Voltage-Controlled Crystal Oscillator (VCXO)

· Package size (7.0 mm × 5.0 mm × 1.5 mm)
· Fundamental mode VCXO
· Output: LV-PECL
· Reference weight Typ.172 mg

[1] Product Number / Product Name / Marking

(1-1) Product Number / Ordering Code

X1G0054910016xx

Last 2 digits code(**xx**) defines Quantity.
The standard is "00", 1 000 pcs/Reel.

(1-2) Product Name / Model Name

VG7050EFN 148.500000MHz CJGHBA

[2] Absolute Maximum Ratings

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Maximum supply voltage	V_{CC}	-0.5	-	+4.0	V	-
Input voltage	Vc	-0.5	-	V_{CC} + 0.5	°C	Vc 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	Vc	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	fo	-	148.500000	-	MHz	-
Frequency tolerance *1	f_tol	-50	-	+50	$\times 10^{-6}$	T_use

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

[5] Frequency Control Characteristics

(Unless stated otherwise [3] Operating Range)

Parameter	Symbol	Specifications			Unit	Conditions
		Min.	Typ.	Max.		
Absolute pull range *1	APR	±50	-	-	$\times 10^{-6}$	-
Input impedance	Zin	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.

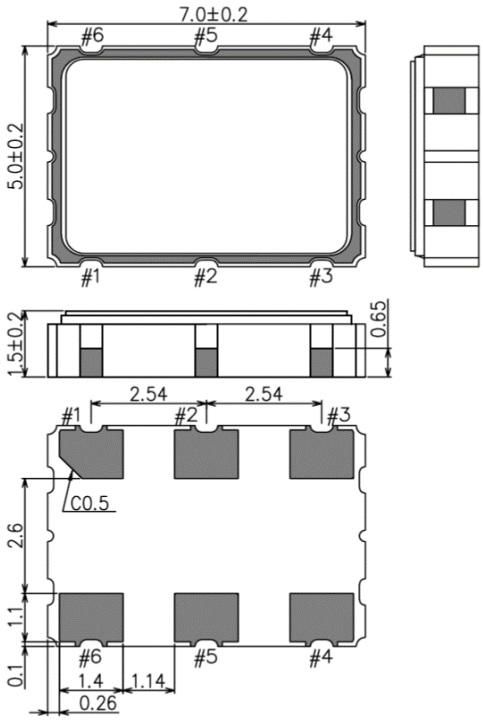
[6] Electrical Characteristics

(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 Ω
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 peek to peek voltage
Rise time	tr	-	-	0.5	ns	20 % → 80 % of (V_{OH}-V_{OL})
Fall time	tf	-	-	0.5	ns	80 % → 20 % of (V_{OH}-V_{OL})
Symmetry	SYM	45	50	55	%	at output crossing point
Input voltage	V_{IH}	70 % Vcc	-	-	V	OE terminal
	V_{IL}	-	-	30 % Vcc	V	OE terminal
Output disable time (OE)	tstp_oe	-	-	100	ns	OE terminal HIGH → LOW
Output enable time (OE)	tsta_oe	-	-	200	ns	OE terminal LOW → HIGH
Phase jitter	t_{PJ}	-	-	120	fs	Offset frequency: 12 kHz to 20 MHz

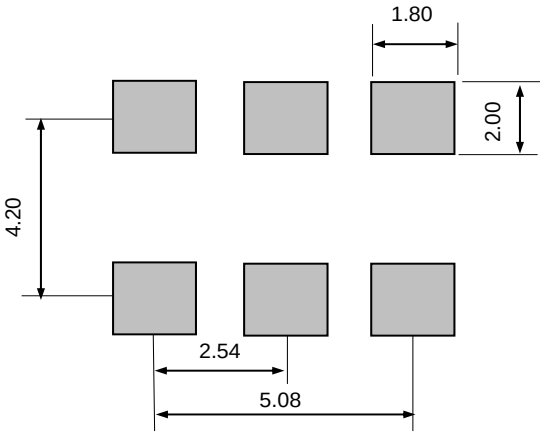
[7] External Dimensions / Footprint / Pin Map

(7-1) External Dimensions



(7-2) Footprint

[Units: mm]



For stable operation, it is recommended that 0.01 µF to 0.1 µF 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	Vc	Vc 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 (X1G005491xxxx**xx**) are a code that defines the packing quantity. The standard is "00" for a 1 000 pcs/Reel.

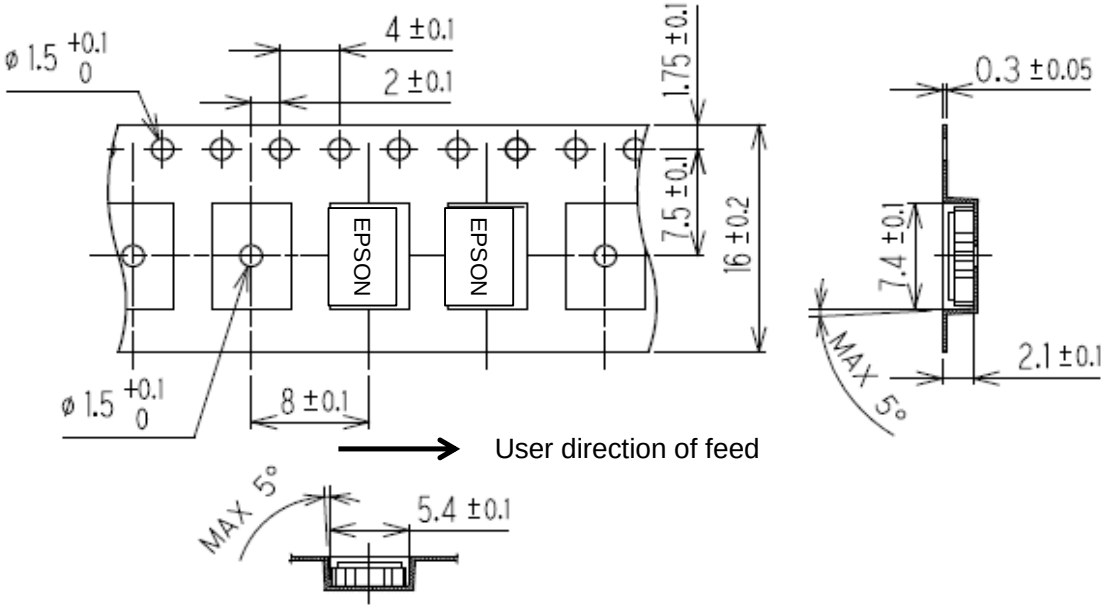
(8-2) Taping Specification

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

(1) Tape Dimensions

Carrier Tape Material: PS (Polystyrene)

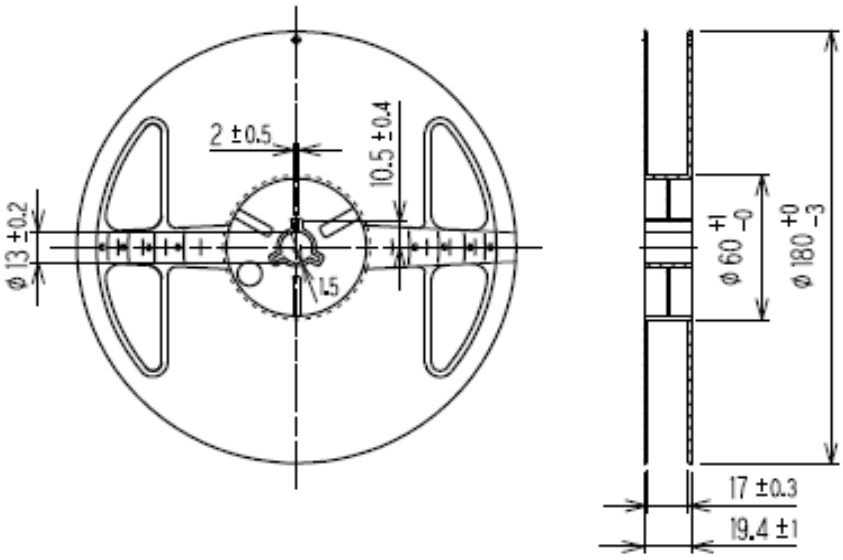
Top Tape Material: PET (Polyethylene Terephthalate) Units: mm



(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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