

Temperature Compensated Voltage Controlled Crystal Oscillators [TCVCXO " MV "]



TCVCXO
MVJF538

High Pulling

SMD

1.8 V	2.5 V	3.3 V
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Min.
15
MHz

Max.
1,300
MHz



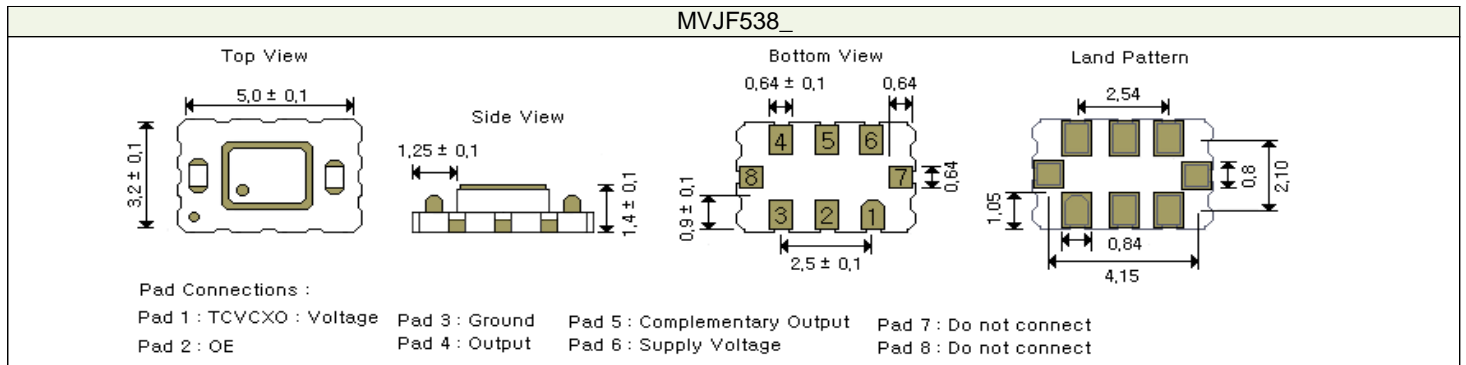
Features

Mercury's QuikXO Quick-Turn TCVCXO that can be delivered in days
 An integrated phase jitter performance of 300 fs RMS.
 Supports all popular formats: LVPECL, LVDS, HCSL and CML
 Gaining its precision frequency control market position by providing engineers with next-day samples for prototypes and low cost, fast delivery for volume production.

General specifications , at Ta = + 25°C

Model	MVJF538P	MVJF538D	MVJF538C	MVJF538Q
Output Logic	LVPECL	LVDS	HCSL	CML
Available	--	--	15 ~ 600 MHz	15 ~ 600 MHz
Frequency	15 ~ 1300 MHz	15 ~ 1300 MHz	15 ~ 700 MHz	15 ~ 1300 MHz
Range by Voltage	15 ~ 1300 MHz	15 ~ 1300 MHz	15 ~ 700 MHz	15 ~ 1300 MHz
Output Load	50 Ω into V _{DD} - 2V or Thevenin equivalent	100 Ω between output and complimentary output	50 Ω to GND	50 Ω to V _{DD}
Output Logic " High " , " 1 "	V _{DD} - 1.03 V (min.) V _{DD} - 0.6 V (max.)	1.4 V (typ.) 1.6 V (max.)	V _{DD} : 0.66V (min.) V _{DD} : 1.15V (max.)	V _{DD} - 0.085V (min.) V _{DD} = (max.)
Output Logic " Low " , " 0 "	V _{DD} - 1.85 V (min.) V _{DD} - 1.6 V (max.)	1.1 V (typ.) 0.9 V (min.)	V _{DD} : 0.0V (min.) V _{DD} : 0.15V (max.)	V _{DD} - 0.6V (min.) V _{DD} - 0.32V (max.)
Output Voltage Swing	595 mV (min.) 750 mV (typ.) 930 mV (max.)	250 mV (min.) 350 mV (typ.) 450 mV (max.)	620 mV (min.) 700 mV (typ.) 780 mV (max.)	200 mV (min.) 600 mV (typ.)
Current Consumption (V _{DD} = + 3.3 V)	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 Disabie	99 mA (typ.)	74 mA (typ.)	79 mA (typ.)	69 mA (typ.)
Rise Time / Fall Time (20% to 80% Waveform)	0.4 nsec. (max.)	0.4 nsec. (max.)	0.4 nsec. (max.)	0.4 nsec. (max.)
Initial Calibration Tolerance	±1.0 ppm. max. at +25°C±2°C.			
Frequency Stability Codes	Temperature (ref to +25°C) ± 2.5 ppm over -40°C to +85°C			
	Aging at Ta = +25°C ± 1.0 ppm max . , per year			
	Voltage Change ± 0.2 ppm max . , for a ±5% input voltage change.			
	Load Change ± 0.2 ppm max . , for a ±10% load condition change.			
	Reflow ± 1.0 ppm max . , 1 reflow and measured 24 hours afterwards.			
RMS Jitter (typ.) (12 KHz to 20 MHz)	15 MHz ~ 50 MHz 500 fsec (typ.)	51MHz ~ 250 MHz 300 fsec (typ.)	251 MHz ~ 1300 MHz 250 fsec (typ.)	
Duty Cycle	50 % ± 5%			
Start-up Time	5 m sec (typ.) ; 10 m sec. (max.)			
Storage Temperature	-55°C to + 150°C			
Control Voltage Function on Pad 1		Output Enable Function on pad 2		
Control Voltage and Range	+1.65V ± 1.35V for V _{DD} = 3.3V			
	+1.25V ± 1.0V for V _{DD} = 2.5V			
	+0.9V ± 0.9V for V _{DD} = 1.8V			
Frequency Pulling Range	± 40 ppm (min.) (Refer to Table-1)			
Linearity	± 1 % (typ.) ± 10% (max.)			
Transfer Function	Positive Transfer			
Absolute Voltage	3.8 V (max.)			
Input Impedance	5 MΩ (typ.)			
Harmonics	10KHz (typ.). Measured at -3 dB			
Output Enable / Disable Function	70% of V _{DD} (min.) to enable output. 30% of V _{DD} (max.) to disable output			
Ouput Enable Time	2.5 msec. (max.)			
Output Disable Time	10 usec. (max.)			

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



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MVJF538

High Pulling

SMD

1.8 V **2.5 V** **3.3 V**

Min.
15
MHz

Max.
1,300
MHz

Part Number Format and Example

Example : MVJF538P33-100N-156.250-2.5/-40+85

MVJF	538	P	33	-	100	N	-	156.250	-	2.5	/	-40+85
Hold Type MVJF : TCVCXO	Package " 538 " (5.0 * 3.2 mm) 8 pad	P : LVPECL D : LVDS C : HCSSL Q : CML	Supply Voltage " 33 " for 3.3V " 25 " for 2.5V " 18 " for 1.8V		Pulling Range " 100 " : for ± 100ppm	Range Code " M " : for Max. " N " : for Min. " T " : for Typ.		Center Freq. (MHz)		Freq. Stability (ppm)		Operating Temperature Range

Test Circuits

LVDS Test Circuit	HCSSL Test Circuit
CML Test Circuit	LVPECL Test Circuit
	<p style="text-align: center;"> $V_{DD} = 3.3V : R1 = R3 = 127\Omega ; R2 = R4 = 82.5\Omega$ $V_{DD} = 2.5V : R1 = R3 = 250\Omega ; R2 = R4 = 62.5\Omega$ </p>

Table-1

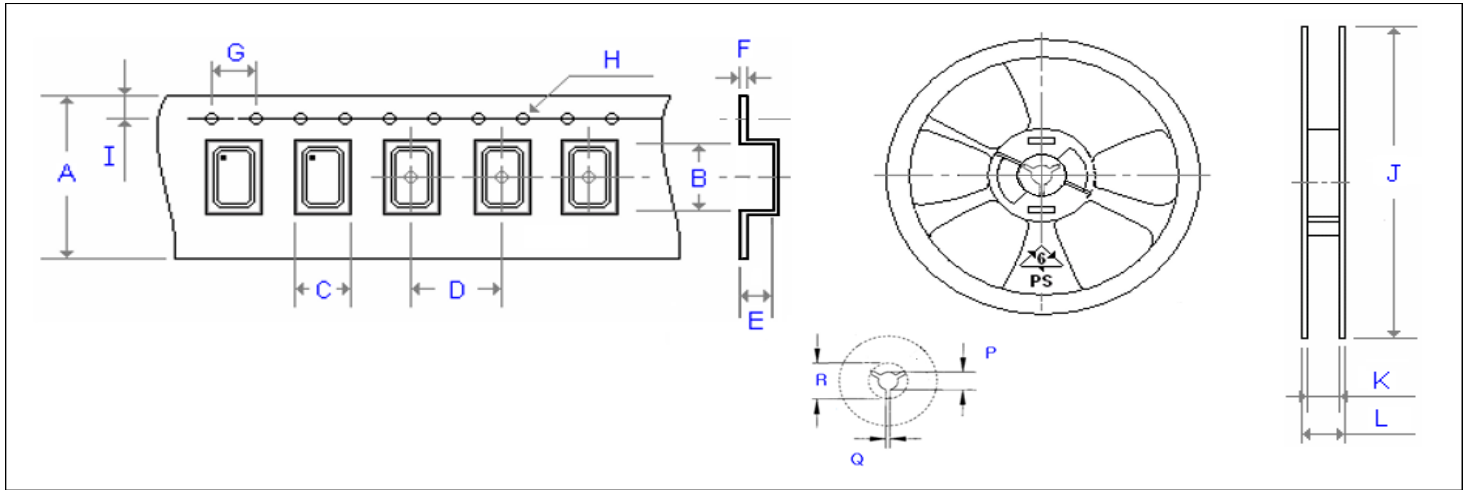
Pulling Range		Output Frequency (MHz)													
Min. (ppm)	Max. (ppm)	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	
40	60	■◆●	■◆●	■◆●	■◆●	■◆●	■◆●	■◆●	■◆	■◆	■◆	■◆	■◆	■◆	
60	90	■◆●	■◆●	■◆●	■◆●	■◆●	■◆●	■◆	■◆	■◆	■◆				
80	120	■◆●	■◆●	■◆●	■◆●	■◆	■◆	■◆	■◆						
100	150	■◆●	■◆●	■◆●	■◆	■◆	■◆								
120	180	■◆●	■◆●	■◆	■◆	■◆									
140	210	■◆●	■◆	■◆	■◆	■◆									
160	240	■◆●	■◆	■◆	■◆	■◆									
180	270	■◆●	■◆	■◆	■◆										
200	300	■◆●	■◆	■◆											

■ for 3.3V ◆ for 2.5V ● for 1.8V

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	∅ 1.50	1.75	3000
G_326	8.00	3.40	2.70	4.00	1.40	0.25	4.00	∅ 1.50	1.75	3000
G_534	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
G_576	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
G_43	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 1.50	1.75	500
G_63	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 1.50	1.75	500
G_JF538	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
G_JF578	16.00	7.30	5.30	8.00	1.90	0.32	4.00	∅ 1.50	1.75	1000
(V)M21	8.00	2.30	1.90	4.00	0.90	0.25	4.00	∅ 1.50	1.75	3000
(V)ME21	8.00	2.30	1.50	4.00	1.35	0.25	4.00	∅ 1.50	1.75	3000
(V)M22	8.00	2.80	2.25	4.00	1.10	0.30	4.00	∅ 1.50	1.75	3000
(V)M_32	8.00	3.71	2.80	4.00	1.75	0.25	4.00	∅ 1.50	1.75	3000
(V)MQ_326	12.00	3.60	2.90	4.00	1.70	0.30	4.00	∅ 1.50	1.75	3000
(V)M_53	12.00	5.30	3.60	8.00	1.40	0.30	4.00	∅ 1.50	1.75	1000
(V)M_57(2)	16.00	7.40	5.50	8.00	2.80	0.35	4.00	∅ 1.50	1.75	500
(V)M_43 (63)	24.00	11.80	10.00	16.00	5.00	0.30	4.00	∅ 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_534	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_43	330.00	24.50	29.10	13.00	2.50	20.20	500
G_63	330.00	24.50	29.10	13.00	2.50	20.20	500
G_JF538	180.00	13.00	16.00	13.00	2.50	20.20	1000
G_JF578	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
(V)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)MQ_326	180.00	13.00	16.00	13.00	2.50	20.20	3000
(V)M_53	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

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