

Voltage-Controlled Crystal Oscillator (VCXO)

- Package size (3.2 mm × 2.5 mm × 1.05 mm)
- Fundamental mode VCXO
- Output: LV-PECL
- Reference weight Typ.26 mg

[1] Product Number / Product Name / Marking

(1-1) Product Number / Ordering Code

X1G0053610011xx

Last 2 digits code(**xx**) defines Quantity.

The standard is "00", 2 000 pcs/Reel.

(1-2) Product Name / Model Name

VG3225EFN 148.352000MHz CJGHBA

[2] Absolute Maximum Ratings

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Maximum supply voltage	V _{CC}	-0.5	-	+5.0	V	-
Input voltage	V _c	-0.5	-	V _{CC} + 0.5	°C	V _c terminal
Storage temperature range	T _{stg}	-55	-	+125	°C	Storage as single product

[3] Operating Range

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Supply voltage	V _{CC}	3.135	3.3	3.465	V	-
	GND	0	0	0	V	-
Control voltage	V _c	0	1.65	3.3	V	-
Operating temperature range	T _{use}	-40	-	+85	°C	-
ECL load condition	L _{ECL}	-	50	-	Ω	Terminated to V _{CC} - 2.0 V

[4] Frequency Characteristics

(Unless stated otherwise [3] Operating Range)

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Output frequency	f _o	-	148.352000	-	MHz	-
Frequency tolerance *1	f _{tol}	-50	-	+50	×10 ⁻⁶	T _{use}

*1 Frequency tolerance includes Initial frequency tolerance, Frequency / temperature characteristics, Frequency / voltage coefficient and aging (10 years, +25 °C)

[5] Frequency Control Characteristics

(Unless stated otherwise [3] Operating Range)

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Absolute pull range *1	APR	±50	-	-	×10 ⁻⁶	-
Input impedance	Z _{in}	10	-	-	MΩ	DC level
Linearity *2	FLIN	-	±5	±10	%	-
Modulation bandwidth	BW	10	15	-	kHz	±3 dB
Frequency change polarity	f _{cp}	Positive			-	-

*1 Absolute pull range = Frequency control range - Frequency tolerance

*2 Deviation from best linear fit.

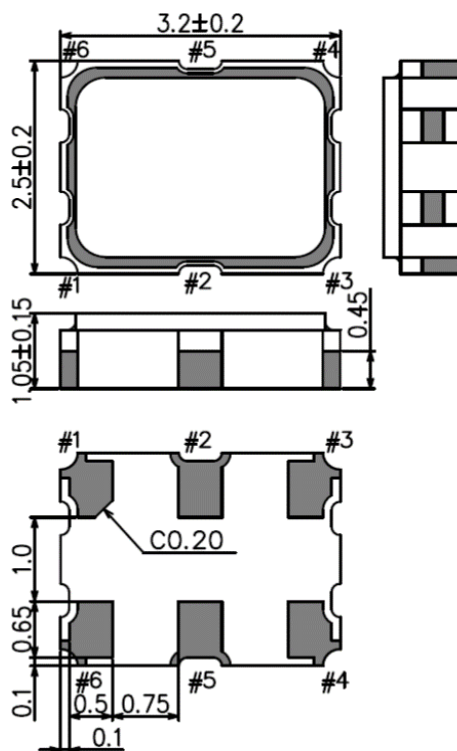
[6] Electrical Characteristics

(Unless stated otherwise [3] Operating Range)

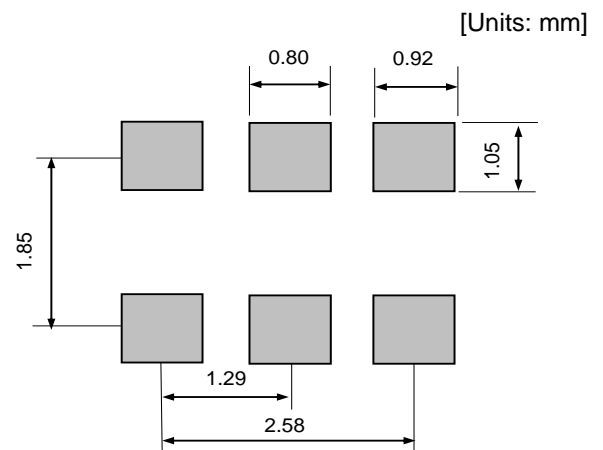
Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Start-up time	t_{str}	-	-	10	ms	$t = 0$ at V_{CC} Min.
Current consumption	I_{CC}	-	-	60	mA	$OE = V_{CC}$, $L_ECL = 50 \Omega$
Disable current	I_{dis}	-	-	25	mA	$OE = GND$
Output voltage	V_{OH}	$V_{CC} - 1.1$	-	-	V	DC characteristics
	V_{OL}	-	-	$V_{CC} - 1.5$	V	DC characteristics
Differential swing	V_{SW}	800	-	2 000	mV	Differential output peak to peak voltage
Rise time	t_r	-	-	0.5	ns	20 % \rightarrow 80 % of $(V_{OH}-V_{OL})$
Fall time	t_f	-	-	0.5	ns	80 % \rightarrow 20 % of $(V_{OH}-V_{OL})$
Symmetry	SYM	45	50	55	%	at output crossing point
Input voltage	V_{IH}	70 % V_{CC}	-	-	V	OE terminal
	V_{IL}	-	-	30 % V_{CC}	V	OE terminal
Output disable time (OE)	t_{stp_oe}	-	-	100	ns	OE terminal HIGH \rightarrow LOW
Output enable time (OE)	t_{sta_oe}	-	-	200	ns	OE terminal LOW \rightarrow HIGH
Phase jitter	t_{PJ}	-	-	120	fs	Offset frequency: 12 kHz to 20 MHz

[7] External Dimensions / Footprint / Pin Map

(7-1) External Dimensions



(7-2) Footprint



For stable operation, it is recommended that 0.01 μ F to 0.1 μ F bypass capacitors should be connected between V_{CC} and GND and placed as close to the V_{CC} pin as possible.

(7-3) Pin Map

Pin #	Connection	Function		
#1	V_C	V_C terminal		
#2	OE	OE terminal / active high		
		OE function	Osc. circuit	Output
		"H" or OPEN	Oscillation	Specified frequency: Enable
		"L"	Oscillation	High impedance: Disable
#3	GND	GND terminal		
#4	OUT	Output terminal (Positive)		
#5	\overline{OUT}	Output terminal (Negative)		
#6	V_{CC}	V_{CC} terminal		

[8] Packing Information

(8-1) Packing Quantity

The last two digits of the Product Number (X1G005361xxxxxx) are a code that defines the packing quantity. The standard is "00" for a 2 000 pcs/Reel.

(8-2) Taping Specification

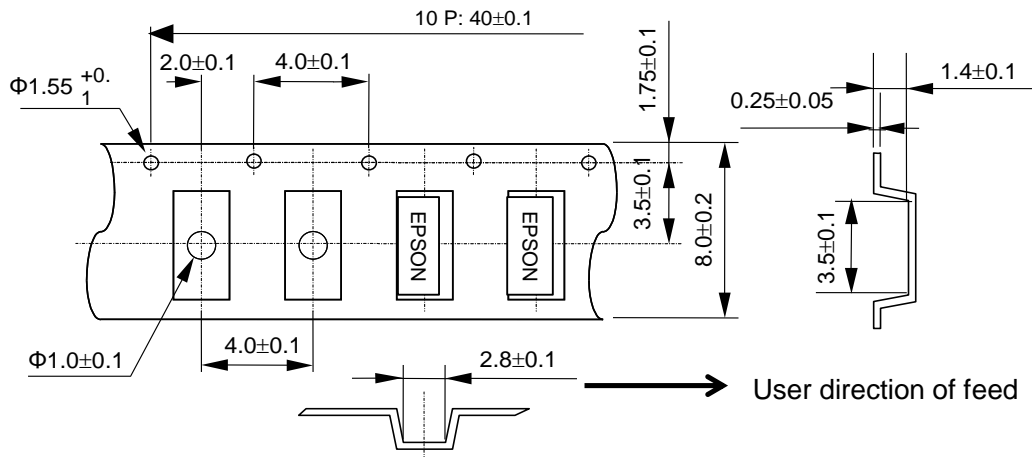
Subject to EIA-481, IEC-60286 and JIS C0806

(1) Tape Dimensions

Carrier Tape Material: PS (Polystyrene)

Top Tape Material: PET (Polyethylene Terephthalate) + PE (Polyethylene)

Units: mm

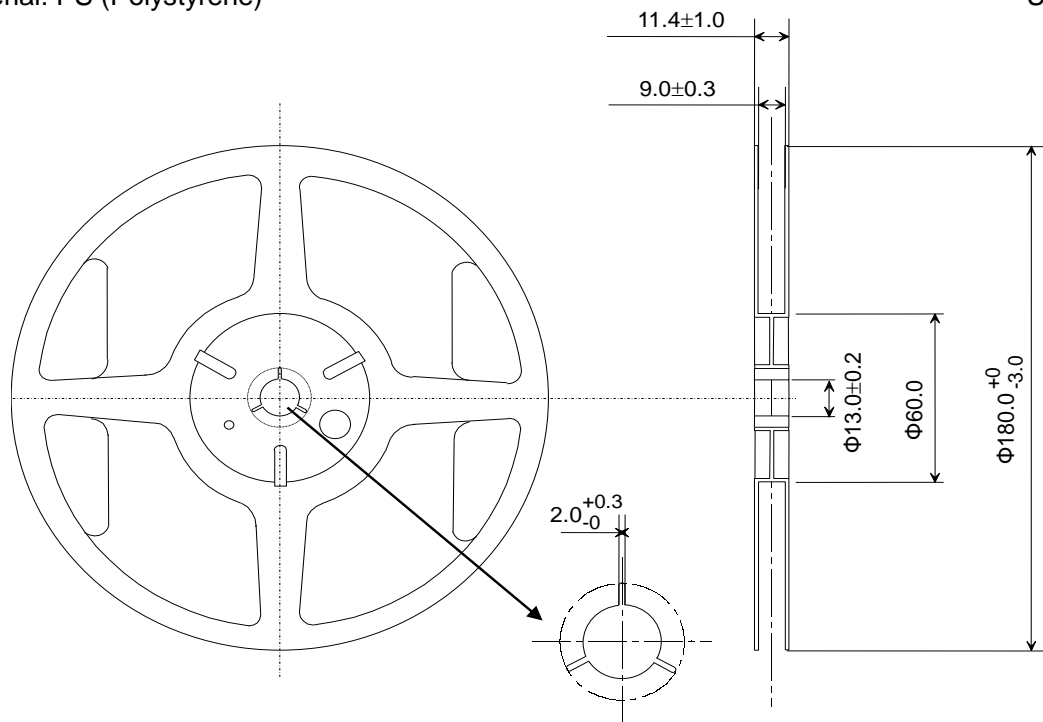


(2) Reel Dimensions

Center Material: PS (Polystyrene)

Reel Material: PS (Polystyrene)

Units: mm



(3) Storage Environment

We recommend to keep at normal temperature and normal humidity in a packed condition.

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