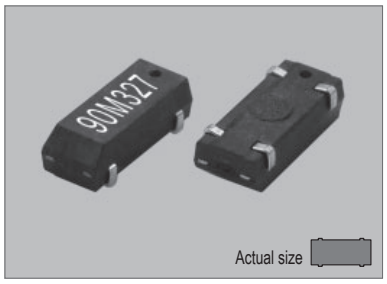
90SMX FAMILY

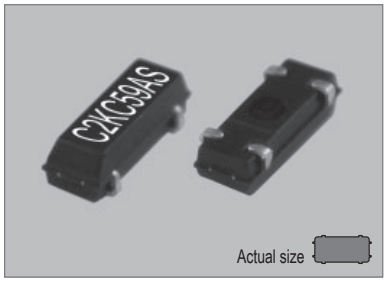
STANDARD 32.768kHz SMD CRYSTALS

90SMX(K)



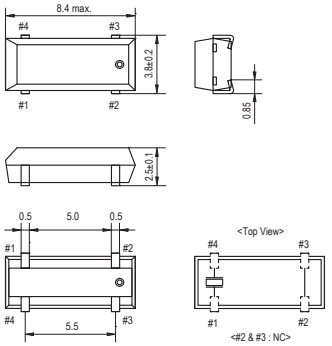
0.125 gm (wt.)

90SMX(S)

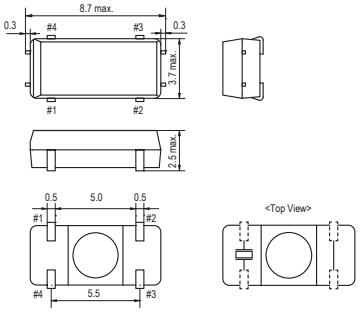


0.121 gm (wt.)

90SMX(K)

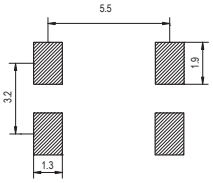


90SMX(S)



SOLDERING PATTERN

90SMX(K) & 90SMX(S)



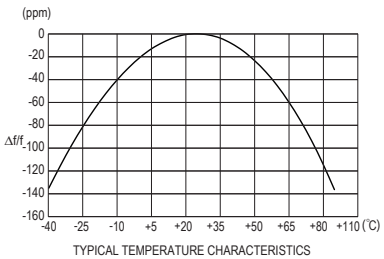
STANDARD SPECIFICATIONS

Item	Symbol	Specifications	
Part number	P/N	90M327(K)	90M327(S)
Package type		90SMX(K)	90SMX(S)
Nominal frequency	F	32.768 kHz	
Frequency tolerance (at +25˚C)	Δf/F	AAA : ±5 ppm AA : ±10 ppm A : ±15 ppm B : ±20 ppm C : ±30 ppm (Standard)	
Load capacitance	CL	12.5 pF : 90M327(K) & 90M327(S) (Standard) 6.0 pF : 90M327-6(K) & 90M327-6(S)	
Equivalent series resistance	ESR	50 kΩ max. (To : -40˚C to +85˚C)	
Drive level	P	1 μW max.	
Turnover temperature	Tt	+25˚C ±5˚C	
Temperature coefficient	β	-0.036 ppm / ˚C^2, Typical	-0.035 ppm / ˚C^2, Typical
Quality factor	Q	50000 min.	
Shunt capacitance	C0	1.85 pF, Typical	1.0 pF, Typical
Motional capacitance	C1	0.0036 pF, Typical	0.0019 pF, Typical
Capacitance ratio	γ	680, Typical	520, Typical
Aging (for first year)	Δf/F	±5 ppm max. at +25˚C ±3˚C	±3 ppm max. at +25˚C ±3˚C
Insulation resistance	Ri	500 MΩ min. at 100V DC ±15V	
Cut		XY-Cut	
Operating temperature range	To	-40˚C to +85˚C	
Storage temperature range	Ts	-55˚C to +125˚C	
Shock resistance	Δf/F	±5 ppm max.	
Vibration resistance	Δf/F	±5 ppm max.	
IR reflow resistance	Δf/F	±10 ppm max.	
Reflow condition		10 seconds max. at +250˚C ±10˚C	

PACKAGE DATA

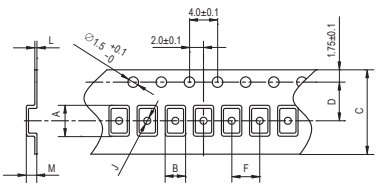
Item \ Package	90SMX(K)	90SMX(S)
Outer package	Epoxy compound	Plastic
Sealing	Press-fit (2x6 mm built in)	Press-fit (2x6 mm built in)
Terminal lead frame	Brass (CuZn)	42 alloy
Terminal plating	SnAg	Sn
RoHS	Compliant	Compliant

XY-CUT



TYPICAL TEMPERATURE CHARACTERISTICS

TAPE SPECIFICATIONS



90SMX(K)

A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
8.3	4.0	16.0	7.5	8.0	1.6	0.3	2.7	330	3000pcs

90SMX(S)

A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
8.7	3.9	16.0	7.5	8.0	-	0.4	2.7	330	3000pcs