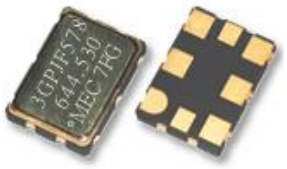
High Frequency Ultra-low Jitter Voltage Controlled Crystal Oscillators [Quick - turn VCXO , 15 ~ 2,100 MHz]

G_JF	150 fsec typical Phase Jitter	SMD	1.8 V	2.5 V	3.3 V	Min. 15 MHz	Max. 2,100 MHz
CMOS / Differential							

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%	--	--	+ 1.8 V_{DD} ± 5%	+ 1.8 V_{DD} ± 5%
	+ 2.5 V_{DD} ± 10%	+ 2.5 V_{DD} ± 10%	+ 2.5 V_{DD} ± 10%	+ 2.5 V_{DD} ± 10%	+ 2.5 V_{DD} ± 10%
	+ 3.3 V_{DD} ± 10%	+ 3.3 V_{DD} ± 10%	+ 3.3 V_{DD} ± 10%	+ 3.3 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.)
	Up to ± 200 ppm (min.) is also available. Please contact Mercury.		
Absolute Voltage	3.8 V max.		

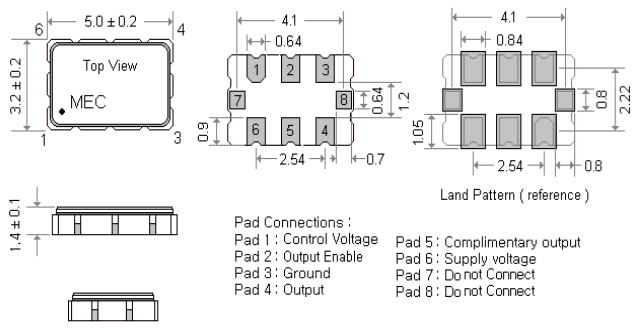
Linearity	± 1% typical ±10% (max.)	Input Impedance	5 MΩ typical
Transfer Function	Positive Transfer	Bandwidth	10 KHz min. Measured at -3 dB

Output Enable Function on Pad 2

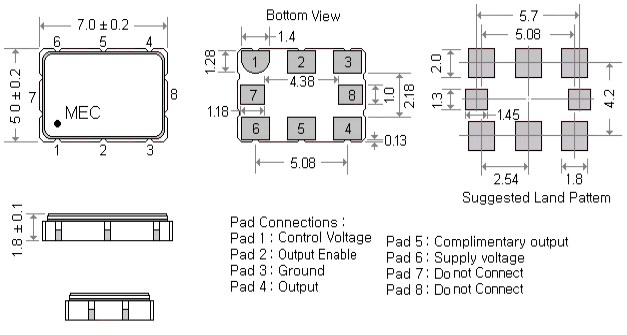
Output Enable / Disable Function	80% of V_{DD} (min.) to enable output.
	20% of V_{DD} (max.) to disable output.
Output Enable Time / Disable Time	2.5 ms max. / 10 us max.

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

G_JF538



G_JF578



Mercury www.mercury-crystal.com ■Taiwan : Tel: (+886)-2-2406-2779 / sales-tw@mercury-crystal.com

■USA : Tel: (+1)-909-466-0427 / sales-us@mercury-crystal.com ■China : Tel: (+86)-512-5763-8100 / sales-cn@mercury-crystal.com

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

G_JF	**150 fsec typical Phase Jitter**	**SMD**	**1.8 V**	**2.5 V**	**3.3 V**	Min. **15 MHz**	Max. **2,100 MHz**
CMOS / Differential							

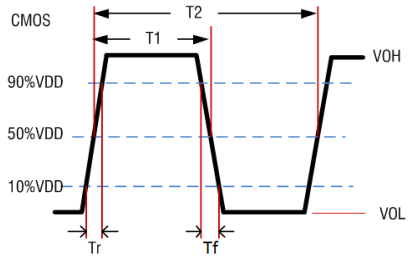
Part Number Format and Example

Example : 3GPJF578-E-150N-644.530

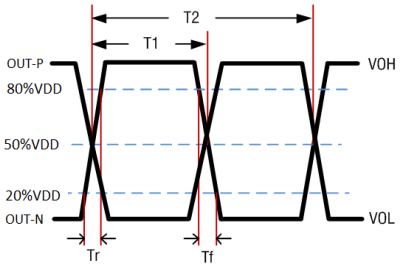
3	G	P	JF578	-	E	-	150N	-	644.530
Supply Voltage Code “ **3** ” for 3.3V “ **25** ” for 2.5V “ **18** ” for 1.8V	“ G ” : for Voltage Controlled Crystal Oscillators	Output Logic Code “ T ”: COMS “ P ”: PECL “ D ”: LVDS “ C ”: HCSL “ Q ”: CML	“ JF ”: Product Series “ 578 ”: Package Size 7.0 x 5.0 x 1.8 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

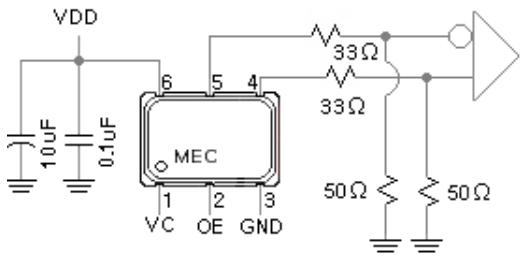
CMOS Output Waveforms



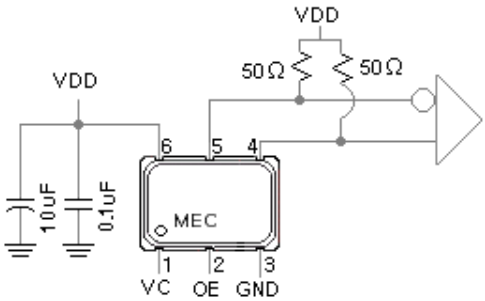
PECL , LVDS , HCSL , CML Output Waveforms



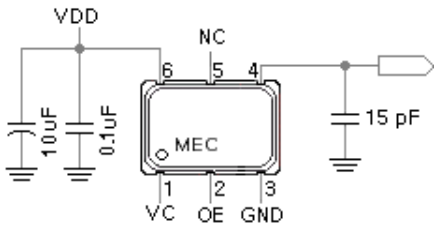
HCSL



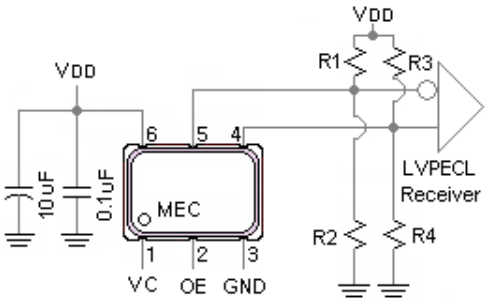
CML



CMOS

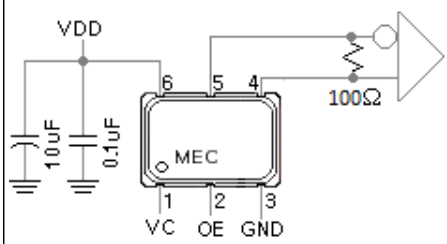


PECL



V_{DD} = 3.3V ; R1 = R3 = 127 Ω ; R2 = R4 = 82.5 Ω
V_{DD} = 2.5V ; R1 = R3 = 250 Ω ; R2 = R4 = 62.5 Ω

LVDS



Mercury www.mercury-crystal.com ■Taiwan : Tel: (+886)-2-2406-2779 / sales-tw@mercury-crystal.com
■USA : Tel: (+1)-909-466-0427 / sales-us@mercury-crystal.com ■China : Tel: (+86)-512-5763-8100 / sales-cn@mercury-crystal.com