

Features

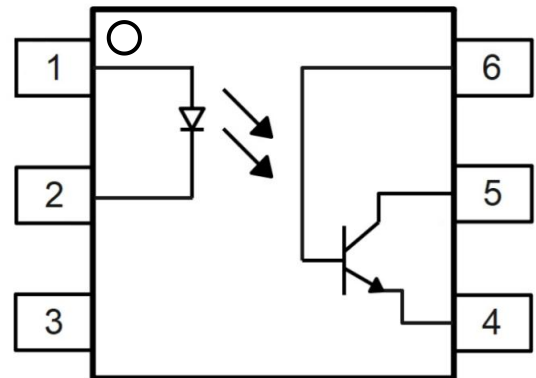
- High isolation 5000 V_{RMS}
- CTR flexibility available see order information
- DC input with transistor output
- Operating temperature range - 40 °C to 110 °C
- REACH compliance
- Halogen free
- MSL class 1
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC – GB4943.1

Applications




- Switch mode power supplies
- Programmable controllers
- Household appliances
- Office equipment

Description

The CNY17-X, CNY17F-X series combine an AlGaAs infrared emitting diode as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic DIP6 package with different lead forming options.



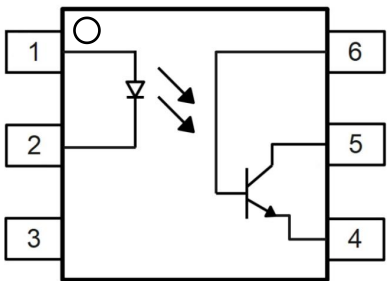
ORDERING INFORMATION

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity
	CNY17-X0E	DIP6	CNY17(F)-X /YYXX A	Tube	500mm	50
	CNY17F-X0E					
	CNY17-X1E	DIP6-M				
	CNY17F-X1E					
	CNY17-X5E	DIP6-SL		Reel	13 "	1000
	CNY17F-X5E					

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PIN CONFIGURATION AND FUNCTIONS

	Pin	Name
	1	Anode
	2	Cathode
	3	NC
	4	Emitter
	5	Collector
	6	Base(CNY17) or NC(CNY17-F)

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}	80	V	
Emitter - Collector Voltage	V_{ECO}	7	V	
Collector Current	I_C	50	mA	
Output Power Dissipation	P_O	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	250	mW	
Isolation Voltage	V_{iso}	5000	Vrms	2
Operating Temperature	T_{opr}	-40~110	°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 (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}	-	10	-	pF	V=0, f=1kHz
OUTPUT							
Collector Dark Current		I _{CEO}	-	-	100	nA	V _{CE} =20V, I _F =0
Collector-Emitter Breakdown Voltage		BV _{CEO}	80	-	-	V	I _C =0.1mA, I _F =0
Emitter-Collector Breakdown Voltage		BV _{ECO}	7	-	-	V	I _E =0.1mA, I _F =0
TRANSFER CHARACTERISTICS							
Current Transfer Ratio	CNY17-1/CNY17F-1	CTR	40	-	80	%	I _F =10mA, V _{CE} =5V
	CNY17-2/CNY17F-2		63	-	125		
	CNY17-3/CNY17F-3		100	-	200		
	CNY17-4/CNY17F-4		160	-	320		
Current Transfer Ratio	CNY17-1/CNY17F-1	CTR	13	-	-	%	I _F =1mA, V _{CE} =5V
	CNY17-2/CNY17F-2		22	-	-		
	CNY17-3/CNY17F-3		34	-	-		
	CNY17-4/CNY17F-4		56	-	-		
Collector-Emitter Saturation Voltage		V _{CE(sat)}	-	-	0.3	V	I _F =10mA, I _C =2.5mA
Isolation Resistance		R _{ISO}	10 ¹²	10 ¹⁴	-	Ω	DC500V, 40 ~ 60% R.H.
Floating Capacitance		C _{IO}	-	0.5	1	pF	V=0, f=1MHz
Turn-on Time		t _{on}	-	10	12	μs	V _{CC} =10V, I _C =2mA R _L =100Ω
Turn-off Time		t _{off}	-	9	12		
Rise Time		t _r	-	6	10		
Fall Time		t _f	-	8	10		
Rise Time		t _r	-	2	10		V _{CC} =5V, I _F =10mA R _L =75Ω
Fall Time		t _f	-	3	10		

CHARACTERISTIC CURVES

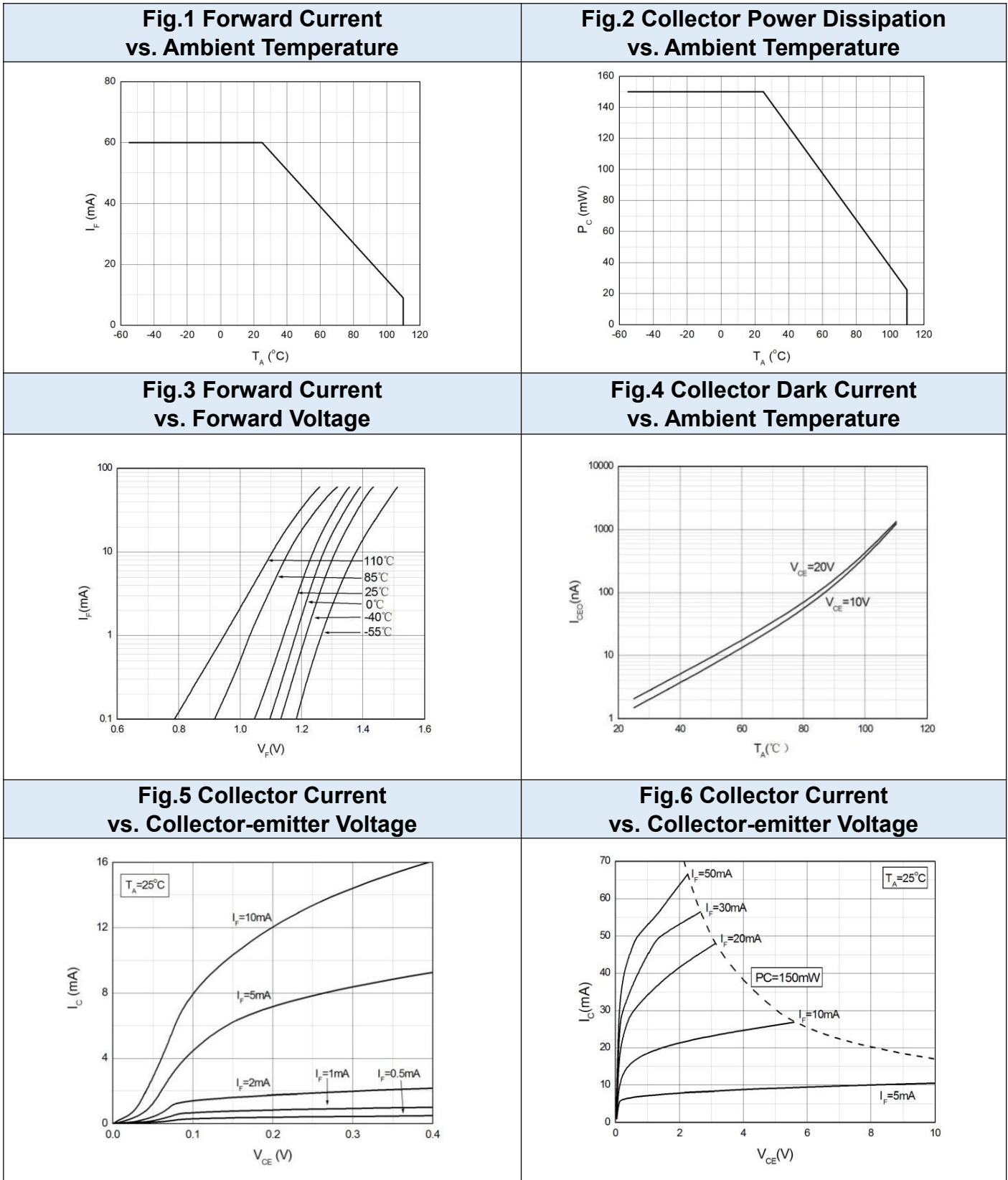


Fig.7 Normalized Current Transfer Ratio vs. Forward Current

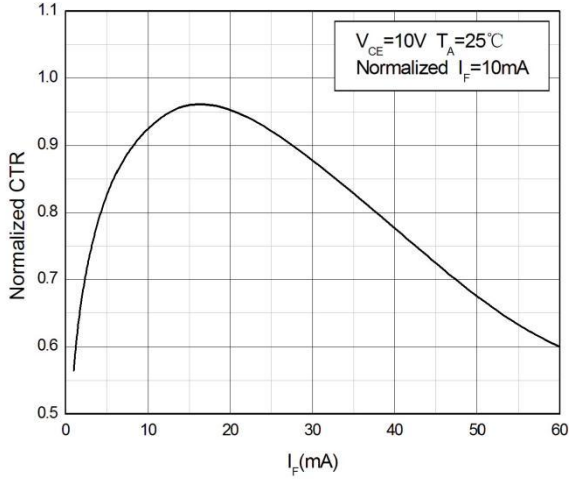


Fig.8 Normalized Current Transfer Ratio vs. Ambient Temperature

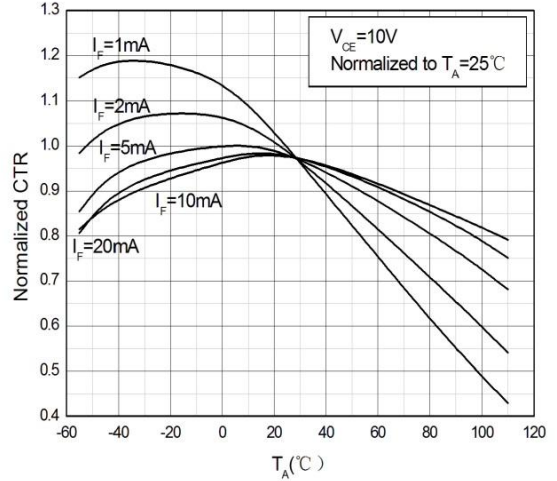


Fig.9 Current Transfer Ratio(Unsaturated) vs Base-Emitter Resistance

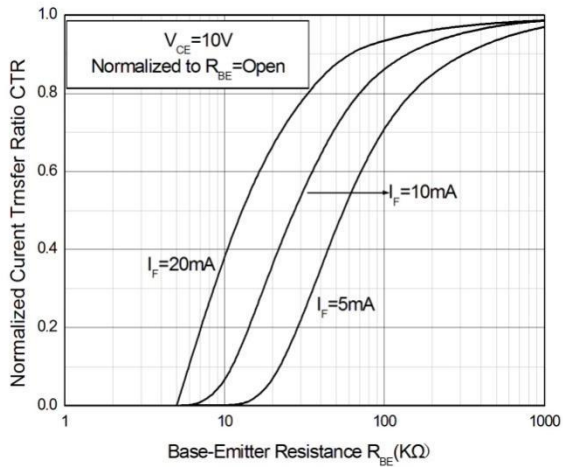
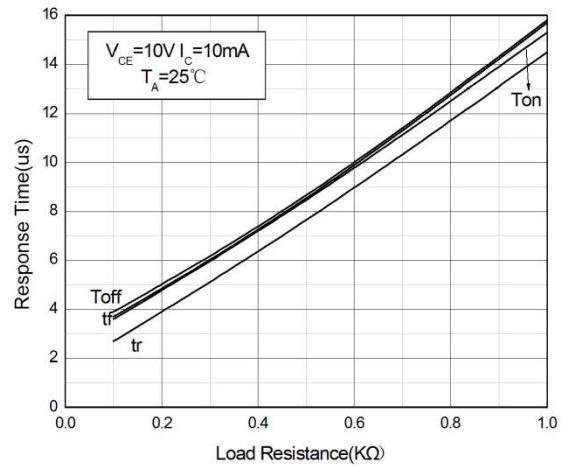
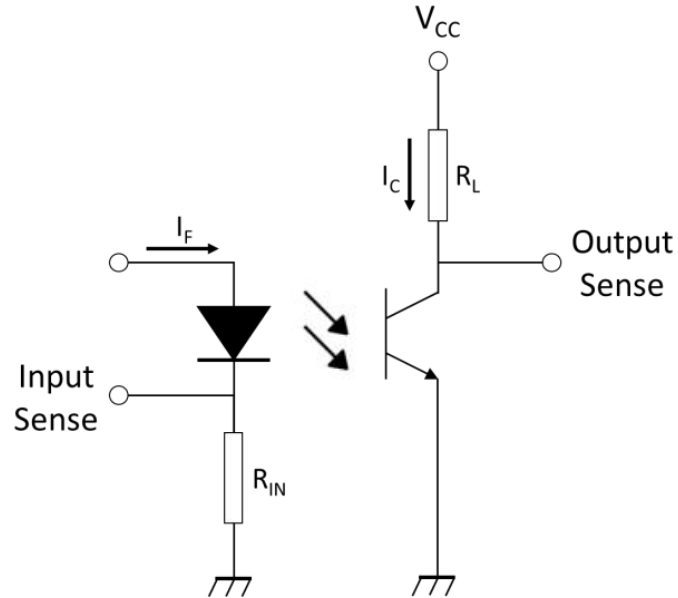


Fig.10 Switching Time vs. Load Resistance

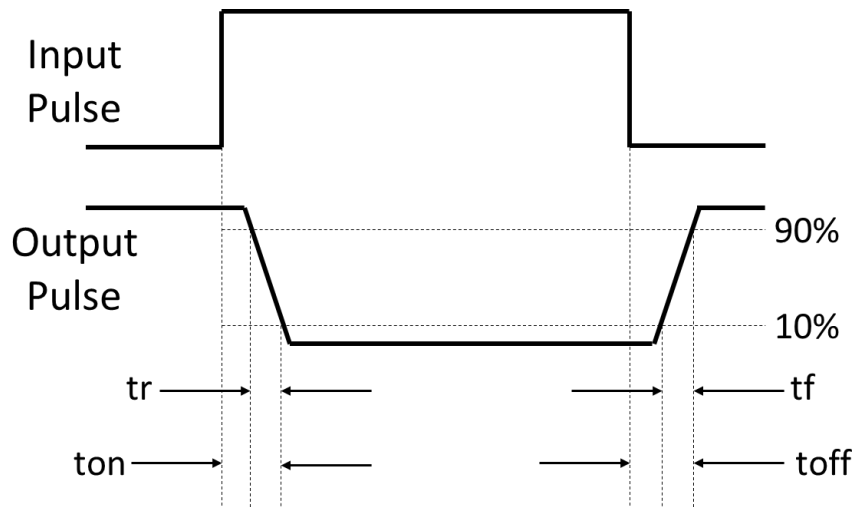


TEST CIRCUITS

Test Circuits of Response Time

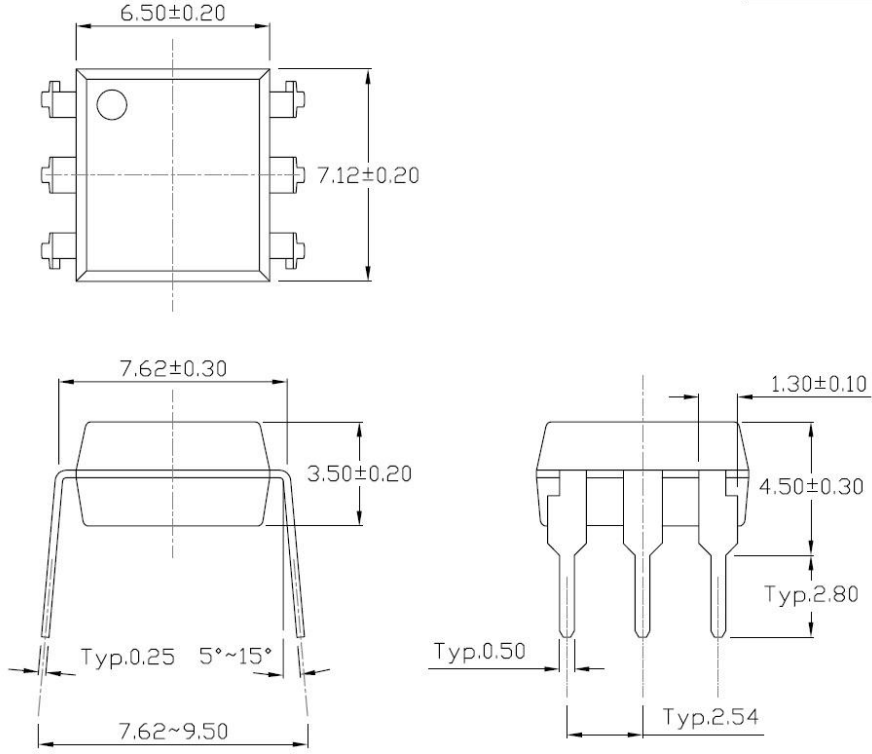


Curves of Response Time

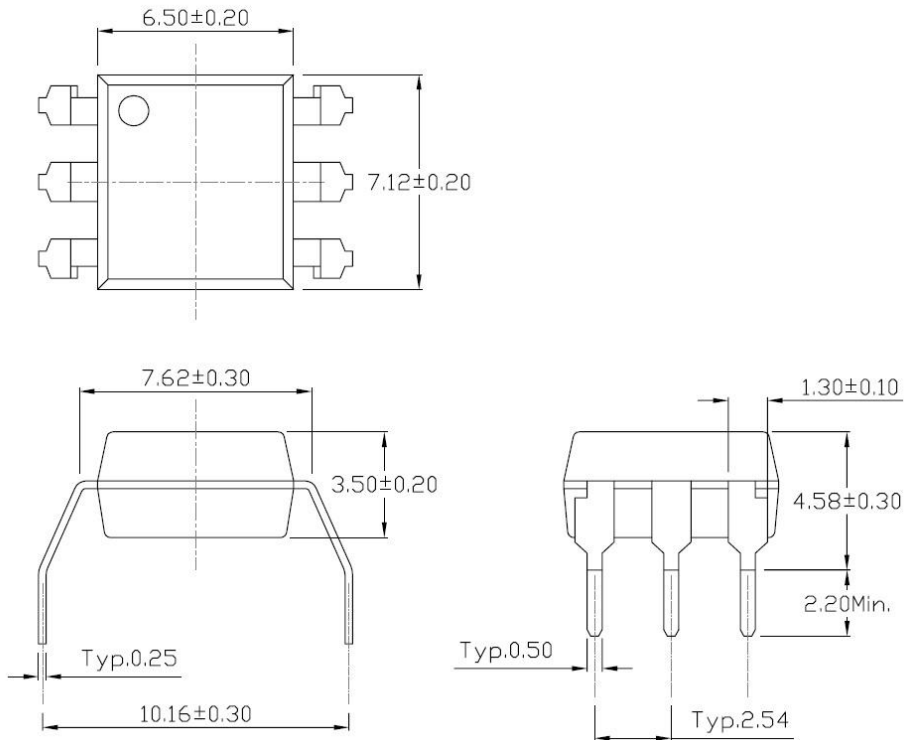


PACKAGE DIMENSIONS

Standard DIP – Through Hole (DIP Type)

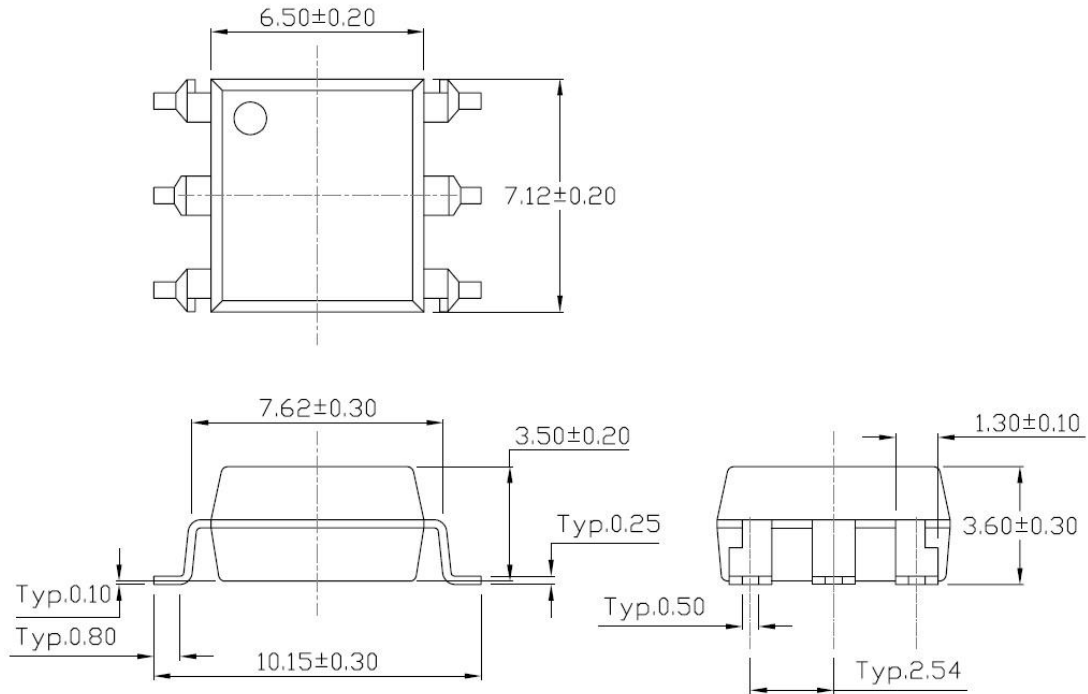


Gullwing (400mil) Lead Forming – Through Hole (M Type)



PACKAGE DIMENSIONS

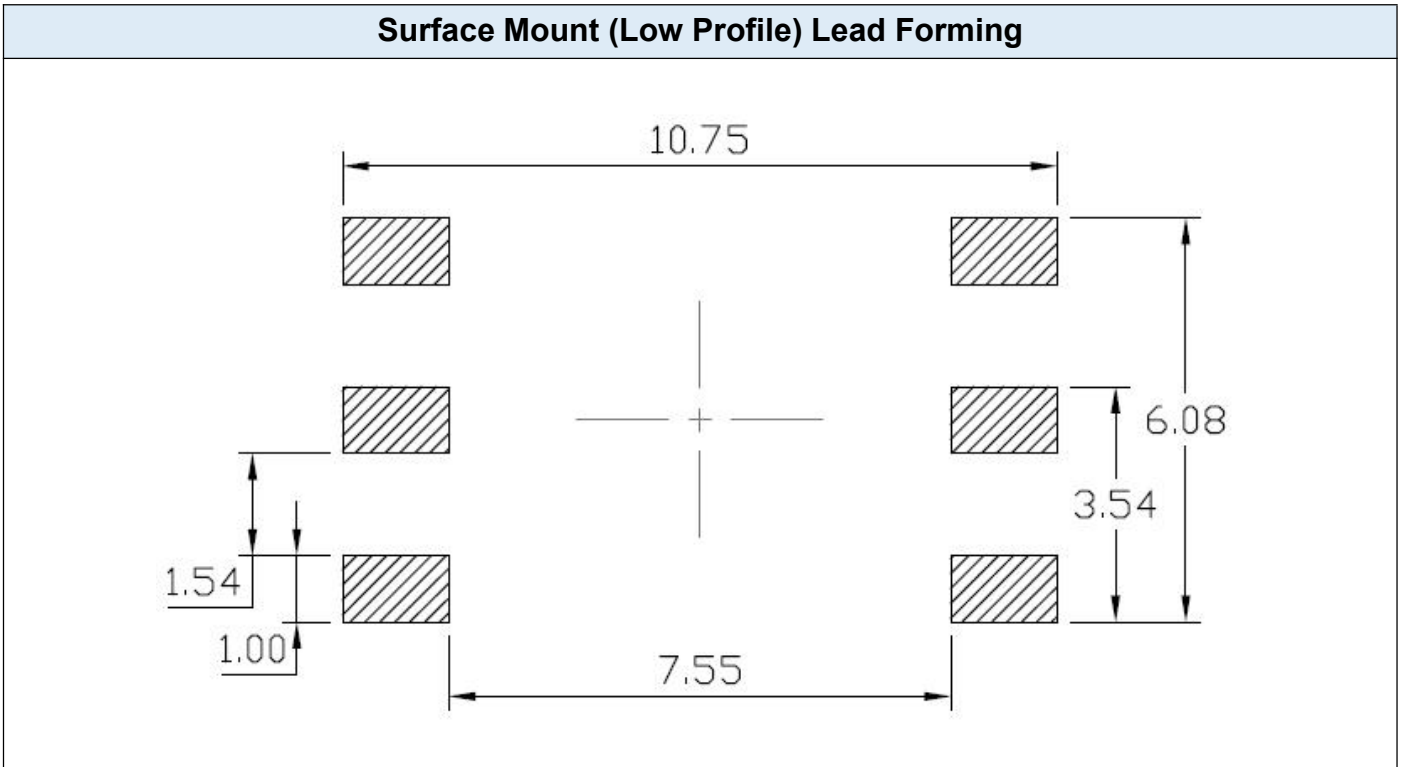
Surface Mount (Low Profile) Lead Forming (SL Type)



- **Dimensions in mm unless otherwise stated**

RECOMMENDED SOLDER MASK

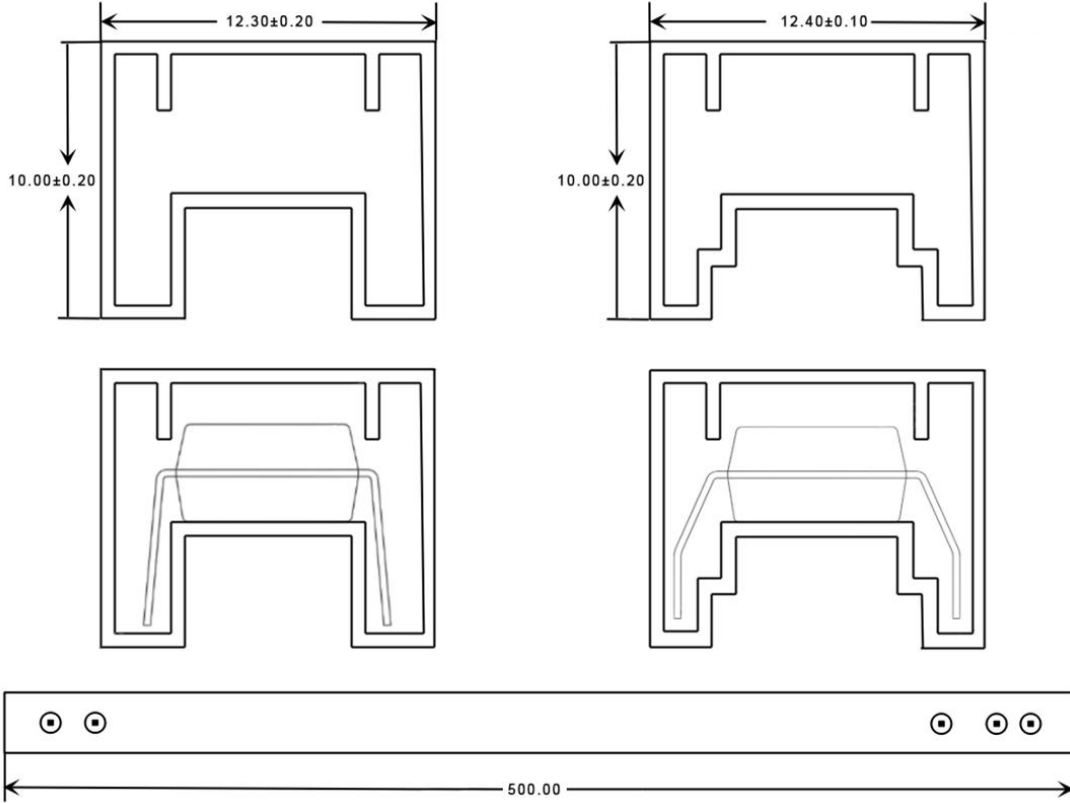
Surface Mount (Low Profile) Lead Forming



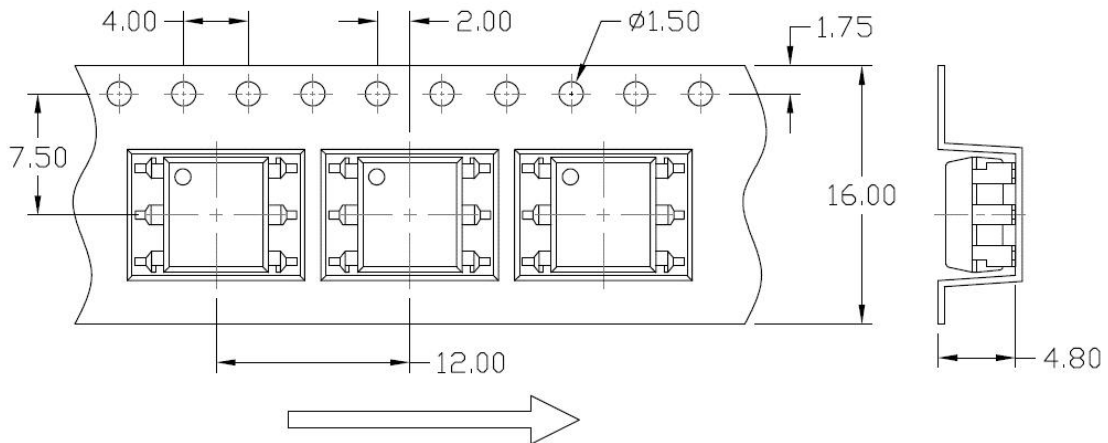
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CARRIER TAPE SPECIFICATIONS

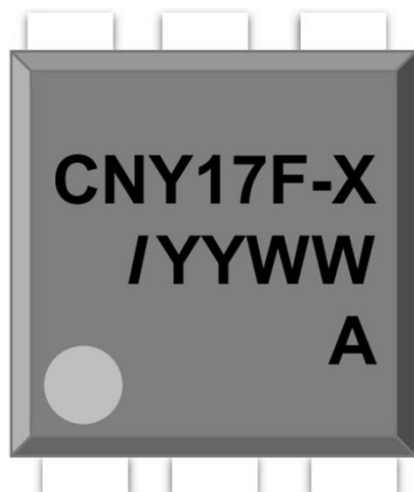
Option DIP6 & DIP6-M



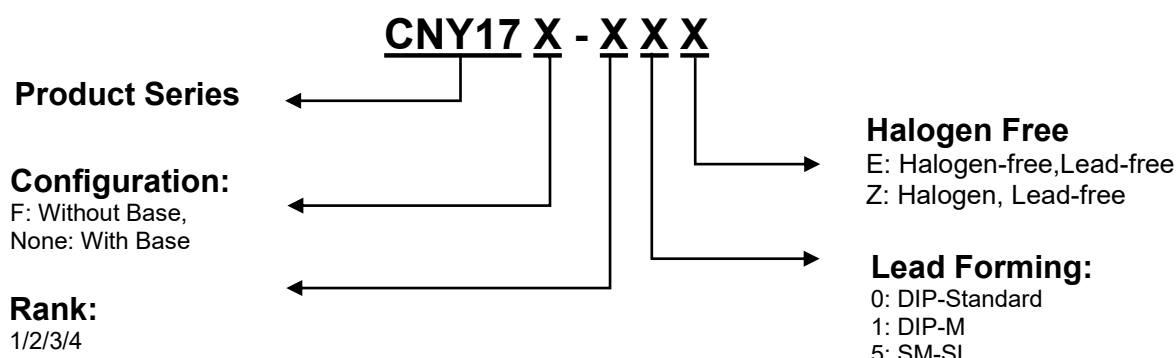
Option DIP6-SL



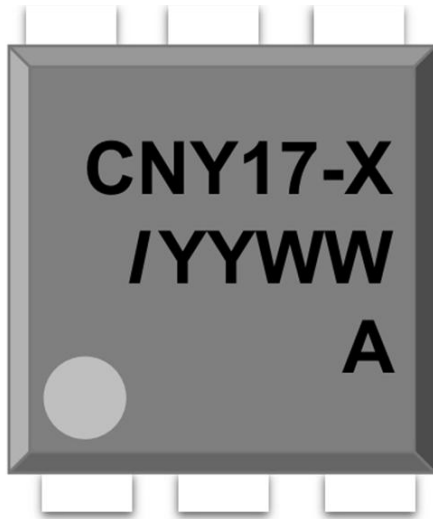
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ORDERING AND MARKING INFORMATION
Marking Information


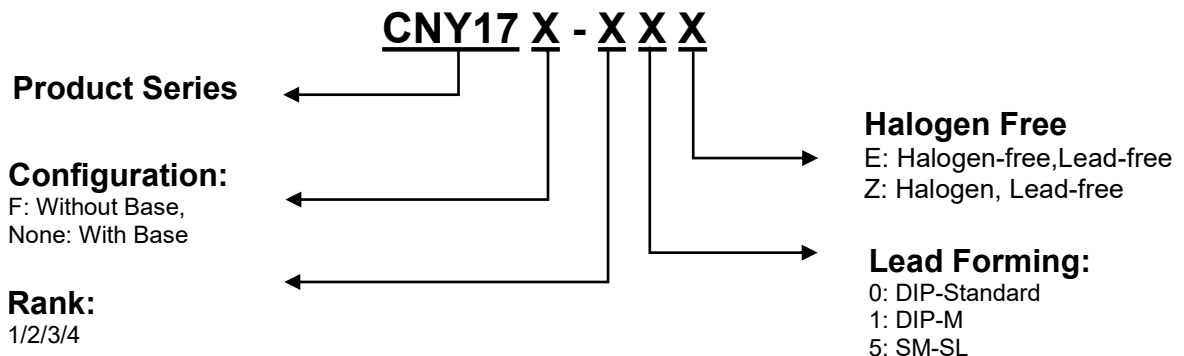
CNY17 : Product series
F : Configuration(F: Without Base, None: With Base)
X : Rank
I : ISOMICRON
YY : Fiscal Year
WW : Work Week
A : Manufacturing Code

Order Code

Packing Quantity

Option	Quantity	Quantity – Inner box	Quantity – Outer box
DIP-Standard	50 Units/Tube	20 Tubes/Inner box	6 Inner box/Outer box = 6k Units
DIP-M	50 Units/Tube	20 Tubes/Inner box	6 Inner box/Outer box = 6k Units
SM-SL	1000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box = 10k Units

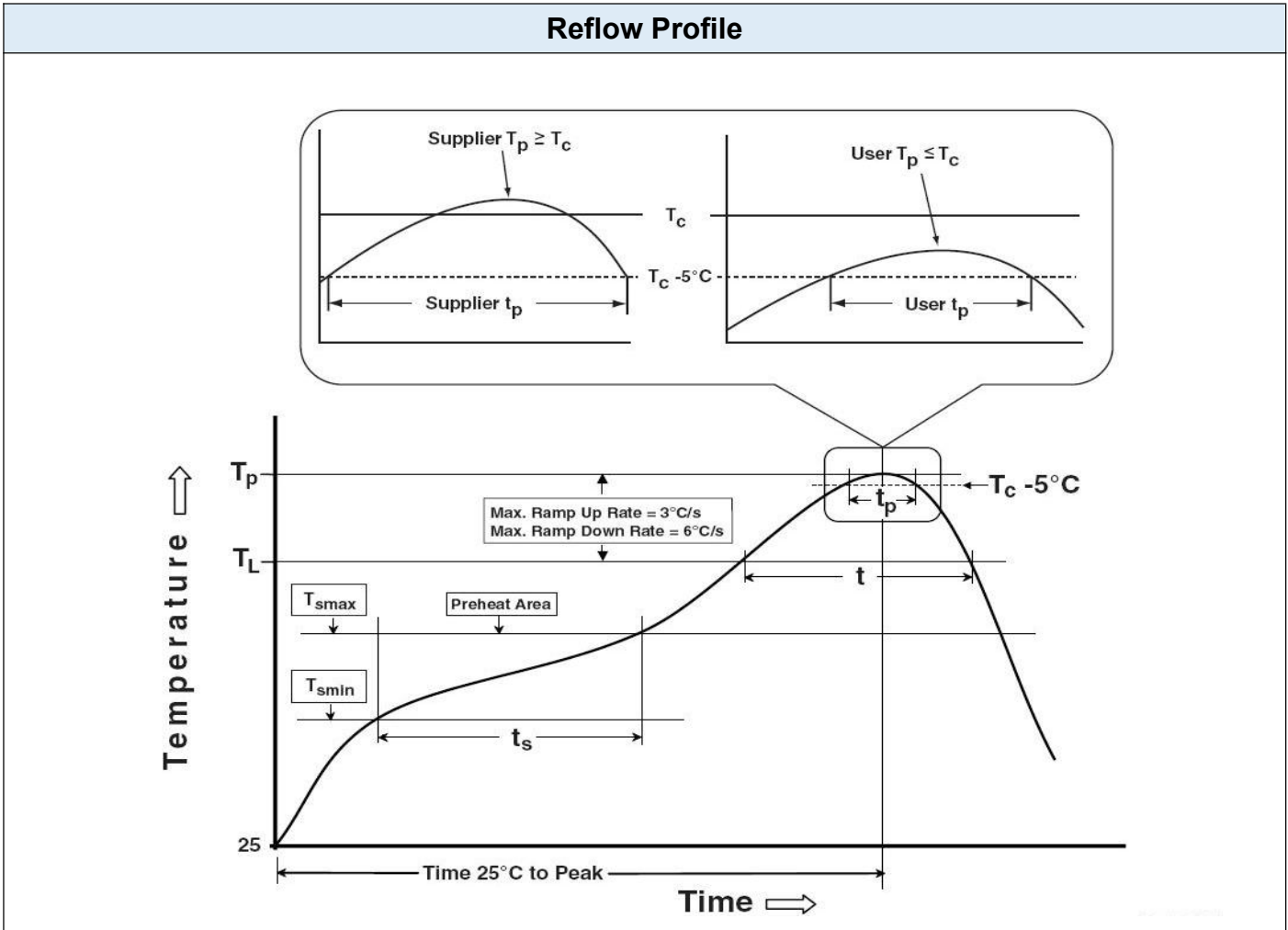
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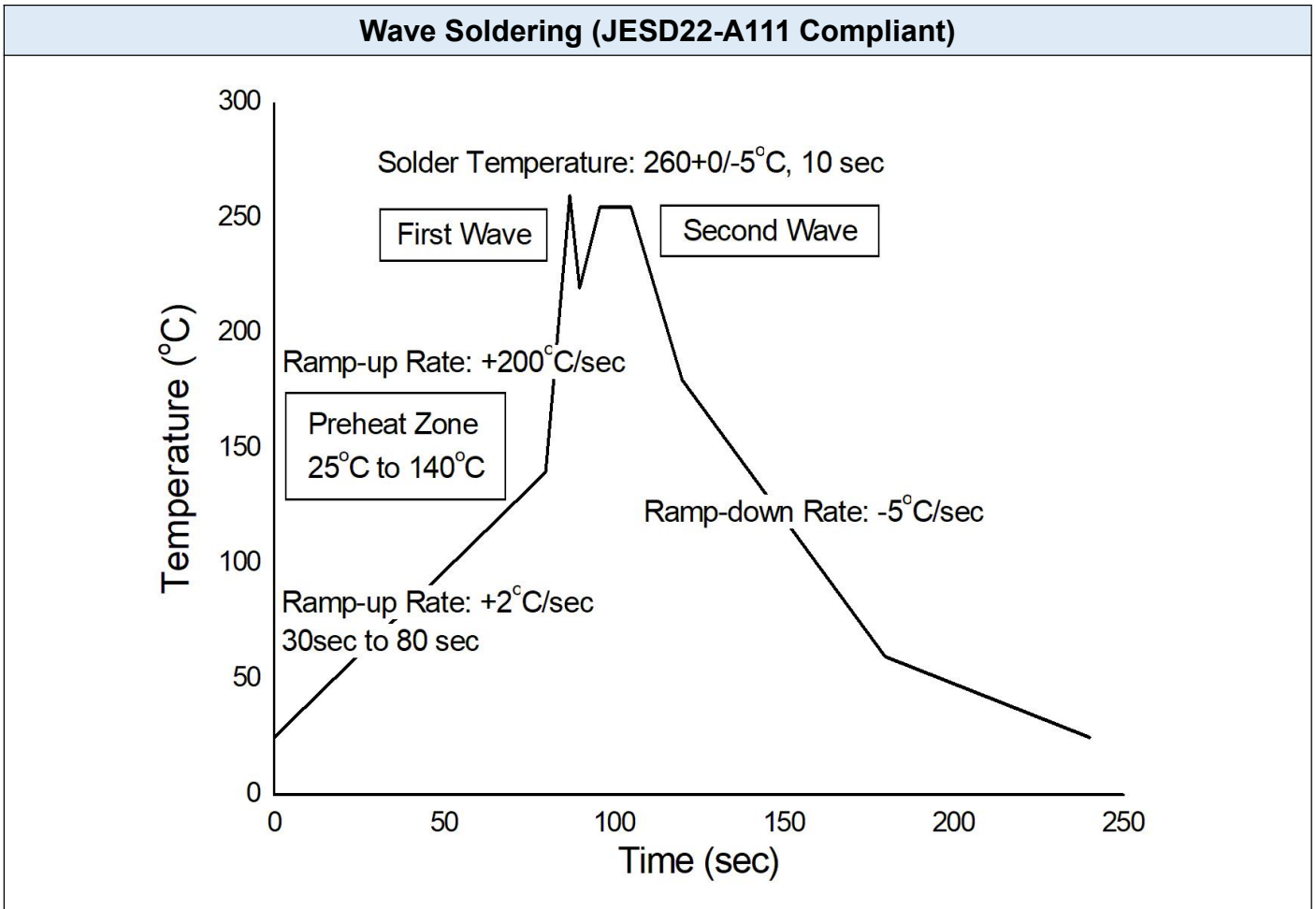
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REFLOW INFORMATION



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.

TEMPERATURE PROFILE OF SOLDERING



Hand Soldering By Soldering Iron	
Soldering Temperature	$380 \pm 0/-5^{\circ}\text{C}$
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

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