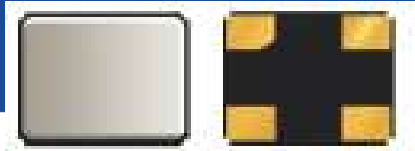


IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

MSL = N/A: NOT APPLICABLE

FEATURES

- Optimized for energy saving wearables and IoT applications
- Plated at exceptionally low plating capacitance, as low as 4pF, with optimized ESR
- 0.6 mm max height ideally suited for height constrained designs
- Seam sealed for longterm reliability

APPLICATIONS

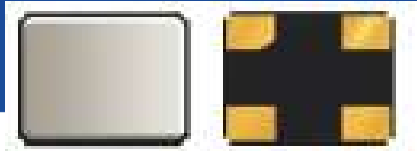
- Wearables
- Internet of Things (IoT)
- Bluetooth/Bluetooth Low Energy (BLE)
- Wireless modules
- Machine-to-machine (M2M) connectivity
- Ultra-low power MCU
- Near Field Communication (NFC)
- ISM Band

STANDARD SPECIFICATIONS

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	16.000		50.000	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)			100	Ω	16.000 – 29.999MHz
			70		30.000 – 50.000MHz
Shunt capacitance (C0)		< 1.0	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

IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



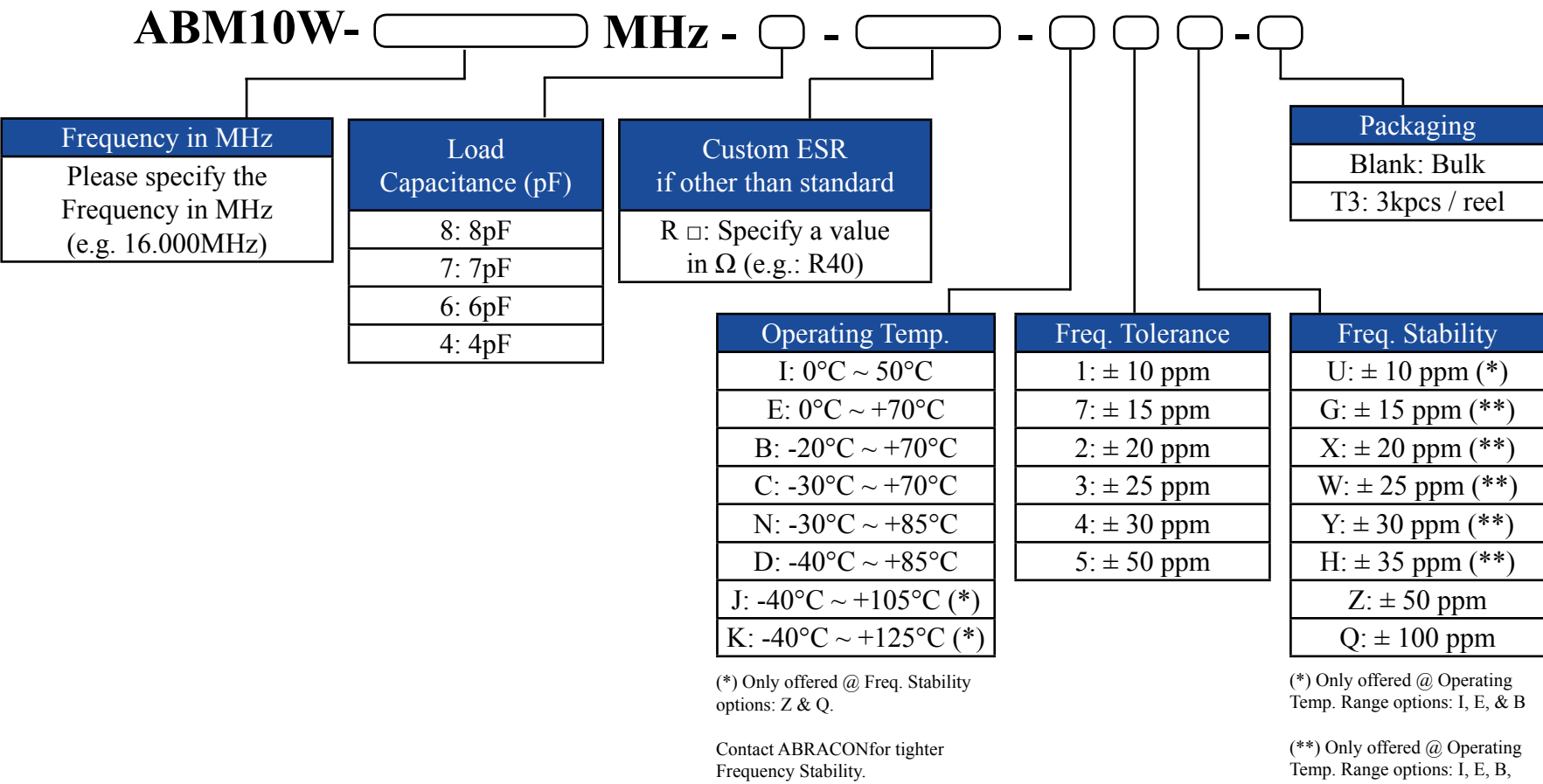
2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

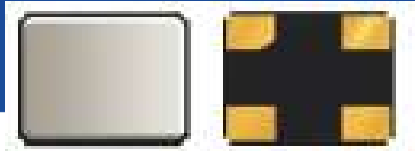
MSL = N/A: NOT APPLICABLE

OPTIONS AND PART IDENTIFICATION



IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



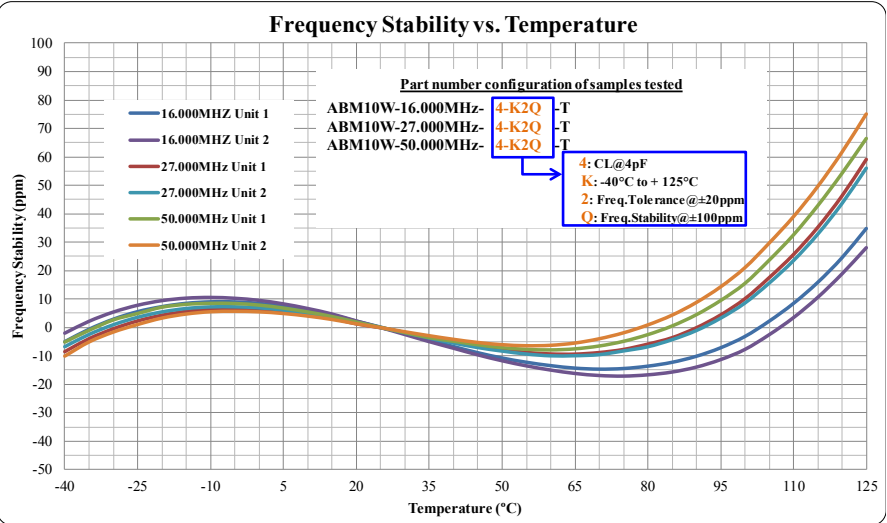
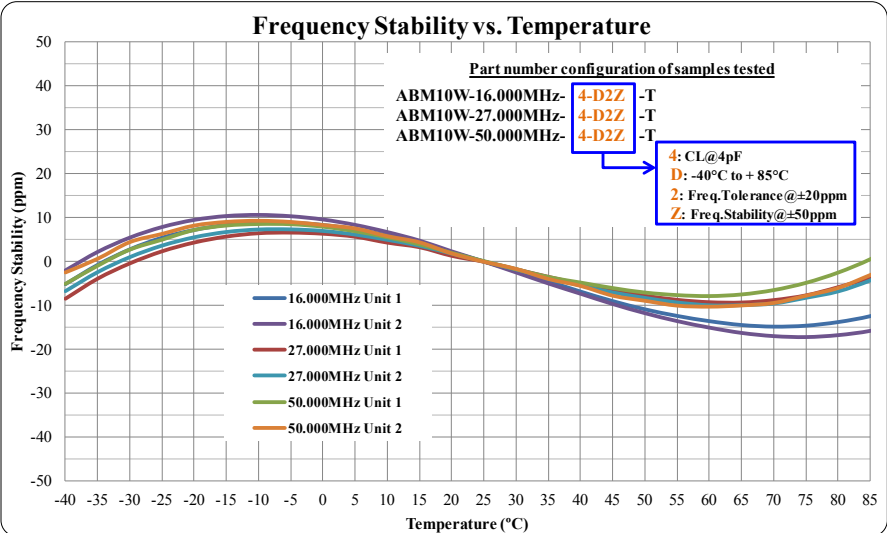
2.5 x 2.0 x 0.6mm



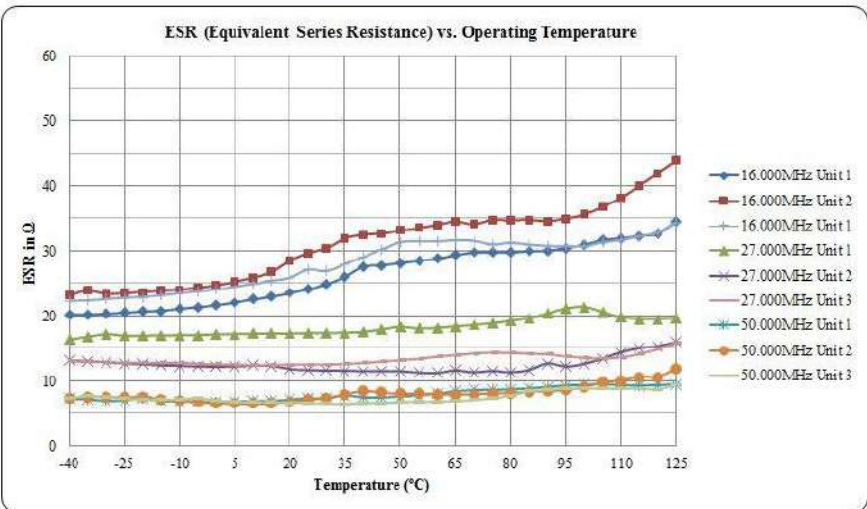
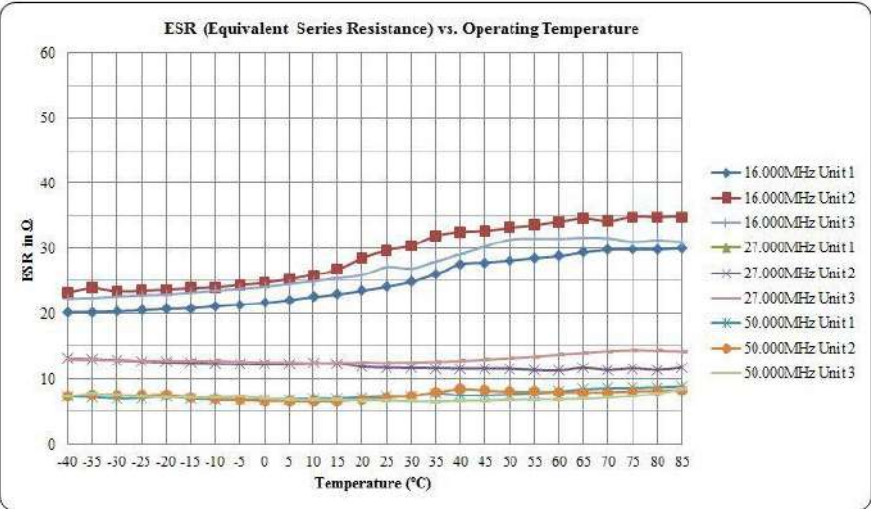
RoHS/REACH II Compliant

MSL = N/A: NOT APPLICABLE

TYPICAL FREQUENCY V_s. TEMPERATURE CHARACTERISTICS



TYPICAL ESR (EQUIVALENT SERIES RESISTANCE) V_s. TEMPERATURE CHARACTERISTICS



IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



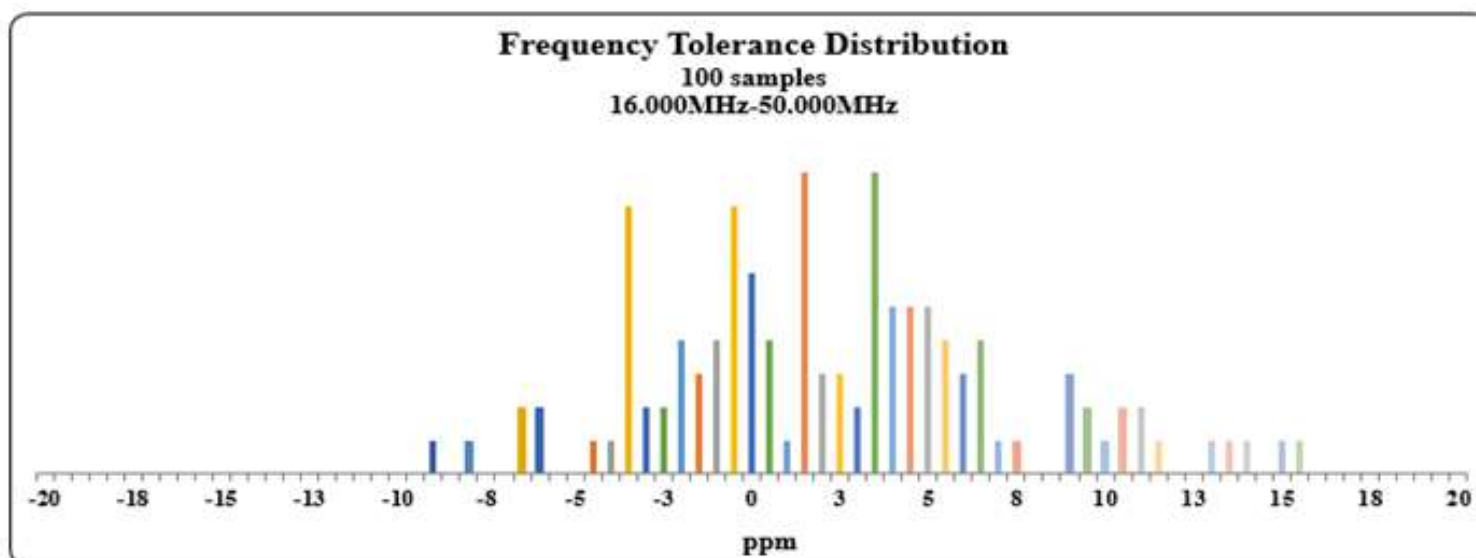
2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

MSL = N/A: NOT APPLICABLE

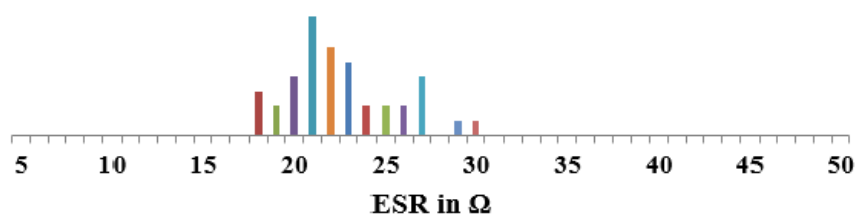
TYPICAL FREQUENCY TOLERANCE DISTRIBUTION (AT 25°C ± 3°C)



TYPICAL ESR DISTRIBUTION (AT 25°C ± 3°C)

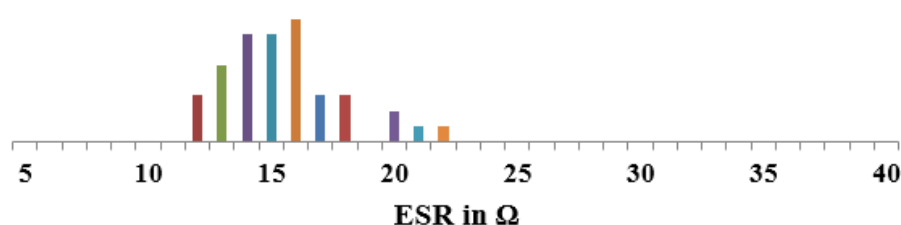
ESR Distribution @ 16.000MHz

100 samples
MAX ESR = 29.46 Ω



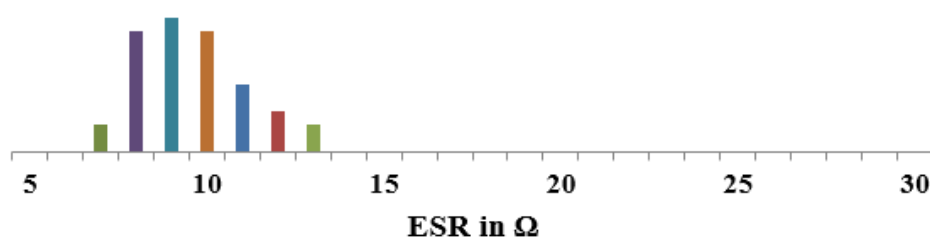
ESR Distribution @ 27.000MHz

100 samples
MAX ESR = 21.10 Ω



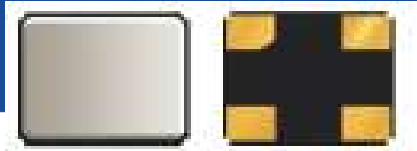
ESR Distribution @ 50.000MHz

100 samples
MAX ESR = 12.60 Ω



IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



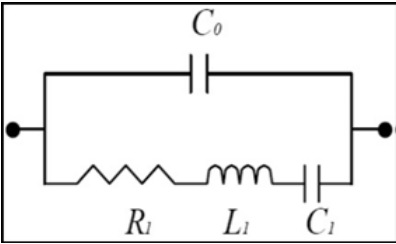
2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

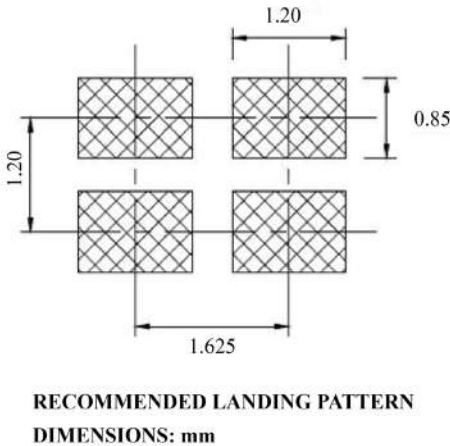
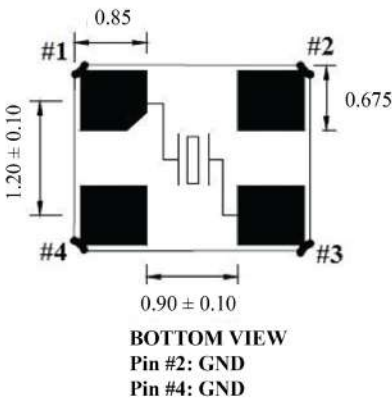
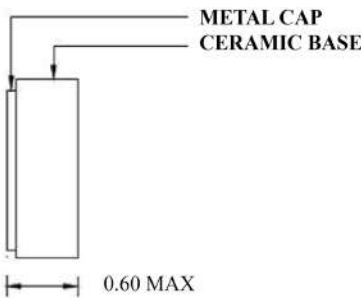
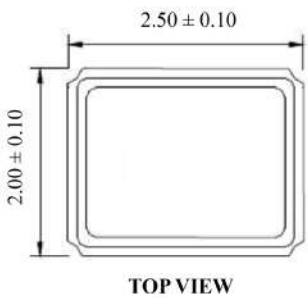
MSL = N/A: NOT APPLICABLE

SPICE MODELS (BASED ON TYPICAL VALUES AT 25°C ± 3°C)



Frequency: 16.000MHz Plating Load: 4pF				Frequency: 16.000MHz Plating Load: 6pF			
C0	=	0.65	pF	C0	=	0.65	pF
R1	=	22.77	Ω	R1	=	21.43	Ω
L1	=	70.34	mH	L1	=	70.13	mH
C1	=	1.41	fF	C1	=	1.41	fF
Frequency: 27.000MHz Plating Load: 4pF				Frequency: 27.000MHz Plating Load: 6pF			
C0	=	0.65	pF	C0	=	0.66	pF
R1	=	14.39	Ω	R1	=	17.38	Ω
L1	=	16.51	mH	L1	=	16.56	mH
C1	=	2.11	fF	C1	=	2.10	fF
Frequency: 50.000MHz Plating Load: 4pF				Frequency: 50.000MHz Plating Load: 6pF			
C0	=	0.89	pF	C0	=	0.87	pF
R1	=	8.40	Ω	R1	=	8.03	Ω
L1	=	3.24	mH	L1	=	3.19	mH
C1	=	3.13	fF	C1	=	3.18	fF

MECHANICAL DIMENSIONS



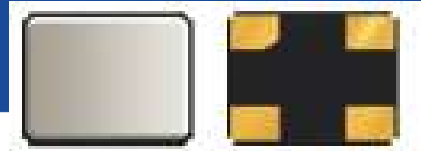
DIMENSIONS: mm

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.

IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL

ABM10W SERIES



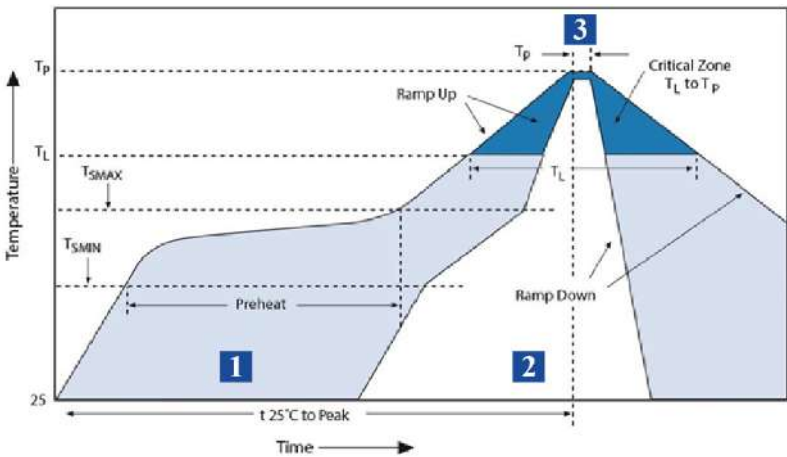
2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

MSL = N/A: NOT APPLICABLE

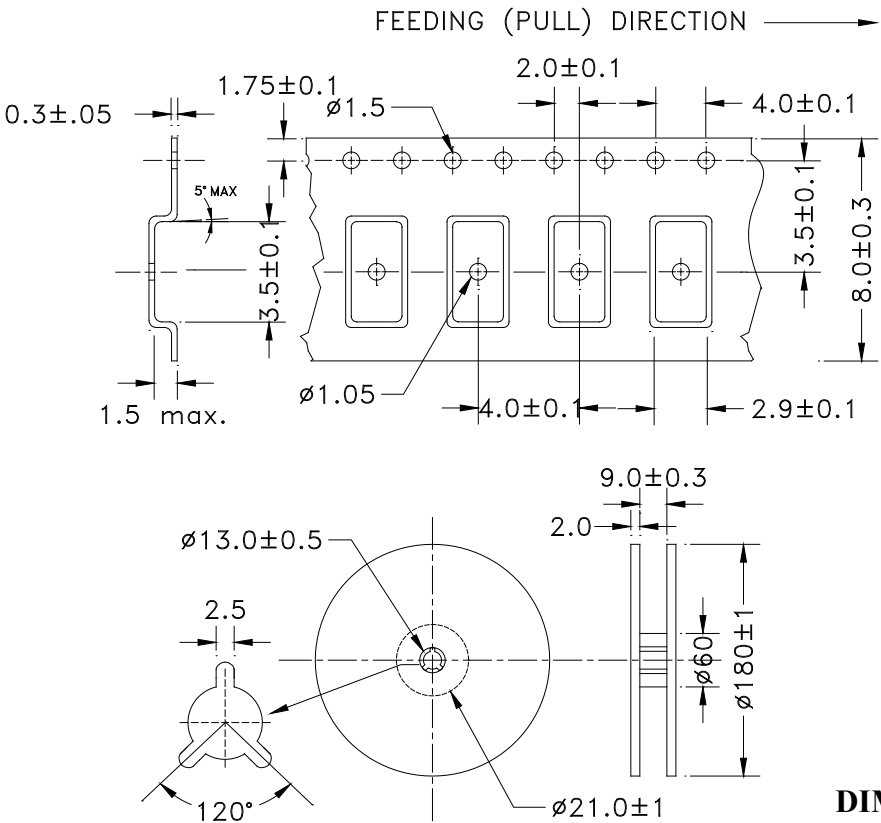
REFLOW PROFILE



Zone	Description	Temperature	Time
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C	60 ~ 120 sec.
2	Reflow	T_L 217°C	45 ~ 90 sec.
3	Peak Heat	T_P 260°C MAX	10 sec.

PACKAGING

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



DIMENSIONS: mm