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

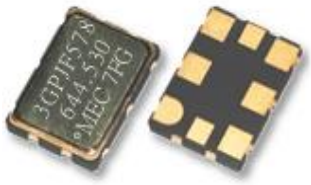
QUIKXO™ MERCURY QUICK - TURN Oscillators

G_JF	SMD	1.8 V	2.5 V	3.3 V	Min.	Max.
CMOS / Differential					15 MHz	2,100 MHz

150 fsec typical Phase Jitter

Features

- High Frequency Range : 150 ~ 2,100 MHz
- Next-Day sample for Prototypes
- 5.0 x 3.2mm and 7.0 x 5.0mm Package Size
- By pass capacitor embedded



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 ± 5%	---	+ 1.8 V ± 5% (*)	+ 1.8 V ± 5%	+ 1.8 V ± 5%
	+ 2.5 V ± 10%	+ 2.5 V ± 10%	+ 2.5 V ± 10%	+ 2.5 V ± 10%	+ 2.5 V ± 10%
	+ 3.3 V ± 10%	+ 3.3 V ± 10%	+ 3.3 V ± 10%	+ 3.3 V ± 10%	+ 3.3 V ± 10%
Available Frequency Range	15 ~ 250 MHz	15 ~ 2,100 MHz	15 ~ 2,100 MHz	15 ~ 700 MHz	15 ~ 2,100 MHz
Output 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} - 0.4 V (min.)	V_{DD} - 1.165 V (min.) V_{DD} - 0.8 V (max.)	V_{DD} : 1.4 V (typ.) V_{DD} : 1.6 V (max.)	V_{DD} : 0.66 V (min.) V_{DD} : 1.15 V (max.)	V_{DD} - 0.085 V (min.) V_{DD} = (max.)
Output Logic " Low " , " 0 "	V_{DD} x 0.1 (max.) 0.3V (max.) for 1.8V only	V_{DD} - 2.0 V (min.) V_{DD} - 1.55 V (max.)	V_{DD} : 1.1 V (typ.) V_{DD} : 0.9 V (min.)	V_{DD} : - 0.15 V (min.) V_{DD} : 0.15 V (max.)	V_{DD} - 0.6 V (min.) V_{DD} - 0.32 V (max.)
Output Voltage Swing	---	595 mV (min.) 930 mV (max.)	250 mV (min.) 450 mV (max.)	450 mV(min.) 700 mV (typ.)	200 mV (min.) 600 mV (typ.)
Current Consumption (V_{DD} = + 3.3 V)	75 mA (typ.) 90 mA (max.)	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 (typ.)	99 mA (typ.)	74 mA (typ.)	79 mA (typ.)	69 mA (typ.)
Rise Time / Fall Time (20% to 80% Waveform)	5.0 nsec (max.) (10% to 90% Waveform)	0.4 nsec (max.)	0.4 nsec (max.)	0.4 nsec (max.)	0.4 nsec (max.)

RMS Jitter [12 kHz ~ 20 MHz]	156.250 MHz : 159 fsec (typ.) ; 491.520 MHz : 155 fsec (typ.) ; 644.530 MHz : 151 fsec (typ.) ; 2,000 MHz : 163 fsec (typ.)			
Frequency Stability Codes	Frequency Stability Over Operating Temperature Range	± 25 ppm	± 50 ppm	± 100 ppm
	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 msec. (typ.) ; 10 msec. (max.)			
Aging at Ta = +25°C	± 3 ppm (max.) for first year ; ± 2 ppm (max.) per year thereafter			
Storage Temperature	-55°C to + 150°C			

Control Voltage Function on Pad 1			
Vcontrol Center	+ 0.9 V for V_{DD} = + 1.8 V	+ 1.25 V for V_{DD} = + 2.5 V	+ 1.65 V for V_{DD} = + 3.3 V
Vcontrol Range	+ 0.0V ~ +1.8V	+ 0.25V ~ +2.25V	+ 0.3V ~ +3.0V
Frequency Pulling Range	± 100 ppm (min.) ± 200 ppm (available)	± 100 ppm (min.) ± 200 ppm (available)	± 100 ppm (min.) ± 200 ppm (available)
Linearity	1% (typ.) ; 10% (max.)		
Transfer Function	Positive Transfer		
Input Impedance	5 MΩ (min.)		
Bandwidth	10 KHz (typ.) 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 msec (max.) / 10 usec (max.)

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G_JF
CMOS / Differential

SMD	1.8 V	2.5 V	3.3 V

Min.	Max.
15 MHz	2,100 MHz

150 fsec typical Phase Jitter

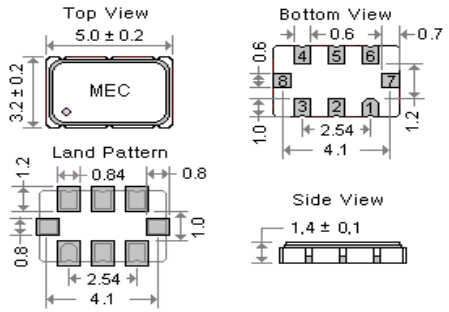
Part Number Format and Example

Example : 3GPJF578-E-150N-644.530

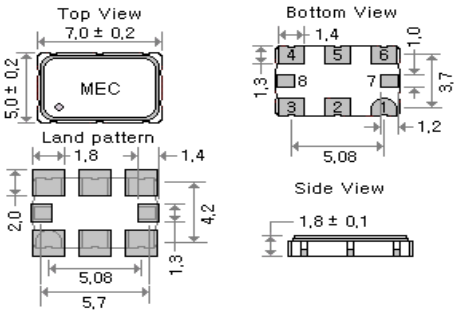
3	G	P	JF578	-	E	-	150N	-	644.530
Supply Voltage Code : " **3** " for 3.3V " **25** " for 2.5V " **18** " for 1.8V	" **G** " : for Voltage Controlled Crystal Oscillators	Output Code : " **T** ": COMS " **P** ": PECL " **D** ": LVDS " **C** ": HCSL " **Q** ": CML	" **JF** ": Product Series " **578** ": Package Code 7.0 * 5.0 _ 8 Pad " **538** ": Package Code 5.0 * 3.2 _ 8 Pad	-	Freq. Stability Code : " **E** ": ±50 ppm over -40 to +85 C Other frequency stabilities are available.	-	Freq. Pulling Range : " **150** " : ±150ppm " **M** ": Maximum " **N** ": Minimum " **T** ": Typical	-	Frequency (MHz)

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

G_JF538



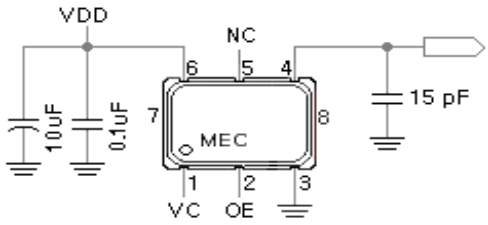
G_JF578



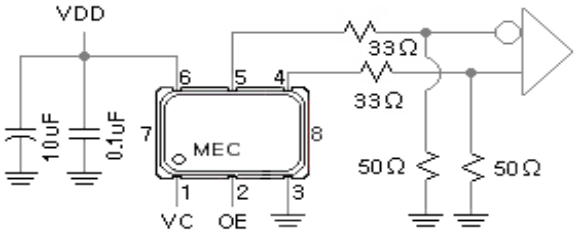
Pad Connections :

Pad 1 : Control Voltage	**Pad 2** : Output Enable	**Pad 3** : Ground	**Pad 4** : CMOS : Output , Differential : Output
Pad 5 : CMOS : No Connection , Differential : Complementary		**Pad 6** : Supply Voltage	**Pad 7** , **Pad 8** : Do Not Connect

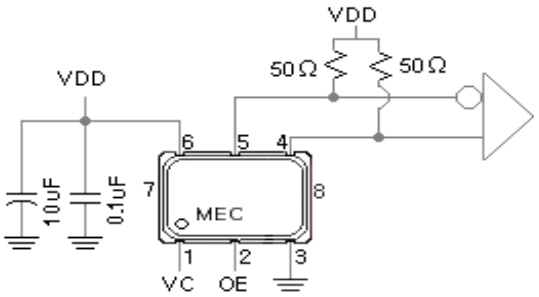
CMOS Test Circuits



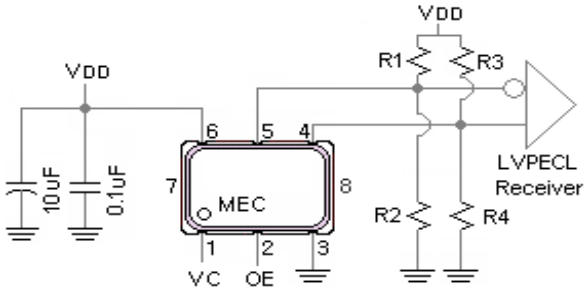
HCSL Test Circuits



CML Test Circuits

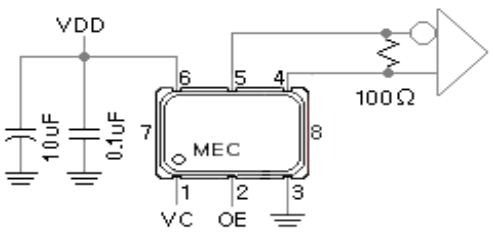


LVPECL Test Circuits

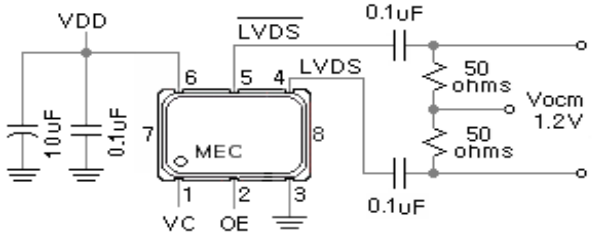


V_{DD} = 3.3V ; R1 = R3 = 127 Ω ; R2 = R4 = 82.5 Ω
V_{DD} = 2.5V ; R1 = R3 = 250 Ω ; R2 = R4 = 62.5 Ω

LVDS Test Circuits for 2.5V and 3.3V

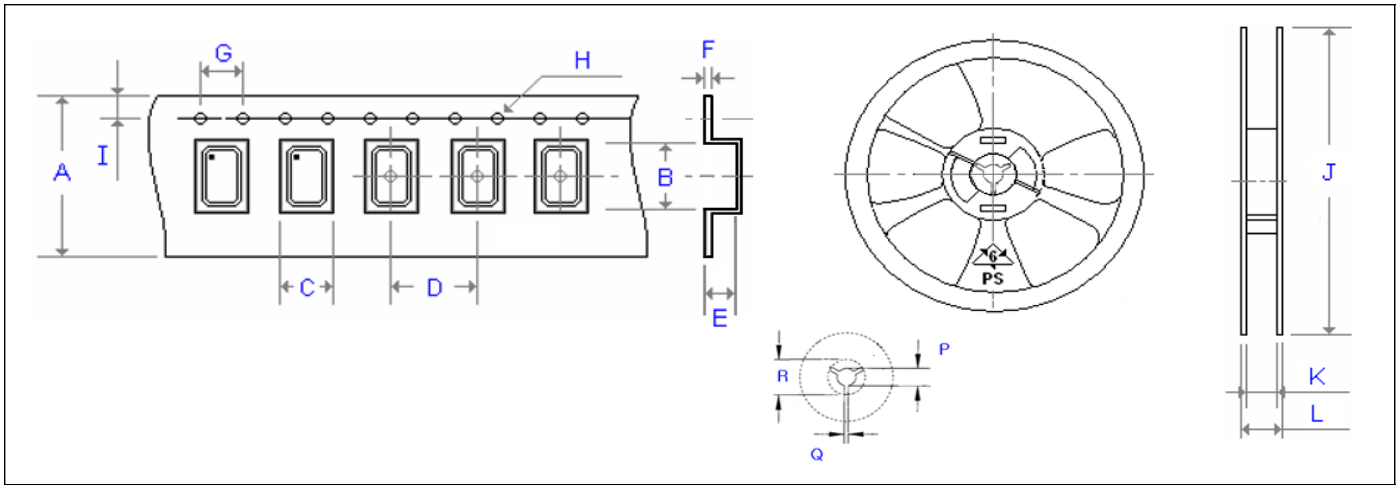


LVDS Test Circuits for 1.8V only (*)



Emboss Taping and Reel Specifications

[VCXO]	[(VC)TCXO]



Carrier Type Dimensions (unit : mm) ±0.3mm

	A	B	C	D	E	F	G	H	I	pcs / reel
G_226	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
G_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	Ø 1.50	1.75	3000
G_536	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
G_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
G_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
G_578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	Ø 1.50	1.75	1000
(V)M21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	Ø 1.50	1.75	3000
ME21	8.00	2.30	1.50	4.00	1.35	0.25	4.00	Ø 1.50	1.75	3000
(V)M22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	Ø 1.50	1.75	3000
(V)M_32	8.00	3.71	2.80	4.00	1.75	0.25	4.00	Ø 1.50	1.75	3000
(V)M_326	12.00	3.60	2.90	4.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	Ø 1.50	1.75	1000
(V)M_538	12.00	5.40	3.60	8.00	1.70	0.30	4.00	Ø 1.50	1.75	1000
(V)M_57(2)	16.00	7.40	5.50	8.00	2.80	0.35	4.00	Ø 1.50	1.75	500
(V)M_43 (63)	24.00	11.80	10.00	16.00	5.00	0.30	4.00	Ø 1.50	1.75	500

Reel Dimensions (unit : mm) ±2mm

	J	K	L	P	Q	R	pcs / reel
G_226	180.00	8.40	11.40	13.00	2.50	20.20	3000
G_326	180.00	9.00	12.00	13.00	2.50	20.20	3000
G_536	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_576	180.00	17.20	19.30	13.00	2.50	20.20	1000
G_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_578	180.00	17.20	19.30	13.00	2.50	20.20	1000
(V)M21	180.00	8.40	11.40	13.00	2.50	20.20	3000
ME21	180.00	9.00	12.00	13.00	2.50	20.20	3000
(V)M22	180.00	8.40	11.40	13.00	2.50	20.20	3000
(V)M_32	180.00	9.00	11.40	13.00	2.50	20.20	3000
(V)M_326	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_53	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_538	180.00	13.00	16.00	13.00	2.50	20.20	1000
(V)M_57(2)	180.00	17.20	19.30	13.00	2.50	20.20	500
(V)M_43 (63)	330.00	24.50	29.10	13.00	2.50	20.20	500