

### Features

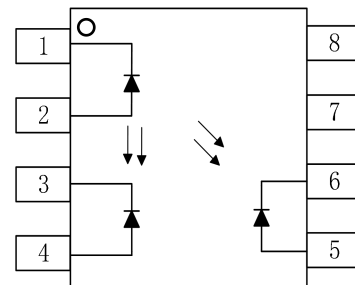
- Low nonlinearity: 0.01%
- K3 (IPD2/IPD1) transfer gain: ±15%/5%
- High isolation voltage between input and output ( $V_{ISO}=5000$  Vrms )
- Meet reinforced insulation standards
- Regulatory Approvals
  - UL - UL1577
  - VDE - EN60747-5-5(VDE0884-5)
  - CQC - GB4943.1

### Applications



- Switching power supply, intelligent meter
- Industrial control, measuring instruments
- Office equipment such as copiers
- Household appliances: such as air conditioners, fans, water heaters, etc.

### Description

The ICPL-2700 ,ICPL-2701 device is a highly linear analog optocoupler composed of a GaAs infrared light emitting diode and two photodiodes. Among them, one photodiode is used for detection and feedback, thereby adjusting and stabilizing the light output intensity of the LED, and achieving linear isolation of the other photodiode.



### ORDERING INFORMATION

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity
	ICPL-2700-000E ICPL-2701-000E	WDIP8	ICPL 270X /YYWW A	Tube	500mm	40
	ICPL-2700-500E ICPL-2701-500E	WDIP8-SL		Reel	13 "	1000

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### PIN CONFIGURATION AND FUNCTIONS

Pin	Name
1	LED Cathode
2	LED Anode
3	PD1 Cathode
4	PD1 Anode
5	PD2 Anode
6	PD2 Cathode
7	NC
8	NC

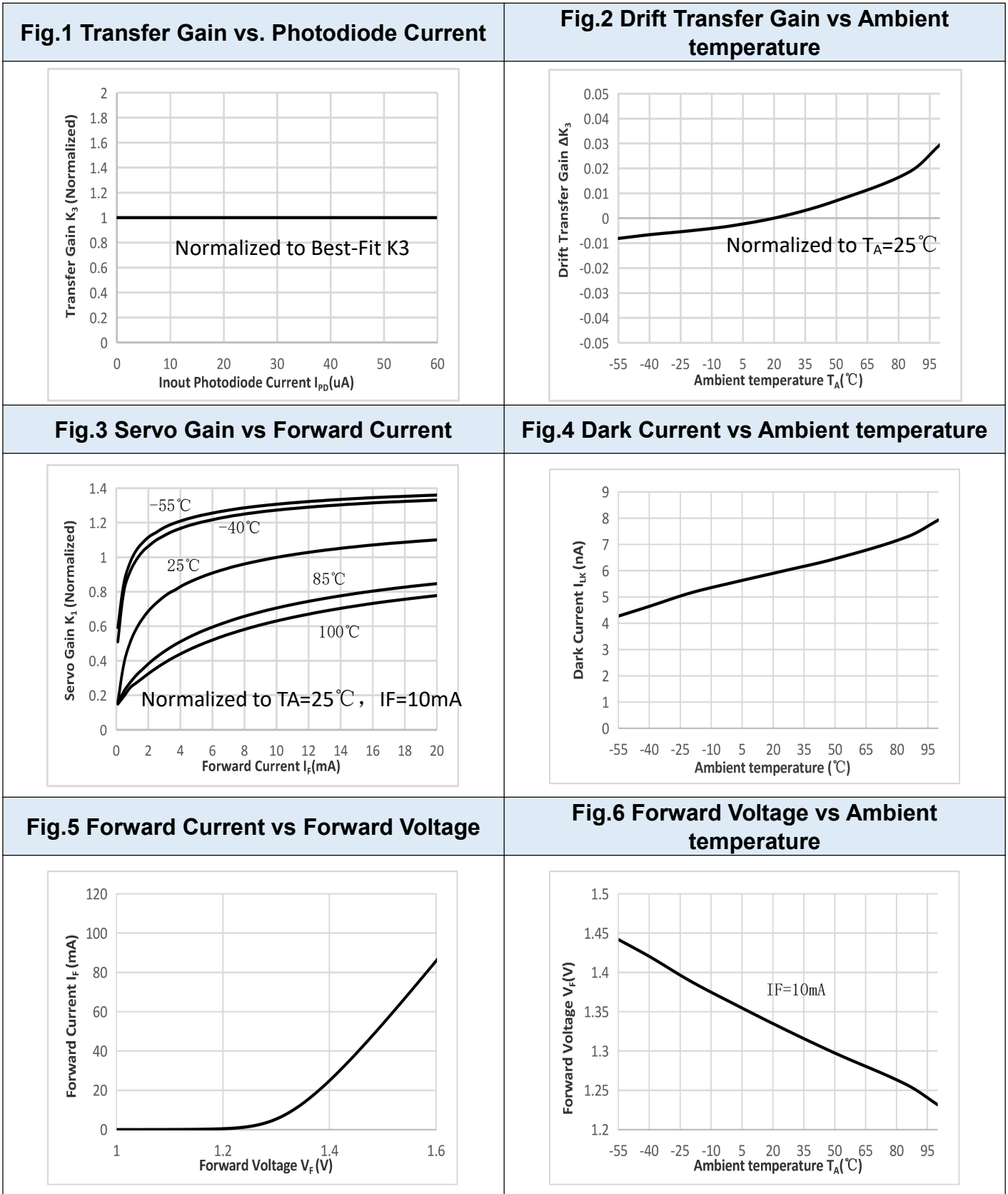
### ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit	Note
Input	Forward Current	$I_F$	25	mA	
	Backward Voltage	$V_R$	2.5	V	
	Power Dissipation	$P_C$	60	mW	
	Power dissipation Derating factor (above $T_a = 90^\circ\text{C}$ )		2.2	mW/°C	
Output	Reverse Input Photodiode Voltage	$V_{PD1}$	30	V	
	Reverse Output Photodiode Voltage	$V_{PD2}$	30	V	
Total Power Dissipation		$P_{tot}$	500	mW	
Isolation Voltage		$V_{iso}$	5000	V	
Operating Temperature		$T_{opr}$	-55~100	°C	
Storage Temperature		$T_{stg}$	-55~125	°C	
Soldering Temperature		$T_{sol}$	260	°C	

**ELECTRO-OPTICAL CHARACTERISTICS (Ta=25°C)**

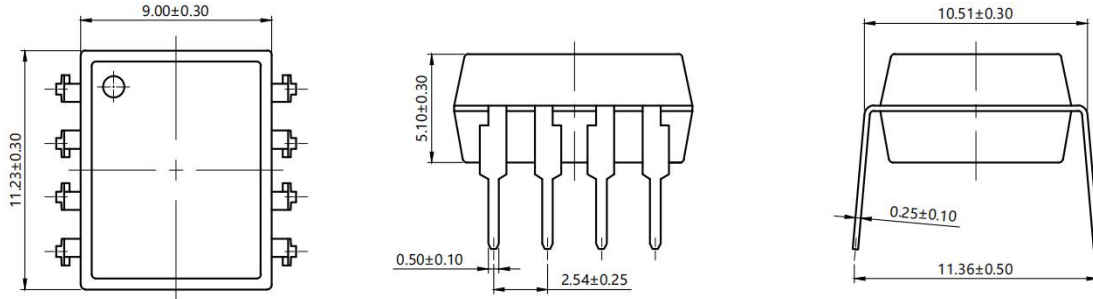
Parameter		Symbol	Min	Typ	Max	Unit	Condition	
Input	Forward Voltage	$V_F$	1.3	1.6	1.8	V	$I_F=10\text{mA}$	
	Back Current	$I_R$	-	-	10	$\mu\text{A}$	$V_R=5\text{V}$	
	LED Junction Capacitance	$C_{LED}$	-	30	-	pF	$V_F=0\text{V}$ $f=1\text{MHz}$	
	Temperature Coefficient of Forward Voltage	$\Delta V_F / \Delta T_A$	-	1.7	-	mV/°C	$I_F=10\text{mA}$	
Output	Dark Current	$I_{LK}$	-	0.5	25	nA	$0\text{V} < V_{PD} < 15\text{V}$	
	Photo diode Reverse Breakdown Voltage	BVRPD	30	150	-	V	$I_R = 100\mu\text{A}$	
	Photodiode Capacitance	$C_{PD}$	-	22	-	pF	$V_{PD}=0\text{V}$	
Transfer Characteristics	Servo Gain ( $I_{C1}/I_F$ )	2700	$K_1$	0.25	0.5	0.75	%	$I_F=10\text{mA}$ $0\text{V} < V_{PD} < 15\text{V}$
		2701		0.36	0.5	0.72		
	Forward Gain ( $I_{C2}/I_F$ )	2700	$K_2$	0.25	0.5	0.75		
		2701		0.36	0.5	0.72		
	Transfer Gain ( $K_2/K_1=I_{C2}/I_{C1}$ )	2700	$K_3$	0.85	1.00	1.15	-	$5\text{nA} < I_{PD} < 50\mu\text{A}$
		2701		0.95	1.00	1.05	-	$0\text{V} < V_{PD} < 15\text{V}$
	DC NonLinearity (Best Fit)	2700	$NL_{BF}$	-	0.01	0.25	%	-
		2701		-	0.01	0.05		
DC Nonlinearity (Ends Fit)		$NL_{EF}$	-	0.016	-	%	$5\text{nA} < I_{PD} < 50\mu\text{A}$ $0\text{V} < V_{PD} < 15\text{V}$	
Input-Output Resistance		$R_{I-O}$	$10^{12}$	-	-	$\Omega$	$V_O=500\text{VDC}$	
Input-Output		$C_{I-O}$	-	0.4	0.6	pF	$f=1\text{MHz}$	

**CHARACTERISTIC CURVES**

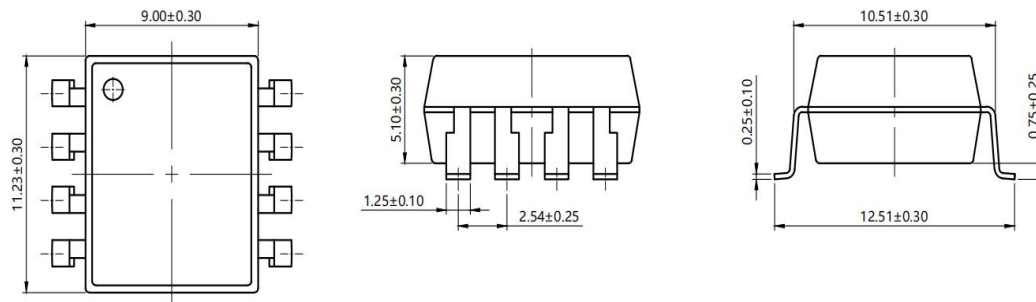


**PACKAGE DIMENSIONS**

**Standard DIP – Through Hole (DIP Type)**



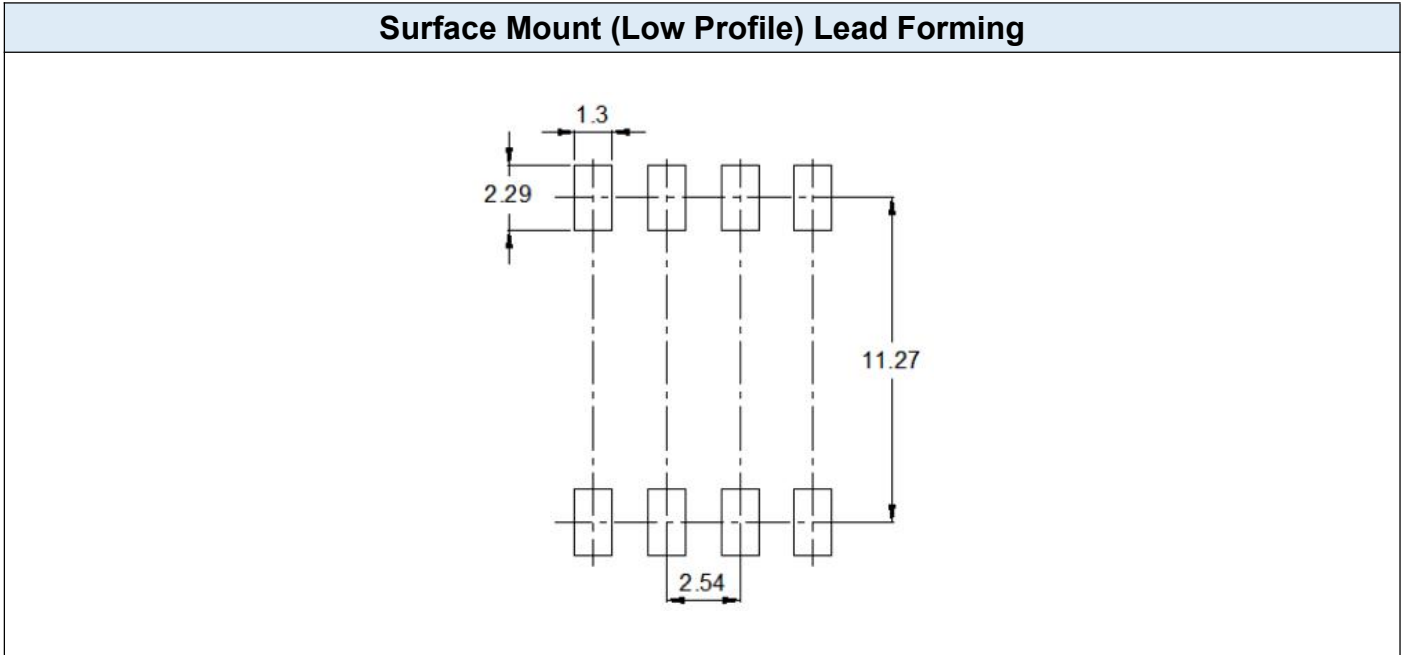
**Surface Mount (Low Profile) Lead Forming (SL Type)**



- Dimensions in mm unless otherwise stated

**RECOMMENDED SOLDER MASK**

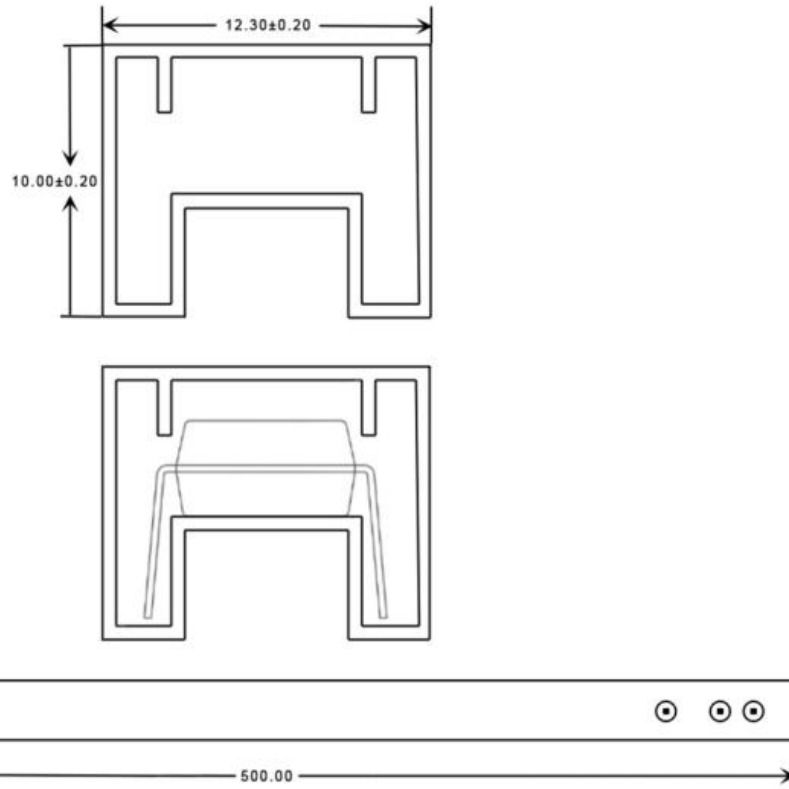
**Surface Mount (Low Profile) Lead Forming**



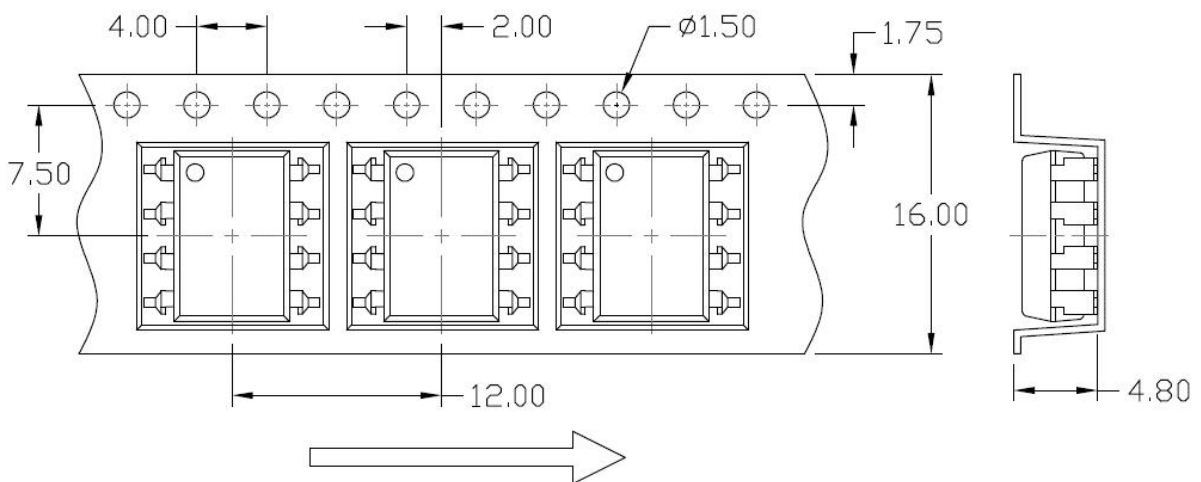
- Dimensions in mm unless otherwise stated

**CARRIER TAPE SPECIFICATIONS**

**Option WDIP8**



**Option WDIP8-SL**

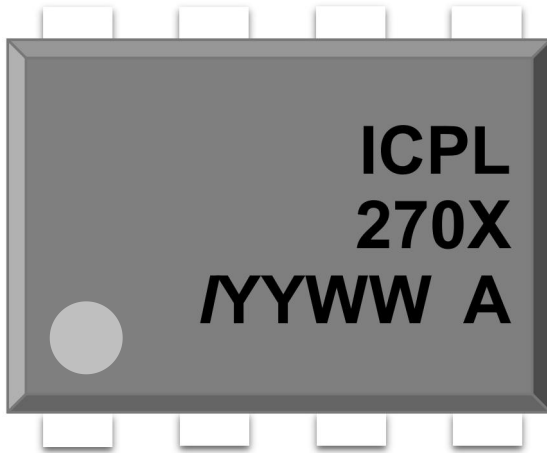


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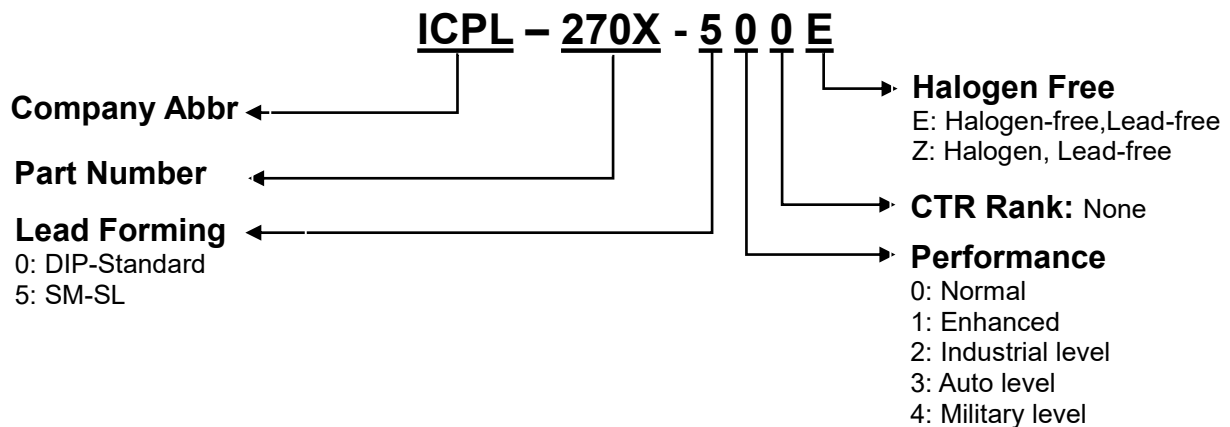
**ORDERING AND MARKING INFORMATION**

**Marking Information**



ICPL : Company Abbr.  
 270X : Part Number  
 / : ISOMICRON  
 YY : Fiscal Year  
 WW : Work Week  
 A : Manufacturing Code

**Order Code**

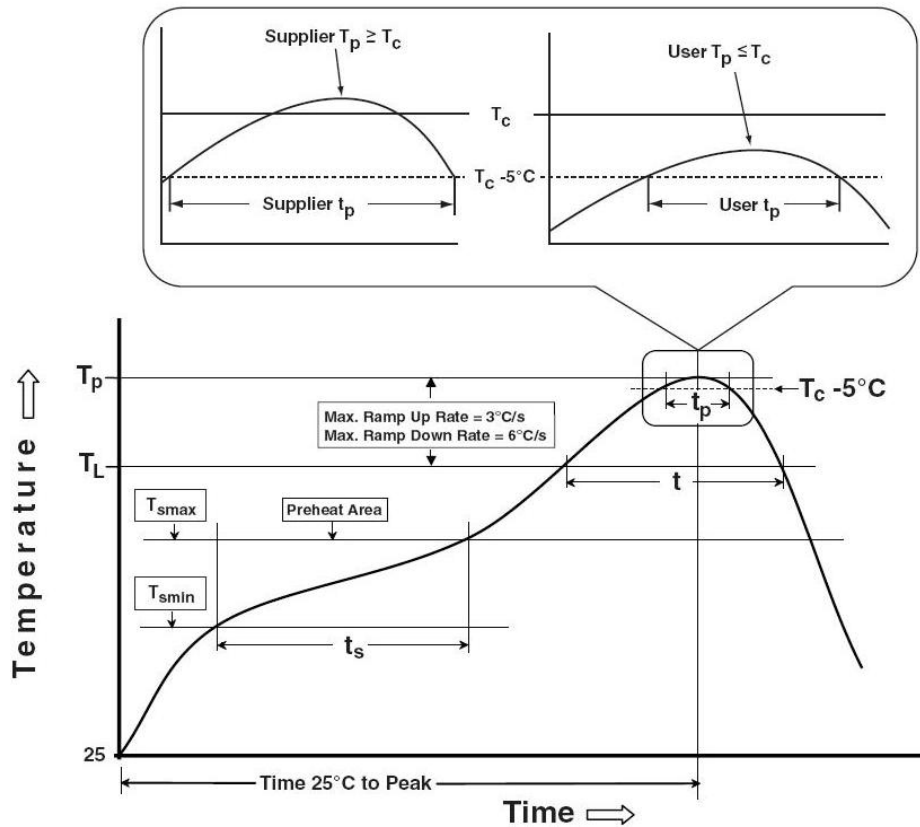


**Packing Quantity**

Option	Quantity	Quantity – Inner box	Quantity – Outer box
WDIP8	40 Units/Tube	25 Tube/ Inner box	6 Inner box/Outer box=6k Units
WDIP8-SL	1000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box = 10k Units

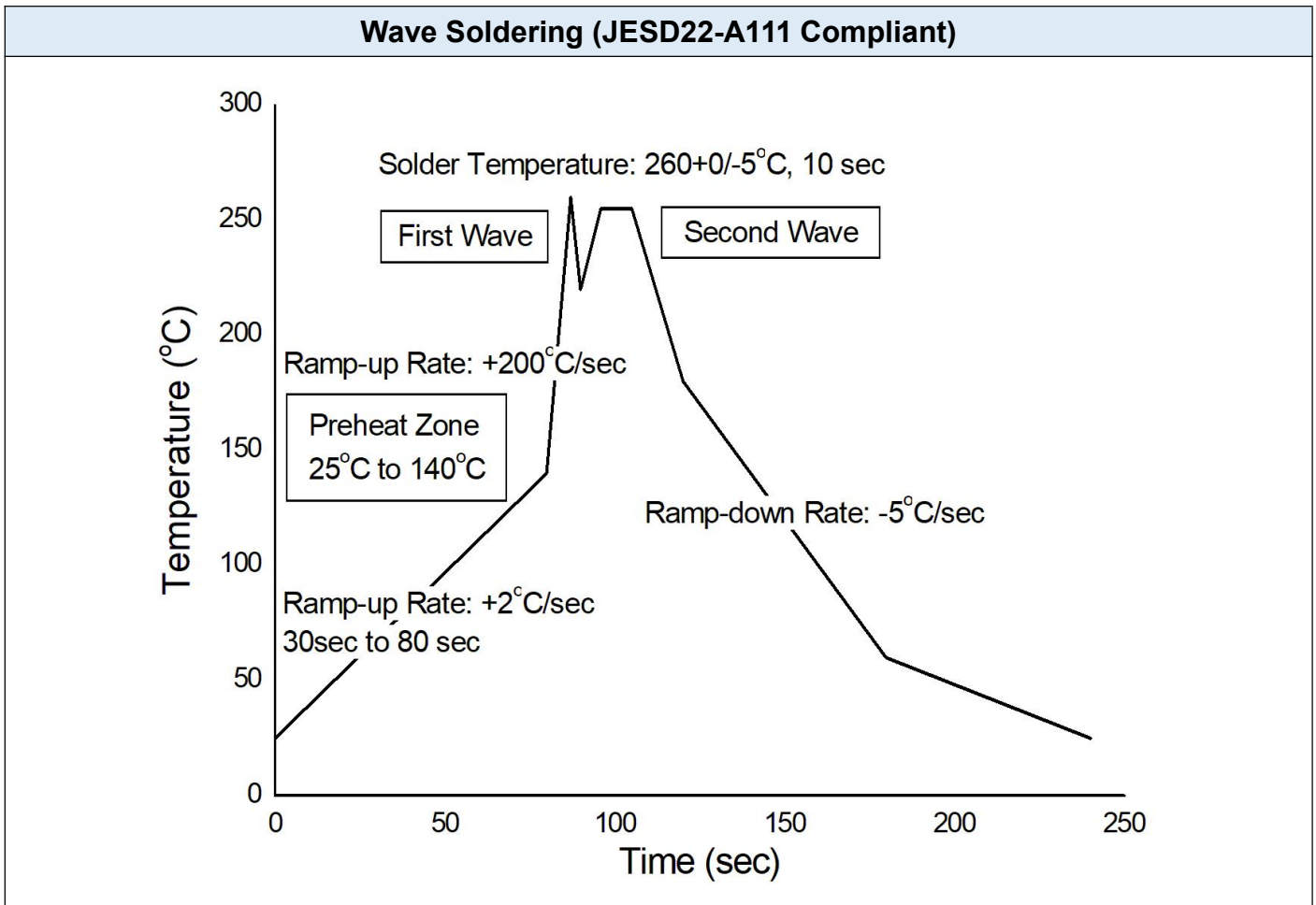
**REFLOW INFORMATION**

**Reflow Profile**



Profile Feature	Sn-Pb Assembly Profile	Pb-Free Assembly Profile
Temperature Min. (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**



<b>Hand Soldering By Soldering Iron</b>	
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.
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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.