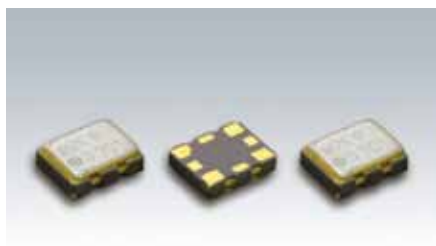


# SMD VC-TCXO/TCXO Module

DSA222MAA, DSB222MAA/DSA222MAB, DSB222MAB for Mobile communications



Actual size

## ■ Features

- 2520 size, 0.7mm height. Ultra miniature and lightweight SMD (VC-) TCXO Module (0.0045cc•0.02g)
- 2 output are available :  
Output1 is Clipped Sine wave with ENABLE/DISABLE or CMOS level.  
CMOS level output is related by independent supply.  
Output 2 is a Clipped Sine wave output.
- Temperature sensor output

## ■ Applications

- Mobile phones



## ■ Standard Specification

| Item                             | Type | DSA222MAA  | DSB222MAA | DSA222MAB  | DSB222MAB |
|----------------------------------|------|--|-----------|--|-----------|
| Output Frequency Range           |      | 13 to 52MHz  |           | 13 to 40MHz  |           |
| Supply Voltage Range (Vcc1)      |      | 13MHz/ 19.2MHz/ 26MHz/ 38.4MHz   |           |  |           |
| Supply Voltage (Vcc1)            |      | +2.3 to +3.63V   |           |  |           |
| Supply Voltage for buffer (Vcc2) |      | +2.6V/ +2.8V/ +3.0V/ +3.3V   |           |  |           |
| Current Consumption              |      | —  |           | +1.6 to +3.63VDC   |           |
| Current Consumption              |      |  |           |  |           |
| Icc1 (Output1 :'ENABLE')         |      | 2.0mA max. (f≤26MHz) /3.0mA max. (26MHz<f≤52MHz)                       |           | 1.5mA max. (f≤26MHz) /2.0mA max. (26MHz<f≤40MHz)           |           |
| Icc1 (Output1 :'DISABLE')        |      | 1.5mA max. (f≤26MHz) /2.5mA max. (26MHz<f≤52MHz)                       |           | 1.5mA max. (f≤26MHz) /2.0mA max. (26MHz<f≤40MHz)           |           |
| Icc2                             |      | —  |           | 2.5mA max. (f≤26MHz) /3.5mA max. (26MHz<f≤40MHz)           |           |
| Output Level                     |      |  |           |  |           |
| Output1                          |      | Clipped Sinewave/ DC-coupled<br>0.8Vp-p min.<br>ENABLE/DISABLE CONTROL |           | CMOS<br>'0'Level Vcc2×0.2V max.<br>'1'Level Vcc2×0.8V min. |           |
| Output2                          |      | Clipped Sinewave/ DC-coupled<br>0.8Vp-p min.                           |           | Clipped Sinewave/ DC-coupled<br>0.8Vp-p min.               |           |
| Output Load                      |      | 10kΩ//10pF (Clipped Sinewave) ,15pF (CMOS)                             |           |  |           |
| Frequency Stability              |      |  |           |  |           |
| Tolerance                        |      | ±1.5×10 <sup>-6</sup> max. (After 2 reflows)                           |           |  |           |
| vs. Temperature                  |      | ±2.0×10 <sup>-6</sup> max./ -30 to +85°C                               |           |  |           |
| vs. Supply Voltage               |      | ±0.2×10 <sup>-6</sup> max. (Vcc1±5%)                                   |           |  |           |
| vs. Load Variation               |      | ±0.2×10 <sup>-6</sup> max. (10kΩ//10pF±10%)                            |           |  |           |
| vs. Aging                        |      | ±1.0×10 <sup>-6</sup> max./year  |           |  |           |
| Frequency Control                |      |  |           |  |           |
| Control Sensitivity              |      | ± 9 to ±15×10 <sup>-6</sup><br>(Vcont= +1.5±1V)                        | —         | ± 9 to ±15×10 <sup>-6</sup><br>(Vcont= +1.5±1V)            | —         |
| Response Slope                   |      | Positive   | —         | Positive   | —         |
| Start up Time                    |      | 2.0ms max.   |           |  |           |
| Phase Noise                      |      |  |           |  |           |
| Offset 100Hz                     |      | [13MHz≤f≤26MHz]  |           | [26MHz<f≤52MHz]  |           |
| Offset 1kHz                      |      | -110dBc/Hz   |           | -105dBc/Hz   |           |
| Offset 10kHz                     |      | -130dBc/Hz   |           | -125dBc/Hz   |           |
| Offset 100kHz                    |      | -140dBc/Hz   |           | -135dBc/Hz   |           |
| Offset 100kHz                    |      | -145dBc/Hz   |           | -145dBc/Hz   |           |
| Temp. Sensor Output              |      | +1.474V typ. (Ta=+30°C) -8.20mV/°C typ.                                |           |  |           |
| Packing Unit (1)                 |      | 3000pcs./reel (φ180)   |           |  |           |

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

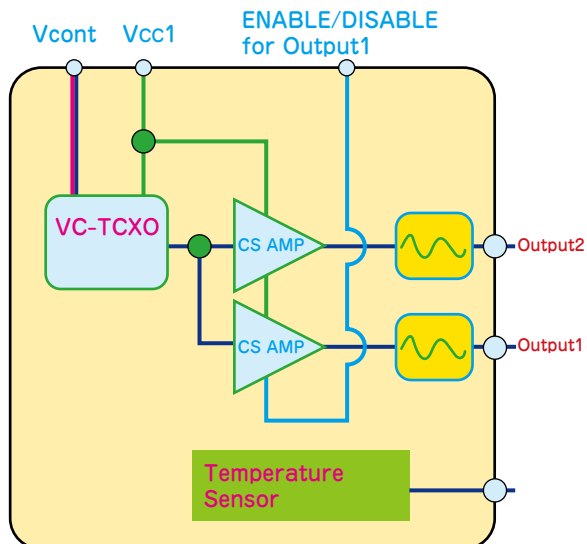
Consult our sales representative for other specifications.

# SMD VC-TCXO/TCXO Module

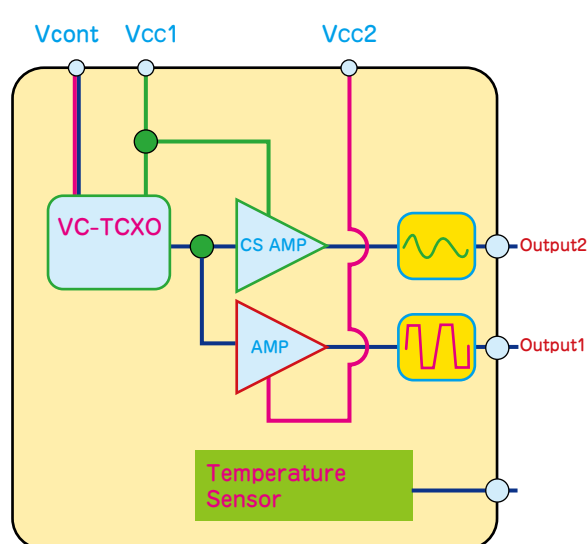
DSA222MAA, DSB222MAA/DSA222MAB, DSB222MAB for Mobile communications

## Block Diagram

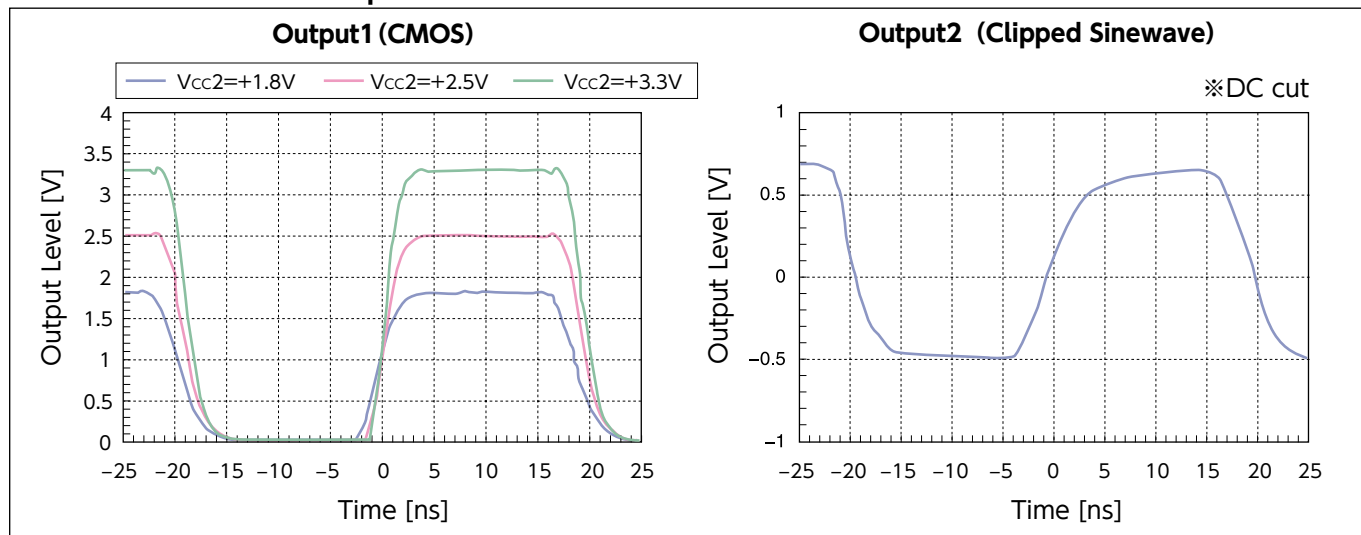
DSA222MAA



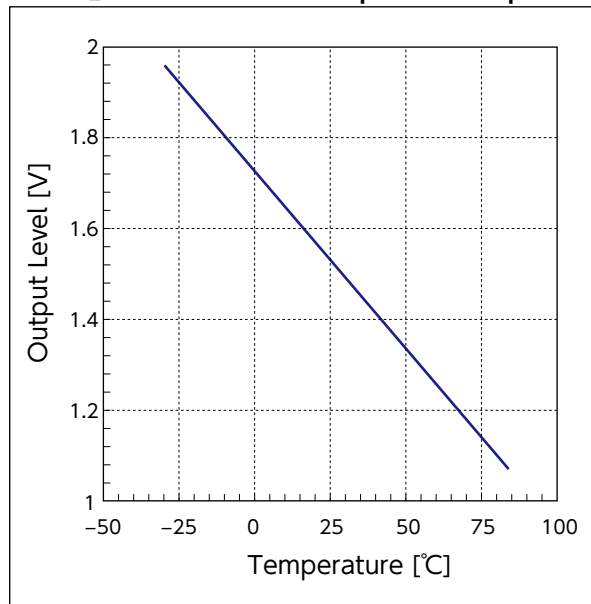
DSA222MAB



## DSA222MAB 26MHz Output Waveform



## DSA\_DSB222MAA/MAB Temp. Sensor Output



## Dimensions

[mm]

