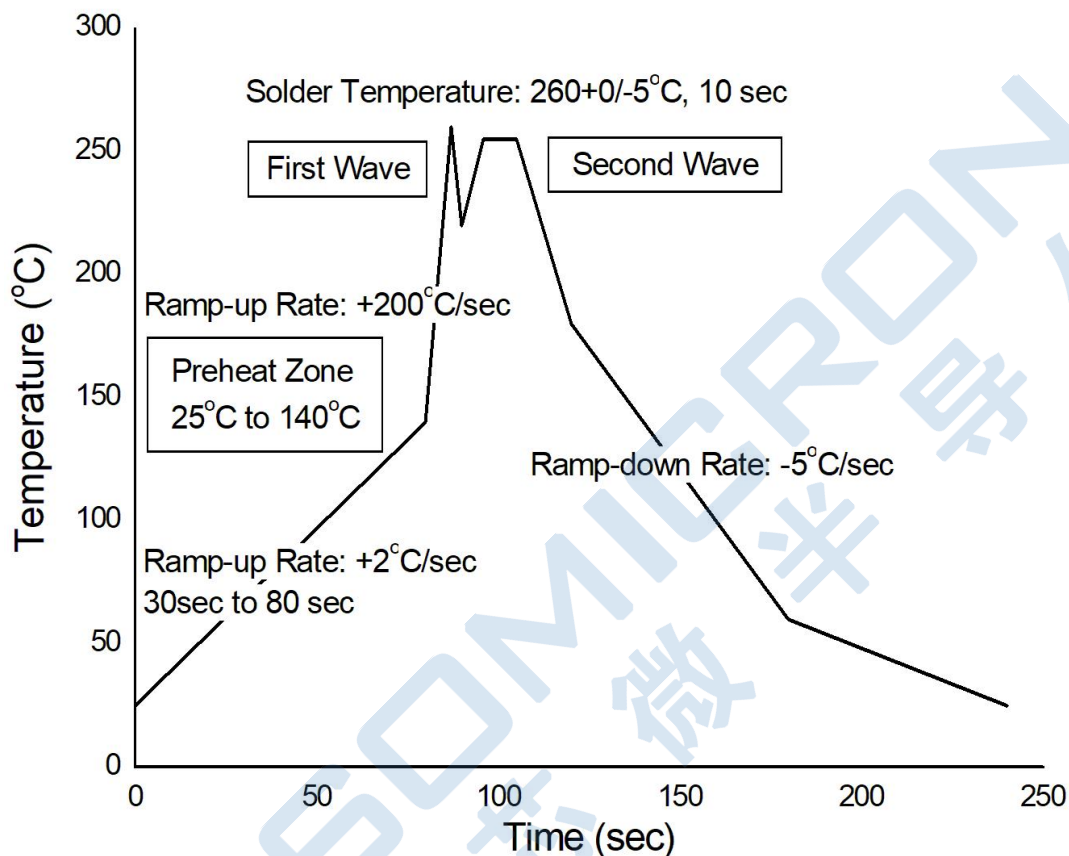
Reflow Profile



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (Tsmmin)	100	150°C
Temperature Max. (Tsmmax)	150	200°C
Time (ts) from (Tsmmin to Tsmmax)	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

- ISOMICRON is continually improving the quality, reliability, function and design. ISOMICRON reserves the right to make changes without further notices.
- The characteristic curves shown in this datasheet are representing typical performance which are not guaranteed.
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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 ISOMICRON 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 ISOMICRON'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.