

Features

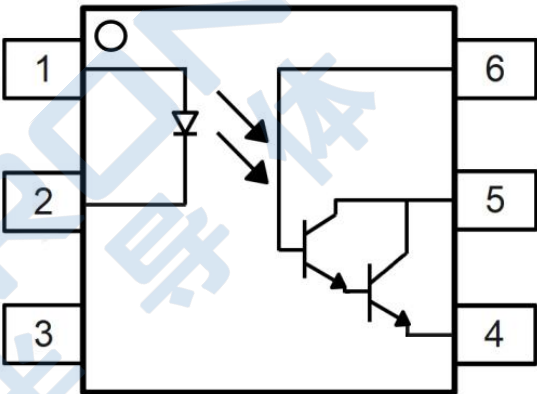
- High isolation 5000 VRMS
- DC input with transistor output
- Operating temperature range - 40 °C to 110 °C
- RoHS & REACH Compliance
- MSL class 1
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC - GB4943.1

Applications

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

Description

The 4N32, 4N33 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.



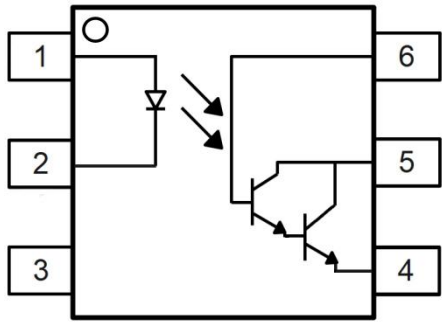
ORDERING INFORMATION

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity
	4NXX-000E	DIP6	4NXX /YYWW A	Tube	500mm	65
	4NXX-100E	DIP6-M		Tube	500mm	65
	4NXX-500E	DIP6-SL		Reel	13 "	1000

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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}	55	V	
Collector-Base Breakdown Voltage	V_{CBO}	55	V	
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($T_a=25^{\circ}\text{C}$)

Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition	Note
INPUT							
Forward Voltage	V_F	-	1.24	1.4	V	$I_F=10\text{mA}$	
Reverse Current	I_R	-	-	10	μA	$V_R=6\text{V}$	
Input Capacitance	C_{in}	-	50	-	pF	$V=0, f=1\text{kHz}$	
OUTPUT							
Collector Dark Current	I_{CEO}	-	-	100	nA	$V_{CE}=10\text{V}$	
Collector-Emitter Breakdown Voltage	BV_{CEO}	55	-	-	V	$I_C=0.1\text{mA}$	
Collector-Base Breakdown Voltage	BV_{CBO}	55	-	-	V	$I_C=0.1\text{mA}$	
Emitter-Collector Breakdown Voltage	BV_{ECO}	7	-	-	V	$I_E=0.1\text{mA}$	
Emitter-Base Breakdown	BV_{EBO}	7	-	-	V	$I_E=0.1\text{mA}, I_F=0$	

TRANSFER CHARACTERISTICS

Parameter	Symbol	Min	Typ.	Max	Unit	Test Condition	Note
Current Transfer Ratio	CTR	500	-	-	%	$I_F=10\text{mA}$, $V_{CE}=10\text{V}$	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	-	1.0	V	$I_F=8\text{mA}$, $I_C=2\text{mA}$	
Isolation Resistance	R_{IO}	10^{11}	-	-	Ω	$V_{IO}=500\text{Vdc}$	
Floating Capacitance	C_{IO}	-	0.8	-	pF	$V=0$, $f=1\text{MHz}$	
Turn On Time	t_{on}	-	-	5	μs	$I_C=10\text{mA}$, $V_{CC}=2\text{V}$, $R_L=100\Omega$	
Turn Off Time	t_{off}	-	-	100	μs	$I_C=10\text{mA}$, $V_{CC}=2\text{V}$, $R_L=100\Omega$	

CHARACTERISTIC CURVES

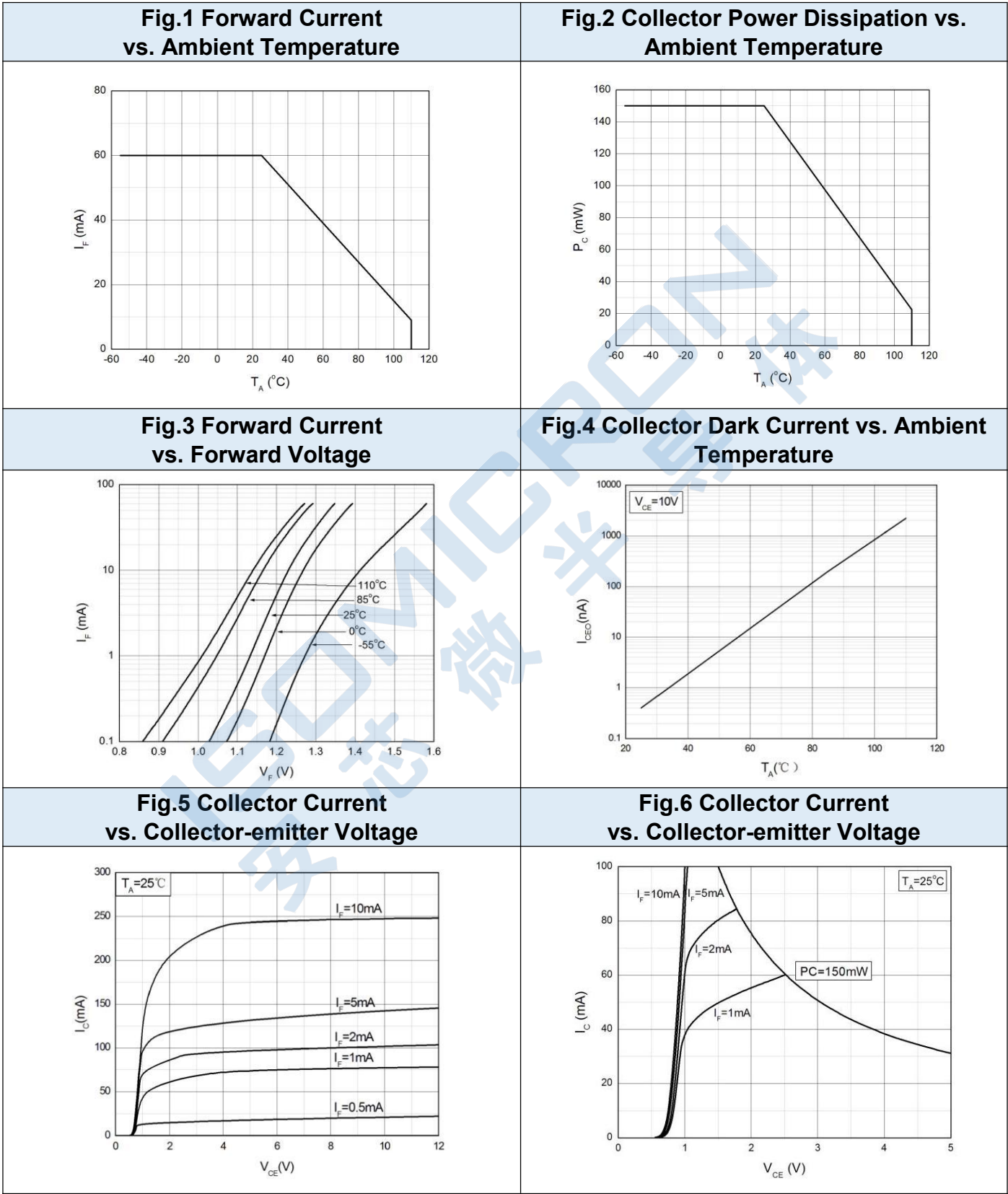


Fig.7 Normalized Current Transfer Ratio vs. Forward Current

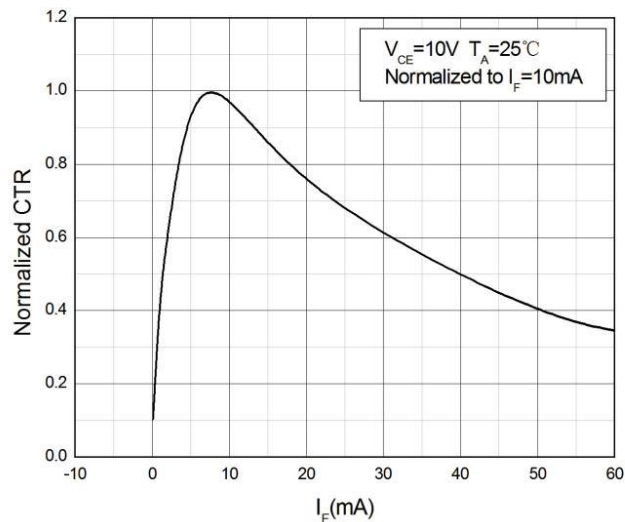


Fig.8 Normalized Current Transfer Ratio vs. Ambient Temperature

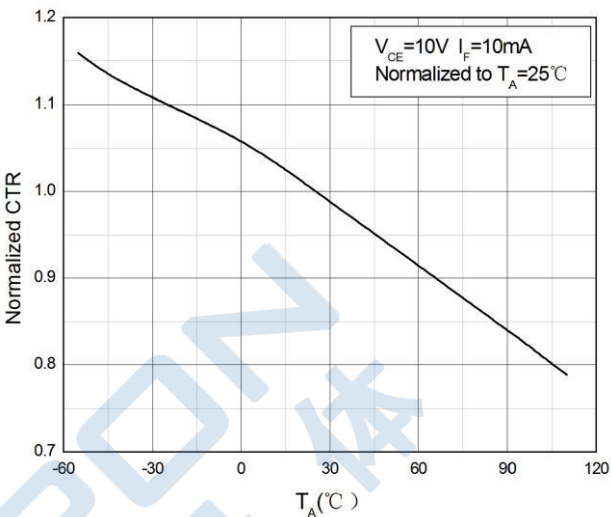


Fig.9 Collector-emitter Saturation Voltage vs. Ambient Temperature

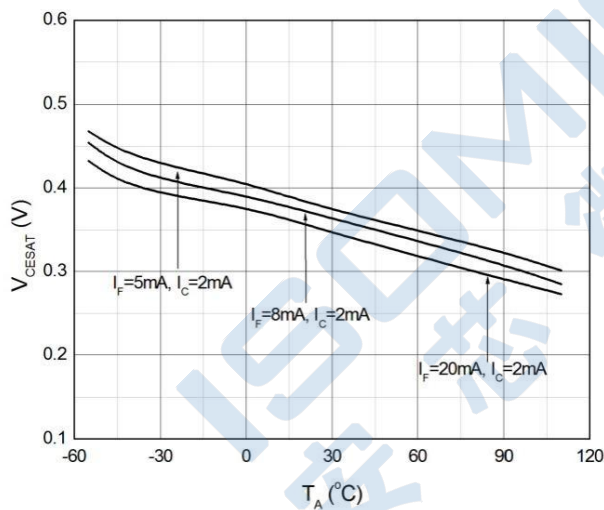
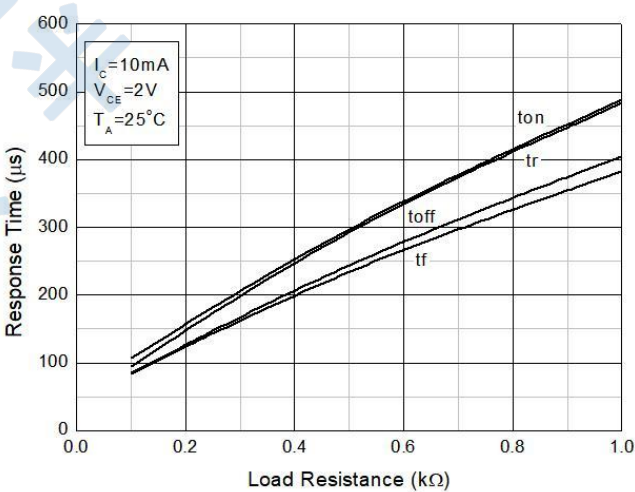
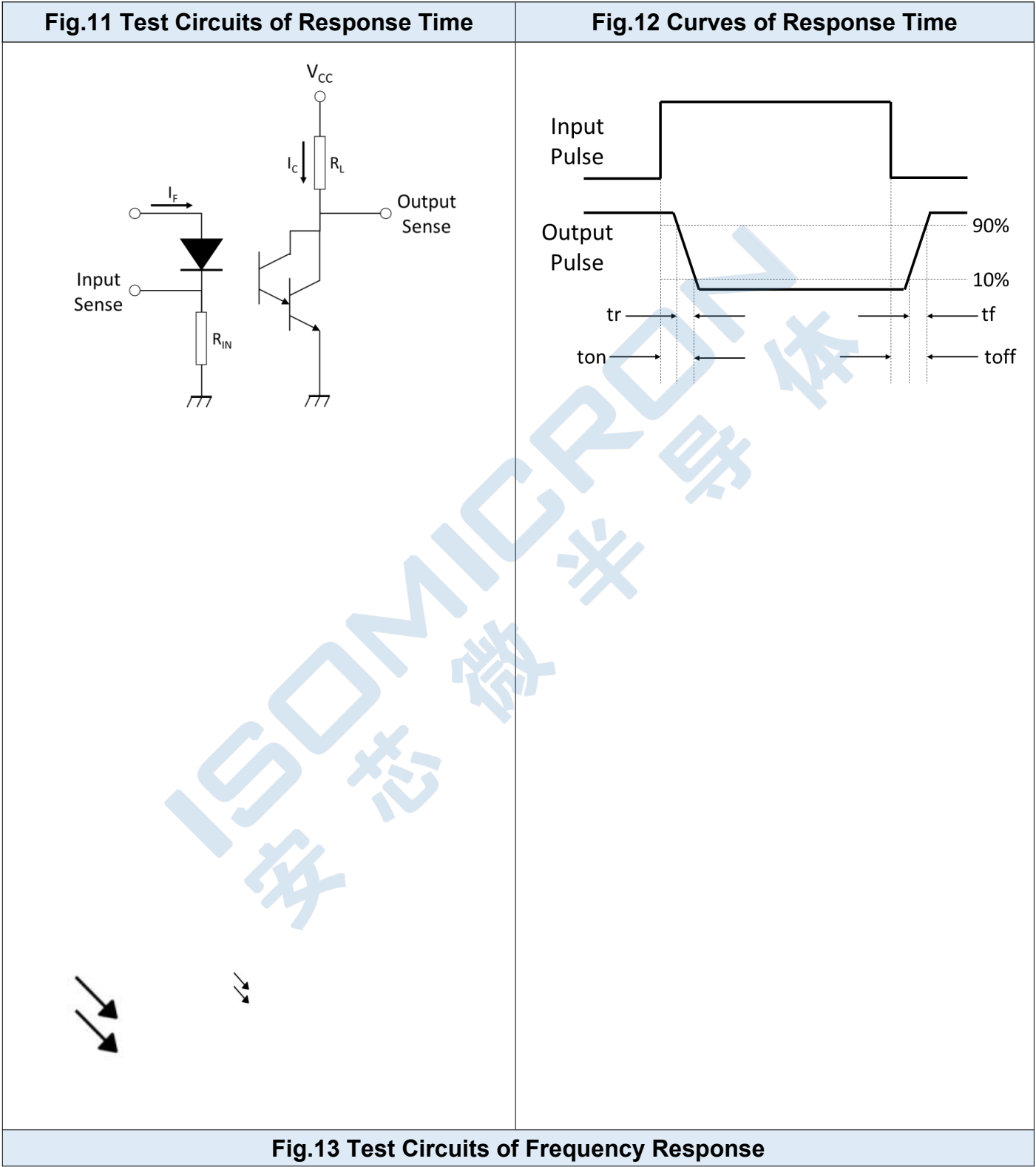
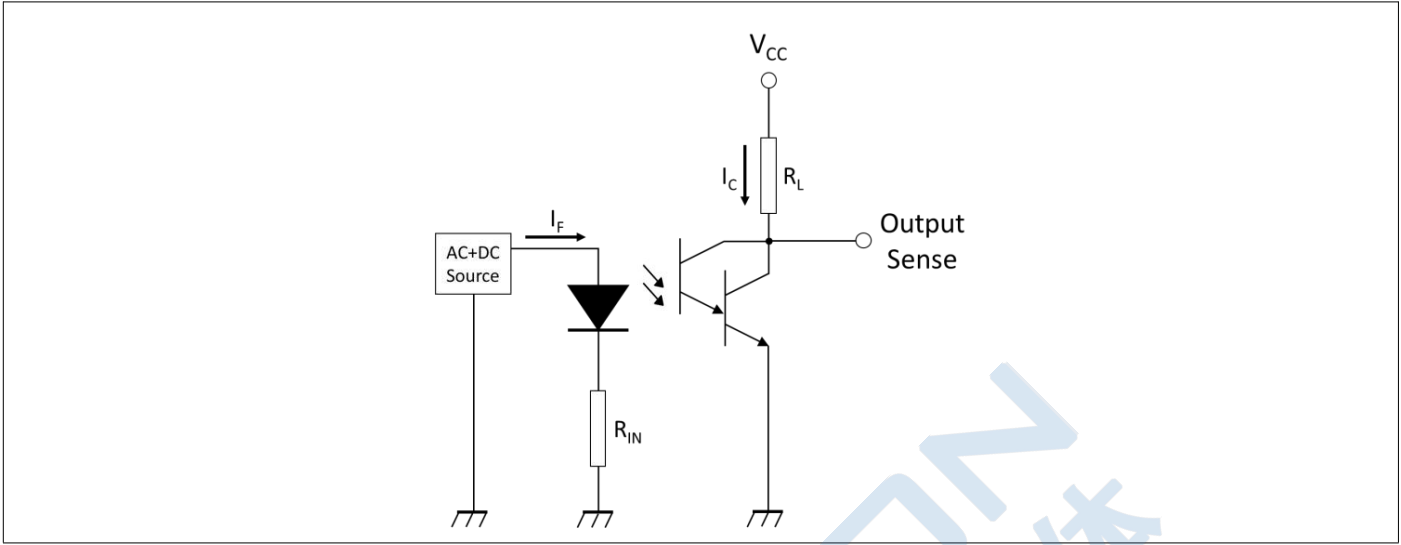


Fig.10 Switching Time vs. Load Resistance



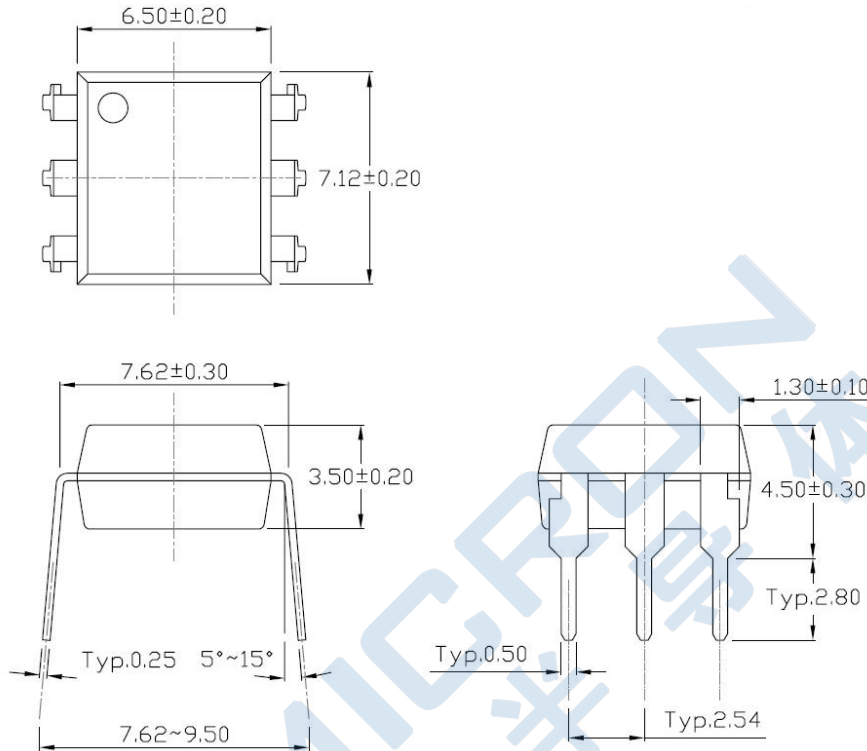
TEST CIRCUITS



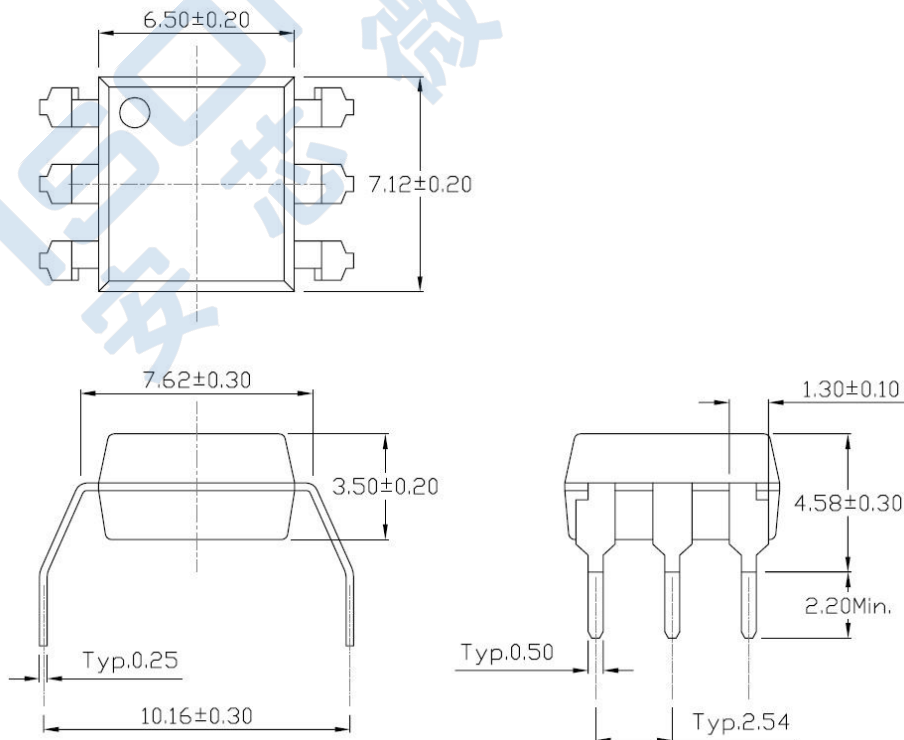


PACKAGE DIMENSIONS

Standard DIP – Through Hole (DIP Type)

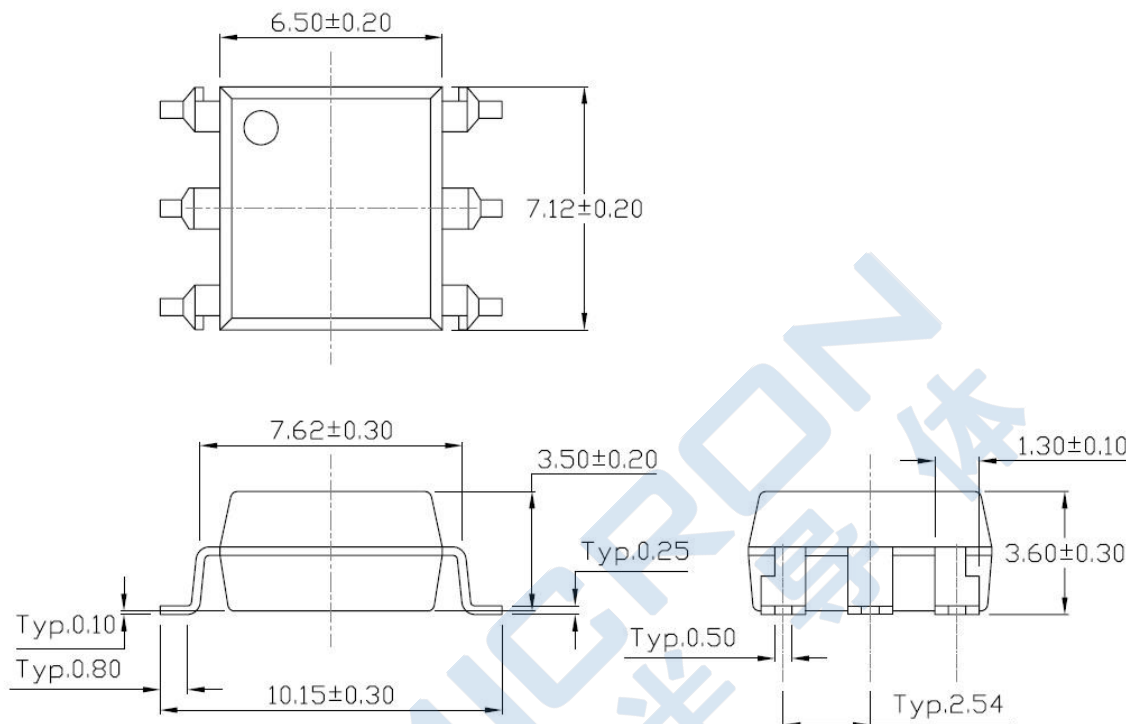


Gullwing (400mil) Lead Forming – Through Hole (M Type)



PACKAGE DIMENSIONS

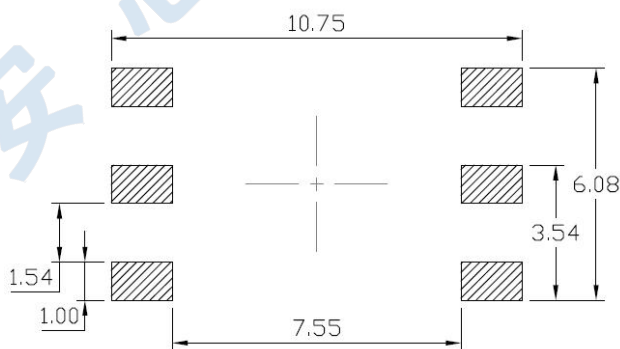
Surface Mount (Low Profile) Lead Forming (SL Type)



- Dimensions in mm unless otherwise stated

Recommended Solder Mask

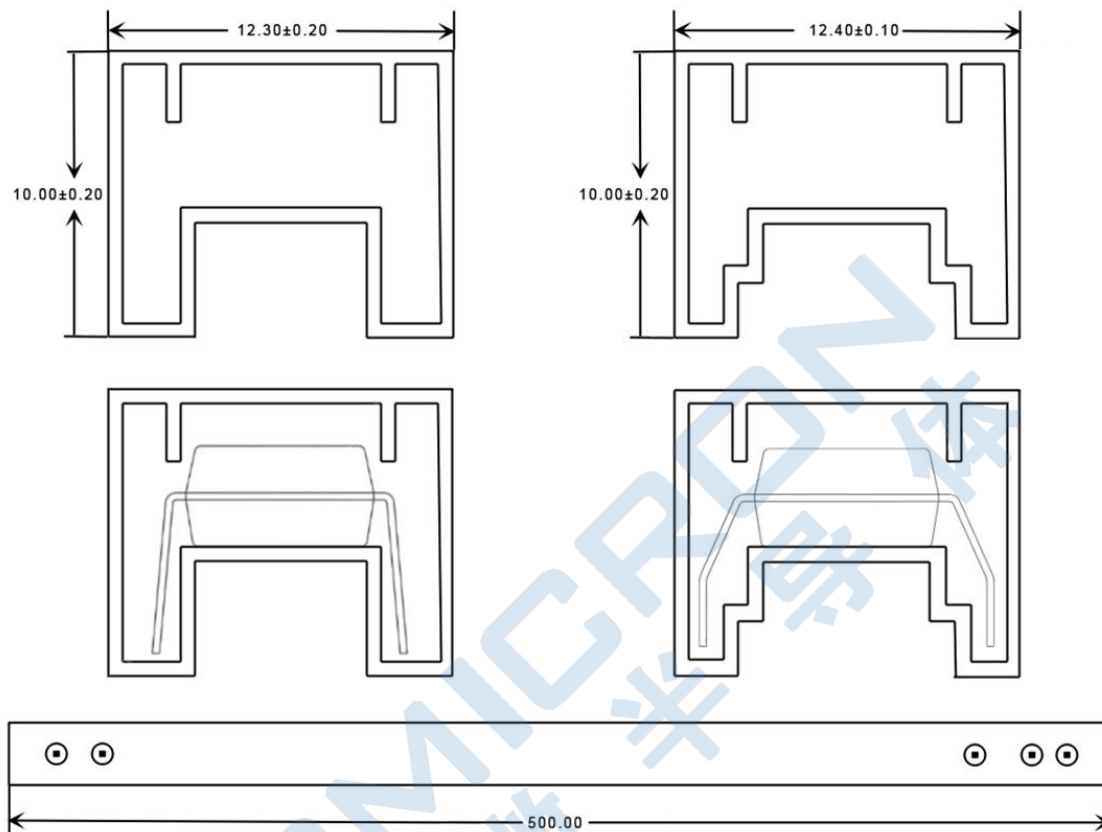
Surface Mount (Low Profile) Lead Forming



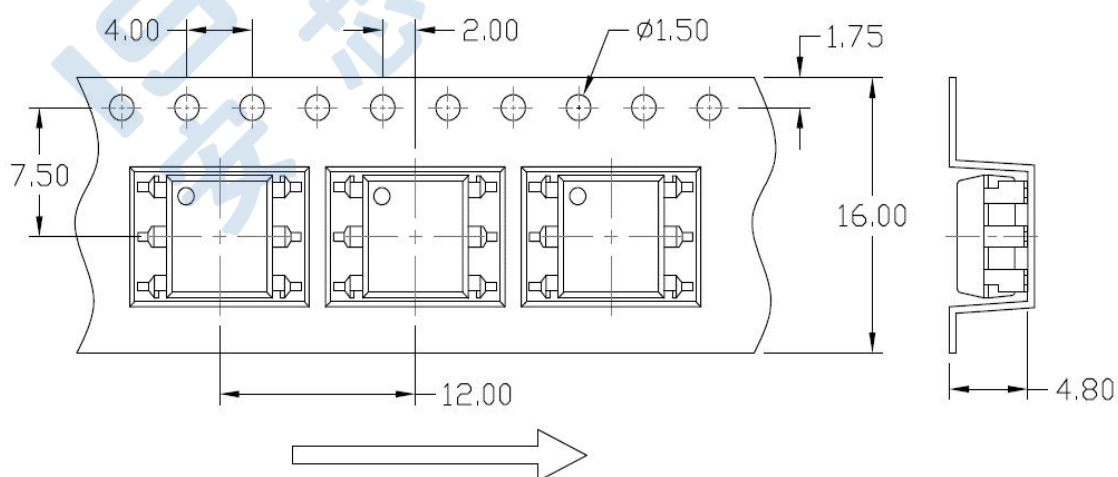
- Dimensions in mm unless otherwise stated

CARRIER TAPE SPECIFICATIONS

Option DIP6 & DIP6-M



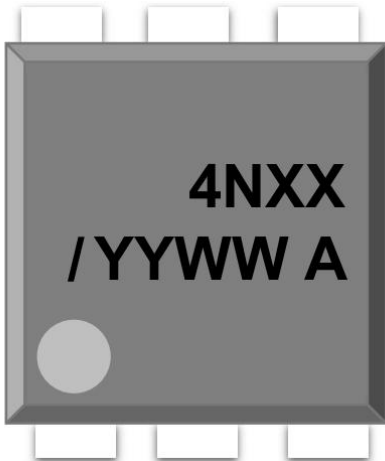
Option DIP6-SL



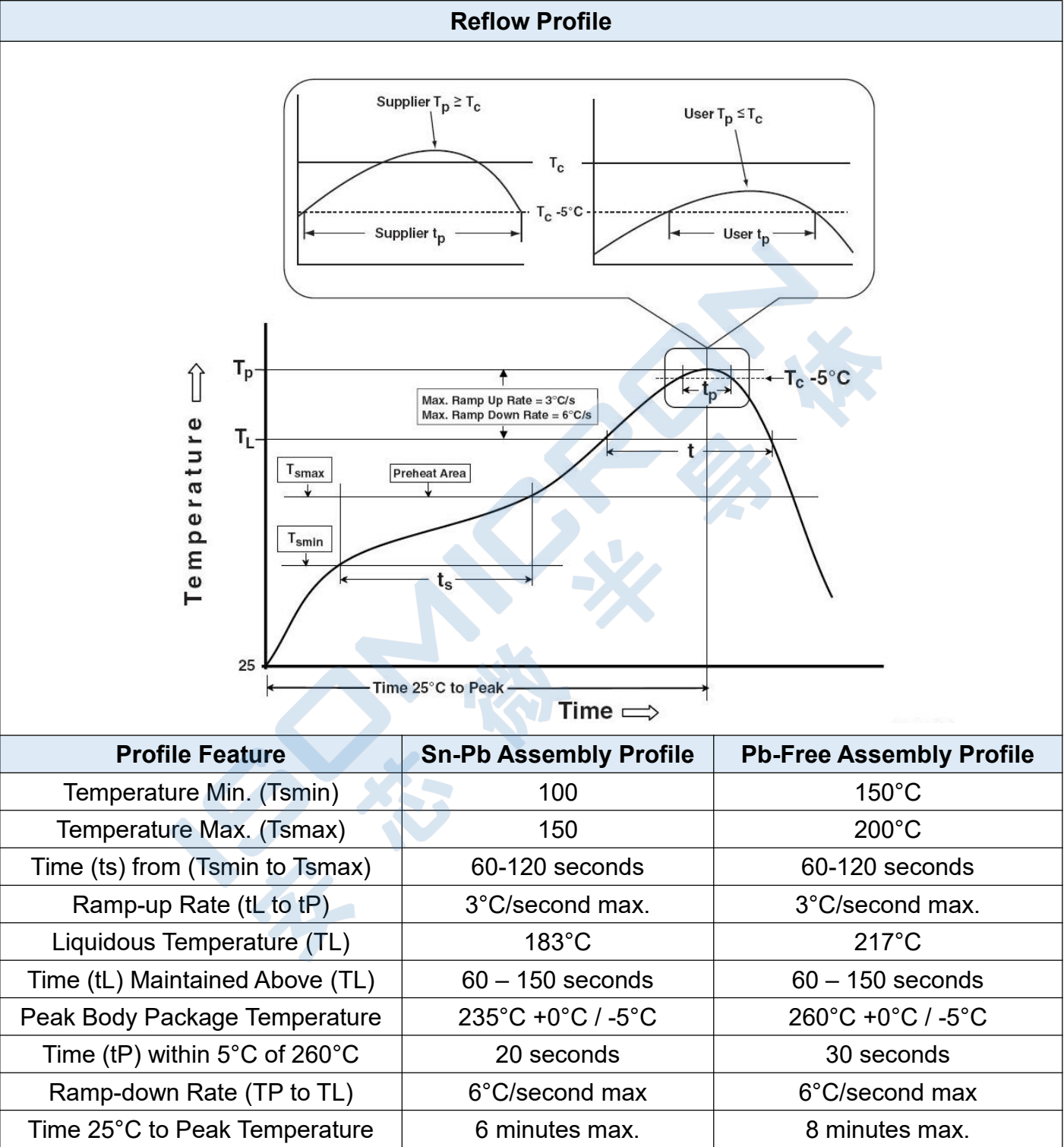
● Dimensions in mm unless otherwise stated
4N32/4N33

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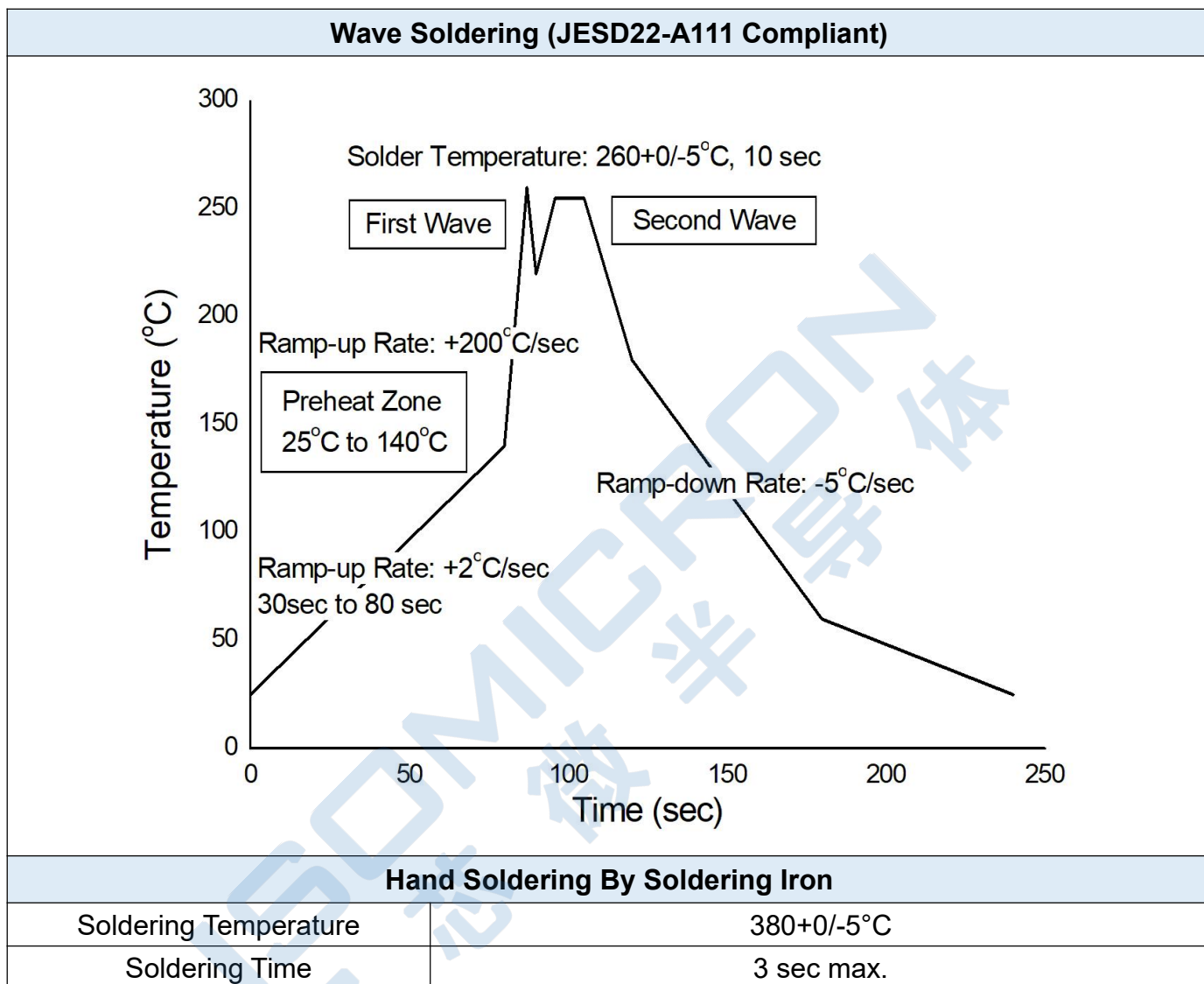
ORDERING AND MARKING INFORMATION

Marking Information			
		4NXX : Product Series & Rank / : ISOMICRON YY : Fiscal Year WW : Work Week A : Manufacturing Code	
Order Code			
Product Series Rank 32/33 Lead Forming 0: DIP-Standard 1: DIP-M Type 5: SM-SL Type 4N XX - X X X X Halogen Free E: Halogen-free, Lead-free Z: Halogen, Lead-free CTR Rank Performance 0: Normal 1: Enhanced			
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



TEMPERATURE PROFILE OF SOLDERING



- 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.
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- Discoloration might be occurred on the package surface after soldering, reflow or long-time use. It neither impacts the performance nor reliability.