

QESM08

2.5 x 2.0 mm, SMD



Frequency and Electrical Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test condition / Description
Nominal frequency (Fn)	12		54	MHz	
Calibration tolerance			±10 to ±30	ppm	Frequency at 25°C ± 2°C and specified load capacitance
Reflow shift			±1	ppm	Frequency shift after reflow with 4 hours settling at 25°C
Operating temperature range		-20 to +70	-40 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 (Aging)			±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)			3.0	pF	
Load capacitance (CL)	8		16	pF	Refer to ordering information
Drive level		50	100	µW	
Equivalent series resistance (ESR)					Mode of vibration: Fundamental (AT-cut)
12.000 to 15.999MHz			120	Ω	Fundamental (AT-cut)
16.000 to 19.999MHz			100		Fundamental (AT-cut)
20.000 to 29.999MHz			80		Fundamental (AT-cut)
30.000 to 54.000MHz			50		Fundamental (AT-cut)
Insulation resistance (IR)	500			MΩ	100 V ±15 V at 25°C

Environmental Specifications

Parameter	Test condition / Description
Mechanical vibration	10g, Frequency: 10Hz ~ 2KHz according to standard CEI 68-2-63
Shock	100g, 6ms according to standard CEI 68-2-27

Order Part Example – QESM08.1.10.HQ.10.08 / 16.000MHz

Parameter	Package type	Vibration mode	Frequency tolerance	Operating temperature range	Frequency stability	Load capacitance	Nominal Frequency (MHz)
Code	QESM08	1	10	HQ	10	08	16.000MHz
Decode	QESM = SMD Crystal 08 = 2.0 x 1.6 mm	1 = Fundamental	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm	D = -40°C F = -30°C H = -20°C Q = +70°C T = +85°C	10 = ±10ppm 15 = ±15ppm 20 = ±20ppm 30 = ±30ppm	08 = 8pF	Please enter the nominal frequency

Model Outline, Recommended Pad Layout and Marking

TOP VIEW

FRONT VIEW

BOTTOM VIEW

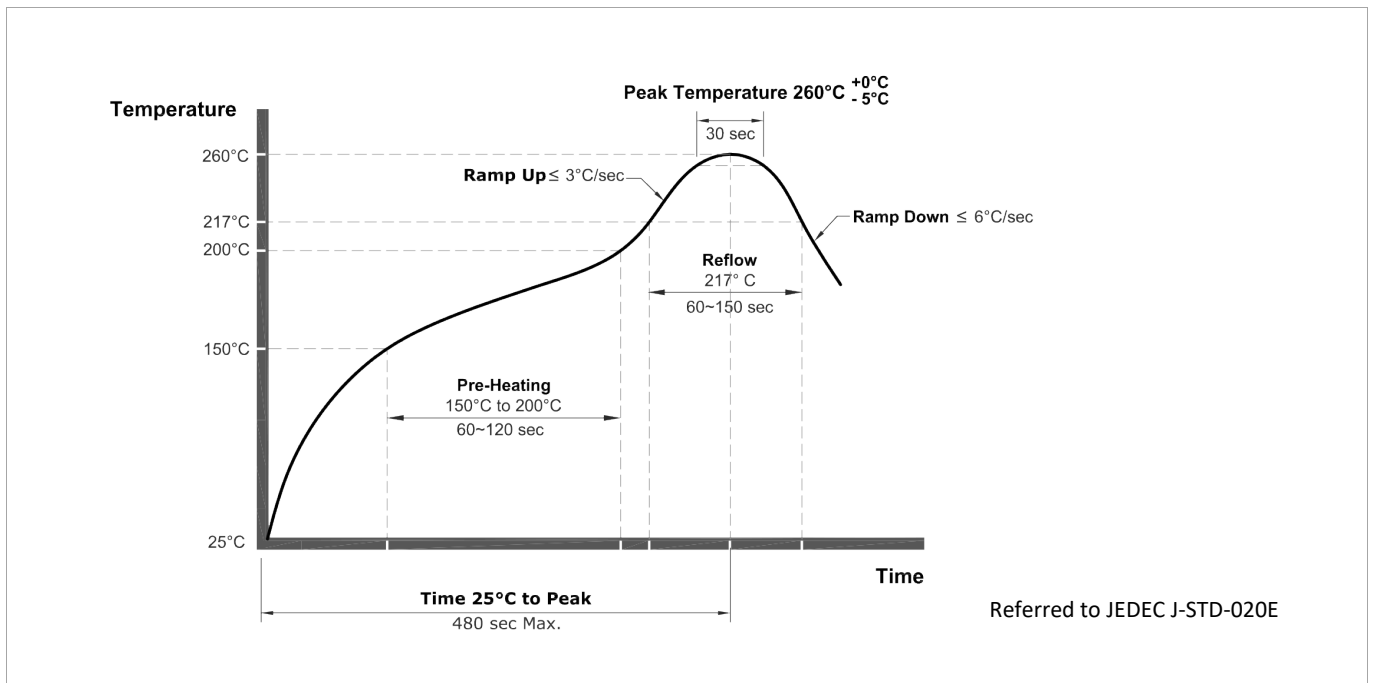
Marking		Example: QESM08.1.10.HQ.10.08 / 16MHz
Line 1	Rakon code (6 digits)	105803
Line 2	T+date code (YWW)	T234

Pin	Connections
1	Crystal
2	GND
3	Crystal
4	GND

NOTE: Dimensions are in millimetre.

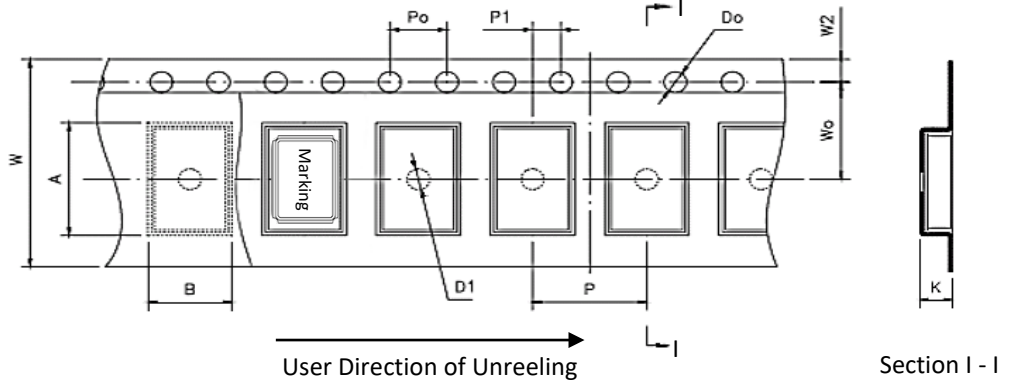
RECOMMENDED PAD LAYOUT (TOP VIEW)

Reflow Soldering Profile



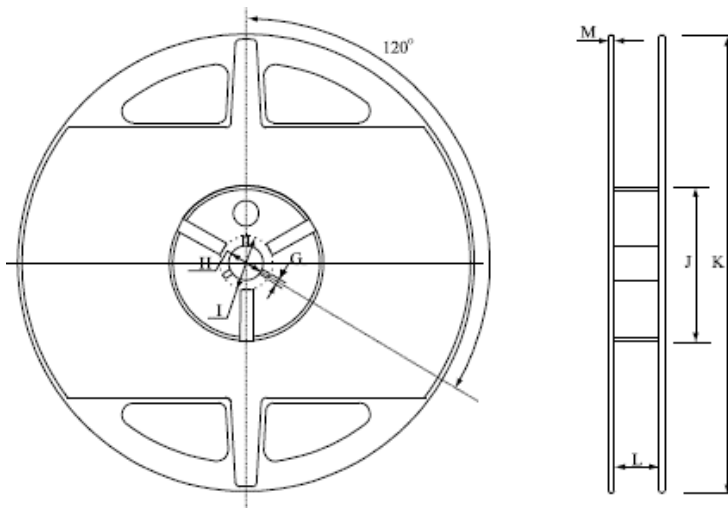
Packaging

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	± 0.1
Width of adhesive tape	W ₀	3.5	± 0.1
Height of component hole	A	2.75	± 0.1
Width of component hole	B	2.25	± 0.1
Gap of hold down tape and carrier tape	W ₂	0.5	± 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	0.7	± 0.1

REEL DETAILS:



G	H	I	J	K	L	M
2.2 ± 0.5	13.5 ± 0.5	18.2 ± 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