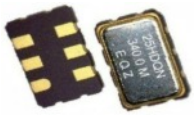
EUROQUARTZ

QF Series CMOS Oscillators

'HTQF' Specification Low Jitter Oscillators 10MHz to 245MHz

FEATURES

- **Low jitter <1.0ps phase jitter**
- **Wide frequency Range 10.0MHz to 245.0MHz**
- **Very quick delivery leadtime**
- **Low supply current <18mA at 50MHz**
- **Supply voltage range 2.5V or 3.3Volts**
- **Tristate function to conserve power**



('536' package displayed)

DESCRIPTION

'HTQF' series oscillators have been developed as a precision frequency control component, providing a CMOS output clock oscillator with low current consumption, wide operating frequency range and an integrated phase jitter performance of 1.0ps r.m.s. The part is available in two industry-standard packages, 7 x 5mm SMD and 5 x 3.2mm SMD.

GENERAL SPECIFICATION

Output Logic Type:	LVCMOS / LVTTL
Frequency Range:	10.0MHz to 245.0MHz
Load:	15pF
Power Supply Voltage:	2.5±5%VDC or +3.3±10%VDC
Output Voltage 'HIGH':	0.9*V_{DD} minimum
Output Voltage 'LOW':	0.1*V_{DD} maximum
Frequency Stability:	±50ppm over -40° to +85°C*
Duty Cycle:	50%±2%
Rise Time:	300ps minimum**
Fall Time:	600ps maximum**
Current Consumption @+2.5V_{DD}	
10.000MHz:	15mA
50.000MHz:	18mA
100.00MHz:	22mA
150.00MHz:	24mA
200.00MHz:	28mA
245.00MHz:	31mA
Current Consumption @+3.3V_{DD}	
10.000MHz:	17mA
50.000MHz:	20mA
100.00MHz:	24mA
150.00MHz:	28mA
200.00MHz:	33mA
250.00MHz:	37mA
Current with output disabled:	16mA typical
Start-up Time:	10ms maximum
Ageing:	±2ppm max., first year, ±10ppm max. over 10 years.
OE Control on Pad 1	
Enable:	0.7% V_{DD} min., or no connection
Disable:	0.3%V_{DD} max., (high impedance).
Output Enable Time:	200ns max.
Output Disable Time:	50ns max.
Phase Jitter r.m.s.:	1.0ps typical (12kHz to 20MHz)
Phase Jitter r.m.s.:	100fs (1.875MHz to 20MHz)

PART NUMBERING

Example: 25HTQF536E-100.00

Supply Voltage
25 = 2.5 Volts
3 = 3.3 Volts

Series/Model
'HTQF' = QF series, HCMOS output

Package
536 = 5.0mm x 3.2mm
576 = 7.0mm x 5.0mm

Temperature Stability
'E' = ±50ppm over -40° to +85°C

Frequency in MHz

Notes:

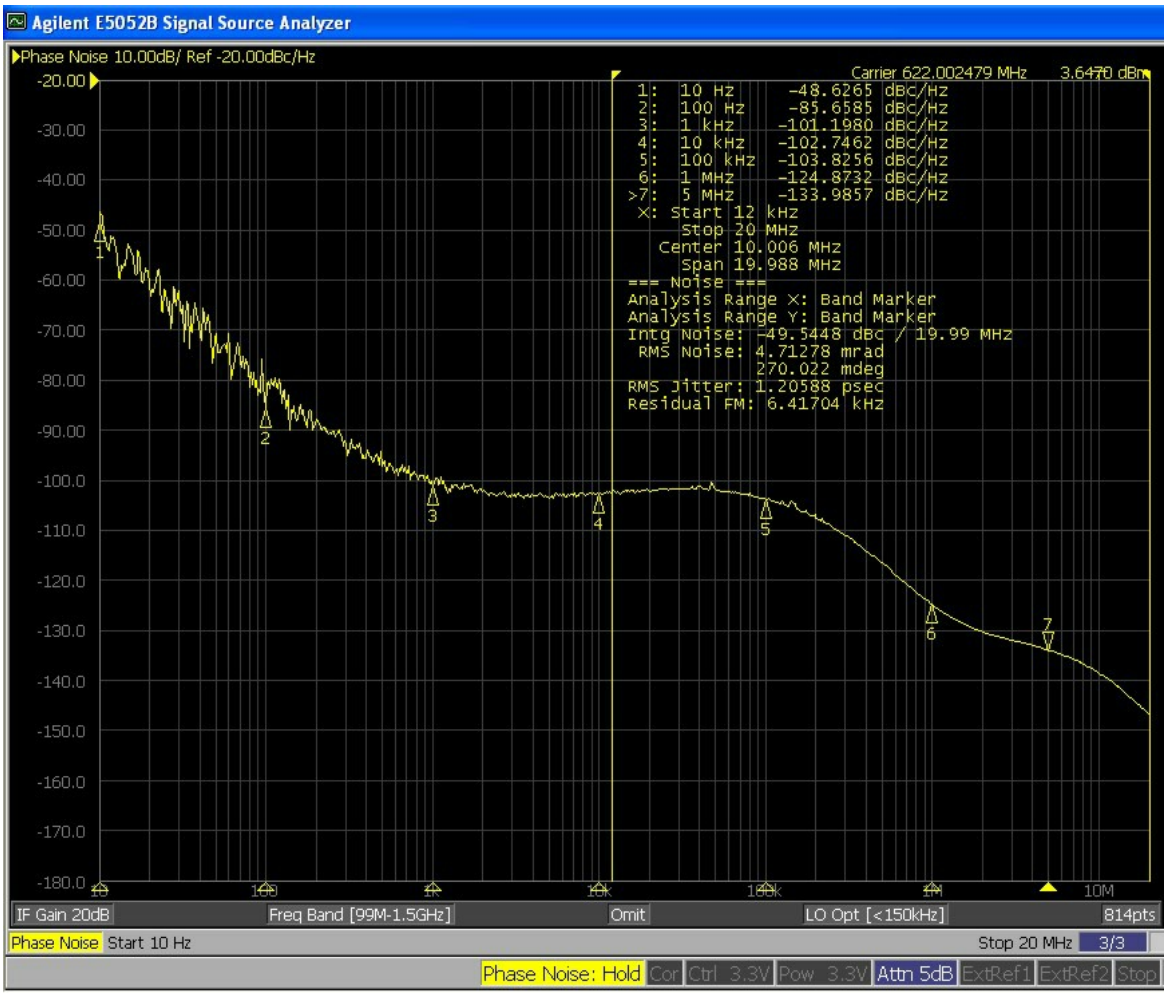
* *Stability code for ±50ppm over -40° to +85°C is 'E.' Other stabilities are available, contact Euroquartz for details.*

* *Note that Frequency stability quoted is inclusive of all conditions, Calibration Tolerance at 25°C, stability over operating temperature range, 1st year ageing at 25°C, supply voltage & output load changes and shock & vibration.*

** *Rise/Fall times are measure between 10% to 90%V_{DD}*

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HTQF SERIES PHASE NOISE & PHASE JITTER DATA

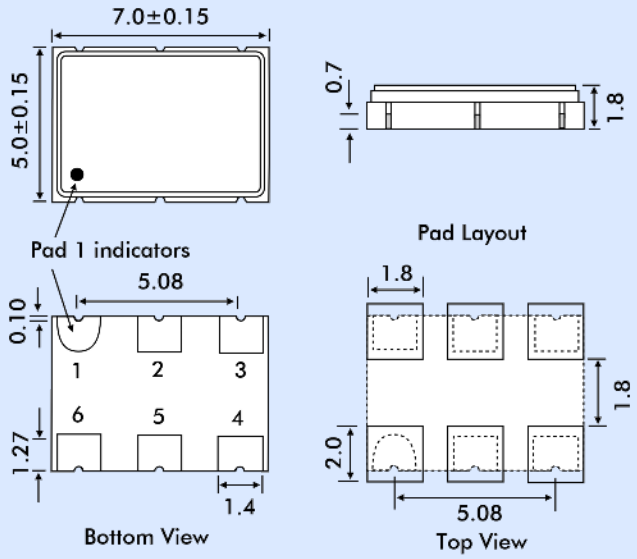


HTQF SERIES PHASE NOISE & PHASE JITTER DATA

	Frequency (MHz)	77.76	122.88	125.00	156.25	212.5
SSB Phase Noise Data (dBc/Hz typical)	10Hz offset	-57	-68	-63	-55	-62
	100Hz offset	-94	-99	-85	-85	-93
	1kHz offset	-114	-113	-109	-109	-105
	10kHz offset	-123	-119	-116	-116	-113
	100kHz offset	-124	-120	-118	-118	-115
	1MHz offset	-144	-140	-139	-139	-135
	5MHz offset	-152	-148	-146	-146	-143
Phase Jitter (ps) (12kHz ~ 20MHz. r.m.s.)		0.9	0.8	1.1	0.9	1.0

OUTLINE & DIMENSIONS

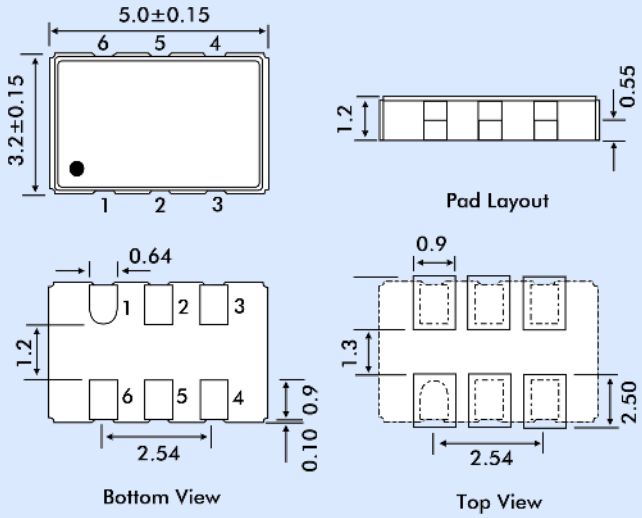
7.0 x 5.0mm SMD Package



Pad Connections

1 OE High Enable
2 No connection
3 Ground
4 Output
5 No connection
6 Supply Voltage

5.0 x 3.2mm SMD Package



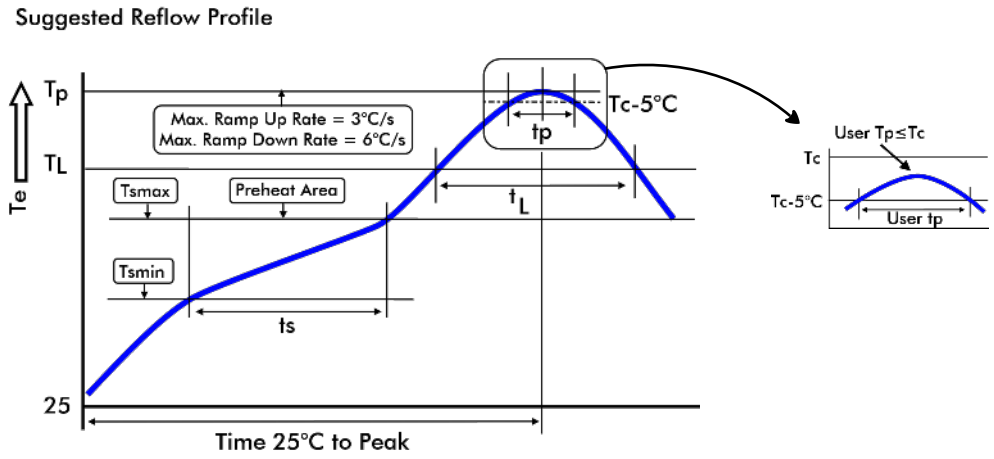
Pad Connections

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ENVIRONMENTAL PERFORMANCE SPECIFICATION

Environmental Approvals	RoHS Compliant, Pb (lead) free in accordance with EU Directive 2002/95/EC 6/6 (2002/95EC) and WEEE (2002/96/EC). Free of halide, cadmium, hexavalent chromium, lead, mercury, PBBs and PBDEs
Moisture sensitivity Level	Level 1 (infinite) according to IPC/JEDEC J-STF-020D.1
Second Level Interconnect	'e4
Storage Temperature Range	-55° to +125°C
Humidity	85%RH, 85°C, 48 hours
Fine Leak / Gross Leak	MIL-STD-202F Method 1014, Cond. A / MIL-STD-883, Method 1014, Cond C.
Solderability	MIL-STD-202F method 208E
Reflow	260°C for 10s. 2 times
Vibration	MIL-STD-202F Method 204, 35g, 50 to 2000Hz
Shock	MIL-STD-202F, Method 213B, Test Cond. E, 1000gg 1/2 sine wave.
Resistance to Solvents	MIL-STD-202, Method 215
Temperature Cycling	MIL-STD-883, Method 1010
ESD Rating	Human Body Model (HBM): 1500 V minimum.
Pad Surface Finish	Gold (Au)(0.3μm ot 1.0μm) over nickel (Ni)(1.27μm to 8.89μm)
Weight of the Device	576 package: 0.18gm typical, 536 package: 0.09gm typical.

RECOMMENDED SOLDER TEMPERATURE PROFILE



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak		
- Temperature min. (Ts min.)	100°C	150°C
- Temperature max. (Ts max.)	150°C	200°
- Time (ts) (Ts min. to Ts max.)	60 to 120 seconds	60 to 180 seconds
Ramp-up Rate (T_L to Tp)	3°C/second max.	3°C/second max.
Luiquidous temperature (T_L)	183°C	217°C
Time (tL) maintained above T_L	60 to 150 seconds	60 to 150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time (Tp) within 5°C of the classification temperature Tc	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (Tp to T_L)	6°C/second max.	6°C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

TEST CIRCUIT

