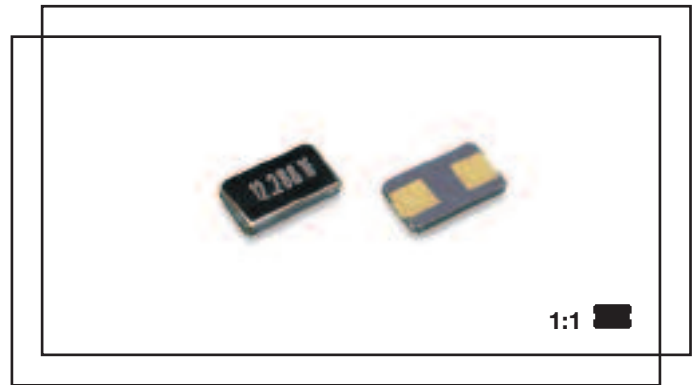


XS miniature smd crystal (10.0 ~ 50.0)MHz

- # (5.0 x 3.2)mm full ceramic case
- # 16mm tape and reel
- # standard and custom frequencies
- # AT cut quartz
- # RoHS compliant optional



Electrical specification

Case style	XS: height 1.3mm
Frequency range	(10.0 ~ 50.0)MHz, fundamental
standard frequencies	12.00MHz, 12.80MHz, 13.00MHz, 14.40MHz, 15.36MHz, 16.00MHz, 16.80MHz, 19.20MHz, 19.50MHz, 19.68MHz, 24.00MHz, 26.00MHz, 32.00MHz
Adjustment tolerance	from ± 30 ppm at $+25^{\circ}\text{C}$, frequency dependent
Temperature tolerance	from ± 5 ppm, frequency and temperature range dependent
Operating temperature	$(-10 +60)^{\circ}\text{C} \sim (-40 +85)^{\circ}\text{C}$
Storage temperature	$(-55 +125)^{\circ}\text{C}$
Load	customer specified
Shunt capacitance C_0	7.0pF max.
Drive level	10 μW typical
Q factor	80,000 typical
Ageing	± 5 ppm max. per year
Insulation resistance	500Meg. ohm min. at 100Vd.c.

Ordering information

The XS smd crystals may be specified within their available frequency range together with load capacitance, adjustment tolerance, temperature tolerance and temperature range with each parameter coded as follows

Example XS crystal, 13.00MHz, load 20pF, ± 50 ppm at $+25^{\circ}\text{C}$, ± 50 ppm $(-10 +60)^{\circ}\text{C}$

TFC PART NUMBER XS 13.00M H G G I

'XS' crystal series: XS

'13.00M' frequency: 13.00M = 13.00MHz, frequency range from (10.0 ~ 50.0)MHz

'H' load capacitance: H = 20pF

'G' adjustment tolerance at $+25^{\circ}\text{C}$: B = ± 50 ppm

'G' temperature tolerance: B = ± 50 ppm

'I' temperature range: I = $(-10 +60)^{\circ}\text{C}$

Load capacitance A: 8pF, B: 9pF, C: 10pF, D: 12pF, F: 16pF, G: 18pF, H: 20pF, J: 32pF, S: series

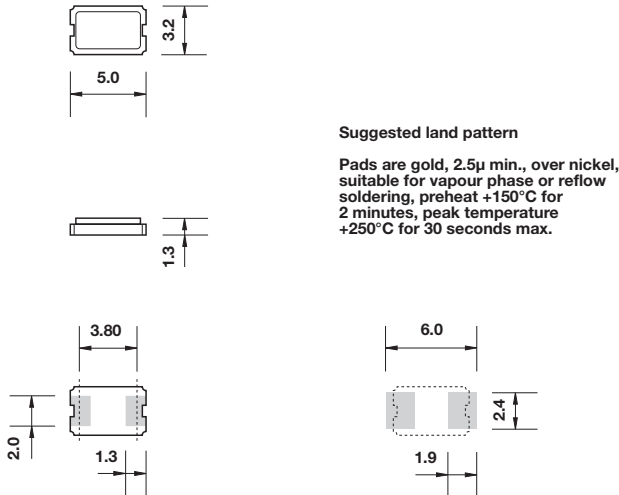
Adjustment tolerance E: ± 30 ppm, G: ± 50 ppm, H: ± 100 ppm

Temperature tolerance A: ± 5 ppm, B: ± 10 ppm, P: ± 15 ppm, C: ± 20 ppm, E: ± 30 ppm, G: ± 50 ppm, H: ± 100 ppm

Temperature range I: $(-10 +60)^{\circ}\text{C}$, C: $(-20 +70)^{\circ}\text{C}$, L: $(-40 +85)^{\circ}\text{C}$

XS miniature smd crystal

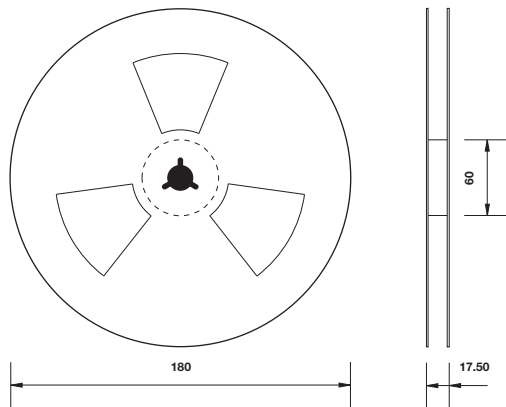
XS dimensions(mm) shown twice full size



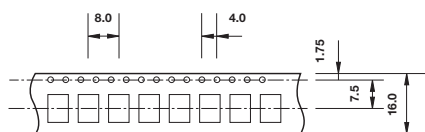
ESR - equivalent series resistance

frequency range(MHz)	cut/mode	esr()
(10.0 ~ 16.0)	AT1	<150
(16.0 ~ 20.0)	AT1	<100
(20.0 ~ 30.0)	AT1	<70
(30.0 ~ 50.0)	AT1	<50

Tape and reel dimensions(mm)



Centre hole diameter 13.0mm, slot width 2mm spaced at 120°
Reel quantity 1K, 2K, 3K, 5K pieces, leader tape 400mm minimum
Trailer tape: 10 empty compartments minimum



Tape transport hole diameter 1.5mm, 4.0mm pitch
Compartment size 3.80mm x 5.70mm, depth 1.29mm
Component spacing on 8.0mm pitch

Product marking

Marking includes frequency and date code:

XX.XXX Frequency in MHz
YWW Y = last digit of year
 WW = week number