

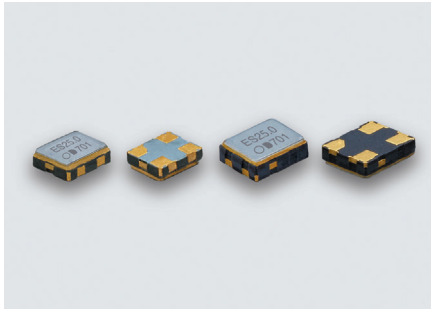


# Ark.h.2G

## SMD Crystal Oscillators (For Automotive)

Under Development

### DE2016AS/DE2520AS



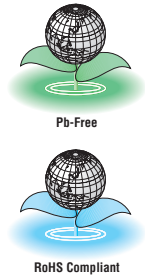
Actual size DE2016AS DE2520AS

#### Features

- Supply voltage: 1.8V/2.5V/3.3V
- Available frequency range: 3.75 to 125MHz
- Low profile: 0.7mm(DE2016AS), 0.8mm(DE2520AS)
- CMOS output
- Supports a wide operating temperature range with narrow tolerance from -40 to +125°C
- AEC-Q200 compliant (option: equivalent to AEC-Q100)

#### Applications

- Automotive communication



[Function Code]

DE\*\*\*\*AS

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

E :  $\pm 20 \times 10^{-6}$

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

#### Standard Specification

| Item                                                                     | Function Code        |                     | Output Frequency Range (MHz) | Legend            | Spec.                 |                          |                       |                    | Condition                                                      |
|--------------------------------------------------------------------------|----------------------|---------------------|------------------------------|-------------------|-----------------------|--------------------------|-----------------------|--------------------|----------------------------------------------------------------|
|                                                                          | Supply Voltage       | Frequency tolerance |                              |                   | min                   | typ.                     | max.                  | Unit               |                                                                |
| Supply Voltage                                                           | A                    | *                   | $3.75 \leq f_0 \leq 125$     | V <sub>cc</sub>   | +3.0                  | +3.3                     | +3.6                  | V                  |                                                                |
|                                                                          | C                    |                     |                              |                   | +2.25                 | +2.5                     | +2.75                 |                    |                                                                |
|                                                                          | D                    |                     |                              |                   | +1.71                 | +1.8                     | +1.89                 |                    |                                                                |
| Frequency Tolerance<br>(Includes frequency tolerance at room temperture) | *                    | E                   | *                            | f <sub>tol</sub>  | −20                   | <div>—<br/>—<br/>—</div> | +20                   | × 10 <sup>−6</sup> | <div>−40 to +125 °C<br/>−40 to +105 °C<br/>−40 to +85 °C</div> |
| Current Consumption                                                      | A                    | *                   | $3.75 \leq f_0 < 8$          | I <sub>cc</sub>   | —                     | —                        | 6.5                   | mA                 | No Load                                                        |
|                                                                          |                      |                     | $8 \leq f_0 < 30$            |                   | —                     | —                        | 7.5                   |                    |                                                                |
|                                                                          |                      |                     | $30 \leq f_0 < 60$           |                   |                       |                          | 9.5                   |                    |                                                                |
|                                                                          |                      |                     | $60 \leq f_0 \leq 125$       |                   | —                     | —                        | 11.5                  |                    |                                                                |
|                                                                          | C                    |                     | $3.75 \leq f_0 < 8$          |                   | —                     | —                        | 5.0                   |                    |                                                                |
|                                                                          |                      |                     | $8 \leq f_0 < 30$            |                   | —                     | —                        | 6.0                   |                    |                                                                |
|                                                                          |                      |                     | $30 \leq f_0 < 60$           |                   |                       |                          | 7.0                   |                    |                                                                |
|                                                                          |                      |                     | $60 \leq f_0 \leq 125$       |                   | —                     | —                        | 9.0                   |                    |                                                                |
|                                                                          | D                    |                     | $3.75 \leq f_0 < 8$          |                   | —                     | —                        | 4.5                   |                    |                                                                |
|                                                                          |                      |                     | $8 \leq f_0 < 30$            |                   | —                     | —                        | 5.0                   |                    |                                                                |
|                                                                          |                      |                     | $30 \leq f_0 < 60$           |                   |                       |                          | 5.5                   |                    |                                                                |
|                                                                          |                      |                     | $60 \leq f_0 \leq 125$       |                   | —                     | —                        | 7.0                   |                    |                                                                |
| Stand-by Current (#1 pin"L"Level)                                        | *                    | *                   | $3.75 \leq f_0 \leq 125$     | I <sub>std</sub>  | —                     | —                        | 20.0                  | μA                 |                                                                |
| Load Condition                                                           | *                    | *                   | *                            | L <sub>CMOS</sub> | —                     | —                        | 15                    | pF                 |                                                                |
| Symmetry                                                                 | *                    | *                   | $3.75 \leq f_0 \leq 125$     | SYM               | 45                    | 50                       | 55                    | %                  | at 50% V <sub>cc</sub>                                         |
| 0 Level Output Voltage                                                   | *                    | *                   | *                            | V <sub>OL</sub>   | —                     | —                        | 0.4                   | V                  |                                                                |
| 1 Level Output Voltage                                                   | *                    | *                   | *                            | V <sub>OH</sub>   | V <sub>cc</sub> − 0.4 | —                        | —                     |                    |                                                                |
| Rise and Fall Time                                                       | A、C、D                | *                   | *                            | tr、tf             | —                     | —                        | 4                     | ns                 | 10 to 90% V <sub>cc</sub> Level                                |
| OE Pin 0 Level Input Voltage                                             | *                    | *                   | *                            | V <sub>IL</sub>   | —                     | —                        | V <sub>cc</sub> × 0.3 | V                  |                                                                |
| OE Pin 1 Level Input Voltage                                             | *                    | *                   | *                            | V <sub>IH</sub>   | V <sub>cc</sub> × 0.7 | —                        | —                     |                    |                                                                |
| Output Disable Time                                                      | *                    | *                   | *                            | tPLZ              | —                     | —                        | 200                   | ns                 |                                                                |
| Output Enable Time                                                       | *                    | *                   | *                            | tPZL              | —                     | —                        | 2                     | ms                 |                                                                |
| Reliability                                                              | AEC-Q100/AEC-Q200    |                     |                              |                   |                       |                          |                       |                    |                                                                |
| Packing unit(1)                                                          | 3000pcs./reel(Φ 180) |                     |                              |                   |                       |                          |                       |                    |                                                                |

(1) Moisture prevention packing is unnecessary.

Moisture Sensitivity Level : Level1 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications

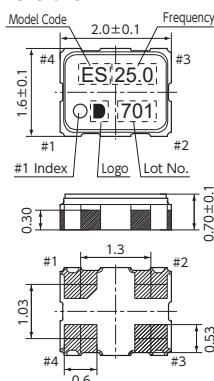
#### DE2016AS

[mm]

#### DE2520AS

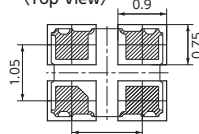
[mm]

##### Dimensions

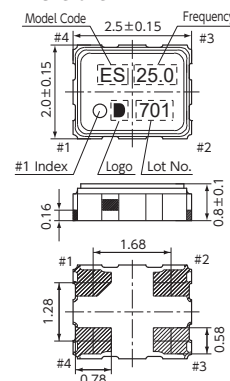


| Pin Connections |                     |
|-----------------|---------------------|
| Pin No.         | Connection          |
| #1              | OE(Output Enable)   |
| #2              | GND                 |
| #3              | Output              |
| #4              | V <sub>cc</sub>     |
| Function        |                     |
| #1 Input        | #3 Output condition |
| H               | Oscillation out     |
| L               | High Z              |

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



##### Dimensions



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