



actual size

SMD Quartz Crystal · SMU3

2 Pad Version · 11.5 x 4.8 mm

- recommended for automotive applications
- reflow soldering temperature: 260 °C max.
- package height 4.0 mm max.



General Data

type	SMU3	
frequency range	3.2768 ~ 35.0 MHz	(fund. AT-cut)
	27.0 ~ 60.0 MHz	(3rd OT. AT-cut)
	30.0 ~ 50.0 MHz	(fund. BT-cut)
frequency tolerance at 25 °C	± 10 ppm ~ ± 50 ppm	(± 50 ppm ≤ 3.579545 MHz)
load capacitance C_L	12 pF ~ 32 pF or series	(30 pF standard)
shunt capacitance C_0	< 5 pF	
storage temperature	-40 °C ~ +125 °C	
drive level max.	500 µW (100 µW recommended)	
aging	< ± 5 ppm first year	

ESR (series resistance Rs)

frequency in MHz	vibration mode	ESR max. in Ω	ESR typ. in Ω
3.276 ~ 3.499	fund.- AT	200	100
3.579 ~ 3.999	fund.- AT	120	80
4.000 ~ 5.999	fund.- AT	80	60
6.000 ~ 6.999	fund.- AT	70	35
7.000 ~ 8.999	fund.- AT	50	25
9.000 ~ 13.99	fund.- AT	35	15
14.00 ~ 35.00	fund.- AT	30	10
27.00 ~ 60.00	3rd OT- AT	100	60
30.00 ~ 50.00	fund.- BT	30	15

Frequency Stability vs. Temperature

		± 30 ppm	± 50 ppm	± 100 ppm	± 150 ppm	+10/-160 ppm
-40 °C ~ +85 °C	T1		● ≥ 3.57 MHz	● < 3.57 MHz		○ BT-cut
-40 °C ~ +105 °C	T2		○	○		
-40 °C ~ +125 °C	T3				○	

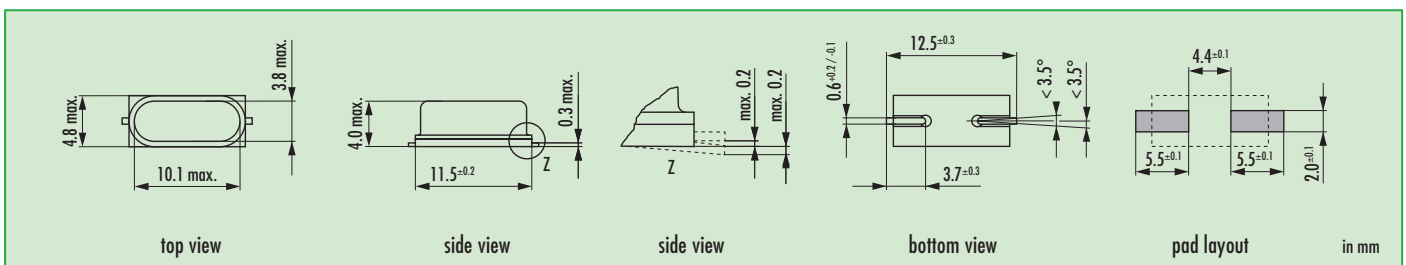
● standard
○ available

Marking

frequency with load capacitance code
company code / date code / internal code

	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Ok.	Nov.	Dec.
2005	A	B	C	D	E	F	G	H	J	K	L	M
2006	N	P	Q	R	S	T	U	V	W	X	Y	Z
2007	a	b	c	d	e	f	g	h	i	k	l	m
2008	n	p	q	r	s	t	u	v	w	x	y	z

Dimensions



Order Information

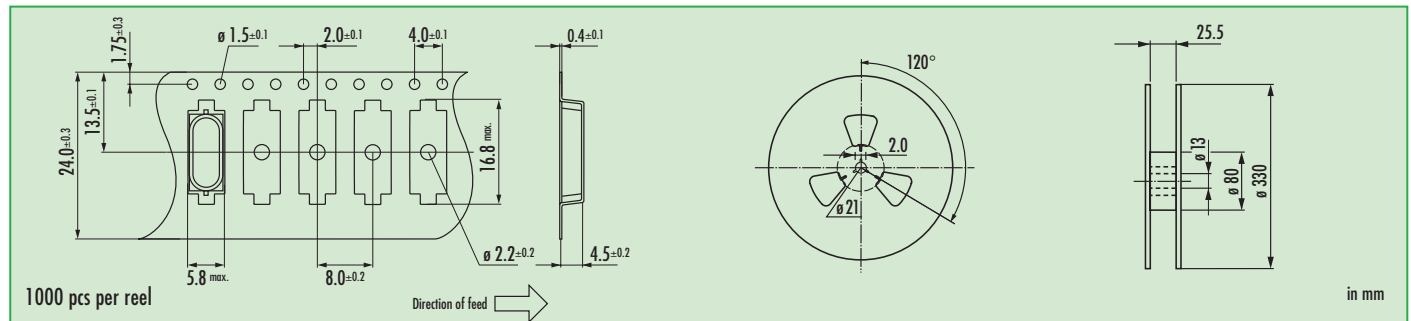
Q	frequency	type	load capacitance	stability at 25 °C	stability vs. temp. range	option
Quartz	3.2768 ~ 60.0 MHz	SMU3	30 pF standard 12 pF ~ 32 pF S for series	10 = ± 10 ppm 20 = ± 20 ppm 30 = ± 30 ppm standard 50 = ± 50 ppm, if < 3.57 MHz	see table	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C FU = for fundamental frequencies ≥ 20 MHz 30T = 3rd overtone BT = fundamental BT-cut

Example: Q 30.0-SMU3-30-30/50-FU-T1 (Suffix LF = RoHS compliant / Pb free pins or pads)

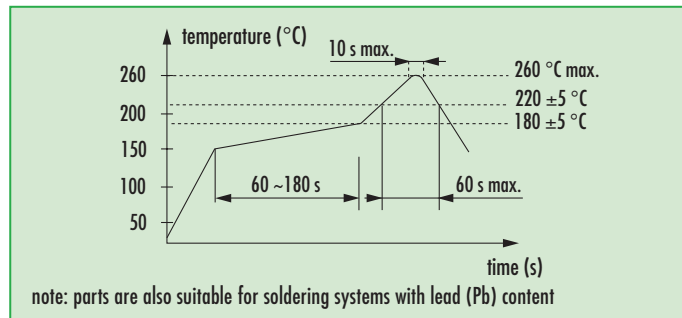


SMD Quartz Crystal · SMU3 · Automotive Applications

Taping Specification



Reflow Soldering Profile



Load Capacitance Codes

7 pF: m	13 pF: v	20 pF: c	32 pF: e
8 pF: k	14 pF: x	22 pF: g	series: s
9 pF: n	15 pF: j	24 pF: d	T: 3rd OT
10 pF: h	16 pF: b	25 pF: r	
11 pF: l	17 pF: t	27 pF: w	
12 pF: a	18 pF: f	30 pF: .	

example 4.0 MHz / 12 pF: 4a000

Automotive application note

- automotive quartz crystals have superior environmental performance in case of shock, vibration and temperature
- extended operating temperatures up to +125 °C
- production is certified according to: ISO 9001 / QS 9000 / QS 14000