

LOW ESR, LOW CL CERAMIC SMD CRYSTAL

ABM8W Series

Request Samples



Check Inventory



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	μ W	
Aging (1 year)	-2		+2	ppm	@ 25°C±3°C
Insulation Resistance	500			M Ω	@ 100Vdc ± 15V

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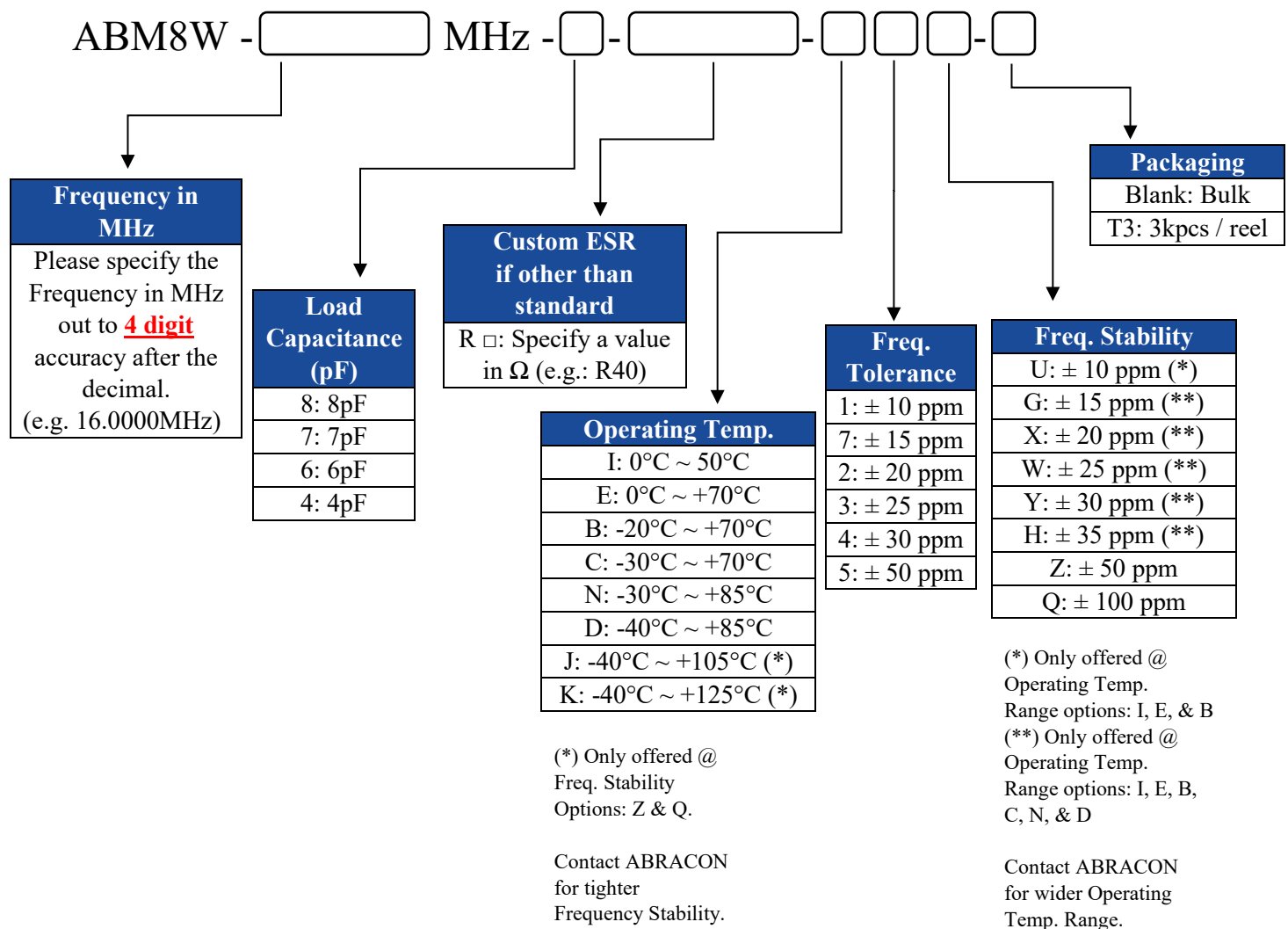
3.2 x 2.5 x 0.8 mm

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Options and Part Identification [\[Note 1\]](#)



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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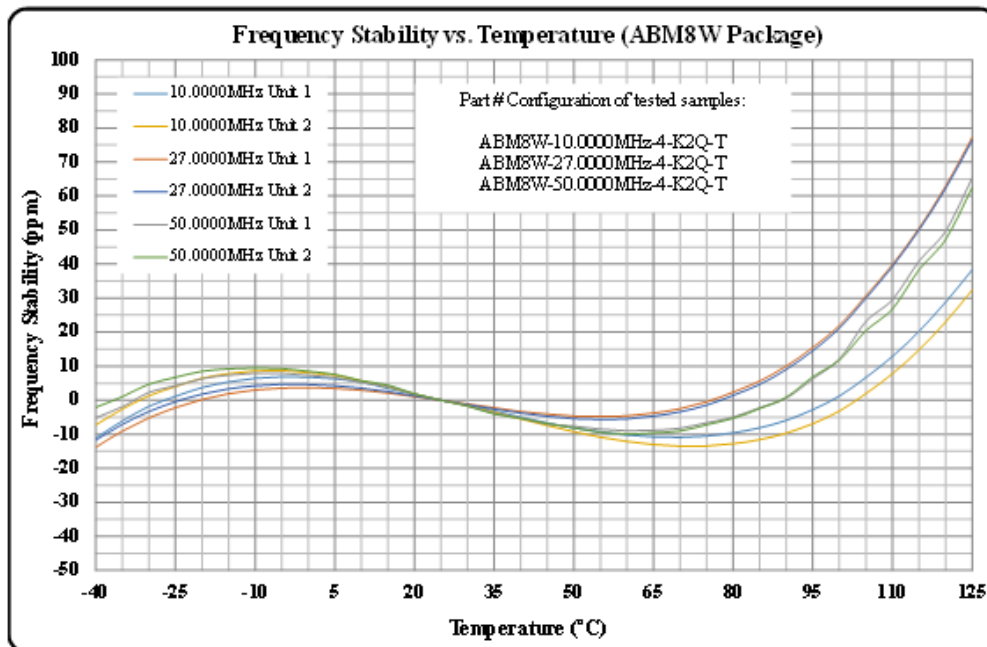
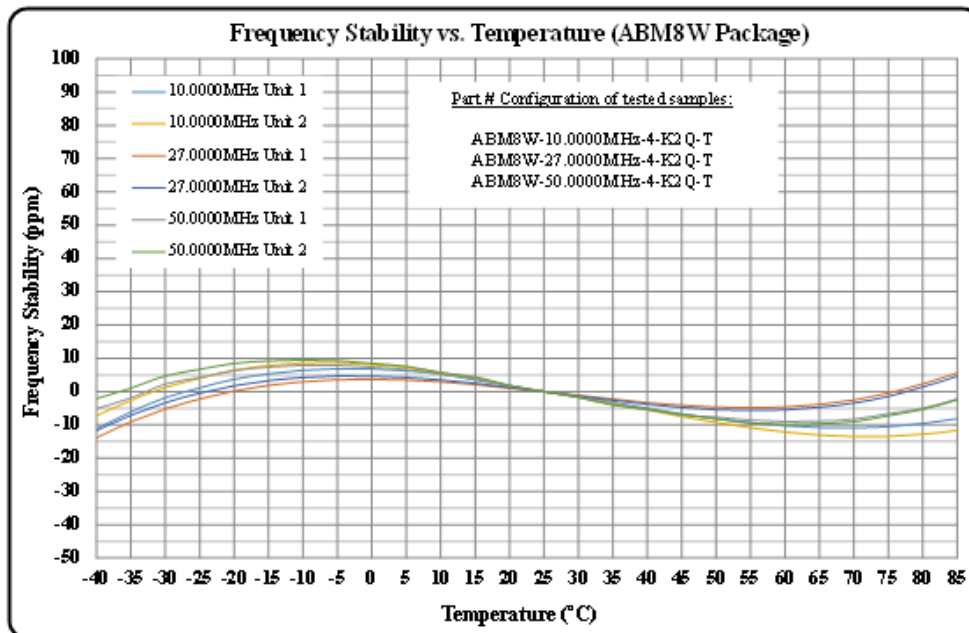


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Typical Frequency vs. Temperature Characteristics:



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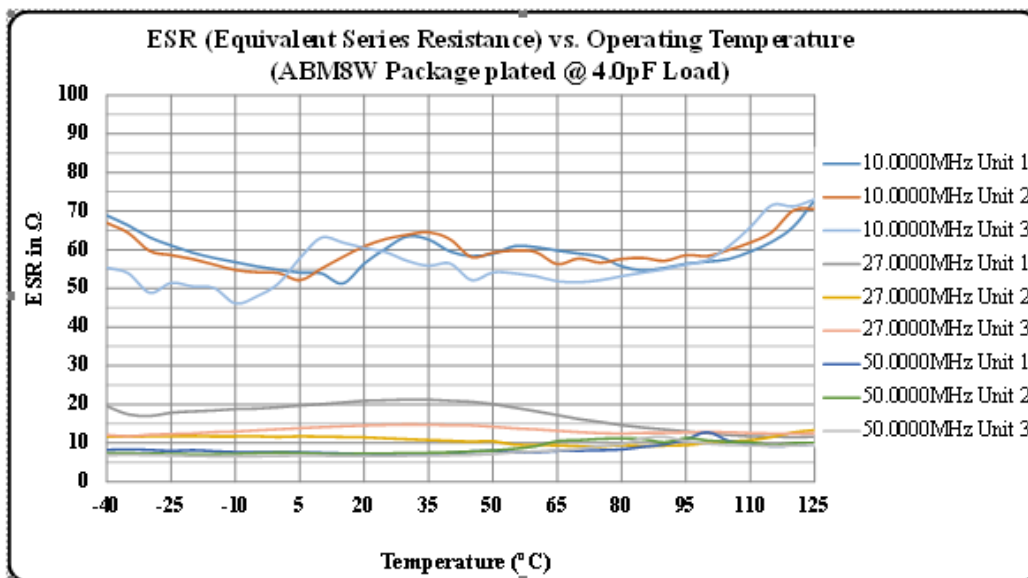
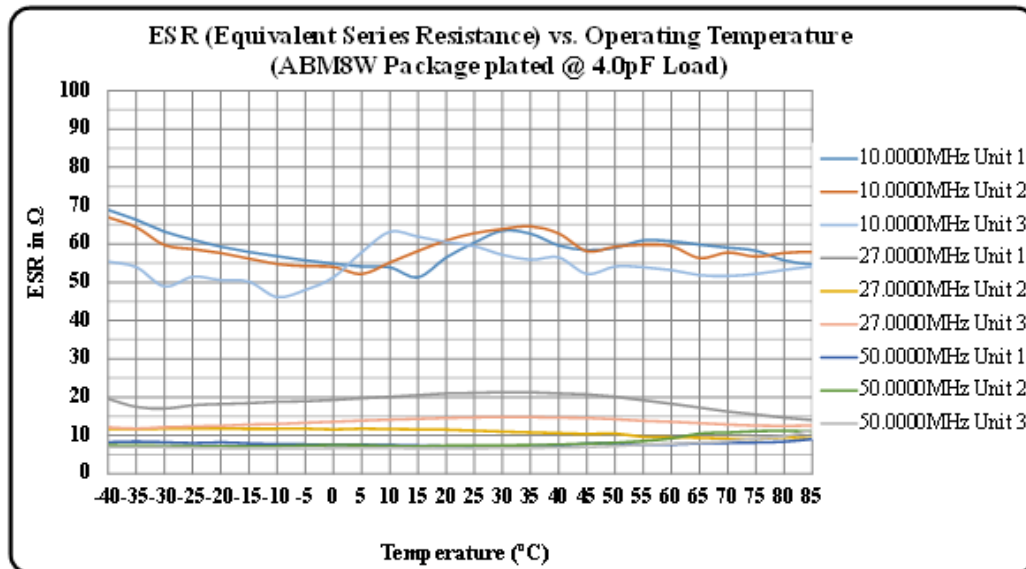
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Typical ESR (Equivalent Series Resistance) vs. Temperature Characteristics:



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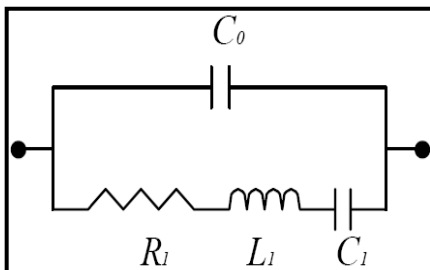
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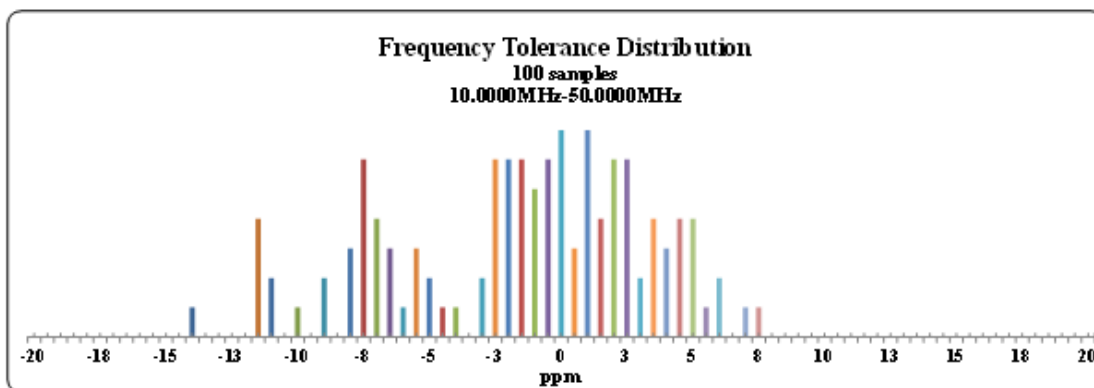


SPICE Models (based on typical values at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$):



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 $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$):



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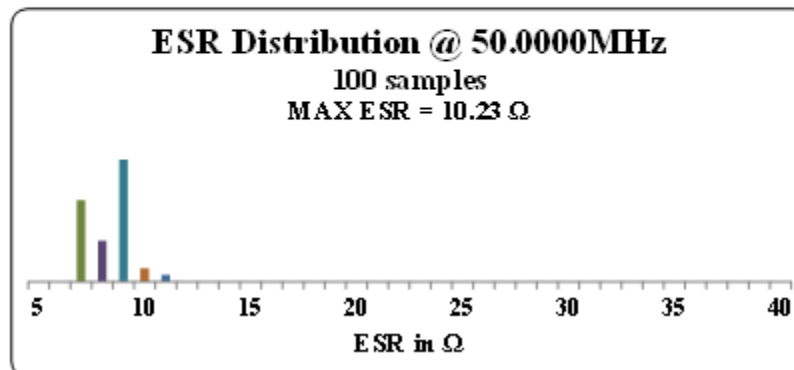
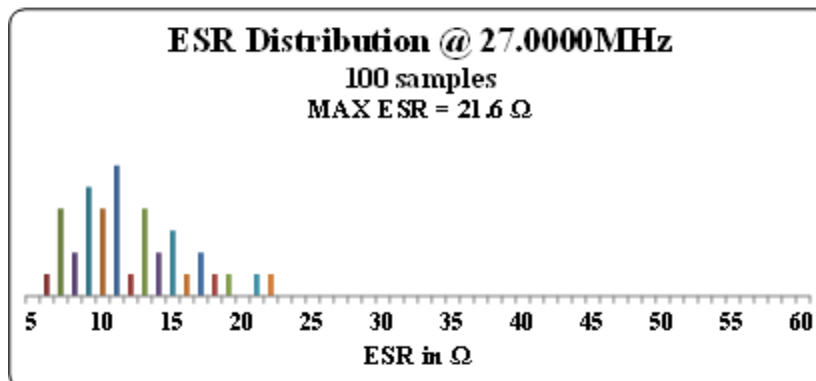
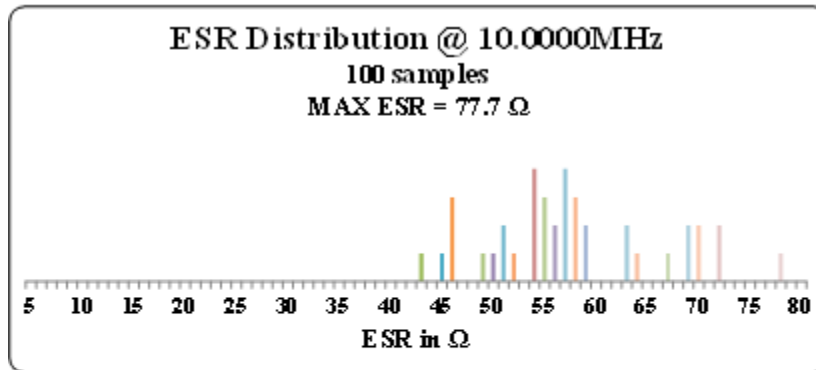


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Typical ESR Distribution (at 25°C ± 3°C):



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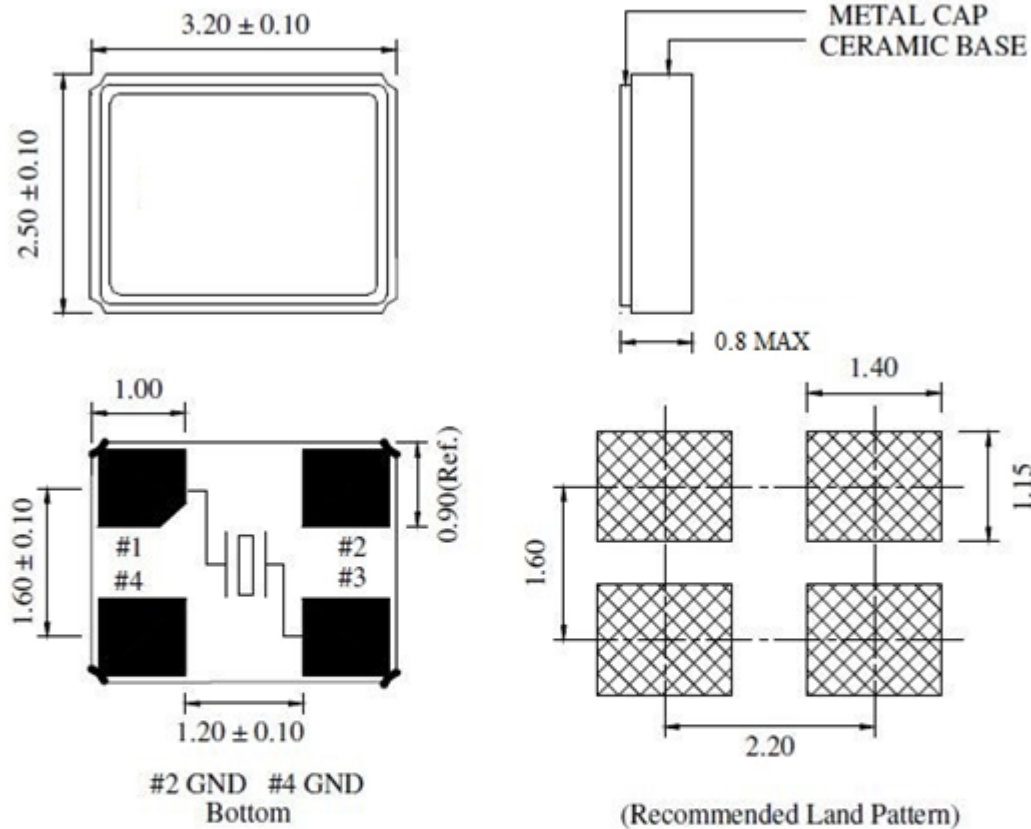
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Mechanical Dimensions



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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Reflow Profile [JEDEC J-STD-020]

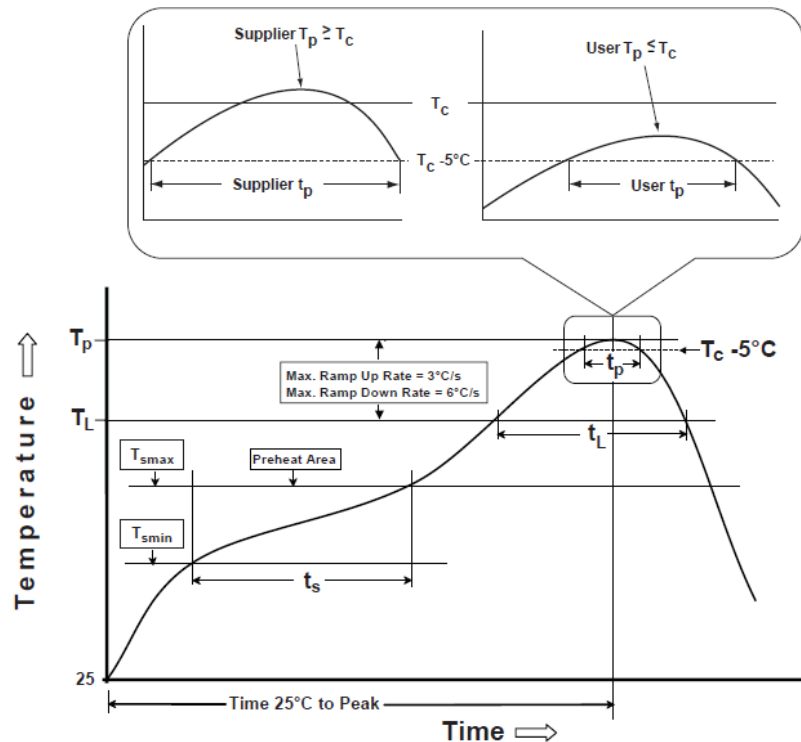


Table 1

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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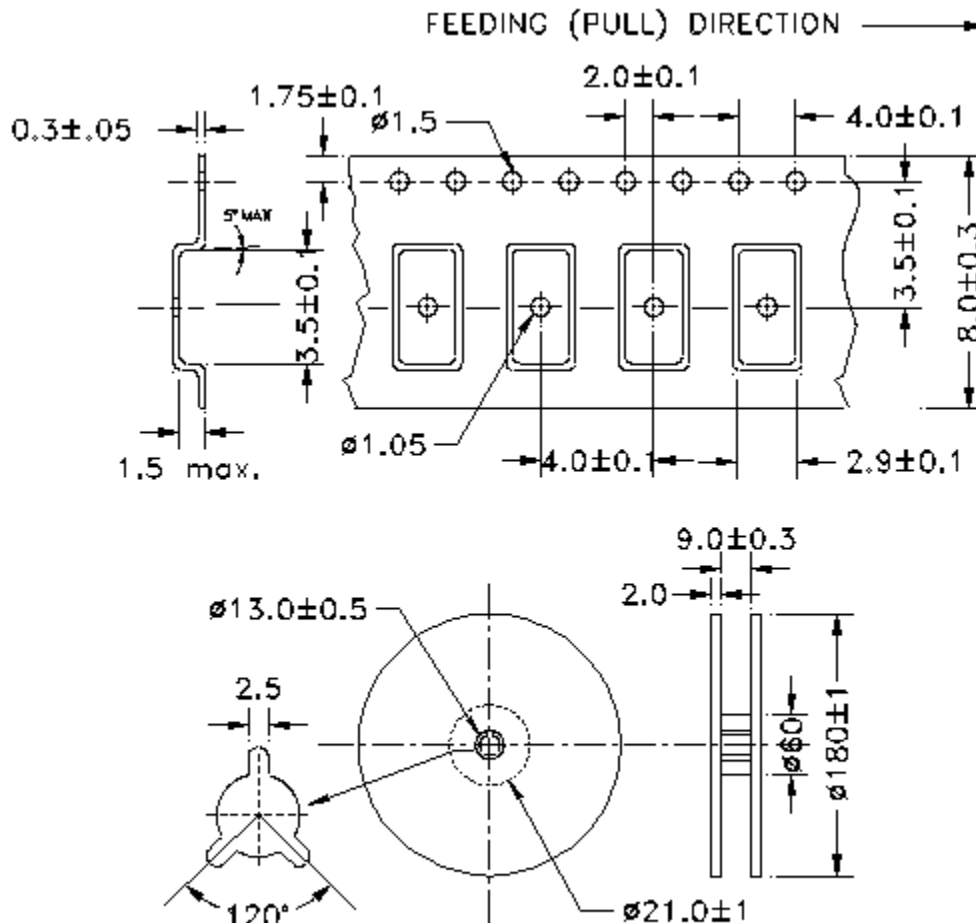


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Packaging:

T3: Tape and reel (3,000pcs/reel)



Dimensions: mm

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