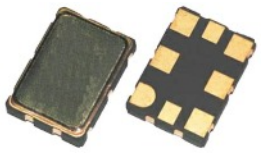
High Frequency - Low Jitter VCXOs 150MHz to 2100MHz

FEATURES

- **EQJF Series Voltage Controlled Oscillators (VCXO)**
- **Outputs LVPECL, LVDS, CML or HCSL**
- **RMS phase jitter 150fs for LVPECL at 644.530MHz**
- **LVPECL, LVDS and CML differential outputs: 150MHz to 2100MHz**
- **HCSL differential output: 150MHz to 700MHz**



GENERAL SPECIFICTIONS

Output Logic Type	LVPECL	LVDS	CML	HCSL
Frequency Range	150 ~ 2100MHz	150 ~ 2100MHz	150 ~ 2100MHz	150 ~ 700MHz
Load	50Ω into V_{DD}-2V or Thevenin equivalent	100Ω between OUT and OUTN	50Ω to V_{DD}	50Ω to GND
Power Supply Voltage (V_{DD})	+2.5V±10% or +3.3V±10%	+1.8V±5% or +2.5V±10% or +3.3V±10%	+1.8V±5% or +2.5V±10% or +3.3V±10%	+1.8V±5% or +2.5V±10% or +3.3V±10%
Output 'HIGH' Voltage	V_{DD}-1.165V min. V_{DD}-0.8V max.	V_{DD}: 1.4V typical V_{DD}: 1.6V max.	V_{DD}: -0.085V min. V_{DD}: = max.	V_{DD}: 0.66V min. V_{DD}: 1.15V max.
Output 'LOW' Voltage	V_{DD}: -2.0V min. V_{DD}: -1.55V max.	V_{DD}: 1.1V typical V_{DD}: 0.9V min.	V_{DD}: -0.6V min. V_{DD}: -0.32V min.	V_{DD}: 0.0V min. V_{DD}: 0.15V min.

Frequency Stability Codes	Frequency stability over operating temp. Range	±25ppm	±50ppm	±100ppm	If non-standard please enter the desired stability after the 'C' or 'I' Example: 'C20' is ±20ppm over -10° to +70°C.
	Commercial -10° to +70°C	A	B	C	
	Industrial -40° to 85°C	D	E	F	

Ageing at Ta = 25°C	±3ppm max. first year; ±ppm max. per year thereafter			
Duty Cycle	50%±5%	50%±5%	50%±5%	50%±5%
Rise Time (Tr) **Fall Time (Tf)** (20% ~ 80% waveform)	0.35ns max.	0.35ns max.	0.35ns max.	0.4ns max.
Current Consumption at VDD = 3.3V	100mA typical 120mA max.	75mA typical 90mA max.	70mA typical 85mA max.	94mA typical 115mA max.
Current with output Disabled	99mA max.	74mA max.	69mA max.	93mA max.

SPECIFICATION

Start-up Time:	5ms typical; 10ms max.		
Output Enable Function on Pad 2			
OE Control			
To Enable:	0.8% of V_{DD} min. or no connection		
To Disable:	0.2% of V_{DD} max. (high impedance)		
Output Enable Time:	2.5ms max.		
Output Disable Time:	10ms max.		
Control Voltage Function on Pad 1			
Control Voltage Center:	+0.9V for V_{DD} = 1.8V	+1.25V for V_{DD} = 2.5V	+1.65V for V_{DD} = 3.3V
Control Voltage Range:	+0.18V ~ +1.62V	+0.25V ~ +2.25V	+0.3V ~ +3.0V
Frequency Pulling Range:	±50ppm min. ; 250ppm max.		
Linearity:	±1% typical, ±10% max.		
Transfer Function:	Positive Transfer		
Absolute Voltage:	3.8V max.		
Input Impedance:	5MΩ min.		
Bandwidth:	10kHz typical, measured at -3dB		
Harmonics:	-5.0dBc max.		

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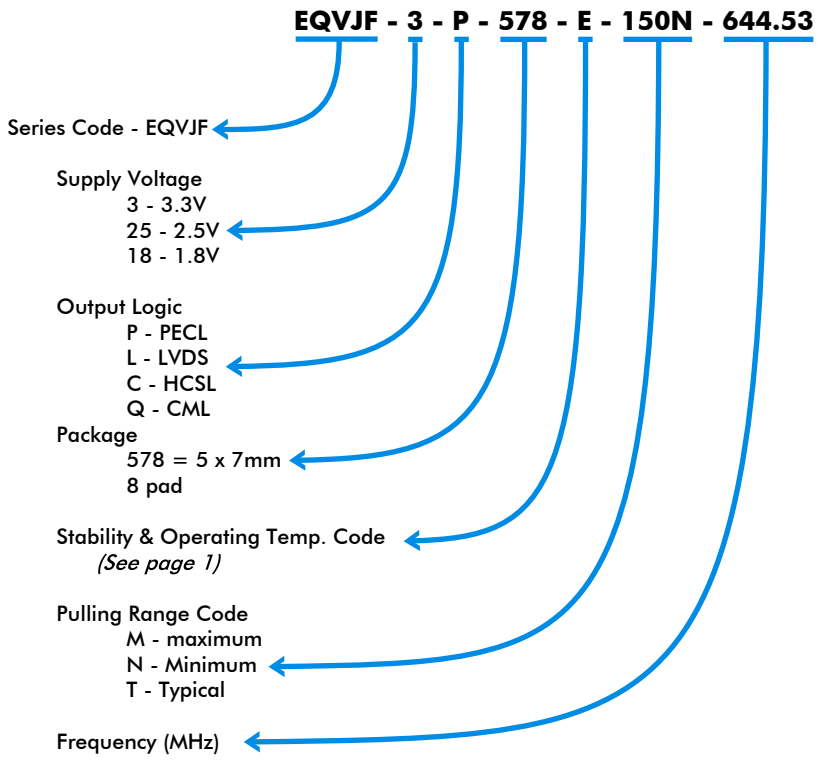
ENVIRONMENTAL PERFORMANCE SPECIFICATION

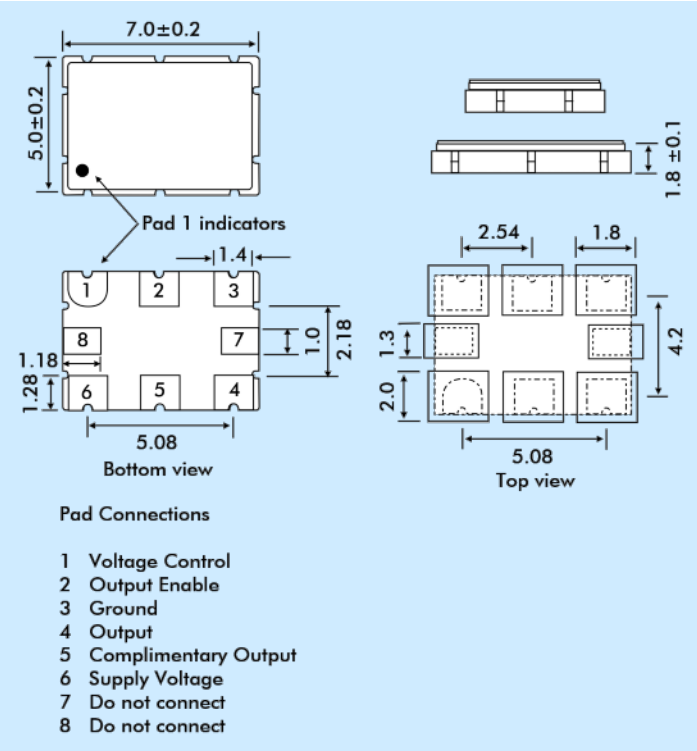
Green Requirement	ROHS Compliant, pB (lead) free in accordance with EU Directive 2002/95/EC 6/6 (2002/95/EC) and WEEE (2002/96/EC)
Second Level Interconnect	e4
Storage Temperature Range	-55° to +150°C
Humidity	85% RH, 85°C, 48 hours
Fine Leak	MIL-STD-883 Method 1014, condition A
Gross Leak	MIL-STD-883 Method 1014, condition C
Solderability	MIL-STD-202F Method 208E
Reflow	260°C for 10 seconds, twice
Vibration	MIL-STD-202F Method 204, 35G, 50 to 2000Hz
Shock	MIL-STD-202F Method 213B, test cond. E, 1000g ½ sine wave
Resistance to Solvent	MIL-STD-202F Method 215
Temperature Cycling	MIL-STD-883 Method 1010
ESD Rating	Human body model (HBM): 1500V min.
Pad Surface Finish	Gold (0.3µm to 1.0µm) over nickel (1.27µm to 8.89µm)
Weight of Device	0.045 gm typical

PART NUMBERING

EQVJF VCXO part numbers are configured as per the following example: EQVJF-3-P-578-E-150N-644.53



OUTLINE & DIMENSIONS



EQVJF578 PHASE NOISE & PHASE JITTER (Typical) VDD = +3.3V, Voltage Control = ground

SSB Phase Noise Data (dBc/Hz Typical)	**Frequency (MHz)**	156.25	491.52	644.53	1480	2100
	10Hz offset	-39	-16	-31	-12	-18
	100Hz offset	-74	-48	-58	-54	-49
	1kHz offset	-99	-83	-86	-80	-77
	10kHz offset	-123	-112	-110	-104	-100
	100kHz offset	-139	-128	-126	-119	-116
	1MHz offset	-149	-140	-137	-130	-125
	5MHz offset	-156	-151	-150	-145	-141
	10MHz offset	-157	-153	-153	-148	-145
	20MHz offset	-157	-154	-153	-150	-147
Phase Jitter fs (12kHz~20MHz RMS)		159	155	151	147	163

PHASE NOISE PLOT OF EQVJF-3-P-578-E-150N-644.53 (Typical) VDD = +3.3V, Voltage Control = ground