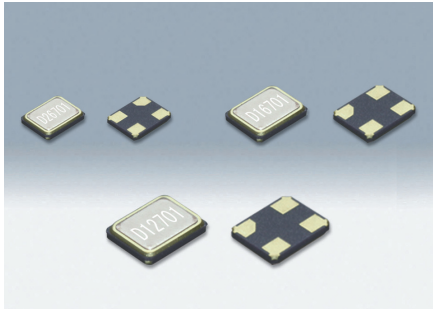


# SMD Crystal Resonators / MHz Band Crystal Resonators (For Automotive)

## 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 : 16MHz to 60MHz  
DSX221SH : 12MHz to 54MHz  
DSX321SH : 12MHz to 50MHz
- AEC-Q200 Compliant



### ■ Applications

- Automotive radio applications such as Bluetooth, wireless LAN, GPS/GNSS, multimedia devices and automotive camera

### ■ Standard Specification

| Item                                       | Type | DSX211SH   |             | DSX221SH    |                   |             | DSX321SH    |             |             |  |
|--|------|--|-------------|-------------|-------------------|-------------|-------------|-------------|-------------|--|
|  |      | 16 to 30MHz  | 30 to 60MHz | 12 to 24MHz | 24 to 30MHz       | 30 to 54MHz | 12 to 20MHz | 20 to 32MHz | 32 to 50MHz |  |
| Frequency Range                            |      | 16 to 30MHz  | 30 to 60MHz | 12 to 24MHz | 24 to 30MHz       | 30 to 54MHz | 12 to 20MHz | 20 to 32MHz | 32 to 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°C)                       |             |             |                   |             |             |             |             |  |
| Series Resistance                          |      | 100Ω max.  | 50Ω max.    | 120Ω max.   | 50Ω max.          | 40Ω max.    | 80Ω max.    | 50Ω max.    | 40Ω max.    |  |
| Frequency Characteristics over Temperature |      | ±100×10 <sup>-6</sup> / -40 to +125°C (Ref. to 25°C) |             |             |                   |             |             |             |             |  |
| Storage Temperature Range                  |      | -40 to +150°C  |             |             |                   |             |             |             |             |  |
| Reliability                                |      | AEC-Q200   |             |             |                   |             |             |             |             |  |
| Packing Unit (1)                           |      | 3000pcs./reel(φ180)                                  |             |             |                   |             |             |             |             |  |

(1) Moisture prevention packing is unnecessary.  
Moisture Sensitivity Level: LEVEL1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

### ■ DSX211SH

[mm]

### ■ DSX221SH

[mm]

### ■ DSX321SH

[mm]

| ■ Dimensions   | ■ Dimensions   | ■ Dimensions   |
|--|--|--|
|  |  |  |
| <b>■ Internal Connections (Top View)</b><br><p>#1 &amp; #3 connected to quartz element<br/>#2 &amp; #4 connected to the cover<br/>#2 &amp; #4 recommended GND connection</p> | <b>■ Internal Connections (Top View)</b><br><p>#1 &amp; #3 connected to quartz element<br/>#2 &amp; #4 connected to the cover<br/>#2 &amp; #4 recommended GND connection</p> | <b>■ Internal Connections (Top View)</b><br><p>#1 &amp; #3 connected to quartz element<br/>#2 &amp; #4 connected to the cover<br/>#2 &amp; #4 recommended GND connection</p> |
| <b>■ Recommended Land Pattern (Top View)</b><br>   | <b>■ Recommended Land Pattern (Top View)</b><br>   | <b>■ Recommended Land Pattern (Top View)</b><br>   |