EUROQUARTZ 18EQHM32 Low EMI Oscillator

3.2 x 2.5 x 1.0mm SMD - Group 'F' (1.8 Volts)



FEATURES

- **Provides up to -12dB reduction in system EMI**
- **'Drop-in' replacement for standard clocks**
- **No need to re-design printed circuit boards**
- **Operates with 1.8 Volts supply voltage**
- **Choice of modulation rate and spread**
- **Miniature package: 2.5 mm x 3.2 mm x 1.0 mm**

SPECIFICATION

Model No:	18EQHM32
Frequency Range:	12.5MHz to 42.0MHz
EMI Reduction and Spread Types:	*See table below*
Modulation Carrier Frequency:	*See table below*
Output Logic:	CMOS
Input Voltage:	Vdd = +1.8 ±0.15VDC
Frequency Stability	
Commercial (0~70°C):	±25ppm (Spec. code = 'A') ±50ppm (Spec. code = 'B') ±100ppm (Spec. code = 'C')
Industrial (-40~+85°C):	±25ppm (Spec. code = 'D') ±50ppm (Spec. code = 'E') ±100ppm (Spec. code = 'F')
Output Voltage HIGH '1':	1.6V min., 1.85V max.
Output Voltage LOW '0':	0.0V max., 0.2V max.
Rise/Fall Times:	2.5ns max.
Load:	15pF
Start-up Time:	2ms typical, 5ms max.
Stabilization Time:	40ms max.
Output Impedance:	30Ω typical
Output Slew Rate:	0.4 V/ns min.; 3.0V/ns max. *VOL-VOH, 15pF load*
Current Consumption:	
13MHz:	2.0mA typical
16MHz:	2.8mA typical
25MHz:	3.5mA typical
42MHz:	5.0mA typical
Duty Cycle:	50%±10% (CL=15pF, 50%Vdd)
Cyle to Cycle Jitter:	±100ps max.
Ageing:	±5ppm /year max at Ta=25°C
Pad 1 Option:	Output Enable/Disable. Output is high impedance when taken low Output enable time 100ms max.
Packaging:	EIA 16mm tape and reel, 1k per.

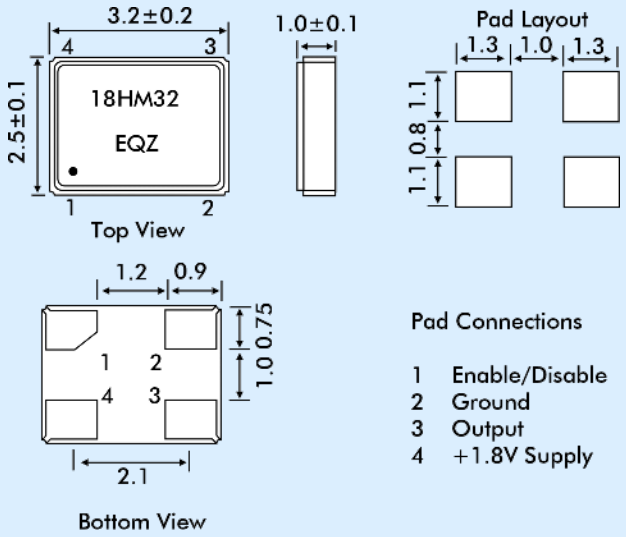
SPREAD TYPE & PERCENTAGE AND EMI REDUCTION RATES

Total %	Down Spread (D)	Centre Spread (C)	EMI Reduction Rate
0.5%	-0.5% (D0.5)	±0.25% (C0.25)	-12dB (typ.)
1%	-1% (D1)	±0.5% (C0.5)	-16dB (typ.)
2%	-2% (D2)	±1% (C1.0)	-18dB (typ.)

ABSOLUTE MAXIMUM RATINGS

Power Supply Voltage	-0.5V min., +2.5V max.
Input Voltage	Vss-0.5V min., VDD+0.5V max.
Output Voltage	Vss-0.5V min., VDD+0.5V max.
Operation Junction Temp.	-40°C min., +125°C max.
Output Current	-13mA min., +13mA max.

OUTLINE & DIMENSIONS

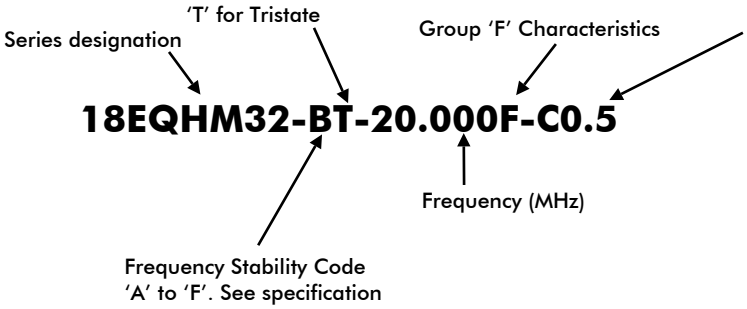


ENVIRONMENTAL SPECIFICATION

RoHS Compliance:	RoHS compliant and Pb (lead) free
Moisture Sensitivity Level:	Level 1 (Infinite)
Second Level Interconnect:	e4
Storage Temperature Range:	-55° to +125°C
Humidity:	85% RH, 85°C for 48 hours
Fine Leak / Gross Leak:	MIL-STD-883, meth. 1014, cond. A MIL-STD-883, meth. 1014, cond. C
Hermetic Seal:	Leak Rate 2x10-8 ATM-cm3/s max.
Solderability:	MIL-STD-2002F method 208E
Reflow:	260° for 10 seconds x2
Vibration:	MIL-STD-202F method 204, 35g, 50Hz to 2000Hz
Shock:	MIL-STD-202F method 213B, test condition: E, 1000g ½ sine wave
Resistance to Solvents:	MIL-STD-202, Method 215
Temperature Cycling:	MIL-STD-883, Method 1010
ESD Rating:	>2000V (per MIL-STD-883, method 3015)
Pad Surface Finish:	Gold (0.3um min.) over nickel (1.27um to 8.89um)
Weight of the Device:	0.04 grams.

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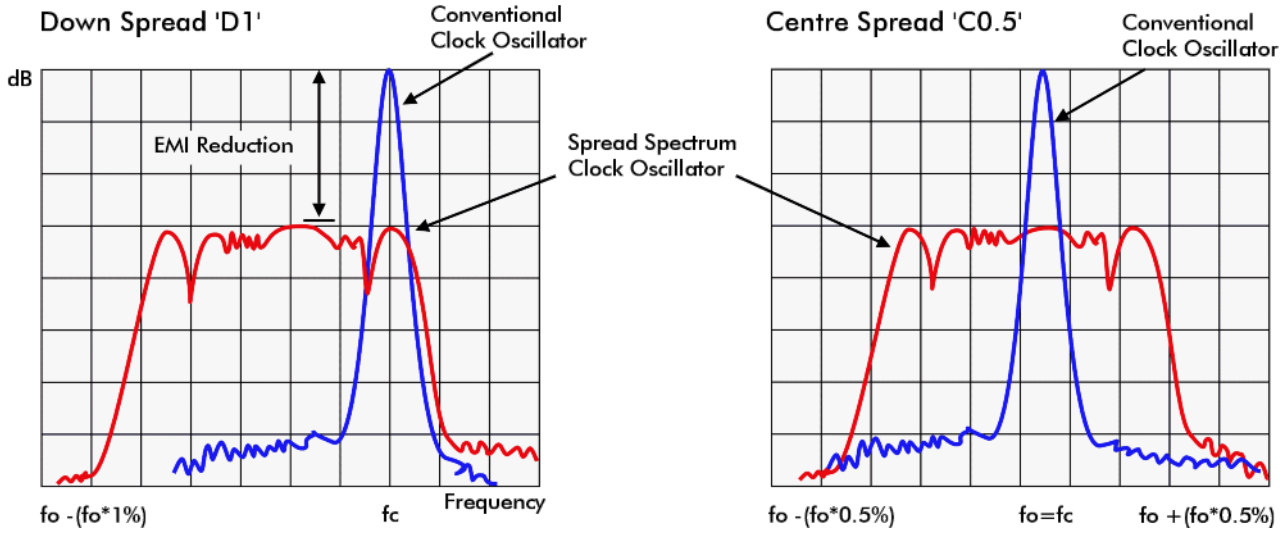
PART NUMBER CONFIGURATION



SPREAD TYPE & PERCENTAGE		
"D0.5"	**Down Spread**	-0.5%
"D1"		-1%
"D2"		-2%
"C0.25"	**Centre Spread**	±0.25%
"C0.5"		±0.5%
"C1.0		±0.1%

MODULATION TYPES - EXAMPLES

Output amplitude (dB) vs. frequency span (MHz)



DESCRIPTION

18EQHM32 series low EMI oscillators can reduce system EMI by -15dB. The oscillators are a 'drop-in' replacement for standard oscillators. EMI reduction is achieved by the use of Spread Spectrum Technology whereby the mode energy is spread over a wider bandwidth. The modulation carrier frequency, operating in the kHz region, makes the process transparent to the oscillator frequency. There is a choice of modulation rates and spread to suit application requirements.

INTRODUCTION

In electrical systems the principal cause of electro-magnetic interference (EMI) is the system clock oscillator. Traditional methods of 'patching-up' systems with too high a level of EMI is to use ferrite beads, filters, ground planes, metal shielding and similar costly methods, However, the most efficient and economic method to reduce EMI is to reduce it at source: replace the system clock ocillator with a low EMI clock oscillator.

Compared with conventional clock oscillators, Spread Spectrum (Dithered) Oscillators can reduce EMI by as much as -15dB. The part is a 'drop-in' replacement for standard clock oscillators hence there is no requirement to re-design existing PCBs.

SPREAD SPECTRUM TECHNOLOGY

Unlike a conventional clock oscillator, in a Spread Spectrum Clock Oscillator the mode energy is spread over a wider bandwidth. This is achieved by the frequency modulation technique. The controlled modulation process may be applied to the 'down' side of the nominal frequency (known as **DOWN SPREAD**,) or spread equally either side of nominal (**CENTRE SPREAD**). Down Spread is preferred if over-clocking would cause a problem to the system.

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