

Features

- High isolation 3750 VRMS
- CTR flexibility available see order information
- AC input with transistor output
- Operating temperature range - 55 °C to 110 °C
- REACH compliance
- Halogen free
- Regulatory Approvals
 - UL - UL1577
 - VDE - EN60747-5-5(VDE0884-5)
 - CQC - GB4943.1

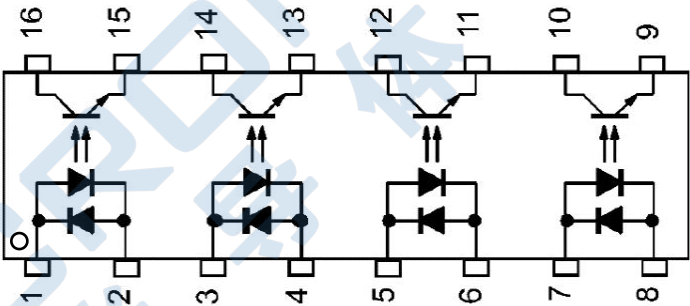
Applications

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

Description

The IS280-4 series combine two AlGaAs infrared emitting diodes as the emitter which is optically coupled to a silicon planar phototransistor detector in a plastic SO16 package.

With the robust coplanar double mold structure, IS280-4 series provide the most stable isolation feature.



ORDERING INFORMATION

Outline	Part Number	Package	Marking	Packing	Packing Size	Quantity
	IS280-4	SSOP16	IS280-4 /YYWW B	Reel	13 "	2000

CONTENTS

Pin Configuration And Functions.	3
Absolute Maximum Ratings.	3
Electrical Optical Characteristics.	4
Characteristic Curves.	5
Test Circuits.	7
Package Dimensions.	8
Recommended Solder Mask	8
Carrier Tape Specifications	9
Ordering And Marking Information	10
Reflow Information	11
Temperature Profile Of Soldering.	12
Disclaimer	13

PIN CONFIGURATION AND FUNCTIONS

	Pin	Name
	1、3、5、7	Cathode /Anode
	2、4、6、8	Anode/Cathode
	9、11、13、15	Emitter
	10、12、14、16	Collector

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit	Note
INPUT				
Forward Current	I_F	± 50	mA	
Power Dissipation	P_D	70	mW	
Power dissipation Derating factor (above $T_a = 100^\circ \text{C}$)	P_{DD}	2.9	mW/ $^\circ\text{C}$	
OUTPUT				
Collector - Emitter Voltage	V_{CEO}	80	V	
Emitter - Collector Voltage	V_{ECO}	7	V	
Collector Current	I_C	50	mA	
Collector Power Dissipation	P_C	150	mW	
COMMON				
Total Power Dissipation	P_{tot}	500	mW	
Isolation Voltage	V_{iso}	3750	V _{rms}	
Operating Temperature	T_{opr}	-55~110	$^\circ\text{C}$	
Storage Temperature	T_{stg}	-55~125	$^\circ\text{C}$	
Soldering Temperature	T_{sol}	260	$^\circ\text{C}$	

Note 1. 100 μs pulse, 100Hz frequency

Note 2. AC For 1 Minute, R.H. = 40 ~ 60%

ELECTRICAL OPTICAL CHARACTERISTICS($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Min	Typ.	Max.	Unit	Test Condition	Note
INPUT							
Forward Voltage	V_F	-	1.2	1.4	V	$I_F = \pm 20\text{mA}$	
Terminal Capacitance	C_t	-	30	250	pF	$V=0, f=1\text{kHz}$	
OUTPUT							
Collector Dark Current	I_{CEO}	-	-	100	nA	$V_{CE}=20\text{V}, I_F=0$	
Collector-Emitter Breakdown Voltage	BV_{CEO}	80	-	-	V	$I_C=0.1\text{mA}, I_F=0$	
Emitter-Collector Breakdown Voltage	BV_{ECO}	7	-	-	V	$I_E=10\mu\text{A}, I_F=0$	
TRANSFER CHARACTERISTICS							
Current Transfer Ratio	CTR	50	-	300	%	$I_F = \pm 1\text{mA}, V_{CE}=5\text{V}$	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	-	0.1	0.2	V	$I_F = \pm 20\text{mA}, I_C=1\text{mA}$	
Isolation Resistance	R_{ISO}	5×10^{10}	1×10^{11}	-	Ω	DC500V, 40 ~ 60% R.H.	
Isolation Capacitance	C_f	-	0.6	1	pF	$V=0, f=1\text{MHz}$	
Cut-off Frequency	F_C	-	80	-	kHz	$V_{CE}=5\text{V}, I_C=2\text{mA}, R_L=100\Omega, -3\text{dB}$	
Response Time (Rise)	t_r	-	-	18	μs	$V_{CE}=2\text{V}, I_C=2\text{mA}, R_L=100\Omega$	
Response Time (Fall)	t_f	-	-	18	μs		

CHARACTERISTIC CURVES

Fig.1 Relative Current Transfer Ratio vs. Forward Current

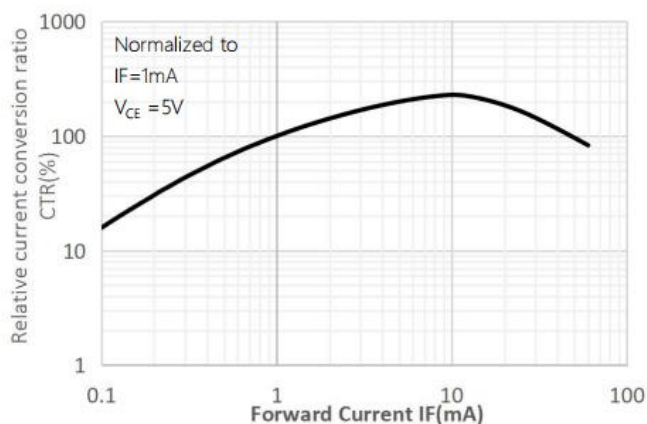


Fig.2 Forward Current vs. Forward Voltage

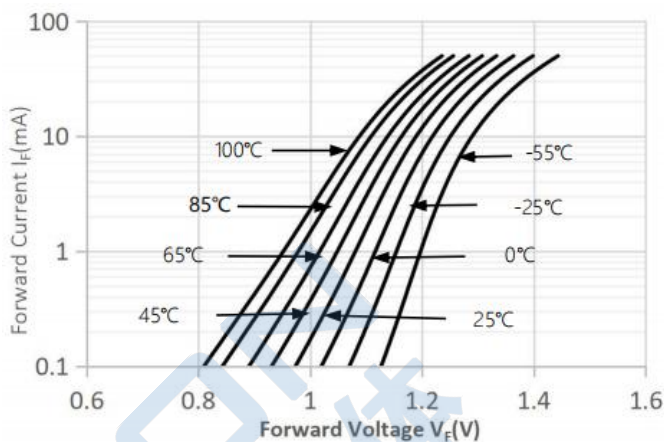


Fig.3 Collector Current vs. Collector-emitter Voltage

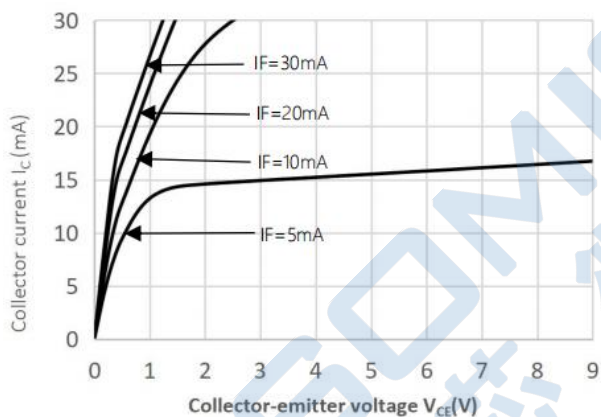


Fig.4 Relative Current Transfer Ratio vs. Ambient Temperature

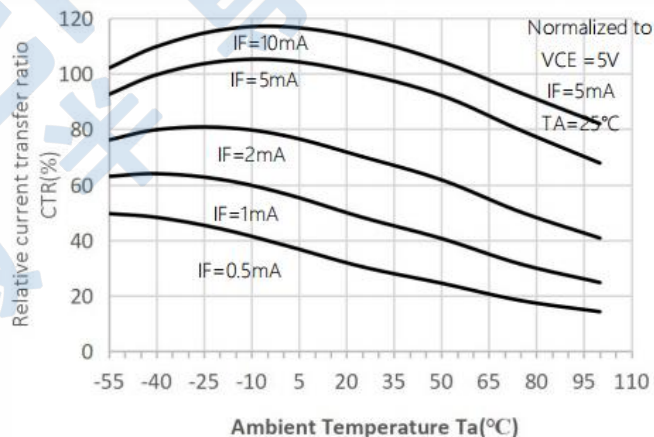


Fig.5 Collector-emitter Saturation Voltage vs. Ambient Temperature

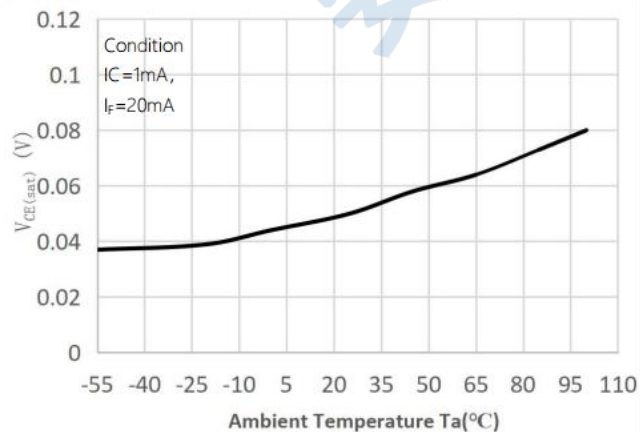


Fig.6 Collector Dark Current vs Ambient Temperature

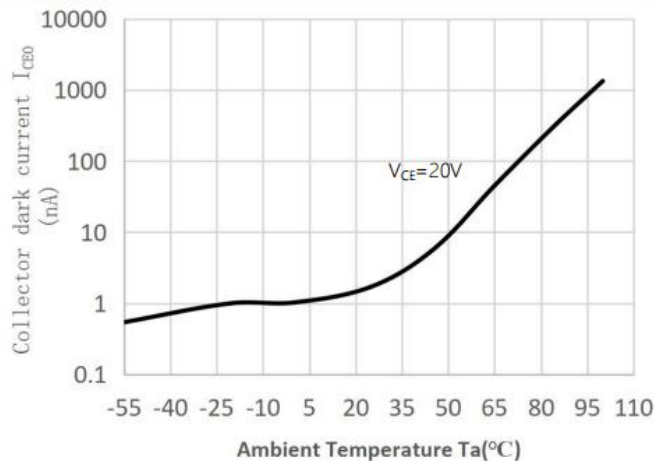


Fig.7 Response Time vs. Load Resistance

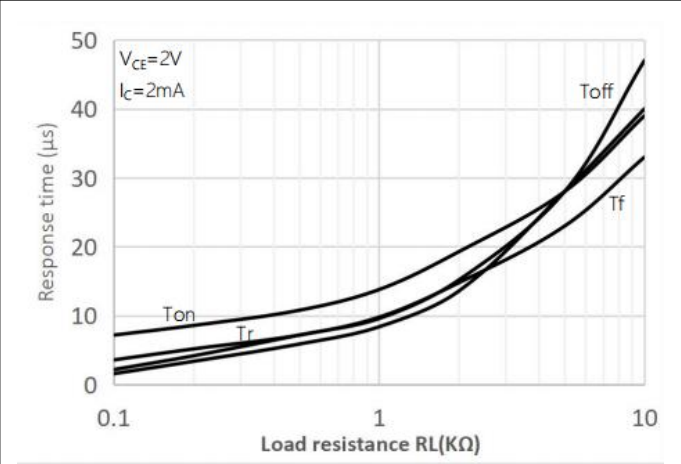


Fig.8 Frequency Response

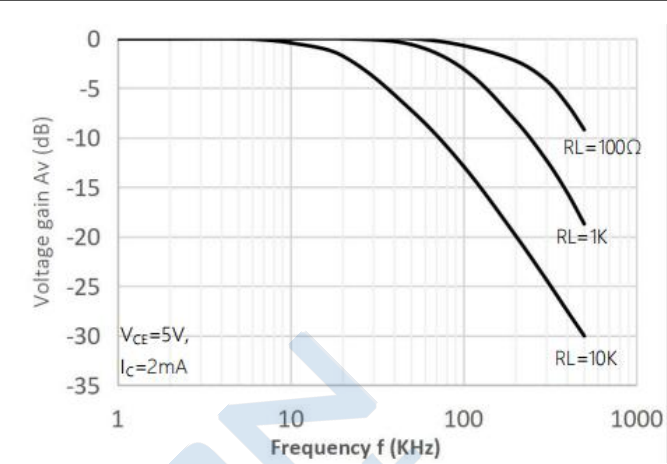
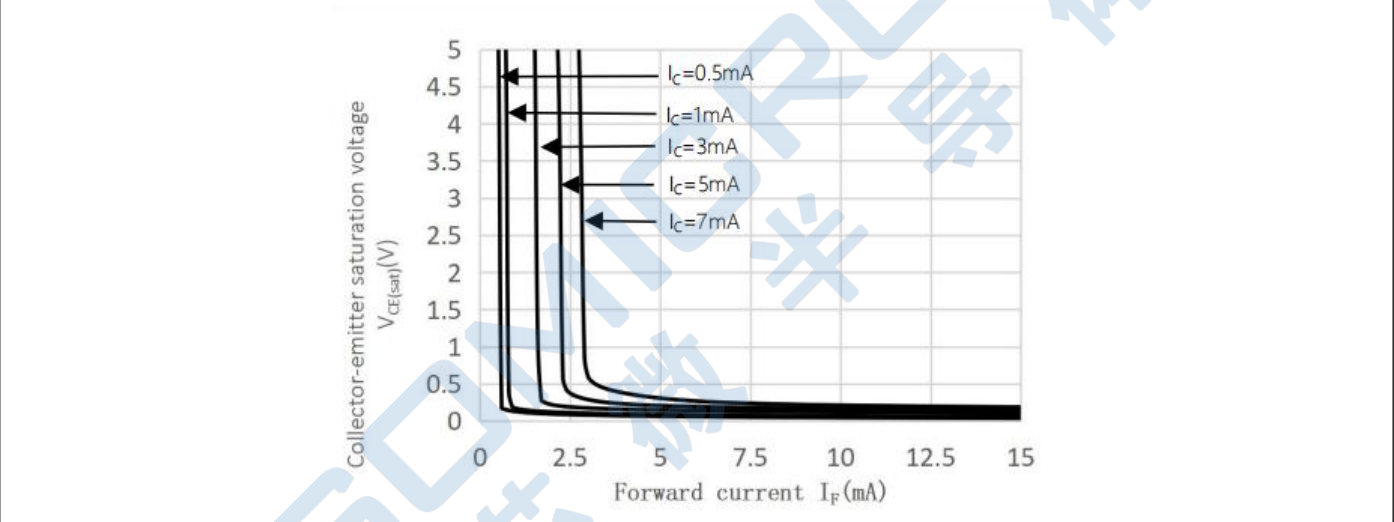
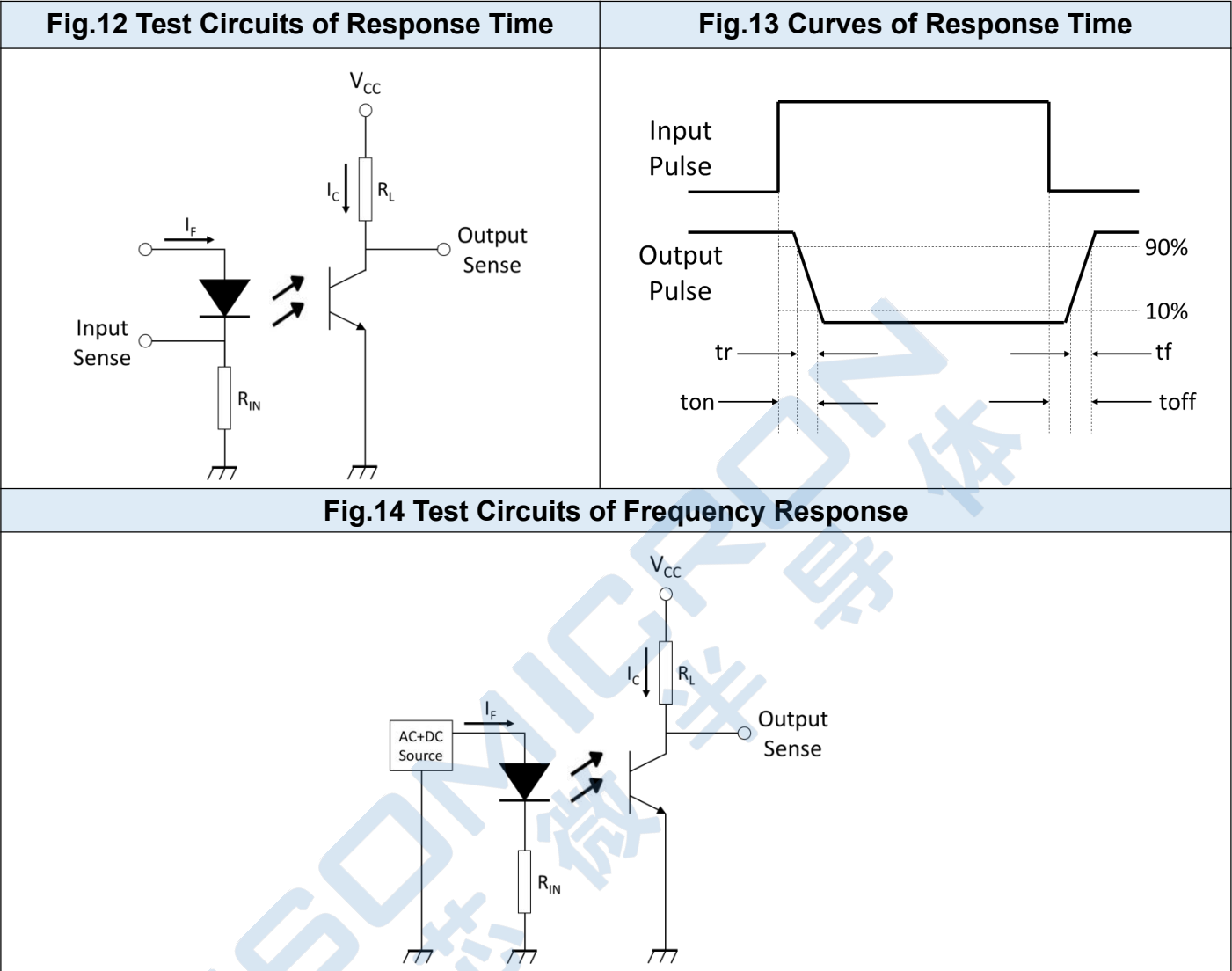


Fig.9 Collector-emitter Saturation Voltage vs Forward Current

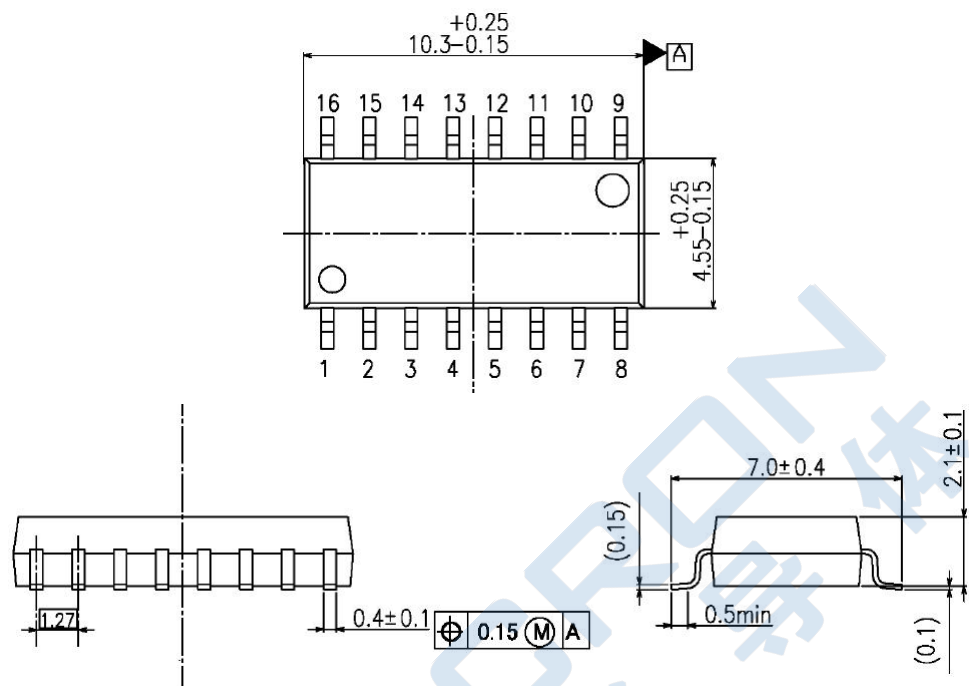


TEST CIRCUITS

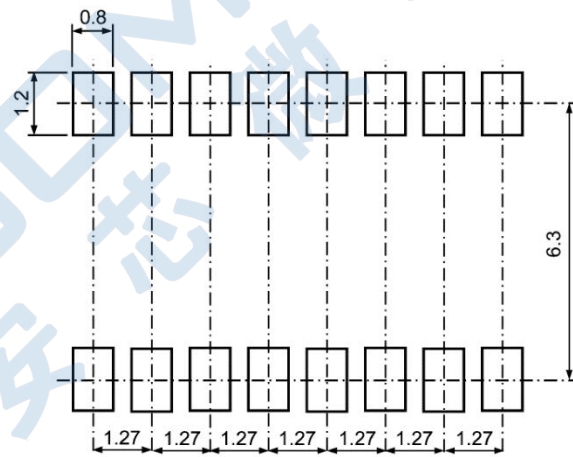


PACKAGE DIMENSIONS

Surface Mount (Low Profile) - (SSOP16)



Recommended Solder Mask

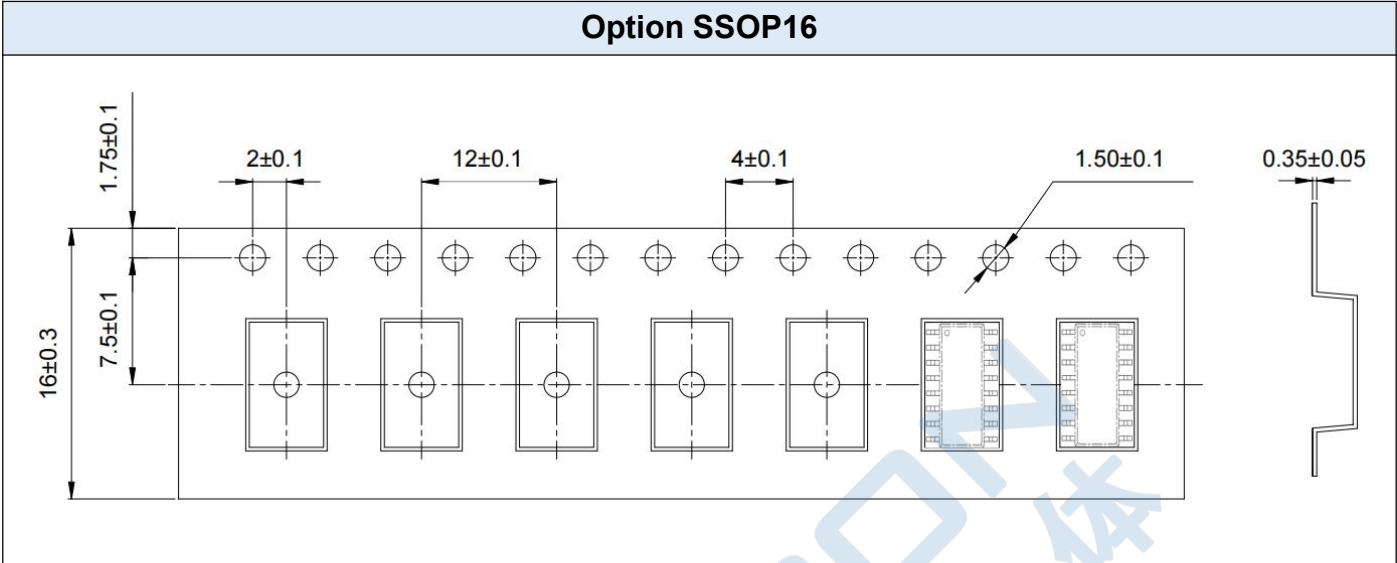


Dimensions in mm

unless otherwise stated

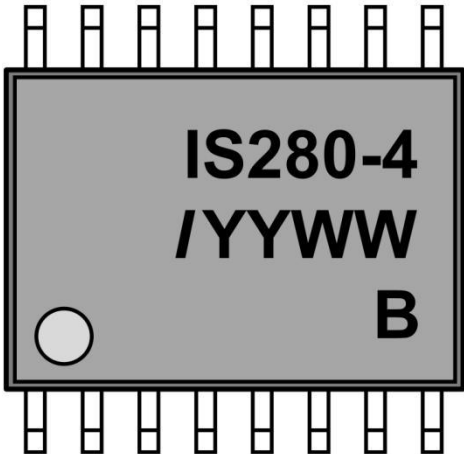
CARRIER TAPE SPECIFICATIONS

Option SSOP16

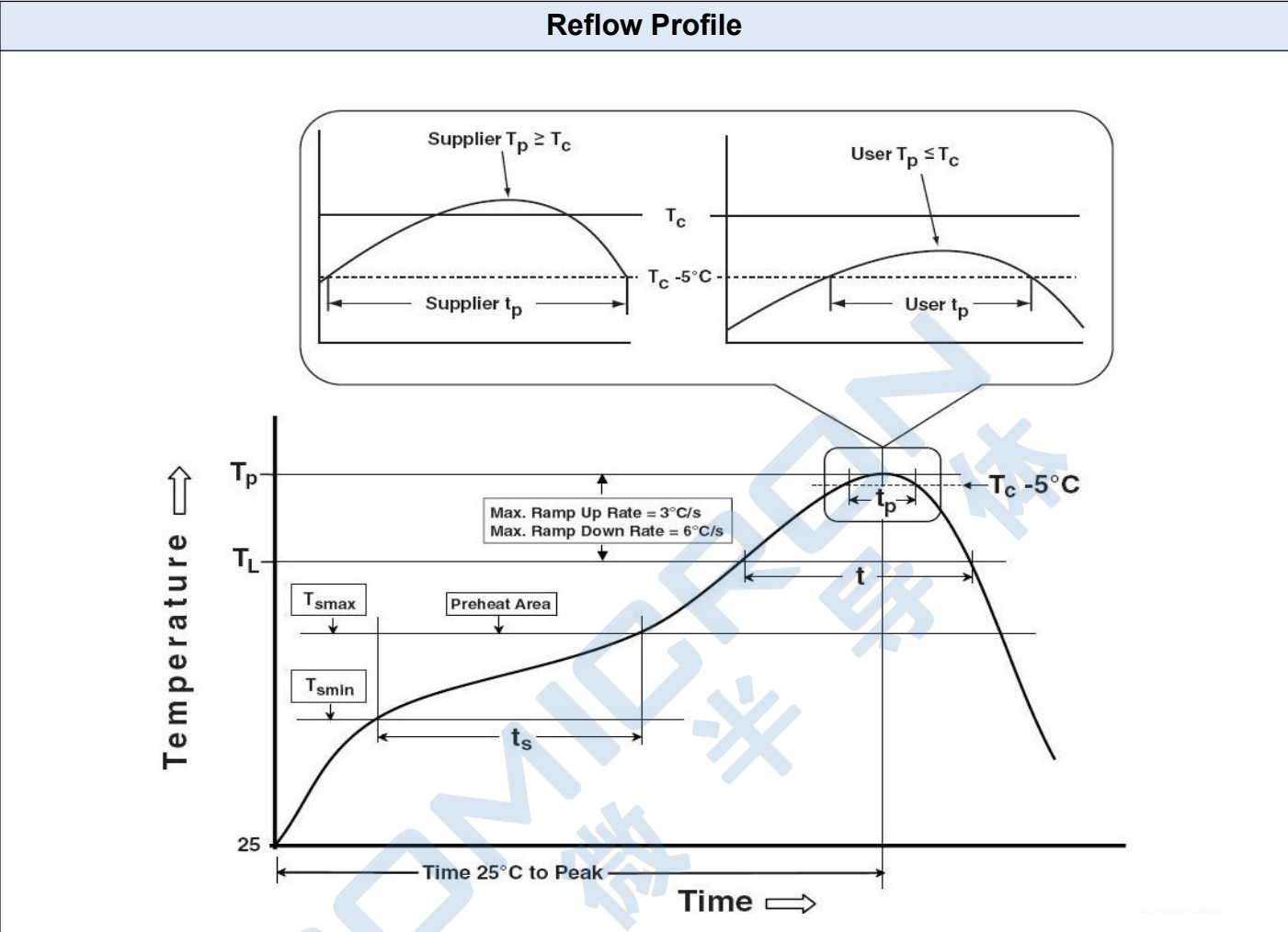


- Dimensions in mm unless otherwise stated

ORDERING AND MARKING INFORMATION

Marking Information			
		IS : Company Abbr. 280-4 : Part Number / : ISOMICRON YY : Fiscal Year WW : Work Week Z : Manufacturing Code	
Order Code			
Company Abbr. Part Number		IS 280-4 - X X Halogen Free: E/None: Halogen-free,Lead-free Z: Halogen, Lead-free Performance: N: Enhanced None: Normal	
Packing Quantity			
Option	Quantity	Quantity – Inner box	Quantity – Outer box
SSOP16	2000 Units/Reel	2 Reels/Inner box	5 Inner box/Outer box = 20k Units

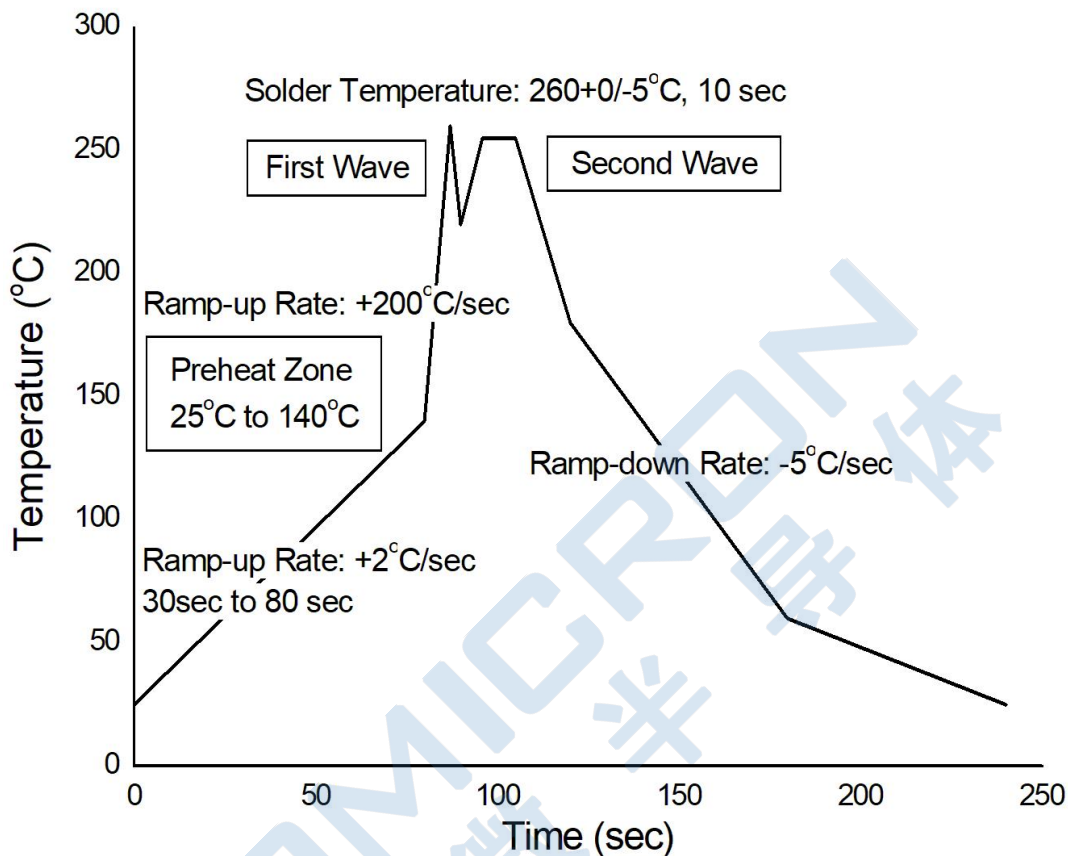
REFLOW INFORMATION



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	$380 \pm 0/-5^{\circ}\text{C}$
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

- 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.
- ISOMICRON 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, ISOMICRON 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 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.