

ECS-2325 (2.5V) and ECS-2333 (3.3V) subminiature SMD oscillators. Ideal for today's high density applications.

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### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS



- Low Voltage HCMOS
- 3.2 x 2.5 mm Footprint
- Low current consumption
- PbFree/RoHS Compliant

Parameters	Conditions	ECS-2325 (+2.5V)			ECS-2333 (+3.3V)			Units
		MIN	TYP	MAX	MIN	TYP	MAX	
<b>Frequency Range</b>		1.000		95.000	1.000		95.000	MHz
<b>Operating Temperature</b>	Standard	-10		+70	-10		+70	°C
	Extended (N Option)	-40		+85	-40		+85	°C
<b>Storage Temperature</b>		-55		+125	-55		+125	°C
<b>Supply Voltage</b>	VDD	+2.25	+2.5	+2.75	+2.97	+3.3	+3.63	VDC
<b>Frequency Stability*</b>	Option A			±100			±100	PPM
	Option B			±50			±50	PPM
	Option C			±25			±25	PPM
<b>Input Current</b>	0.75 ~ 20.0 MHz			5			7	mA
	20.1 ~ 40.0 MHz			9			13	mA
	40.1 ~ 60.0 MHz			11			19	mA
	60.1 ~ 95.0 MHz			14			24	mA
<b>Stand-by Current</b>	Pin 1 = VIL			10			10	µA
<b>Output Symmetry</b>	@50% VDD Level			40/60			45/55	%
	@50% VDD Level (**T Option)			45/55			-	
<b>Rise and Fall Times</b>	10% VDD to 90% Level			10			10	ns
<b>"0" Level</b>	VOL			10% VDD			10% VDD	VDC
<b>"1" Level</b>	VOH	90% VDD			90% VDD			VDC
<b>Output Load</b>	CMOS			15			15	pF
<b>Disable Delay Time</b>				150			150	ns
<b>Enable/Startup Time</b>				10			10	ms
<b>Aging</b>				±5			±5	PPM

\* Note: Inclusive of 25°C tolerance, operating temperature, input voltage change, load change, shock and vibration.  
 \*\* Symmetry "T" option applies to ECS-2325 Series only.

### Part Numbering Guide: Example ECS-2333-200-BN-TR

ECS - Series - Frequency Abbreviations - Stability Tolerance - Temperature - Output Symmetry - Packaging

ECS

2325 = +2.5V  
2333 = +3.3V

200 = 20 MHz

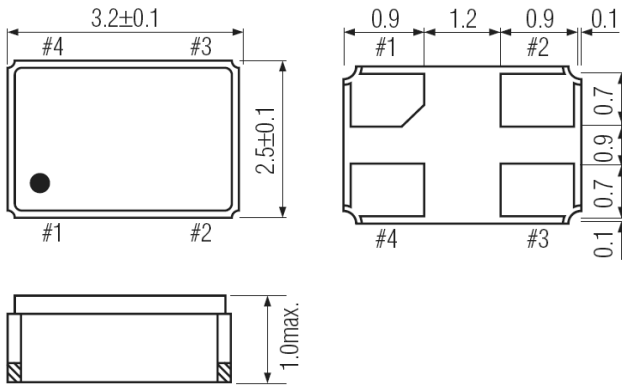
A = ±100 ppm  
B = ±50 ppm  
C = ±25 ppm

Blank = -10 ~ 70°C  
M = -20 ~ +70°C  
N = -40 ~ +85°C  
P = -40 ~ +105°C

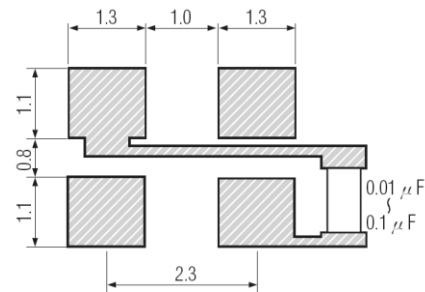
Blank = Standard  
\*\*T = 45/55

TR = 1K/Reel  
TR3 = 3K/Reel  
Qty/Reel

**Package Dimensions (mm)**



**Figure 1) Top, Side, and Bottom views**



**Figure 2) Land Pattern**

Pin Connections	
#1	Tri-State
#2	Ground
#3	Output
#4	VDD

Tri-State Control Voltage	
Pad 1	Pad 3
Open	Oscillation
VIH 70% VDD Min.	Oscillation
VIL 30% VDD Max.	No Oscillation

*Note: Internal crystal oscillation to be halted (Pin #1=VIL)*

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