CRYSTAL OSCILLATOR

SAW-Based Differential Multi Output (LV-PECL)

MG7050EAN

NEW

Feature

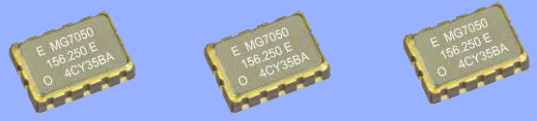
- •Ultra Low jitter : 0.3 ps Max.
- •2 or 4 outputs and it is able to reduce fan-out buffers
- •Frequency range : 100 MHz to 700 MHz
- •Supply voltage : 2.5 V / 3.3 V
- •External dimensions : 7.0 × 5.0 × 1.6 mm
- •Output : LV-PECL (2 or 4 outputs)

Application

GbE, Fiber Channel, SAS, PCI express
Server, Storage, Router/Switch, Networking, OTN

Pb Free RoHS Compliant

Product Number (please contact us)
X1G000411xxxx00



Actual size

Specifications (characteristics)

Item	Symbol	Specifications		Conditions / Remarks	
Output frequency range	fo	100 MHz to 700 MHz		Please contact us about available frequencies.	
		100MHz, 106.25MHz, 125MHz, 150MHz, 156.25MHz, 200MHz, 212.5MHz, 250MHz, 300MHz, 312.5MHz		Standard frequency	
Supply voltage	V_{CC}	D: 2.5 V ± 0.125 V	C: 3.3 V ± 0.33 V	V_{CC}1 and V_{CC}2 need same voltage	
Storage temperature	T_stg	-55 ºC to +125 ºC		Store as bare product after packing	
Operating temperature	T_use	A: 0 ºC to +70 ºC, B: -20 ºC to +70 ºC D: -5 ºC to +85 ºC			
Frequency tolerance *1	f_tol	J: ±50 × 10^{-6}, L: ±100 × 10^{-6}			
Current consumption	I_{CC}	75 mA Typ., 94 mA Max.	80 mA Typ., 102 mA Max.	2-outputs	OE=V_{CC}, L_ECL=50 Ω
		125 mA Typ., 170 mA Max.	130 mA Typ., 184 mA Max.	4-outputs	
Disable current	I_dis	8 mA Typ., 20 mA Max.		OE=GND	
Symmetry	SYM	45 % to 55 %		At outputs crossing point	
Output voltage	V_{OH}	V_{CC}-1.025 V to V_{CC}-0.88 V		DC characteristics	
	V_{OL}	V_{CC}-1.81 V to V_{CC}-1.62 V			
Output load condition	L_ECL	50 Ω		Termination to V_{CC}-2.0 V	
Input voltage	V_{IH}	70% V_{CC} Min.		OE and FSEL terminals	
	V_{IL}	30% V_{CC} Max.			
Rise time / Fall time	tr/tf	200 ps Typ., 400 ps Max.		Between 20% and 80% of (V_{OH}-V_{OL})	
Start-up time	t_str	5 ms Typ., 10 ms Max.		Time at minimum supply voltage to be 0 s	
Phase Jitter	tPJ	0.17 ps Typ.	0.14 ps Typ.	fo=100 MHz	Offset frequency: 12 kHz to 20 MHz
		0.16 ps Typ.	0.13 ps Typ.	fo=125 MHz	
		0.15 ps Typ.	0.12 ps Typ.	fo=156.25 MHz	
		0.13 ps Typ.	0.11 ps Typ.	fo=212.5 MHz	
		0.11 ps Typ.	0.10 ps Typ.	fo=312.5 MHz	
		0.05 ps Typ.	0.05 ps Typ.	fo=700 MHz	
		0.3 ps Max.			
Skew	t_skew	10 ps Typ., 30 ps Max.		FSEL=H	
Aging	f_age	N: ±10 × 10^{-6}/ year Max.		First year	+25 °C, V_{CC}=2.5 V, 3.3 V
		A: Included in Frequency tolerance *2		10 years	

*1 Frequency tolerance includes initial frequency tolerance, temperature variation, supply voltage change and reflow drift.
*2 “A” is not acceptable when Frequency tolerance is “J” and Operating temperature is “B” or “D”.

Part number

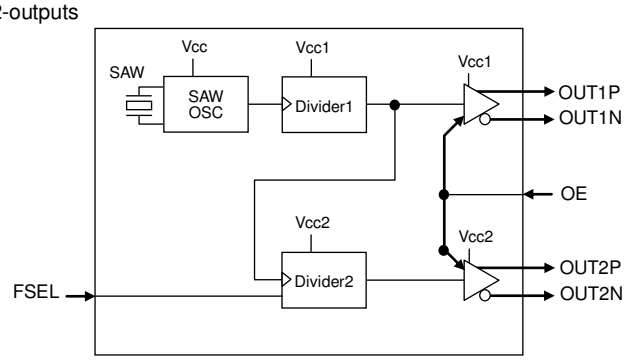
MG7050EAN 156.250000MHz 4 A C J A N

* Unavailable Combination : xAxJDA and xAxJBA

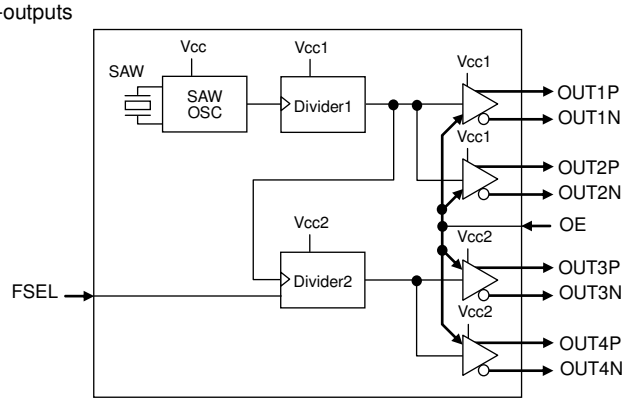
- MG7050EAN: Model Name
- 156.250000MHz: Frequency
- Aging: A: Frequency tolerance include 10years aging at 25°C , N: exclude aging
- Operating temperature: A: 0 °C to +70 °C , B: -20 °C to +70 °C , D: -5 °C to +85 °C
- Frequency tolerance: J: ± 50 × 10^{-6} , L: ±100 × 10^{-6}
- Supply voltage: C: 3.3 V , D: 2.5 V
- “A” Fixed
- Number of outputs: 2: 2-outputs , 4: 4-outputs

Block diagram

2-outputs



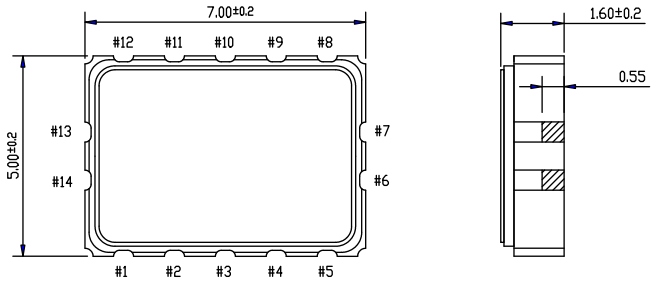
4-outputs

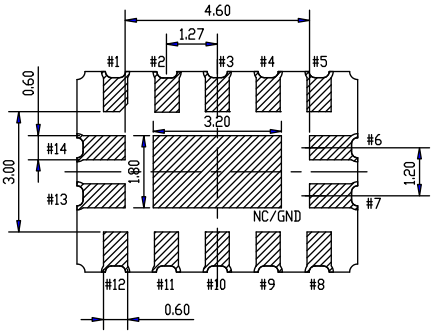


FSEL function

2-outputs		OUT1	OUT2
4-outputs		OUT1 / OUT2	OUT3 / OUT4
FSEL	H	fo	fo
	L	fo	fo/2

External dimensions (Unit :mm)

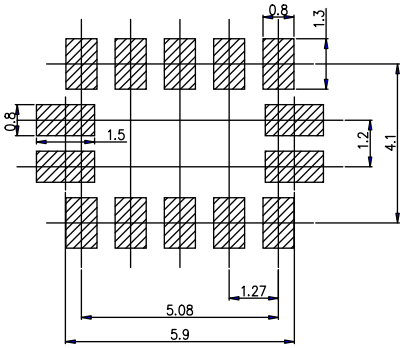




OE pin = “H” : Specified frequency output.
OE pin = “L” : Output is high impedance
#14 is connected to the cover.

Pin	Connections	
	2-outputs	4-outputs
1	$V_{CC}1$	
2	GND	OUT1P
3	OUT1P	OUT1N
4	OUT1N	OUT2P
5	GND	OUT2N
6	FSEL	
7	OE	
8	GND	OUT3N
9	OUT2N	OUT3P
10	OUT2P	OUT4N
11	GND	OUT4P
12	$V_{CC}2$	
13	V_{CC}	
14	GND	

Footprint (Recommended) (Unit :mm)



To maintain stable operation, provide a 0.01 µF to 0.1 µF by-pass capacitor at a location as near as possible to the power source terminal of the crystal product (between V_{CC}, $V_{CC}1$, $V_{CC}2$ - GND).