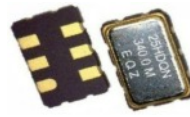


FEATURES

- Low jitter <1.0ps phase jitter
- Wide frequency Range 10.0MHz to 1500MHz
- Very short delivery leadtimes
- Low supply current <16mA at 100MHz
- Supply voltage range 2.5V or 3.3Volts
- Tristate function to conserve power



(*536' package displayed)



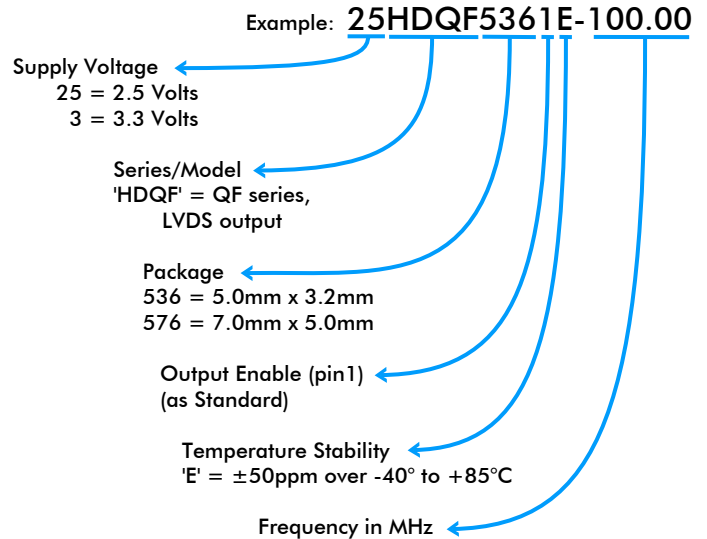
DESCRIPTION

'HDQF' series oscillators have been developed as a precision frequency control component, providing a LVDS 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.

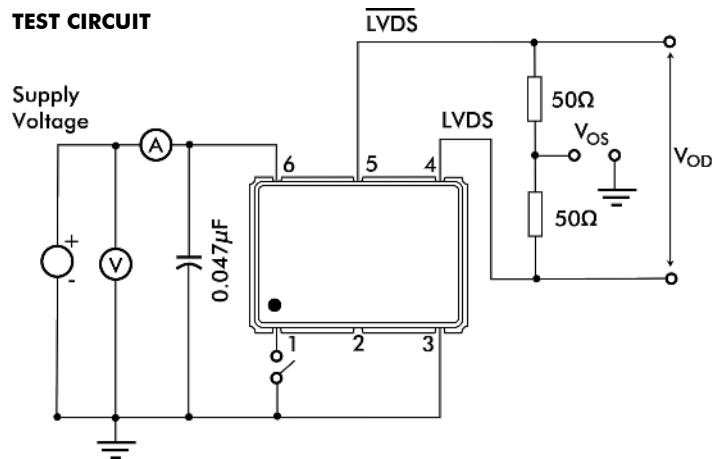
GENERAL SPECIFICATION

Output Logic Type:	LVDS
Frequency Range:	10.0MHz to 1450MHz
Load:	100Ω
Power Supply Voltage:	2.5±5%VDC or +3.3±10%VDC
Output Logic Hi:	1.4V Typ. 1.6V Max.
Lo:	1.1V Typ. 0.9V Min.
Duty Cycle:	50%±5%
Rise/Fall Time:	0.2ns Typ 0.4ns Max. Tr/Tf 20% -80% waveform
Current Consumption @+2.5V _{DD}	
100.000MHz:	16mA
250.000MHz:	18mA
500.00MHz:	21mA
750.00MHz:	22mA
1GHz:	24mA
1.35GHz:	26mA
Current Consumption @+3.3V _{DD}	
100.000MHz:	18mA
250.000MHz:	20mA
500.00MHz:	22mA
750.00MHz:	24mA
1GHz:	26mA
1.35GHz:	28mA
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.

PART NUMBERING

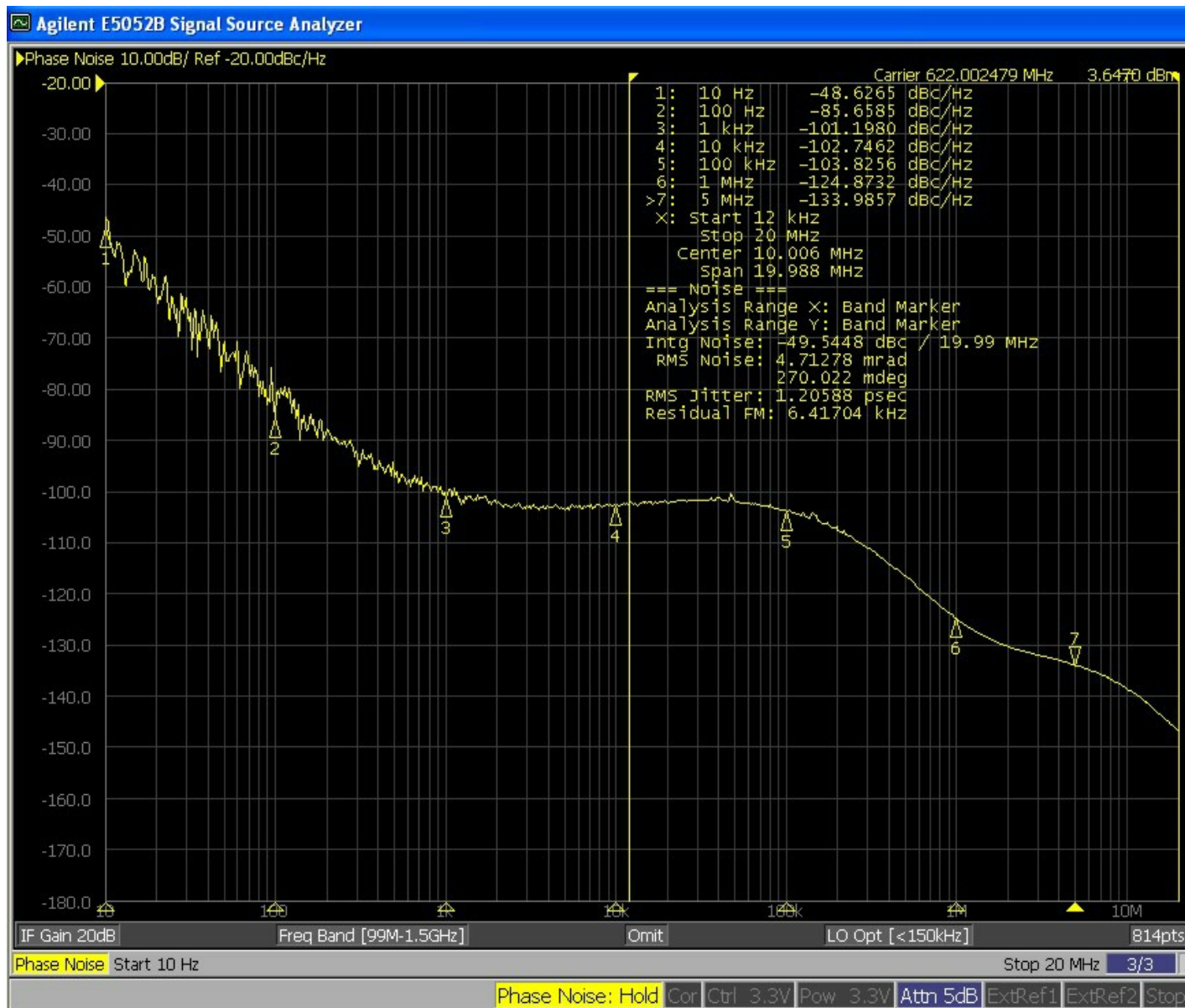


TEST CIRCUIT



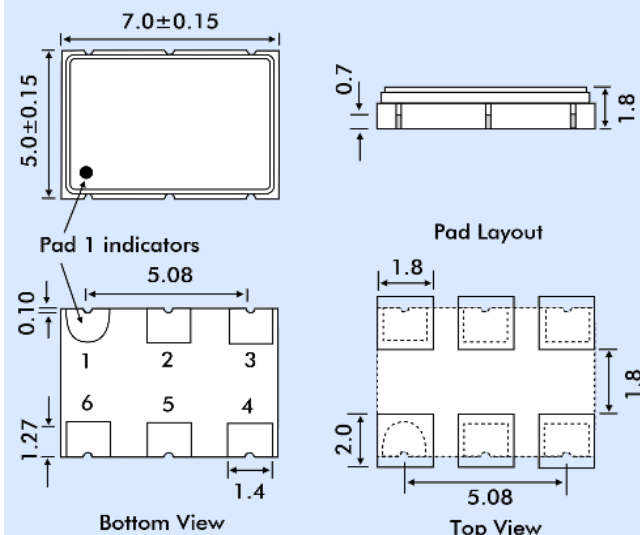
OPERATING TEMP STABILITY

Freq Stability over Operating Temperature	±25ppm	±50ppm	±100ppm	If non-standard, please enter the desired stability after the "C" or "I" E.g. : "C20" = ±20ppm over -10°C to +70°C "I30" = ±30ppm over -40°C to +85°C
Commercial (-10°C to +70°C)	A	B	C	
Industrial (-40°C to +85°C)	D	E	F	

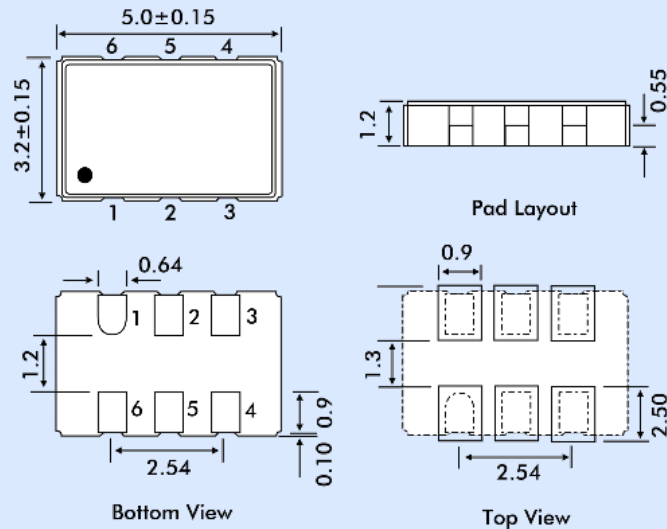


HDQF SERIES PHASE NOISE & PHASE JITTER DATA

	Frequency (MHz)	77.76	122.88	125.00	156.25	212.5	491.25	622.08	1000	1250
SSB Phase Noise Data (dBc/Hz typical)	10Hz offset	-57	-68	-63	-55	-62	-61	-48	-52	-42
	100Hz offset	-94	-99	-94	-85	-93	-86	-85	-82	-81
	1kHz offset	-114	-113	-113	-109	-105	-100	-101	-93	-94
	10kHz offset	-123	-119	-118	-116	-113	-105	-102	-97	-96
	100kHz offset	-124	-120	-119	-118	-115	-105	-103	-97	-97
	1MHz offset	-144	-140	-137	-139	-135	-126	-124	-116	-119
	10MHz offset	-152	-148	-146	-146	-143	-137	-133	-127	-129
Phase Jitter (ps) (12kHz ~ 20MHz, r.m.s.)		0.9	0.8	1.1	0.9	1.0	1.1	1.2	1.5	1.1

OUTLINE & DIMENSIONS
7.0 x 5.0mm SMD Package

Pad Connections

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

5.0 x 3.2mm SMD Package

Pad Connections

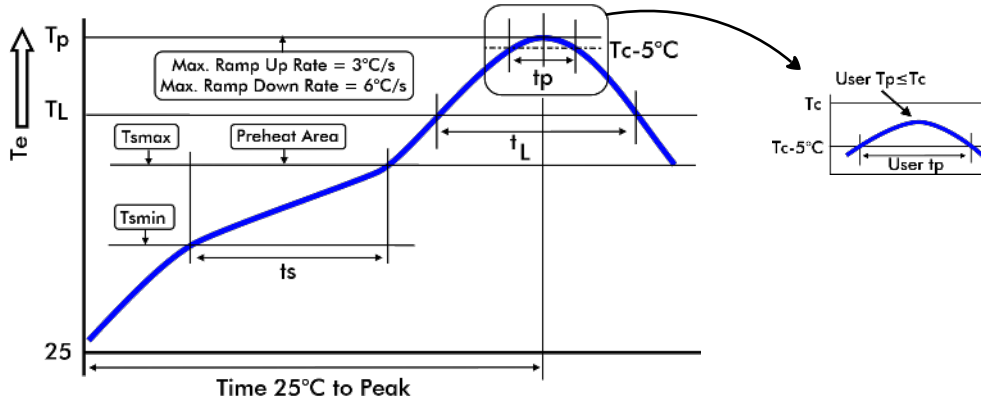
- 1 OE High Enable
- 2 No connection
- 3 Ground
- 4 Output
- 5 Output
- 6 Supply Voltage

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 Cyscling	MIL-STD-883, Method 1010
ESD Rating	Human Body Model (HBM): 1500 V minimum.
Pad Surface Finish	Gold (Au)(0.3µm of 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

Suggested Reflow Profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak - Temperature min. (Ts min.) - Temperature max. (Ts max.) - Time (ts) (Ts min. to Ts max.)	100°C 150°C 60 to 120 seconds	150°C 200° 60 to 180 seconds
Ramp-up Rate (Tl to Tp)	3°C/second max.	3°C/second max.
Liquidus temperature (Tl)	183°C	217°C
Time (tL) maintained above Tl	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 Tl)	6°C/second max.	6°C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.