






PAD	CONNECTION
1	Crystal
2	Ground & lid
3	Crystal
4	Ground & lid

Scale 3:1

## Features

-  **Good frequency perturbation**
-  **Metal lid can be grounded to minimise EMI**
-  **Seam sealed for excellent long-term stability**
-  **Ultra-miniature for maximum space saving**
-  **Ideal for Bluetooth / Wireless applications**

## Bluetooth Applications

Frequency	Specification	IC	Part No
12.0MHz	9pF, $\pm 11.3$ ppm/pF typ pullability	CSR, Zeevo	MA04647*
12.0MHz	16pF, $\pm 3.7$ ppm/pF typ pullability		MA04650
13.0MHz	16pF, $C_1 = 2.5$ fF typ	TI	MA04648
13.0MHz	7pF, $C_1 = 2.5$ fF typ	Philips	MA04649
13.0MHz	9pF, $C_1 = 2.4$ fF typ		MA04654
15.360MHz	10pF, $C_1 = 3.0 \pm 0.6$ fF	Broadcom	MA04651
15.360MHz	12pF, $C_1 = 3.0 \pm 0.6$ fF	Broadcom	MA04652
16.0MHz	9pF, $\pm 18$ ppm/pF typ pullability	CSR	MA03057*
26.0MHz	9pF, $\pm 27$ ppm/pF typ pullability		MA04653

\* Qualified for use with CSR chipset solutions. Golledge is a global supply partner for CSR

## Specifications

Parameters	Product	Option Codes
	GSX-433	
<b>Frequency range:</b> 12.0 ~ 44.0MHz	<input checked="" type="checkbox"/>	
<b>Calibration tolerance:</b> $\pm 10$ ppm $\pm 15$ ppm $\pm 20$ ppm Other values ( $\pm 7.5 \sim \pm 100$ ppm)	<input checked="" type="checkbox"/>	1
	<input type="checkbox"/>	P
	<input type="checkbox"/>	2
	<input type="checkbox"/>	specify
<b>Temperature stability:</b> $\pm 10$ ppm $\pm 15$ ppm $\pm 20$ ppm $\pm 30$ ppm Other values ( $\pm 7.5 \sim \pm 100$ ppm)	<input checked="" type="checkbox"/>	1
	<input type="checkbox"/>	P
	<input type="checkbox"/>	2
	<input type="checkbox"/>	specify
<b>Operating temperature range:</b> -10 to +60°C -20 to +70°C -30 to +80°C Other values	<input checked="" type="checkbox"/>	1
	<input type="checkbox"/>	2
	<input type="checkbox"/>	3
	<input type="checkbox"/>	specify
<b>Storage temperature range:</b> -40 to +85°C	<input checked="" type="checkbox"/>	
<b>Circuit condition:</b> 9pF 12pF 16pF Series resonant Other values	<input type="checkbox"/>	N
	<input type="checkbox"/>	B
	<input checked="" type="checkbox"/>	D
	<input type="checkbox"/>	S
	<input type="checkbox"/>	specify
<b>Oscillation mode:</b> Fundamental	<input checked="" type="checkbox"/>	F
<b>Equivalent series resistance:</b> 60Ω max	<input checked="" type="checkbox"/>	
<b>Frequency perturbation:</b> $\pm 1$ ppm max	<input checked="" type="checkbox"/>	
<b>Ageing:</b> $\pm 1$ ppm max first year	<input checked="" type="checkbox"/>	
<b>Test drive level:</b> 10μW	<input checked="" type="checkbox"/>	
<b>Soldering condition:</b> 260°C, 10 sec x2 max	<input checked="" type="checkbox"/>	

Standard.  Optional - Please specify required code(s) when ordering

## Ordering Information

Product name + option codes + frequency

eg: **GSX-433/111NF 16.0MHz** 10/10/10/9-F

**GSX-433/1P3AF 26.0MHz** 10/15/30/10-F

Option code X (eg GSX-433/X) denotes a custom specification.

◆  $\pm 10$ ppm temperature stability may not be available over -30+80°C.

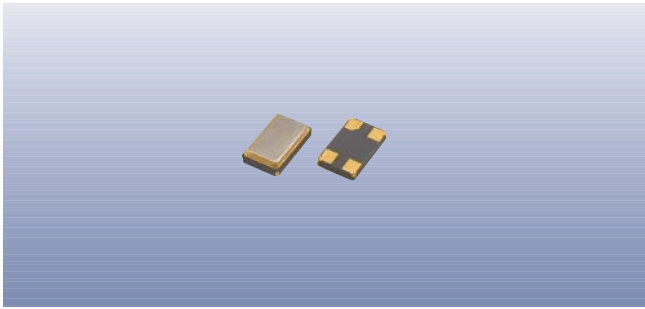
Check with our sales office before ordering.

◆ Available on T&R - 1k or 3k pcs per reel.

◆ Refer to our website for T&R and soldering details.

## GPS / Mobile Applications

Frequency	Specification	IC / Appln	Part No
12.0MHz	18pF, $C_1 = 2.0$ fF typ	DSC mobile	MA06114
16.367667MHz	20pF, $C_1 = 3.7$ fF typ		MA06113
24.0MHz	12pF, $C_1 = 4.5$ fF typ	DSC mobile	MA06115
24.0MHz	20pF, $C_1 = 4.5$ fF typ	DSC mobile	MA06116
24.5535MHz	32pF, $C_1 = 5.1$ fF typ	SiRF GPS	MA06112
26.0MHz	12pF, $C_1 = 5.5$ fF typ		MA06117



## Construction

- ▮▮▮▮ **Ceramic body with gold-plated pads**
- ▮▮▮▮ **Metal lid, seam sealed**

## Composition



This product is lead-free, and is fully compliant with the RoHS directive 2002/95/EC



## Packaging & Handling

Production quantities supplied on T & R, 1k or 3k pcs per reel.  
Small quantities may be supplied on tape (no reel), or in bulk.

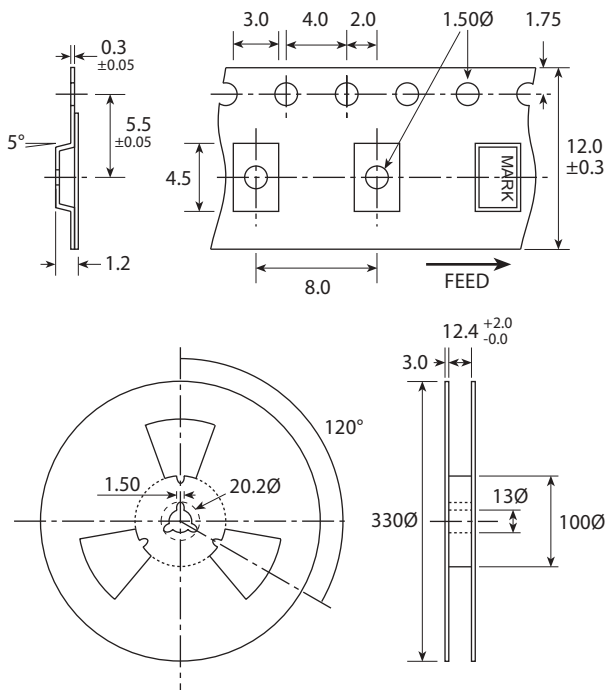
## Marking

NNN T DC	Marking type: Laser NNN = Part ID code DC = Date code in YW, as shown below Example: "zd" = 2004 week 30
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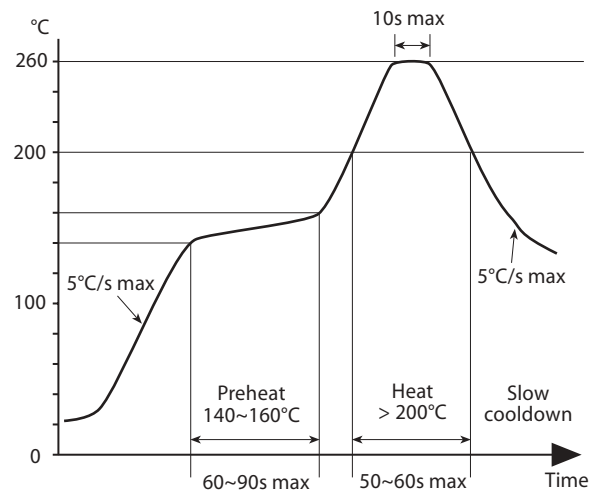
Year	2001 2005	2002 2006	2003 2007	2004 2008	Week codes:
Code	Z	z	Z	z	A ~ Z: weeks 1 to 26 a ~ z: weeks 27 to 52

## Tape & Reel Specification



Not to scale. Dimensional tolerances ±0.1mm unless otherwise stated

## Soldering Profile



Solder resistance: 260°C x 10 secs x 2.