

The miniature ECS-33B is a compact SMD Crystal. The industry standard 3.2 x 2.5 x 0.8 mm ceramic package is ideal for today's wireless applications.

ECS-33B SMD CRYSTAL

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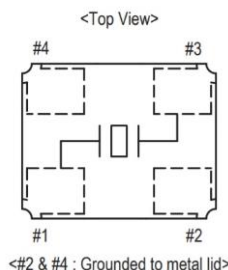
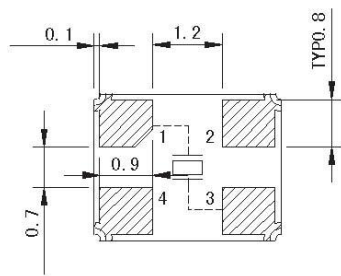
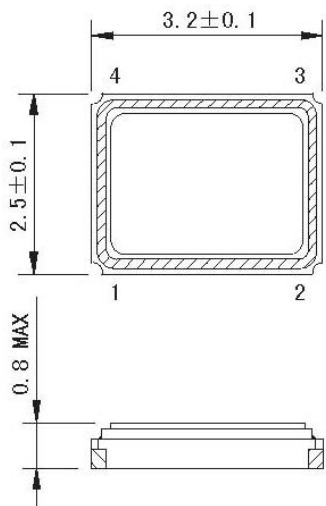


- IOT/Wearable applications
- SmartHome Sensors
- BTLE, Wi-Fi wireless
- Low Aging

OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

PARAMETERS	CONDITIONS	ECS-33B			UNITS
		MIN	TYP	MAX	
Frequency		10.000		54.000	MHz
Mode of Oscillation	Fundamental				
Frequency Tolerance* (C)	@ +25°C			± 10	ppm
Frequency Stability* (WN)	-40 ~ +85°C			± 15	ppm
Shunt Capacitance	Co			3	pF
Load Capacitance	Specify in P/N		8		pF
Drive Level	DL			200	μW
Operating Temperature*	T _{opr}	-40		+85	°C
Storage Temperature	T _{stg}	-40		+125	°C
Aging (First Year)	@ +25°C ±3°C			±1	ppm

DIMENSIONS (mm)



Pad Connections

1	In/Out
2	Gnd
3	Out/In
4	Gnd

Figure 1) Top, Side, and Bottom

Crystal is symmetrical, pad 1 & 3 are interchangeable. Chamfer on the bottom pad has no electrical significance.

Frequency (MHz)	ESR Ω Max.
10.000 ~ 15.999	100
16.000 ~ 18.999	60
21.000 ~ 54.000	40

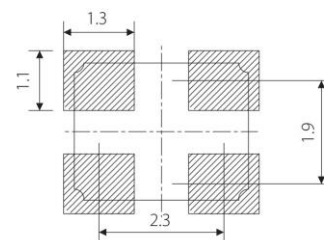


Figure 2) Suggested land

PART NUMBERING GUIDE: Example ECS-160-9-33B-CZM-TR

ECS - FREQUENCY ABBREVIATION		LOAD CAPACITANCE	PACKAGE	AVAILABLE OPTIONS			PACKAGING
				Tolerance	Stability	Temp Range	
ECS	160 = 16.000 MHz See P/N Guide	8 = 8 pF*	-33B = ECS-33B	Blank = Std A = ± 25 ppm J = ± 20 ppm R = ± 15 ppm C = ± 10 ppm	Blank= Std G = ± 30 ppm H = ± 25 ppm T = ± 20 ppm † W = ±15 ppm † K = ± 10 ppm † Z = ±9 ppm†	Blank= Std L = -10 ~ +70°C M = -20 ~ +70°C Y = -30 ~ +85°C N = -40 ~ +85°C P = -40 ~ +105°C S = -40 ~ +125°C	TR = Tape & Reel 1K/Reel

* Specify available options in P/N.

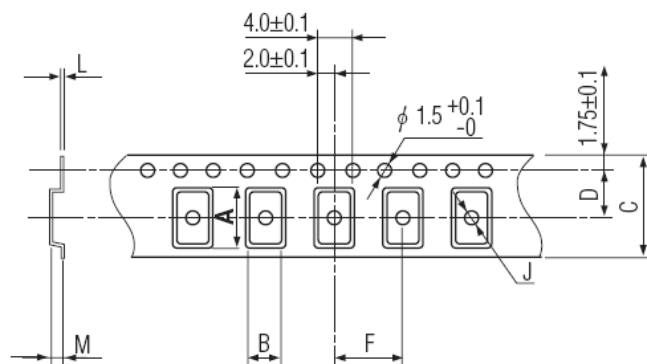
† Contact ECS for availability over extended temp range.

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POCKET TAPE DIMENSIONS (mm)



A	B	C	D	F	J	L	M	Reel Dia.	Qty/Reel
3.5	2.8	8.0	3.5	4.0	1.1	0.25	1.0	180	1000

SOLDER PROFILE

Peak solder Temp +260°C Max 10 sec Max.

2 Cycles Max.

MSL 1, Lead Finish Au

DEVELOPED FREQUENCIES

Abbreviation	Frequency (MHZ)
120	12.000
160	16.000
192	19.200
200	20.000
240	24.000
245.7	24.576
250	25.000
260	26.000
270	27.000
300	30.000
320	32.000
360	36.000
400	40.000
480	48.000

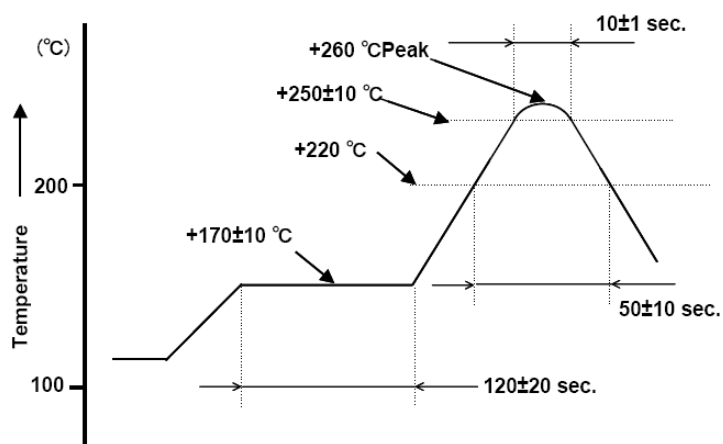


Figure 1) Suggested Reflow Profile