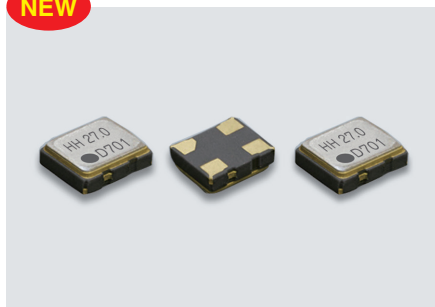


SMD Crystal Oscillators (For Automotive)

DSO221SHH

NEW



Actual size

Features

- Supply Voltage: 1.8V/2.5V/2.8V/3.3V
- Low phase noise : Offset 1kHz -146dBc/Hz(typ.)
: Offset 100kHz -164dBc/Hz(typ.)
- Available frequency range: 2.0 to 54MHz
- Low profile : 0.8 mm
- 3-state function
- CMOS Level Output
- AEC-Q200 Compliant
(Option: Equivalent to AEC-Q100)

Applications

- Automotive multimedia device

[Function Code]

DSO221SHH

A : 3.3V
B : 2.8V
C : 2.5V
D : 1.8V

A : $\pm 100 \times 10^{-6}$
B : $\pm 50 \times 10^{-6}$
C : $\pm 30 \times 10^{-6}$



When requesting the product, please select the model and function code of your request.

Standard Specification

Reliability	Function Code		Output Frequency Range (MHz)	Legend	Spec.				Condition
	Supply Voltage	Frequency tolerance			min.	typ.	max.	Unit	
Supply Voltage	A	*	2.0≤f0≤54	Vcc	+3.0	+3.3	+3.6	V	
	B				+2.6	+2.8	+3.0		
	C				+2.25	+2.5	+2.75		
	D				+1.62	+1.8	+2.0		
Frequency Tolerance (Includes frequency tolerance at room temperature.)	*	A	*	f_tol	-100	—	+100	×10 ⁻⁶	-40 to +125℃
		B			-50	—	+50		-40 to +85℃
		C			-30	—	+30		-20 to +70℃
Current Consumption	A	*	2.0≤f0≤54	Icc	—	—	4.2	mA	No Load
	B				—	—	2.3		
	C				—	—	2.3		
	D				—	—	2.3		
Stand-by Current(#1 pin "L" Level)	*	*	*	I_std	—	—	10	μA	
Symmetry	*	*	*	SYM	40	50	60	%	50% Vcc Level
0 Level Output Voltage	*	*	*	V _{OL}	—	—	Vcc×0.1	V	
1 Level Output Voltage	*	*	*	V _{OH}	Vcc×0.9	—	—	V	
Rise and Fall Time	A, B, C	*	*	tr, tf	—	—	4	ns	10 to 90% Vcc Level
	D				—	—	6.5		
Load Condition	*	*	*	L _{CMOS}	—	—	15	pF	
OE Pin 0 Level Input Voltage	*	*	*	V _{IL}	—	—	Vcc×0.2	V	
OE Pin 1 Level Input Voltage	*	*	*	V _{IH}	Vcc×0.8	—	—	V	
Output Disable Time	*	*	*	tPLZ	—	—	100	ns	
Output Enable Time	*	*	*	tPZL	—	—	2	ms	
Phase Noise	*	*	*	—	—	-146	—	dBc/Hz	Offset 1kHz
					—	-164	—		Offset 100kHz
Period Jitter (1)	*	*	*	tRMS	—	2.4	—	ps	σ
				tp-p	—	23	—		Peak to peak
Total Jitter (1)	*	*	*	tTL	—	34	—	ps	tDJ+n×tRJ n=14.1(BER=1×10 ⁻¹²) (2)
Phase Jitter	*	*	40≤f0≤54 10≤f0<40	tpj	—	—	1	ps	f0 offset:12kHz to 20MHz f0 offset:12kHz to 5MHz
Reliability	AEC-Q100/AEC-Q200								
Packing Unit(3)	3000pcs./reel(φ180)								

(1) Measured WAVECREST DTS-2075

(2) tDJ:Deterministic jitter tRJ:Random jitter

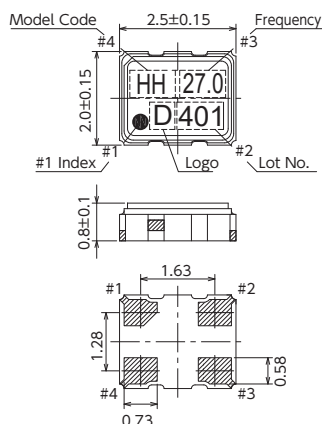
(3) Moisture prevention packing is unnecessary.

Moisture Sensitivity Level: LEVEL 1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

[mm]

Dimensions



Pin Connections

Pin No.	Connection
#1	OE(Output Enable)
#2	GND
#3	Output
#4	Vcc

Function

#1 Input	#3 Output condition
H	Oscillation out
Open	Oscillation out
L	High Z

Recommended Land Pattern

<Top View>

