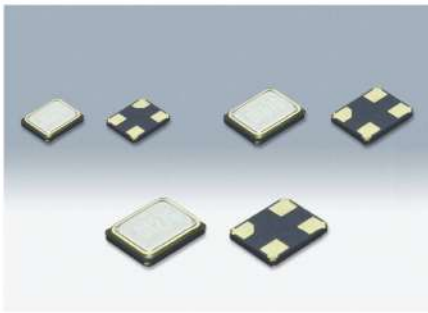


# SMD Crystal Resonators / MHz Band Crystal Resonators (For Automotive)

## DSX211SH/DSX221SH/DSX321SH



Actual size DSX211SH □ DSX221SH □  
DSX321SH □

### ■ Features

- Miniature and lightweight SMD crystal resonator  
DSX211SH : 2016 size 0.45mm height  
DSX221SH : 2520 size 0.45mm height  
DSX321SH : 3225 size 0.65mm height
- Excellent heat resistance, High precision and high reliability
- Offers a wide range of frequencies  
DSX211SH : 24MHz~50MHz  
DSX221SH : 16MHz~54MHz  
DSX321SH : 12MHz~50MHz
- Moisture prevention packing is unnecessary.  
Moisture Sensitivity Level: LEVEL1 (IPC/JEDEC J-STD-033)
- AEC-Q200 Compliant

### ■ Applications

- Telecommunication products, short-range wireless modules and other small devices such as DVC, DSC, PDA, PC.
- Automotive radio applications such as Bluetooth, wireless LAN, GPS/GNSS, multimedia devices and automotive camera



### ■ Standard Specification

| Item \ Type                                | DSX211SH                                         |           | DSX221SH          |           |           |           | DSX321SH  |           |          |
|--------------------------------------------|--------------------------------------------------|-----------|-------------------|-----------|-----------|-----------|-----------|-----------|----------|
| Frequency Range                            | 24~30MHz                                         | 30~50MHz  | 12~16MHz          | 16~24MHz  | 24~30MHz  | 30~54MHz  | 12~20MHz  | 20~28MHz  | 28~50MHz |
| Overtone Order                             | Fundamental                                      |           |                   |           |           |           |           |           |          |
| Load Capacitance                           | 8pF, 10pF, 12pF                                  |           |                   |           |           |           |           |           |          |
| Drive Level                                | 10μW (100μW max.)                                |           | 10μW (200μW max.) |           |           |           |           |           |          |
| Frequency Tolerance                        | ±30×10 <sup>-6</sup> (at 25℃)                    |           |                   |           |           |           |           |           |          |
| Series Resistance                          | 150Ω max.                                        | 100Ω max. | 250Ω max.         | 200Ω max. | 150Ω max. | 100Ω max. | 120Ω max. | 100Ω max. | 80Ω max. |
| Frequency Characteristics over Temperature | ±100×10 <sup>-6</sup> / -40~+125℃ (Ref. to 25℃ ) |           |                   |           |           |           |           |           |          |
| Storage Temperature Range                  | -40~+150℃                                        |           |                   |           |           |           |           |           |          |
| Reliability                                | AEC-Q200                                         |           |                   |           |           |           |           |           |          |
| Packing Unit                               | 3000pcs./reel(φ180)                              |           |                   |           |           |           |           |           |          |

Consult our sales representative for other specifications.

### ■ DSX211SH

[mm]

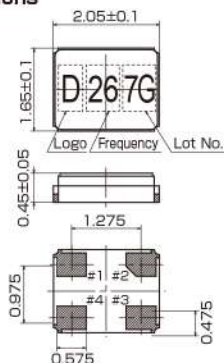
### ■ DSX221SH

[mm]

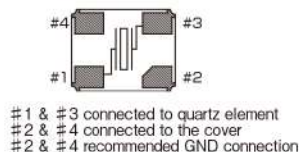
### ■ DSX321SH

[mm]

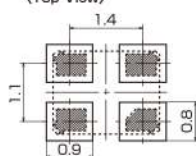
#### ■ Dimensions



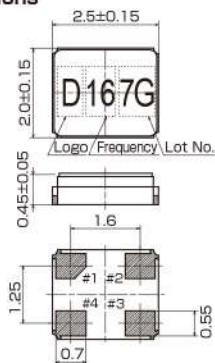
#### ■ Internal Connections (Top View)



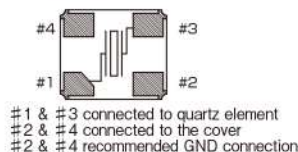
#### ■ Recommended Land Pattern (Top View)



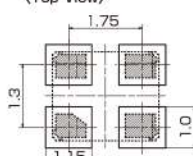
#### ■ Dimensions



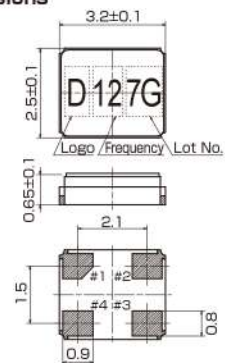
#### ■ Internal Connections (Top View)



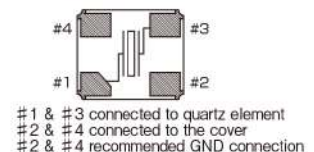
#### ■ Recommended Land Pattern (Top View)



#### ■ Dimensions



#### ■ Internal Connections (Top View)



#### ■ Recommended Land Pattern (Top View)

