

High Frequency Ultra-low Jitter Voltage Controlled Crystal Oscillators [Quick - turn VCXO , 15 ~ 2,100 MHz]

G_JF

CMOS / Differential

150 fsec typical Phase Jitter

SMD

1.8 V

2.5 V

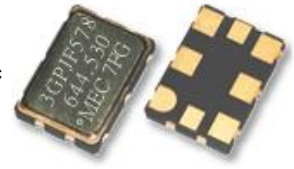
3.3 V

**Min.
15 MHz**

**Max.
2,100 MHz**

Features

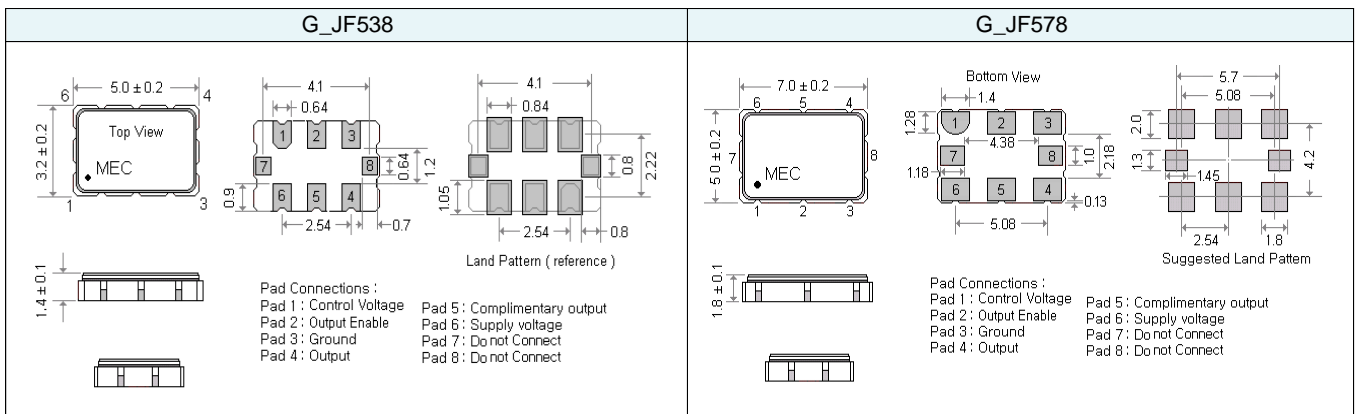
G_JF series (8 pads), a member of Mercury QuikXO™ quick-turn Voltage Controlled Crystal Oscillators VCXOs, features CMOS, LVPECL, LVDS, CML or HCSL output logics and Ultra-low RMS phase jitter (163 fsec for 250 MHz at 3.3V, 12 KHz to 20 MHz). Operating voltages are 1.8V, 2.5V or 3.3V. Applications include networking, wireless infrastructure, high resolution audio and video, high-speed data converters and storage area networks. Differential outputs (LVPECL, LVDS, HCSL, CML) up to 2.1 GHz is also available.



General specifications , at Ta=+25°C

Model	GTJF	GPJF	GDJF	GCJF	GQJF	
Output Logic	CMOS	PECL	LVDS	HCSL	CML	
Supply Voltage V _{DD}	+ 1.8 V _{DD} ± 5% + 2.5 V _{DD} ± 10% + 3.3 V _{DD} ± 10%	-- + 2.5 V _{DD} ± 10% + 3.3 V _{DD} ± 10%	-- + 2.5 V _{DD} ± 10% + 3.3 V _{DD} ± 10%	+ 1.8 V _{DD} ± 5% + 2.5 V _{DD} ± 10% + 3.3 V _{DD} ± 10%	+ 1.8 V _{DD} ± 5% + 2.5 V _{DD} ± 10% + 3.3 V _{DD} ± 10%	
Available Frequency Range	15 ~ 250 MHz	15 ~ 2,100 MHz	15 ~ 2,100 MHz	15 ~ 700 MHz	15 ~ 2,100 MHz	
Load	15pF max.	50 Ω into V _{DD} - 2V or Thevenin equivalent	100 Ω between OUT and OUTN	50 Ω to GND	50 Ω to V _{DD}	
Output Logic " High " , " 1 "	V _{DD} - 0.4V min.	V _{DD} - 1.165 V min. V _{DD} - 0.8 V max.	V _{DD} : 1.4V typical V _{DD} : 1.6 V max.	V _{DD} : 0.66V min V _{DD} : 1.15 V max.	V _{DD} - 0.085V min. V _{DD} = max.	
Output Logic " Low " , " 0 "	V _{DD} x 0.1 max. 201~250MHz:0.3V	V _{DD} - 2.0 V min. V _{DD} - 1.55 V max.	V _{DD} : 1.1 V typical V _{DD} : 0.9 V min.	V _{DD} : 0.0V min. V _{DD} : 0.15V max.	V _{DD} - 0.6V min. V _{DD} - 0.32V max.	
Current Consumption (V _{DD} = + 3.3 V)	50MHz : 70 mA typ. 250MHz : 80 mA typ.	100 mA typ. 120 mA max.	75 mA typ. 90 mA max.	80 mA typ. 100 mA max.	70 mA typ. 85 mA max.	
Current with Output Disabled	63 mA typical	99 mA typical	74 mA typical	79 mA typical	69 mA typical	
Rise Time / Fall Time	1.0 nS typ. 5.0 nS max. (10% to 90% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)	0.4 nS max. (20% to 80% Waveform)	
RMS Phase Jitter fsec (typical) (12 KHz to 20 MHz)	156.250 MHz : 159 fs ; 491.520 MHz : 155 fs ; 644.530 MHz : 151 fs ; 1,480 MHz : 147 fs ; 2,000 MHz : 163 fs					
Frequency Stability Codes	Frequency Stability Over Operating Temperature Range		± 25 ppm	± 50 ppm	± 100 ppm	If non-standard , please enter the desired stability after the " C " or " I " represents . For example : " C20 " ± 20 ppm over -10°C to +70°C ; " I40 " ± 40 ppm over -40°C to +85°C
	Commercial (-10°C to +70°C)		A	B	C	
	Industrial (-40°C to +85°C)		D	E	F	
Duty Cycle	50 % ± 5% , 50 % ± 10%(for CMOS 1.8V only)					
Start-up Time	5 m sec (typ.) ; 10 m sec. (max.)					
Aging at Ta = +25°C	± 3 ppm max. for first year at 25°C ; ± 2 ppm max. per year thereafter					
Storage Temperature	-55°C to + 150°C					
Control Voltage Function on Pad 1						
Supply Voltage (V _{DD})	V _{DD} = +1.8 V ; Vcon Center = +0.9V		V _{DD} = +2.5 V ; Vcon Center = +1.25V		V _{DD} = +3.3 V ; Vcon Center = +1.65V	
Vcontrol Range	+ 0.0V ~ +1.8V		+ 0.25V ~ +2.25V		+ 0.3V ~ +3.0V	
Frequency Pulling Range	± 50 ppm (min.)		± 50 ppm (min.)		± 50 ppm (min.)	
Absolute Voltage	Up to ± 200 ppm (min.) is also available. Please contact Mercury.					
	3.8 V max.					
Linearity	± 1% typical ±10% (max.)		Input Impedance	5 MΩ typical		
Transfer Function	Positive Transfer		Bandwidth	10 KHz min. Measured at -3 dB		
Output Enable Function on Pad 2						
Output Enable / Disable Function	80% of V _{DD} (min.) to enable output. 20% of V _{DD} (max.) to disable output.					
Output Enable Time / Disable Time	2.5 ms max. / 10 us max.					

Outline Dimensions (Unit : mm) , Suggested pad Layout for SMDs



G_JF

CMOS / Differential

150 fsec typical Phase Jitter

SMD

1.8 V

2.5 V

3.3 V

Min.
15 MHz

Max.
2,100 MHz

Part Number Format and Example

Example : 3GPJF578-E-150N-644.530

3	G	P	JF578	-	E	-	150N	-	644.530
Supply Voltage Code "3" for 3.3V "25" for 2.5V "18" for 1.8V	"G": for Voltage Controlled Crystal Oscillators	Output Logic Code "T": COMS "P": PECL "D": LVDS "C": HCSL "Q": CML	"JF": Product Series "578": Package Size 7.0 x 5.0 x 1.8 mm 8 Pad	Frequency Stability Code "E": ±50 ppm over -40 to +85 C Other frequency stabilities are available.	Frequency Pulling Range 150 : ±150ppm "M": Maximum "N": Minimum "T": Typical	Frequency (MHz)			

Test Circuits and Output Waveforms

<p>CMOS Output Waveforms</p>		<p>PECL, LVDS, HCSL, CML Output Waveforms</p>	
<p>HCSL</p>		<p>CML</p>	
<p>CMOS</p>	<p>PECL</p> <p>$V_{DD} = 3.3V ; R1 = R3 = 127 \Omega ; R2 = R4 = 82.5 \Omega$ $V_{DD} = 2.5V ; R1 = R3 = 250 \Omega ; R2 = R4 = 62.5 \Omega$</p>	<p>LVDS</p>	