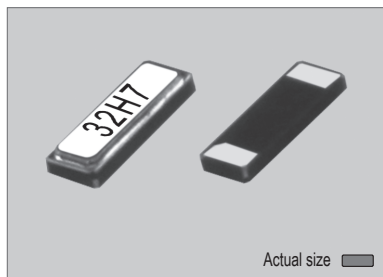
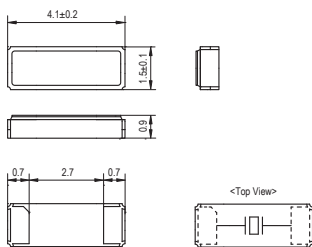


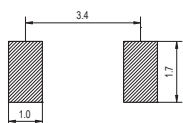
415SMX



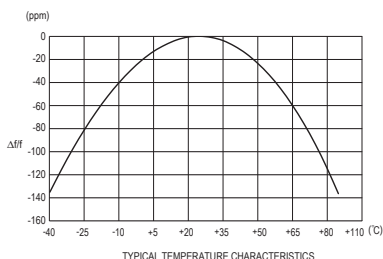
415SMX



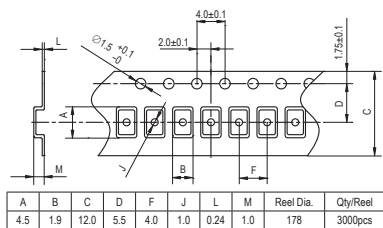
SOLDERING PATTERN



XY-CUT



TAPE SPECIFICATIONS



STANDARD SPECIFICATIONS

Item	Symbol	Specifications
Part number	P/N	415M327*
Package type		415SMX
Nominal frequency	F	32.768 kHz
Frequency tolerance (at +25°C)	$\Delta f/F$	B : $\pm 20$ ppm C : $\pm 30$ ppm (Standard)
Load capacitance	CL	12.5 pF : 415M327 (Standard) 9.0 pF : 415M327-9 7.0 pF : 415M327-7
Equivalent series resistance	ESR	70 k $\Omega$ max.
Drive level	P	1 $\mu$ W max.
Turnover temperature	T <sub>t</sub>	+25°C $\pm$ 5°C
Temperature coefficient	$\beta$	-0.034 ppm / °C <sup>2</sup> , Typical
Quality factor	Q	30000 min.
Shunt capacitance	C <sub>0</sub>	1.1 pF, Typical
Motional capacitance	C <sub>1</sub>	0.002 pF, Typical
Capacitance ratio	$\gamma$	550, Typical
Aging (for first year)	$\Delta f/F$	$\pm 3$ ppm max. at +25°C $\pm 3$ °C
Insulation resistance	R <sub>i</sub>	500 M $\Omega$ min. at 100V DC $\pm 15$ V
Cut		XY-Cut
Operating temperature range	T <sub>o</sub>	-40°C to +85°C
Storage temperature range	T <sub>s</sub>	-55°C to +125°C
Shock resistance	$\Delta f/F$	$\pm 5$ ppm max.
Vibration resistance	$\Delta f/F$	$\pm 5$ ppm max.
IR reflow resistance	$\Delta f/F$	$\pm 10$ ppm max.
Reflow condition		10 seconds max. at +250°C $\pm 10$ °C

(\*) No pattern path underneath the 415SMX

PACKAGE DATA

Item	Package	415SMX
Lid		Metal
Base		Ceramic
Sealing		AuSn
Terminal		Tungsten (metalized)
Terminal plating		Gold / Nickel (surface) / (under)
RoHS		Compliant (Pb-free)

XTAL

CLK OSC

VCXO

TCXO

OCXO

MCF