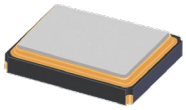
QESM05

5.0 x 3.2 mm, SMD



Frequency and Electrical Characteristics

Parameter	Min.	Typ.	Max.	Unit	Test condition / Description
Nominal frequency (Fn)	8		80	MHz	
Calibration tolerance			±10 to ±50	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 ±50	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
Shunt capacitance (CO)			7.0	pF	
Load capacitance (CL)	8		30	pF	Refer to ordering information
Drive level	10	100	300	µW	
Equivalent series resistance (ESR)					Mode of vibration:
8.000 to 9.999MHz			100	Ω	Fundamental (AT-cut)
10.000 to 13.999MHz			80	Ω	Fundamental (AT-cut)
14.000 to 19.999MHz			60	Ω	Fundamental (AT-cut)
20.000 to 29.999MHz			50	Ω	Fundamental (AT-cut)
30.000 to 47.999Mhz			40	Ω	Fundamental (AT-cut)
48.000 to 80.000Mhz			70	Ω	3rd Overtone (AT-cut)
Insulation resistance (IR)	500			MΩ	100 V ±15 V at 25°C

Environmental Specifications

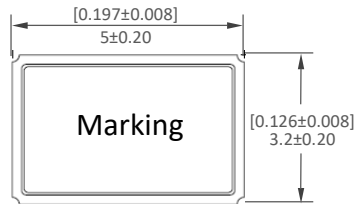
Parameter	Test condition / Description
Mechanical vibration	10g, Frequency: 10Hz ~ 2KHz according to standard CEI 68-2-63
Shock	100g, 6ms according to standard CEI 68-2-27

Order Part Example – QESM05.1.30.HQ.50.12 / 13.4008MHZ

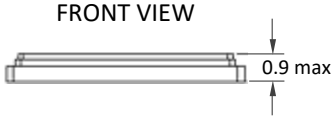
Parameter	Package type	Vibration mode	Frenquency tolerance	Operating temperature range	Frenquency stability	Load capacitance	Nominal Frenquency (MHz)
Code	QESM05	1	30	HQ	50	12	13.4008MHZ
Decode	QESM = SMD Crystal 05 = 5.0 x 3.2 mm	1 = Fundamental 3 = 3rd overtone	10 = ±10ppm 20 = ±20ppm 30 = ±30ppm 50 = ±50ppm	D = -40°C F = -30°C H = -20°C Q = +70°C T = +85°C	10 = ±10ppm 20 = ±20ppm 30 = ±30ppm 50 = ±50ppm	12 = 12pF	Please enter the nominal frequency

Model Outline, Recommended Pad Layout and Marking

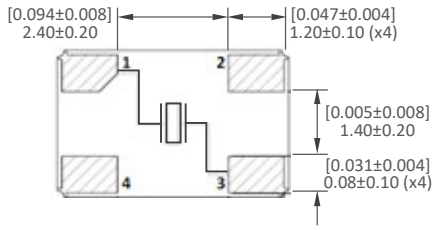
TOP VIEW



FRONT VIEW

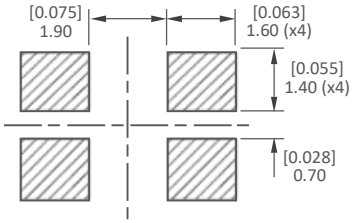


BOTTOM VIEW



RECOMMENDED PAD LAYOUT

(TOP VIEW)



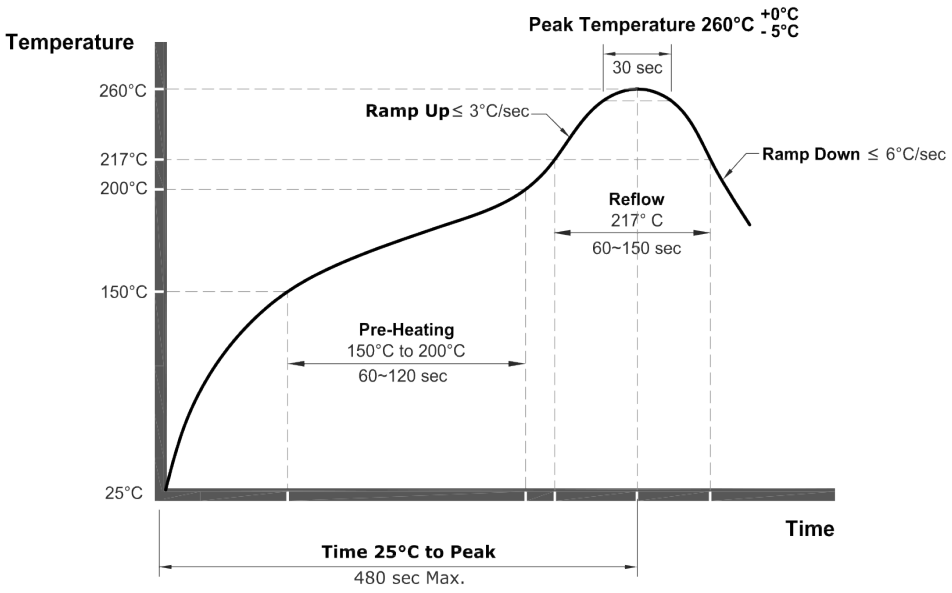
Marking		Example: QESM05.1.10.HQ.10.15 / 12.8MHz
Line 1	Rakon code (6 digits)	104894
Line 2	Frequency in MHz (6digits)	12.800
Line 3	Manuf Code - DC (YYWW)	G-2235

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

NOTE:

Dimensions are in inch and millimetre.

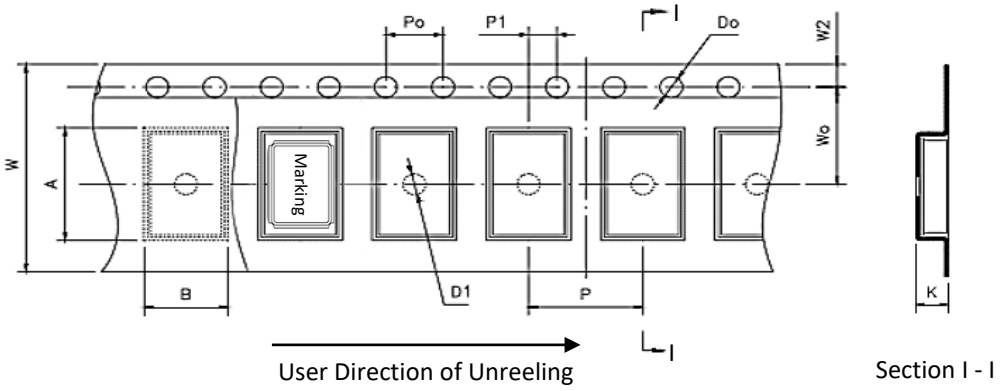
Reflow Soldering Profile



Referred to JEDEC J-STD-020E

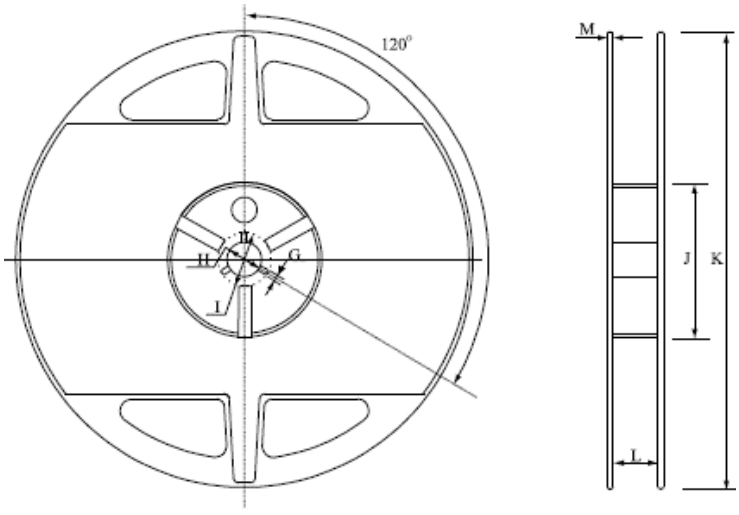
Packaging

TAPE DETAILS:



Parameter	Code	Dimension	Tolerance
Pitch of components	P	8.0	± 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	12.0	± 0.3
Width of adhesive tape	W_0	5.5	± 0.1
Height of component hole	A	5.4	± 0.1
Width of component hole	B	3.6	± 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	1.5	± 0.1

REEL DETAILS:



G	H	I	J	K	L	M
2.2 ± 0.5	13.5 ± 0.5	21.6 ± 0.5	60.0 ± 1.0	178.0 ± 1.0	13.5 ± 1.0	1.6 ± 0.2

NOTE:

- Standard Packing Quantity (SPQ): 1000 pcs/reel
- Unit: mm