


VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)
OUTPUT : LV-PECL, LVDS
VG3225EFN / VFN
VG5032EFN / VFN
VG7050EFN / VFN


Product Number
VG3225EFN X1G005361xxxx00
VG5032EFN X1G005471xxxx00
VG7050EFN X1G005491xxxx00
VG3225VFN X1G005461xxxx00
VG5032VFN X1G005481xxxx00
VG7050VFN X1G005501xxxx00



- Frequency range : 25 MHz to 500 MHz (VG3225EFN / VFN)
25 MHz to 250 MHz (All other)
- Supply voltage : 3.3 V Typ.
- Output : LV-PECL or LVDS
- Function : Output enable (OE)

VG3225EFN / VFN (3.2 x 2.5 x 1.05 mm) VG5032EFN / VFN (5.0 x 3.2 x 1.3 mm) VG7050EFN / VFN (7.0 x 5.0 x 1.5 mm)

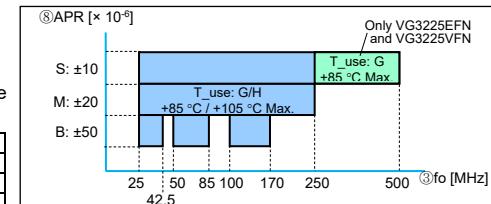
Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks
		LV-PECL	LVDS	
Output frequency range	fo	25 MHz to 500 MHz	VG3225EFN / VG3225VFN	VG3225EFN / VG3225VFN
		25 MHz to 250 MHz	All other	Please contact us for available frequencies.
Supply voltage	V _{cc}	C: 3.3 V ± 0.165 V		
Control voltage	V _c	1.65 V ± 1.65 V		
Storage temperature range	T _{stg}	-55 °C to +125 °C		
Operating temperature range	T _{use}	G: -40 °C to +85 °C, H: -40 °C to +105 °C		
Frequency tolerance	f _{tol}	J: ±50 × 10 ⁻⁶ Max.		Includes initial frequency tolerance, temperature variation, supply voltage change and 10 years aging (+25 °C) at V _c = 1.65 V
Absolute Pull range *1	APR	B: ±50 × 10 ⁻⁶ Min.	25 MHz ≤ fo ≤ 42.5 MHz, 50 MHz ≤ fo ≤ 85 MHz, 100 MHz ≤ fo ≤ 170 MHz	
		M: ±20 × 10 ⁻⁶ Min.	25 MHz ≤ fo ≤ 250 MHz	
		S: ±10 × 10 ⁻⁶ Min.	25 MHz ≤ fo ≤ 250 MHz	
			250 MHz < fo ≤ 500 MHz, T _{use} : G (-40 °C to +85 °C)	
Current consumption	I _{cc}	60 mA Max.	OE = V _{cc} , L _{ECL} = 50 Ω or L _{LVDS} = 100 Ω	
Disable current	I _{dis}	25 mA Max.	OE = GND	
Input impedance	Z _{in}	10 MΩ Min.	DC level	
Frequency change polarity	-	Positive slope	V _c = 0 V to 3.3 V	
Symmetry	SYM	45 % to 55 %	At output crossing point	
Output voltage (LV-PECL)	V _{OH} V _{OL}	V _{cc} - 1.1 V Min. V _{cc} - 1.5 V Max.	–	DC characteristics
Output voltage (LVDS)	V _{OD} V _{OS}	– –	250 mV to 450 mV 1.15 V to 1.35 V	Differential output voltage, V _{OD1} , V _{OD2} Offset voltage, V _{OS1} , V _{OS2} DC characteristics
ECL load condition	L _{ECL}	50 Ω	–	Terminated to V _{cc} - 2.0 V
LVDS load condition	L _{LVDS}	–	100 Ω	Connected between OUT to OUT
Input voltage	V _{IH} V _{IL}	70 % V _{cc} Min. 30 % V _{cc} Max.	–	OE terminal
Rise/Fall times	tr / tf	0.5 ns Max..	0.3 ns Max.	LV-PECL: Between 20 % and 80 % of (V _{OH} - V _{OL}) LVDS: Between 20 % and 80 % of Differential Output peak to peak voltage
Startup time	t _{str}	10 ms Max.	–	Time at minimum supply voltage to be 0 s
Phase Jitter	t _{pj}	120 fs Max.	160 fs Max.	fo = 122.88 MHz
		80 fs Max.	80 fs Max.	fo = 245.76 MHz
		70 fs Max.	80 fs Max.	fo = 491.52 MHz

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

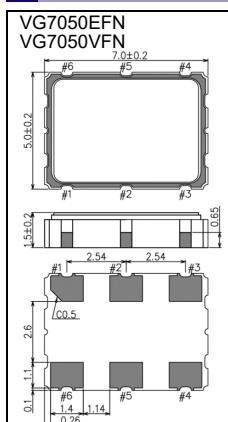
* Please keep V_c pin open or ground while powering up V_{cc}.

Figure 1 Available combination of
③Output frequency (fo) and ⑧Absolute Pull Range (APR)

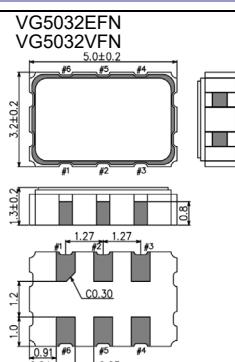


Product Name VG3225 EFN 122.880000MHz C J G H B A								
(Standard form)		①	②	③	④	⑤	⑥	⑦
①Model	②Output (E: LV-PECL, V: LVDS)	③Frequency	④Supply voltage (C: 3.3 V Typ.)	⑤Frequency tolerance	⑥Operating temperature	⑦OE Function	⑧Absolute Pull Range	⑨Output Standby Type (A: High-Z)
J	±50 × 10 ⁻⁶	G	-40 to +85 °C	H	Active High		B: ±50 × 10 ⁻⁶	
							M: ±20 × 10 ⁻⁶	
							S: ±10 × 10 ⁻⁶	

External dimensions (Unit:mm)



Note:
 OE pin = HIGH or "Open"; Specified frequency output.
 OE pin = LOW: Output is high impedance



Pin map

Pin	Connection
1	V _c
2	OE
3	GND
4	OUT
5	OUT
6	V _{CC}

(Unit:mm)

Footprint (Recommended) (Unit:mm)

	VG3225EFN VG3225VFN	VG5032EFN VG5032VFN	VG7050EFN VG7050VFN
A	1.05	1.60	2.00
B	0.92	0.89	1.80
C	1.85	2.60	4.20
D	2.58	2.54	5.08
E	0.80	0.89	1.80

In order to achieve optimum jitter performance, it is recommended that 0.1 μ F and 10 μ F bypass capacitors should be connected between V_{CC} and GND and placed as close to the V_{CC} pin as possible.

PROMOTION OF ENVIRONMENTAL MANAGEMENT SYSTEM CONFORMING TO INTERNATIONAL STANDARDS

At Seiko Epson, all environmental initiatives operate under the Plan-Do-Check-Action (PDCA) cycle designed to achieve continuous improvements. The environmental management system (EMS) operates under the ISO 14001 environmental management standard.

All of our major manufacturing and non-manufacturing sites, in Japan and overseas, completed the acquisition of ISO 14001 certification.

ISO 14000 is an international standard for environmental management that was established by the International Standards Organization in 1996 against the background of growing concern regarding global warming, destruction of the ozone layer, and global deforestation.

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IATF 16949 is the international standard that added the sector-specific supplemental requirements for automotive industry based on ISO9001.

► Explanation of the mark that are using it for the catalog

	► Pb free.
	► Complies with EU RoHS directive. *About the products without the Pb-free mark. Contains Pb in products exempted by EU RoHS directive. (Contains Pb in sealing glass, high melting temperature type solder or other.)
	► Designed for automotive applications such as Car Multimedia, Body Electronics, Remote Keyless Entry etc.
	► Designed for automotive applications related to driving safety (Engine Control Unit, Air Bag, ESC etc).

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