SEIKO EPSON CORPORATION

VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR (VCXO)
OUTPUT : LV-PECL, LVDS

VG3225EFN / VFN
VG5032EFN / VFN
VG7050EFN / VFN

Pb Free

RoHS Compliant

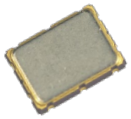
Product Number

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 × 2.5 × 1.05 mm)

VG5032EFN / VFN
(5.0 × 3.2 × 1.3 mm)



VG7050EFN / VFN
(7.0 × 5.0 × 1.5 mm)

Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks	
		LV-PECL VG3225EFN / VG5032EFN / VG7050EFN	LVDS VG3225VFN / VG5032VFN / VG7050VFN		
Output frequency range	fo	25 MHz to 500 MHz		VG3225EFN / VG3225VFN	Please contact us for available frequencies.
		25 MHz to 250 MHz		All other	
Supply voltage	V_{CC}	C: 3.3 V ± 0.165 V			
Control voltage	Vc	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 Vc = 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.	25 mA Max.	OE = V_{CC}, L_ECL = 50 Ω or L_LVDS = 100 Ω	
Disable current	I_dis	25 mA Max.	15 mA Max.	OE = GND	
Input impedance	Zin	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_{CC} - 1.1 V Min.	–	DC characteristics	
	V_{OL}	V_{CC} - 1.5 V Max.	–		
Output voltage (LVDS)	V_{OD}	–	250 mV to 450 mV	Differential output voltage, V_{OD1}, V_{OD2}	DC characteristics
	V_{OS}	–	1.15 V to 1.35 V	Offset voltage, V_{OS1}, V_{OS2}	
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 $\overline{OUT}$	
Input voltage	V_{IH}	70 % V_{CC} Min.		OE terminal	
	V_{IL}	30 % V_{CC} Max.			
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	Offset Frequency 12 kHz to 20 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 Vc pin open or ground while powering up V_{CC}.

Product Name (Standard form)

VG3225 EFN 122.880000MHz C J G H B A
① ② ③ ④⑤⑥⑦⑧⑨

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)

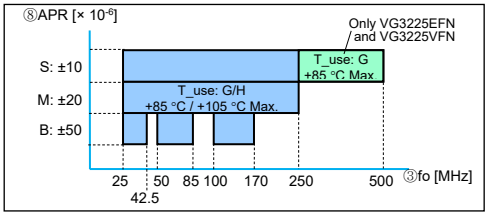
⑤Frequency tolerance	
J	±50 × 10^{-6}

⑥Operating temperature	
G	-40 to +85 °C
H	-40 to +105 °C

⑦OE Function	
H	Active High

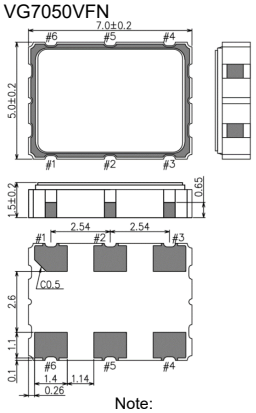
⑧Absolute Pull Range	
B	±50 × 10^{-6}
M	±20 × 10^{-6}
S	±10 × 10^{-6}

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

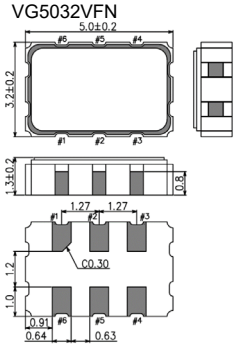


External dimensions (Unit:mm)

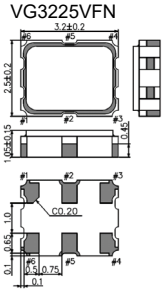
VG7050EFN
VG7050VFN



VG5032EFN
VG5032VFN



VG3225EFN
VG3225VFN

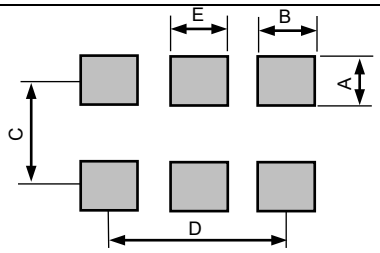


Pin map

Pin	Connection
1	Vc
2	OE
3	GND
4	OUT
5	$\overline{OUT}$
6	V_{CC}

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

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 µF and 10 µF bypass capacitors should be connected between V_{CC} and GND and placed as close to the V_{CC} pin as possible.

►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 general equipment.
	►Designed for automotive applications related to driving and safety.

NOTICE：PLEASE READ CAREFULLY BELOW BEFORE THE USE OF THIS DOCUMENT

1. The content of this document is subject to change without notice. Before purchasing or using Epson products, please contact with sales representative of Seiko Epson Corporation (“Epson”) for the latest information and be always sure to check the latest information published on Epson’s official web sites and resources.
2. This document may not be copied, reproduced, or used for any other purposes, in whole or in part, without Epson’s prior consent.
3. Information provided in this document including, but not limited to application circuits, programs and usage, is for reference purpose only. Epson makes no guarantees against any infringements or damages to any third parties’ intellectual property rights or any other rights resulting from the information. This document does not grant you any licenses, any intellectual property rights or any other rights with respect to Epson products owned by Epson or any third parties.
4. Epson has prepared this document carefully to be accurate and dependable, but Epson does not guarantee that the information is always accurate and complete. Epson assumes no responsibility for any damages you incurred due to any misinformation in this document.
5. Epson products listed in this document and our associated technologies shall not be used in any equipment or systems that laws and regulations in Japan or any other countries prohibit to manufacture, use or sell. Furthermore, Epson products and our associated technologies shall not be used for the purposes of military weapons development (e.g. mass destruction weapons), military use, or any other military applications. If exporting Epson products or our associated technologies, please be sure to comply with the Foreign Exchange and Foreign Trade Control Act in Japan, Export Administration Regulations in the U.S.A (EAR) and other export-related laws and regulations in Japan and any other countries and to follow their required procedures.
6. Epson assumes no responsibility for any damages (whether direct or indirect) caused by or in relation with your non-compliance with the terms and conditions in this document or for any damages (whether direct or indirect) incurred by any third party that you give, transfer or assign Epson products.
7. For more details or other concerns about this document, please contact our sales representative.
8. Company names and product names listed in this document are trademarks or registered trademarks of their respective companies.

●Disclaimer

1. Epson products are designed for use in general electronic equipment applications that do not require extremely high reliability or safety.

2. Epson does not represent or warrant that its products will not cause a failure for any particular application, except for cases where the failure is a direct result caused by defects in materials and workmanship of this product.
If a product fails due to defects in materials and workmanship, to the maximum extent permitted by law, we will, at our sole discretion, refund or replace the affected product.

3. When products for used directly or indirectly in certain devices or applications (ex. Nuclear power, aerospace, infrastructure facilities, medical equipment, etc.) which are connected to or affect safety of human life or property, Customer is solely responsible for determining if the products and respective specifications are suitable for the intended use in particular customer applications.
Customer shall implement necessary and proper safety design and measures (including redundant design, malfunction prevention design, etc.) to ensure reliability and safety before using the products in/with customer’s Equipment.

4.For the products designed for automotive applications, the products comply with AEC-Q100 or AEC-Q200.
Products do not comply with ISO 26262 (Products are not categorized to ASIL A, B, C and D).

5. No dismantling, analysis, reverse engineering, modification, alteration, adaptation, reproduction, etc., of Epson products is allowed.
Furthermore, any defects caused by this are not covered by the warranty.

©Seiko Epson Corporation 2025