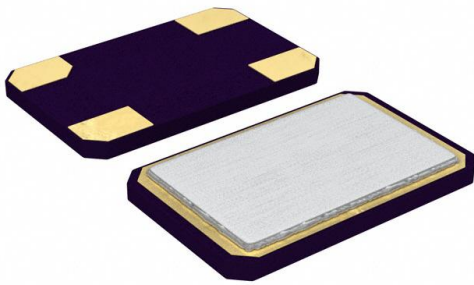


ABM8W-16.6667MHZ-7-D2X-T3 Datasheet

www.digi-electronics.com



<https://www.DiGi-Electronics.com>

DiGi Electronics Part Number	ABM8W-16.6667MHZ-7-D2X-T3-DG
Manufacturer	Abracon LLC
Manufacturer Product Number	ABM8W-16.6667MHZ-7-D2X-T3
Description	CRYSTAL 16.6667MHZ 7PF SMD
Detailed Description	16.6667 MHz \pm 20ppm Crystal 7pF 70 Ohms 4-SMD, No Lead

This model ABM8W-16.6667MHZ-7-D2X-T3 is available at DiGi Electronics.

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Purchase and inquiry

Manufacturer Product Number:

ABM8W-16.6667MHZ-7-D2X-T3

Series:

ABM8W

Type:

MHz Crystal

Frequency Stability:

±20ppm

Load Capacitance:

7pF

Operating Mode:

Fundamental

Ratings:

-

Package / Case:

4-SMD, No Lead

Height - Seated (Max):

0.030" (0.75mm)

Manufacturer:

Abracon LLC

Product Status:

Active

Frequency:

16.6667 MHz

Frequency Tolerance:

±20ppm

ESR (Equivalent Series Resistance):

70 Ohms

Operating Temperature:

-40°C ~ 85°C

Mounting Type:

Surface Mount

Size / Dimension:

0.126" L x 0.098" W (3.20mm x 2.50mm)

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.60.0050

Moisture Sensitivity Level (MSL):

Not Applicable

ECCN:

EAR99

LOW ESR, LOW CL CERAMIC SMD CRYSTAL

ABM8W Series

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3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



Features

- Optimized for energy saving wearables and IoT applications
- Plated at exceptionally low plating capacitance, as low as 4pF, with optimized ESR
- Seam sealed for long term reliability

Applications

- Wearables
- Internet of Things (IoT)
- Bluetooth/Bluetooth Low Energy (BLE)
- Wireless modules
- Machine-to-machine (M2M) connectivity
- Ultra-low power MCU
- Near Field Communication (NFC)
- ISM Band

Key Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency Range	10.0000		54.0000	MHz	
Operation Mode	Fundamental				
Operating Temperature Range	-40		+125	°C	See options
Storage Temperature	-55		+125	°C	
Frequency Tolerance @ +25°C	-10		+10	ppm	See options
Frequency Stability over the Operating Temperature (ref. to +25°C)	-10		+10	ppm	See options
Equivalent series resistance (R1) (over -40°C to +125°C)		< 100	200	Ω	10.0000 – 11.9999MHz
		< 60	100		12.0000 – 15.9999MHz
		< 40	70		16.0000 – 19.9999MHz
		< 25	50		20.0000 – 29.9999MHz
		< 20	40		30.0000 – 39.9999MHz
		< 18	30		40.0000 – 54.0000MHz
Shunt capacitance (C0)		< 1.2	2.0	pF	
Load capacitance (CL)		4.0		pF	See options
Drive Level		10	100	μW	
Aging (1 year)	-2		+2	ppm	@ 25°C±3°C
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V



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3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



Options and Part Identification [Note 1]

ABM8W - [] MHz - [] - [] - [] [] [] - []

Frequency in MHz
 Please specify the Frequency in MHz out to **4 digit** accuracy after the decimal.
 (e.g. 16.0000MHz)

Load Capacitance (pF)

8: 8pF
7: 7pF
6: 6pF
4: 4pF

Custom ESR if other than standard
 R □: Specify a value in Ω (e.g.: R40)

Operating Temp.

I: 0°C ~ 50°C
E: 0°C ~ +70°C
B: -20°C ~ +70°C
C: -30°C ~ +70°C
N: -30°C ~ +85°C
D: -40°C ~ +85°C
J: -40°C ~ +105°C (*)
K: -40°C ~ +125°C (*)

Freq. Tolerance

1: ± 10 ppm
7: ± 15 ppm
2: ± 20 ppm
3: ± 25 ppm
4: ± 30 ppm
5: ± 50 ppm

Packaging

Blank: Bulk
T3: 3kpcs / reel

Freq. Stability

U: ± 10 ppm (*)
G: ± 15 ppm (**)
X: ± 20 ppm (**)
W: ± 25 ppm (**)
Y: ± 30 ppm (**)
H: ± 35 ppm (**)
Z: ± 50 ppm
Q: ± 100 ppm

(*) Only offered @
 Freq. Stability
 Options: Z & Q.

Contact ABRACON
 for tighter
 Frequency Stability.

(*) Only offered @
 Operating Temp.
 Range options: I, E, & B
 (**) Only offered @
 Operating Temp.
 Range options: I, E, B,
 C, N, & D

Contact ABRACON
 for wider Operating
 Temp. Range.

Note 1: Contact Abracon for part number requests with carrier frequency callouts up to 5 & 6 digit accuracy after the decimal.



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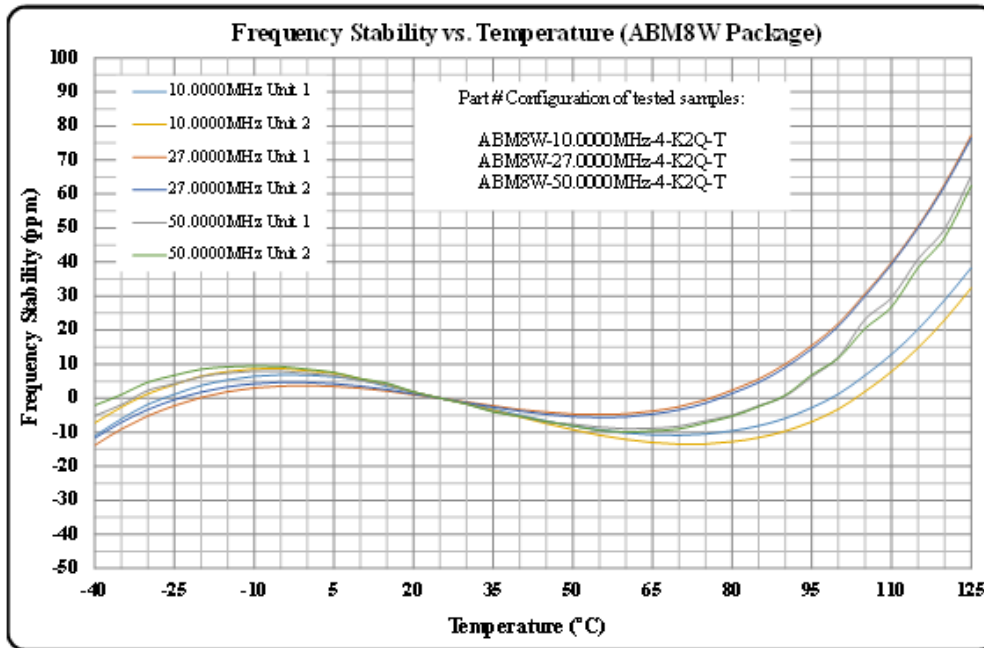
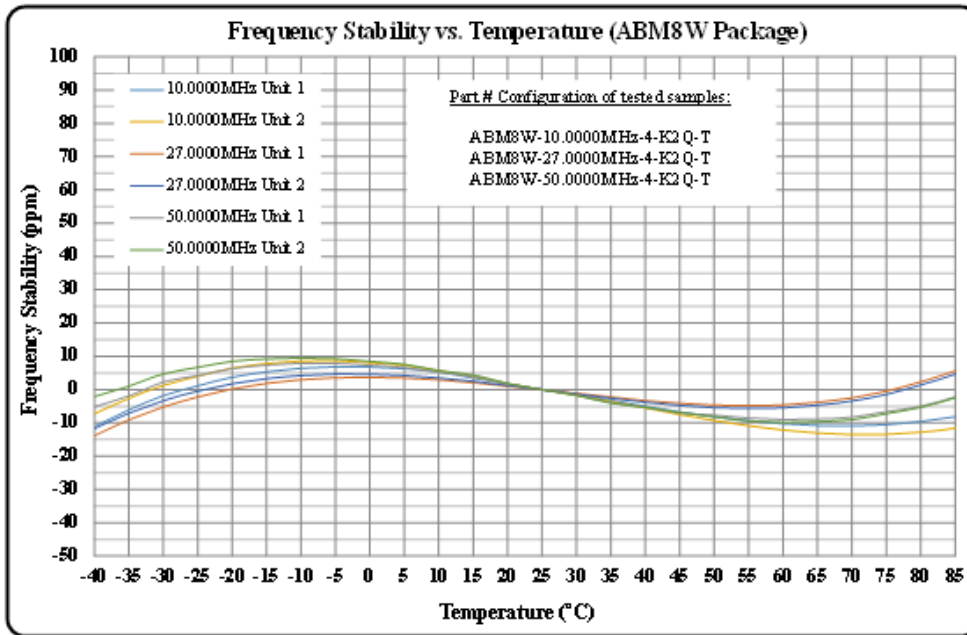
Check Inventory



3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



Typical Frequency vs. Temperature Characteristics:



LOW ESR, LOW CL CERAMIC SMD CRYSTAL

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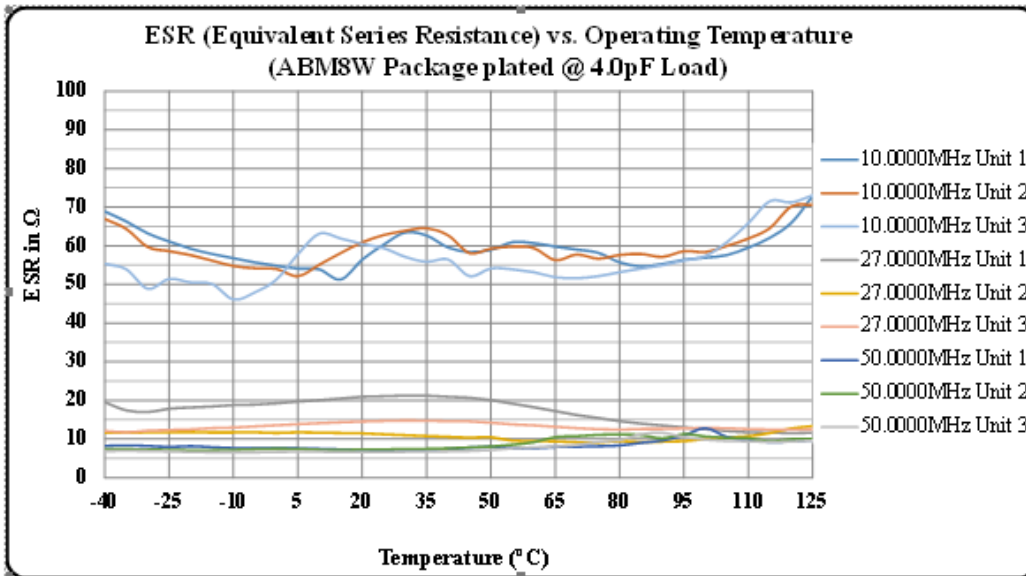
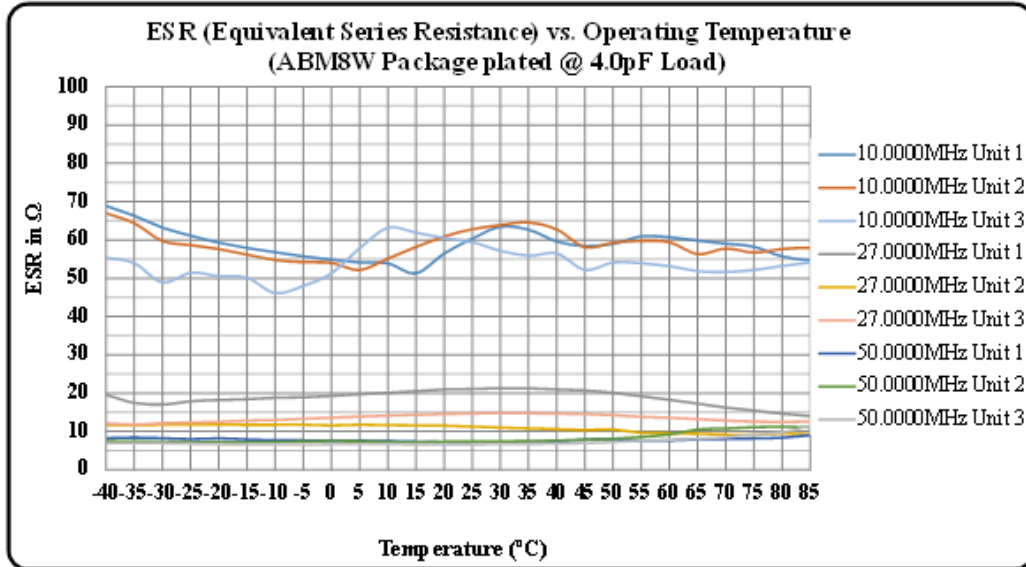
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RoHS/RoHS II Compliant
 MSL Level = N/A



Typical ESR (Equivalent Series Resistance) vs. Temperature Characteristics:



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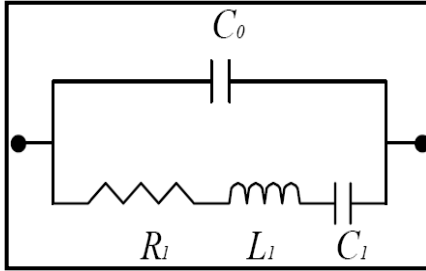
Check Inventory



3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A

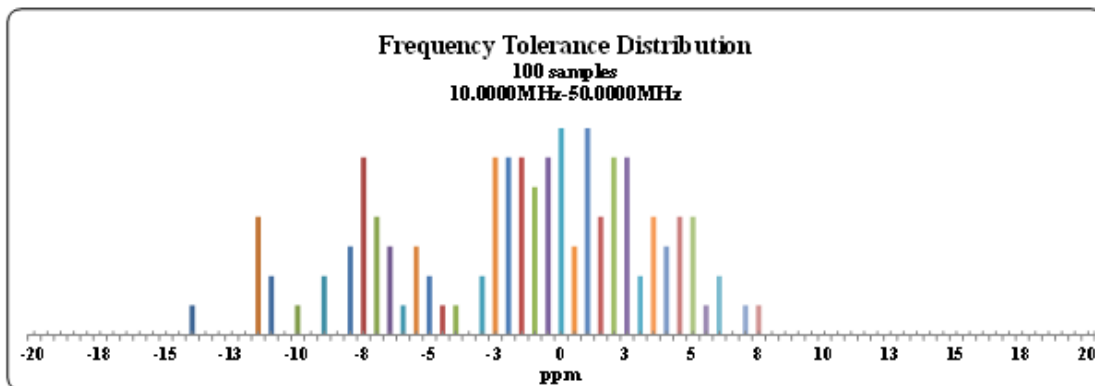


SPICE Models (based on typical values at 25°C ± 3°C):



Frequency: 10.0000MHz Plating Load: 4pF		Frequency: 10.0000MHz Plating Load: 6pF	
C0	= 0.88 pF	C0	= 0.86 pF
R1	= 53.82 Ω	R1	= 60.62 Ω
L1	= 162.02 mH	L1	= 164.96 mH
C1	= 1.56 fF	C1	= 1.54 fF
Frequency: 27.0000MHz Plating Load: 4pF		Frequency: 27.0000MHz Plating Load: 6pF	
C0	= 1.16 pF	C0	= 1.16 pF
R1	= 11.83 Ω	R1	= 11.06 Ω
L1	= 9.16 mH	L1	= 9.10 mH
C1	= 3.80 fF	C1	= 3.82 fF
Frequency: 50.0000MHz Plating Load: 4pF		Frequency: 50.0000MHz Plating Load: 6pF	
C0	= 1.16 pF	C0	= 1.15 pF
R1	= 7.61 Ω	R1	= 8.06 Ω
L1	= 2.45 mH	L1	= 2.49 mH
C1	= 4.14 fF	C1	= 4.07 fF

Typical Frequency Tolerance Distribution (at 25°C ± 3°C):



LOW ESR, LOW CL CERAMIC SMD CRYSTAL

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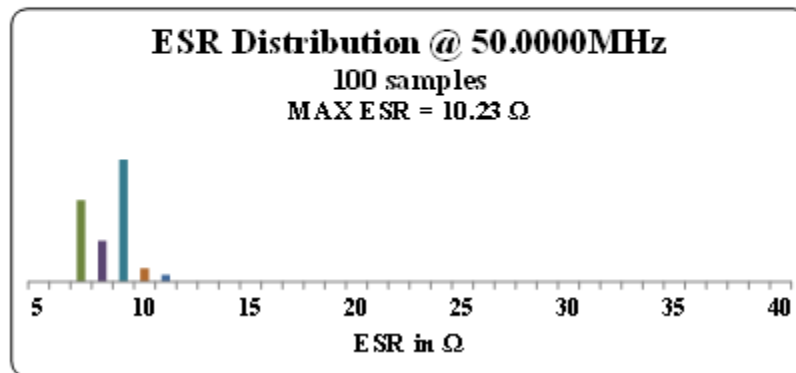
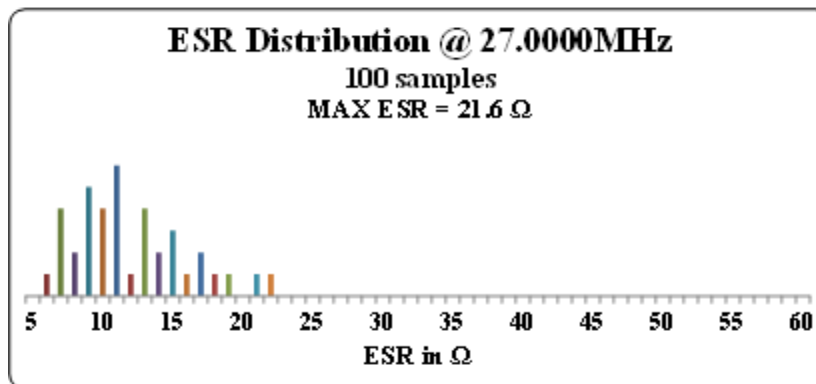
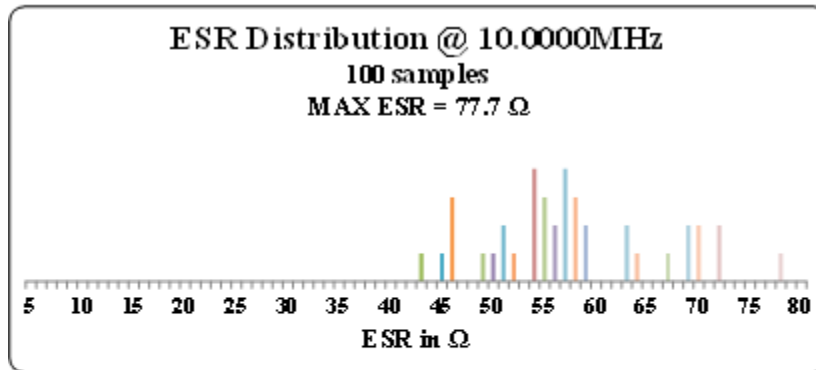
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3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



Typical ESR Distribution (at 25°C ± 3°C):



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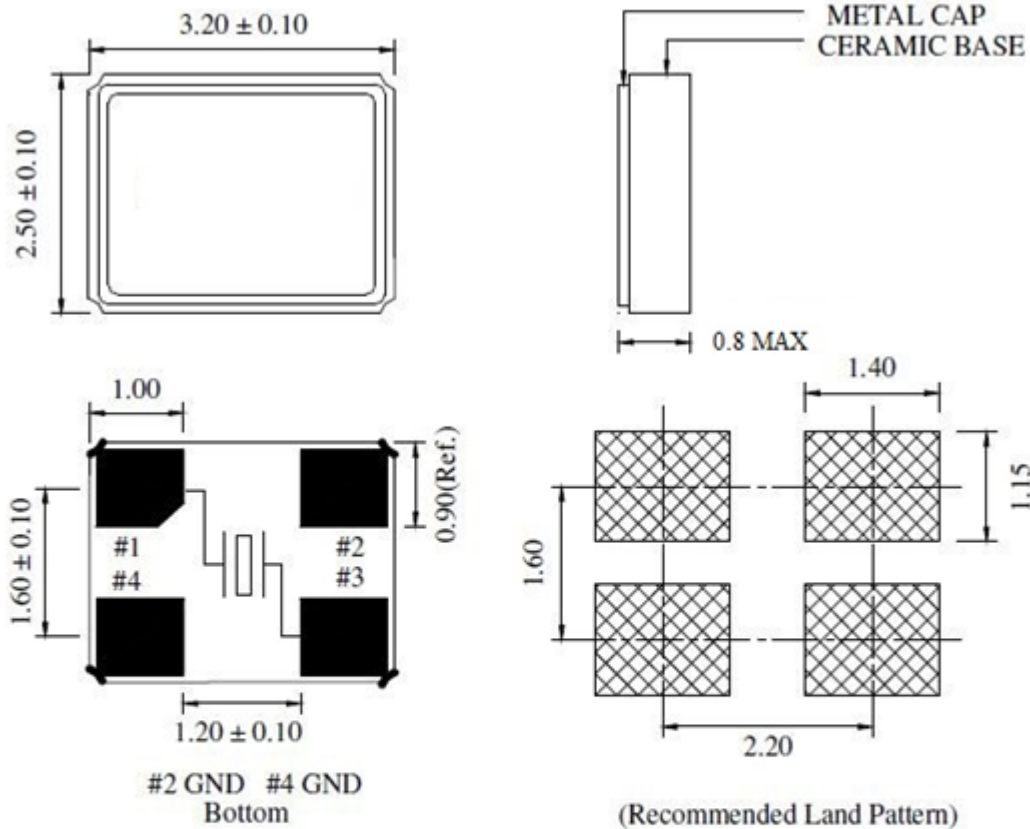
Check Inventory



3.2 x 2.5 x 0.8 mm
RoHS/RoHS II Compliant
 MSL Level = N/A



Mechanical Dimensions



Note:

Due to material availability the Chamfer could be located on pin #1, 2 or 4. Be advised that the Chamfer location has no impact on the electrical performance of the device.

Dimensions: mm

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3.2 x 2.5 x 0.8 mm
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Reflow Profile [JEDEC J-STD-020]

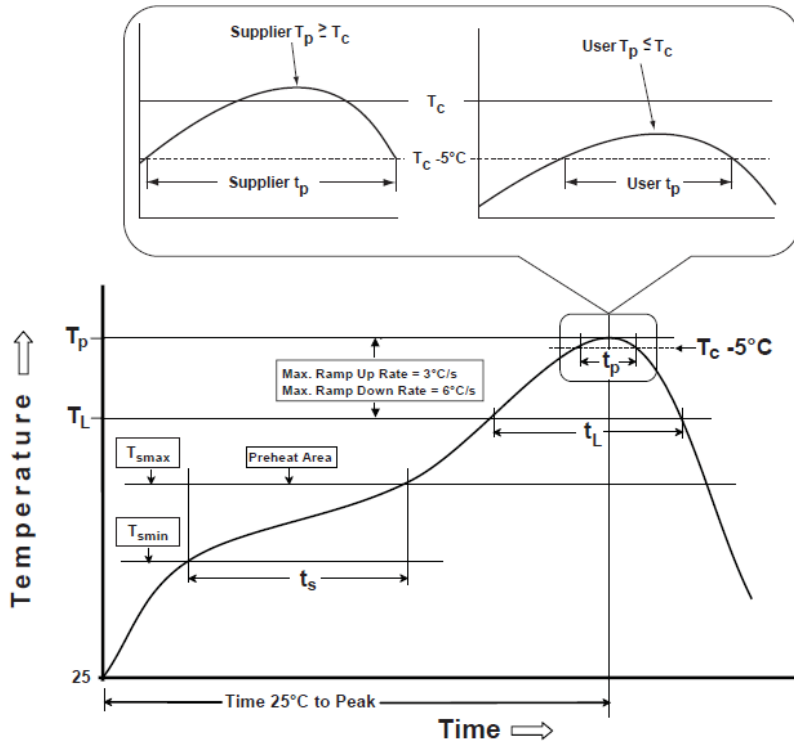


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2

Pb-Free Process Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm - 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T_{smin})	100°C	150°C
Temperature maximum (T_{smax})	150°C	200°C
Time (T_{smin} to T_{smax}) (t_s)	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T_{smax} to T_P)	3°C/sec. max	3°C/sec. max
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T_P)*	see Table 1	see Table 2
Time (t_p)** within 5°C of the specified classification temperature (T_C)	20 sec.	30 sec.
Ramp-down rate (T_P to T_{smax})	6°C/sec. max	6°C/sec. max
Time 25°C to peak temperature	6 min. max	8 min. max
Reflow cycles	2 max	2 max

*Tolerance for peak profile temperature (T_P) is defined as a supplier minimum and a user maximum.

**Tolerance for time at peak profile temperature (t_p) is defined as supplier minimum and a user maximum.



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