



actual size

# SMD Quartz Crystal · SMU2

2 Pad Version · 11.5 x 4.8 mm

- recommended for automotive applications
- reflow soldering temperature: 260 °C max.
- package height 3.0 mm max.



## General Data

type	SMU2	
frequency range	4.1943 ~ 40.0 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 ~ ± 30 ppm	
load capacitance $C_L$	12 pF ~ 32 pF or series	
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
4.19 ~ 9.9999	fund.- AT	70	30
10.0 ~ 13.999	fund.- AT	50	25
14.0 ~ 40.000	fund.- AT	40	15
27.0 ~ 60.000	3rd OT - AT	100	80
30.0 ~ 50.000	fund.- BT	50	20

## Frequency Stability vs. Temperature

		± 30 ppm	± 50 ppm	± 100 ppm	± 150 ppm	+10/-100 ppm
-20 °C ~ +70 °C	STD.	○	●			○ BT-cut
-40 °C ~ +85 °C	T1	○	○	●		
-40 °C ~ +105 °C	T2		○	○		
-40 °C ~ +125 °C	T3				○	

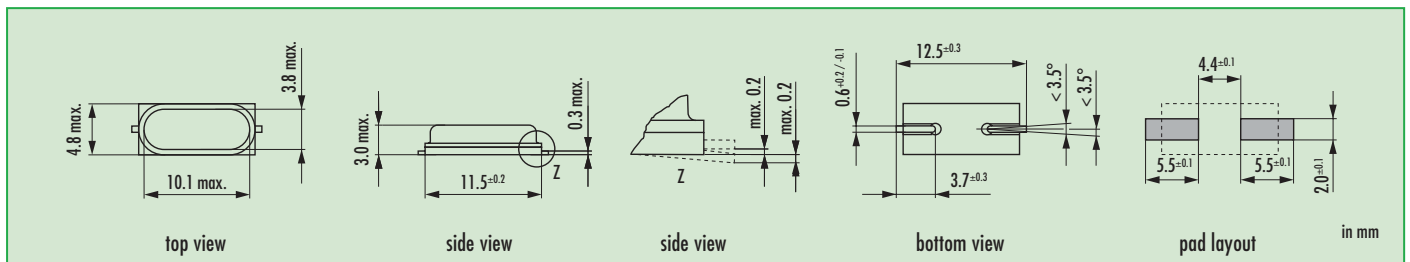
● standard  
○ available

## Marking

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

	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Okt.	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

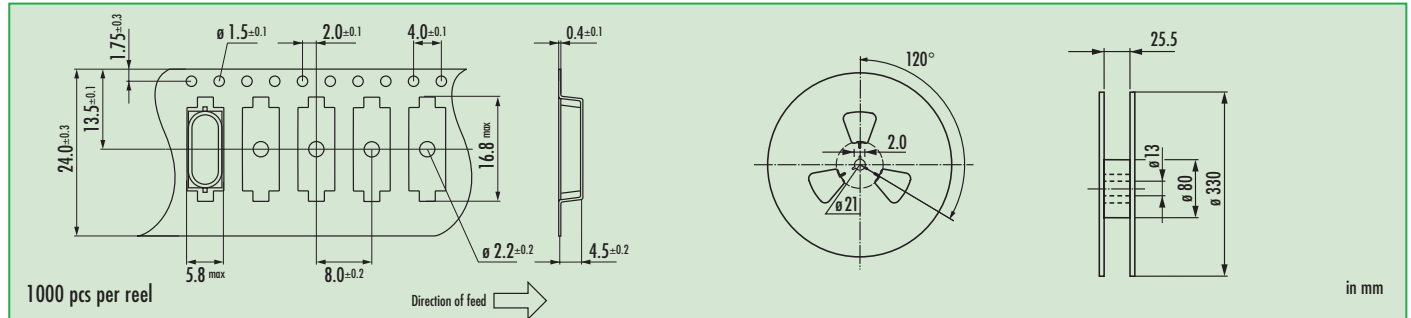
Q	frequency	type	load capacitance	stability at 25 °C	stability vs. temp. range	option
Quartz	4.19 ~ 60.0 MHz	SMU2	30 pF standard 12 pF ~ 32 pF S for series	30 = ± 30 ppm std	see table	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~ +105 °C T3 = -40 °C ~ +125 °C FU = for fundamental frequencies ≥ 20 MHz 30T = 3rd overtone BT = fundamental BT-cut

Example: Q 25.0-SMU2-30-30/50-FU (Suffix LF = RoHS compliant / Pb free pins or pads)

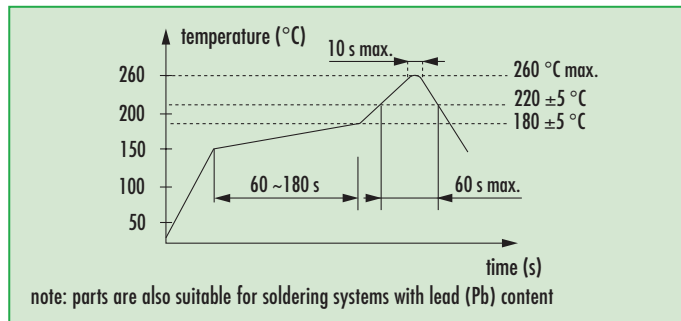


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## Taping Specification



## 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 10.0 MHz / 12 pF: 10a000

## 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