

actual size

SMQ series • MG3A

surface mount crystal

features

- good heat resistance characteristics
- extended temperature range

type	MG3A		
frequency	3.579545 ~ 33,8 MHz (fundamental AT-cut)		
	30.0 ~ 91.1 MHz (3rd overtone AT-cut)		
	30.0 ~ 40.0 MHz (fundamental BT-cut)		
frequency tolerance at 25 °C	± 50 ppm	± 50 ppm	± 50 ppm
frequency temp. characteristic	± 50 ppm	± 100 ppm	± 150 ppm
operating temperature	-20 °C ~ +70 °C	-40 °C ~ +85 °C	-40 °C ~ +125 °C
storage temperature	-40 °C ~ +125 °C	-40 °C ~ +125 °C	-40 °C ~ +125 °C
load capacitance C_L	12 pF ~ 32 pF / series	12 pF ~ 32 pF / series	12 pF ~ 32 pF / series
shunt capacitance C_0	< 5 pF	< 5 pF	< 5 pF
drive level max.	100 µW	100 µW	100 µW
aging	< ± 5 ppm	< ± 5 ppm	< ± 5 ppm

order information example:

Q - 16.0 - MG3A - 30 - 50 / 100 - T1

1. 2. 3. 4. 5. 6. 7.

- quartz: Q
- frequency: 16.0 MHz
- type: MG3A
- load capacitance: 30 pF
- frequency stability at 25 °C: ± 50 ppm
- frequency vs temperature: ± 100 ppm
- special requirement: -40 °C ~ +85 °C (see option table)

option table:

- FUND — fundamental tone
- BT — BT-cut
- 3 OT — 3rd overtone
- T1 — -40 °C ~ +85 °C
- T3 — -40 °C ~ +125 °C

date code

	Jan.	Febr.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1999	a	b	c	d	e	f	g	h	j	k	l	m
2000	n	p	q	r	s	t	u	v	w	x	y	z
2001	A	B	C	D	E	F	G	H	J	K	L	M
2002	N	P	Q	R	S	T	U	V	W	X	Y	Z

marking:

frequency with C_L code / company code / date code

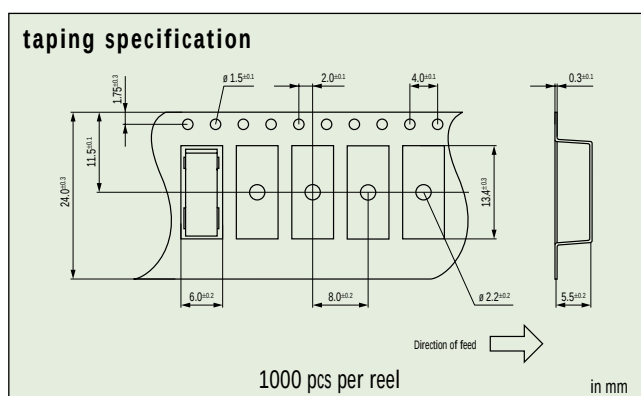
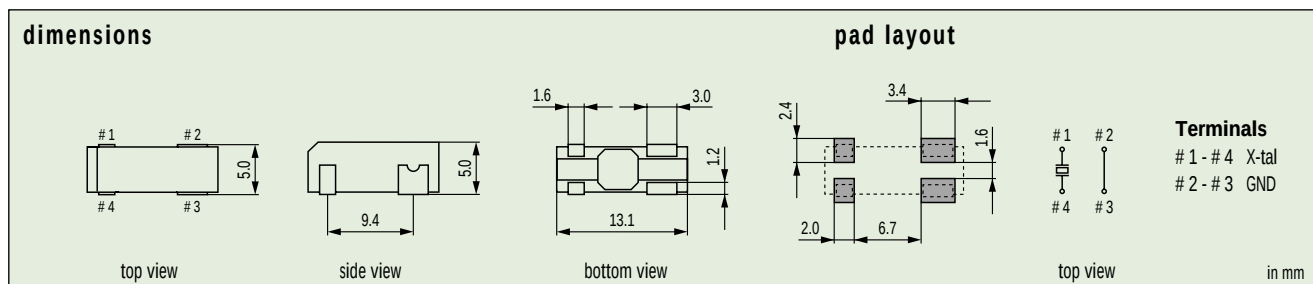
example:

16 a 00 J n

16 — frequency in MHz (4 digits max.)
 a — load capacitance code (T = 3rd OT)
 00 — company code
 J — date code / internal code
 n — date code / internal code



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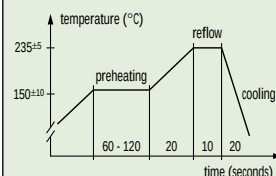
test conditions:

- a) acceleration: 1000 g / 0.5 ms, 1/2 sine wave
- b) shock (random drop): height 75 cm, 3 times to hardwood surface ($\Delta R/R \leq 20\%$; $\Delta f/f \leq \pm 5$ ppm)
- c) vibration: $f = 10$ Hz ~ 55 Hz; amplitude = 1.5 mm; period = about 1 minute; time = 2 h each direction
- d) solderability: according to DIN 68-2-54

standard load capacitance codes

12 pF:	a	24 pF:	d
16 pF:	b	30 pF:	.
18 pF:	f	32 pF:	e
20 pF:	c	series:	s
22 pF:	g		

reflow soldering profile



series resistance (Rs) / motional capacitance (C1) table					
frequency in MHz	cut	vibration mode	Rs max. in Ω	Rs typ. in Ω	C1 typ. in fF
3.5 ~ 3.69	AT	fund	180	70 ~ 100	2.5 ~ 5.5
3.7 ~ 3.99	AT	fund	150	60 ~ 80	2.5 ~ 5.5
4.0 ~ 4.09	AT	fund	150	50 ~ 70	3.0 ~ 3.4
4.1 ~ 4.39	AT	fund	130	50 ~ 70	3.0 ~ 3.4
4.4 ~ 4.99	AT	fund	120	40 ~ 60	2.9 ~ 3.5
5.0 ~ 5.99	AT	fund	120	40 ~ 60	3.9 ~ 4.2
6.0 ~ 6.99	AT	fund	80	35 ~ 55	3.2 ~ 3.6
7.0 ~ 7.99	AT	fund	75	25 ~ 45	3.2 ~ 3.6
8.0 ~ 9.99	AT	fund	70	20 ~ 40	5.9 ~ 7.0
10.0 ~ 11.99	AT	fund	50	15 ~ 35	6.0 ~ 8.0
12.0 ~ 13.99	AT	fund	50	15 ~ 35	6.5 ~ 8.5
14.0 ~ 15.99	AT	fund	50	10 ~ 15	9.2 ~ 11.2
16.0 ~ 17.99	AT	fund	50	10 ~ 15	9.2 ~ 11.2
18.0 ~ 19.99	AT	fund	50	10 ~ 15	9.2 ~ 11.2
20.0 ~ 33.8	AT	fund	50	10 ~ 15	10.0 ~ 13.5
30.0 ~ 40.0	BT	fund	50	10 ~ 15	10.0 ~ 15.0
30.0 ~ 91.1	AT	3rd OT	100	80	0.8 ~ 2.5