QESM12

1.2 x 1.0 mm, SMD

Pb FREE

RoHS COMPLIANT

Frequency and Electrical Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test condition / Description
Nominal frequency (Fn)	26		96	MHz	
Calibration tolerance			±10 to ±50	ppm	Frequency at 25°C ± 2°C and specified load capacitance
Operating Temperature Range		-20 to +70	-30 to +85	°C	Refer to ordering information
Storage Temperature Range	-55		+125	°C	
Frequency stability over temperature			±10 to ±30	ppm	Referenced to frequency reading at 25°C and the specified load capacitance
Long-term stability (Ageing)			±2	ppm	Frequency drift over 1 year at 25°C
g sensitivity			2	ppb/g	Gamma vector of all three axes from 30 Hz to 1500 Hz
Shunt capacitance (CO)			2	pF	
Load capacitance (CL)	6		16	pF	Refer to ordering information
Drive level		50	100	µW	
Equivalent series resistance (ESR) 24.000 to 27.999MHz 28.000 to 39.**999**MHz 40.000 to 96.000MHz			 150 100 60	Ω	Mode of vibration: Fundamental (AT-cut) Fundamental (AT-cut) Fundamental (AT-cut)
Insulation resistance (IR)	500			MΩ	100 V ±15 V at 25°C

Environmental Specifications

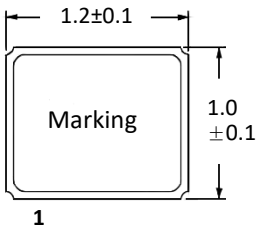
Parameter	Test condition / Description	Reference
Mechanical vibration	Frequency: 10-2000Hz, Amplitude: 1.5mm Duration time: 4 hours for each X,Y,Z axis	MIL-STD-202 Method 204
Drop test	Free-fall from 150cm height, 3 times on a hard wooden board	IEC 68-2-32

Order Part Example – QESM12.1.10.HQ.10.10 / 26.000MHz

Parameter	Package type	Vibration mode	Frequency tolerance	Operating temperature range	Frequency stability	Load Capacitance	Nominal Frequency (MHz)
Code	QESM12	1	10	HQ	10	10	26.000MHz
Decode	QESM = SMD Crystal 12 = 1.2 x 1.0 mm	1 = Fundamental	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm 50 = ±50ppm	F = -30°C H = -20°C Q = +70°C T = +85°C	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm	10 = ±10pf	Please enter the nominal frequency

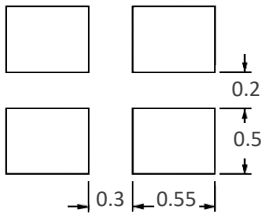
Model Outline, Recommended Pad Layout and Marking

TOP VIEW

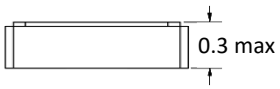


Marking		Example: QESM12.1.HQ.10.10 / 24MHz
Line 1	Product code	10xxxx
Line 2	Manuf. Code +date code (YWW)	G314

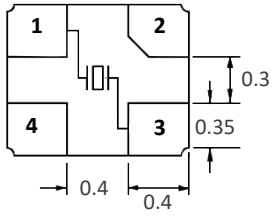
RECOMMENDED PAD LAYOUT



FRONT VIEW



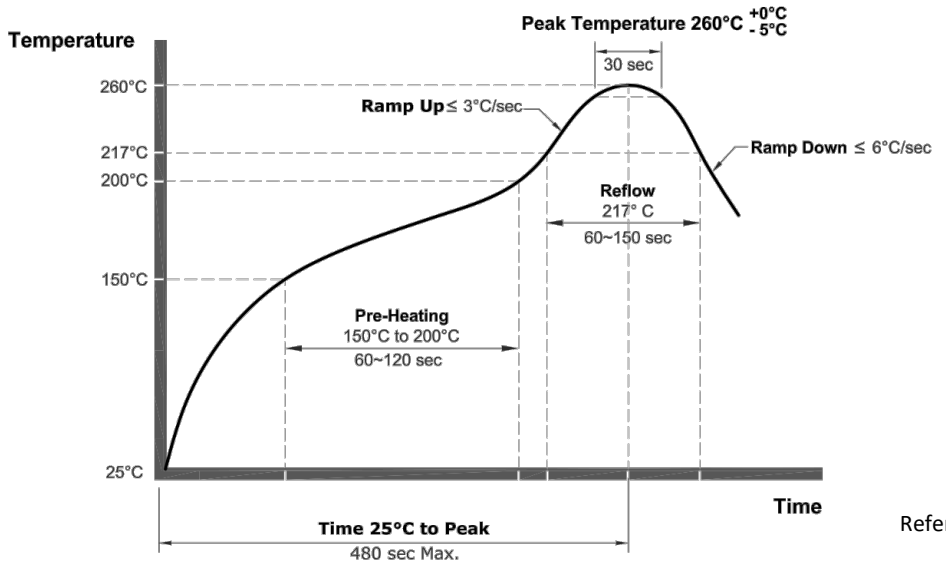
BOTTOM VIEW



Pin	Connections
1	Crystal
2	GND
3	Crystal
4	GND/NC

NOTE:
Dimensions are in millimetre.
Pin #2 and #4 are connected to cover.

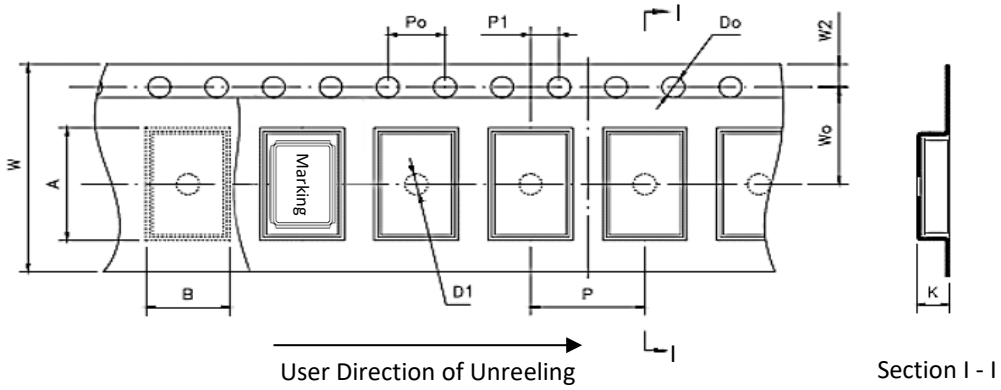
Reflow Soldering Profile



Referred to JEDEC J-STD-020E

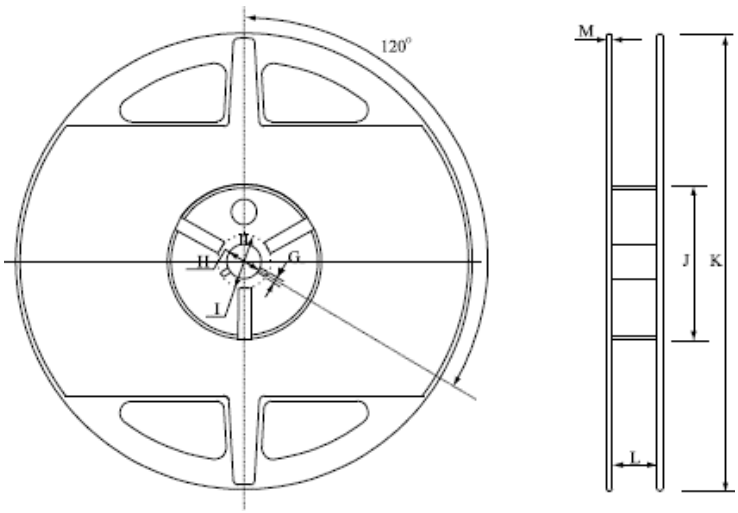
Tape and Reel

TAPE DETAILS:



Parameter	Code	Dimension	Tolerance
Pitch of components	P	4.0	± 0.1
Pitch of sprocket hole	P_0	4.0	± 0.1
Length from hole center to component center	P_1	2.0	± 0.1
Width of carrier tape	W	8.0	± 0.3
Width of adhesive tape	W_0	3.5	± 0.05
Height of component hole	A	1.3	± 0.1
Width of component hole	B	1.1	± 0.1
Gap of hold down tape and carrier tape	W_2	1.75	± 0.1
Diameter of sprocket hole	D_0	Φ 1.5	± 0.05
Diameter of feed hole	D_1	Φ 1.5	± 0.25
Total of tape thickness	K	0.45	± 0.1

REEL DETAILS:



G	H	I	J	K	L	M
2.5 ± 0.5	13.5 ± 0.5	21.6 ± 0.5	60.0 ± 1.0	178.0 ± 1.0	9.5 ± 1.0	1.6 ± 0.2

NOTE:

- Standard Packing Quantity (SPQ): 3000 pcs/reel.
- Unit: mm