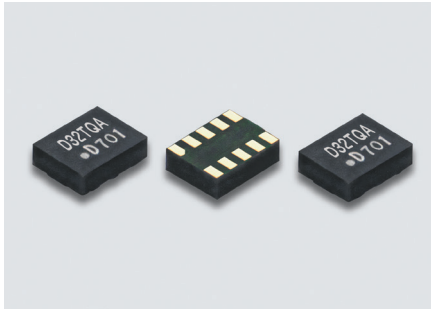


# SMD Real Time Clock Module

Under Development

## DD3225TQA



Actual size

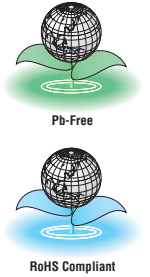
### Features

- Digital temperature compensated type
- Low current consumption
- High precision:  $\pm 5.0 \times 10^{-6}$  ( $-40$  to  $+85^{\circ}\text{C}$ ),  $\pm 8.0 \times 10^{-6}$  ( $+85$  to  $+105^{\circ}\text{C}$ )
- I<sup>2</sup>C-BUS serial interface: 400kHz fast-mode compatible
- Clock function: hour, minute, second
- Calendar function with auto leap year adjustment: year, month, day, day of week
- Alarm interrupt function: day, day of week, hour, minute
- Fixed-cycle timer interrupt function: 244.14 $\mu\text{s}$  to approximately 32 years
- Time update interrupt function: minute, second
- Clock output function: 32.768kHz, 1024Hz, 1Hz (select one)
- SOUT function: internal status output possible
- Timestamp function: single-event recording with precision from year to second
- CMOS level output
- AEC-Q200 compliant (Option: Equivalent to AEC-Q100)

\* "I<sup>2</sup>C-BUS" is a trademark of NXP semiconductors.

### Applications

- High precision clock source
- Car navigation, smart meter, data logger



### Standard Specification

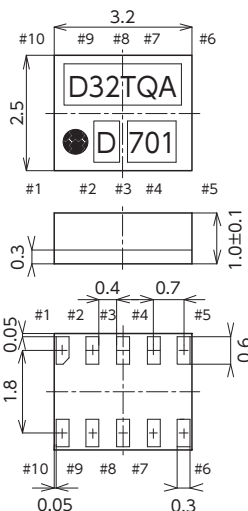
| Item                                                                      | Legend             | Spec.                |        |                      |                  | Condition                                                                                                                                            |
|---------------------------------------------------------------------------|--------------------|----------------------|--------|----------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                           |                    | min.                 | typ.   | max.                 | Unit             |                                                                                                                                                      |
| Output Frequency                                                          | f <sub>o</sub>     | —                    | 32.768 | —                    | kHz              |                                                                                                                                                      |
| Supply Voltage                                                            | V <sub>cc</sub>    | +1.6                 | —      | +5.5                 | V                | (Clock Timing Operating)                                                                                                                             |
| Frequency Tolerance<br>(Includes frequency tolerance at room temperature) | f <sub>tol</sub>   | −5                   | —      | +5                   | $\times 10^{-6}$ | −40 to +85°C                                                                                                                                         |
|                                                                           |                    | −8                   | —      | +8                   | $\times 10^{-6}$ | +85 to +105°C                                                                                                                                        |
| Current Consumption                                                       | I <sub>cc</sub>    | —                    | 1.00   | 15                   | $\mu\text{A}$    | V <sub>cc</sub> =+3.0V<br>OE="H"<br>f <sub>SCL</sub> =0Hz, INTN=V <sub>cc</sub> , Output:32.768kHz<br>CL=0pF<br>Temperature Compensation Interval 2s |
|                                                                           |                    | —                    | 2.00   | 18                   |                  | V <sub>cc</sub> =+5.0V                                                                                                                               |
| Stand-by Current<br>(#1 pin "L" Level)                                    | I <sub>std</sub>   | —                    | 0.52   | 12                   | $\mu\text{A}$    | V <sub>cc</sub> =+3.0V<br>OE="L"<br>f <sub>SCL</sub> =0Hz, INTN=V <sub>cc</sub> , Output off<br>Temperature Compensation Interval 2s                 |
|                                                                           |                    | —                    | 0.56   | 15                   |                  | V <sub>cc</sub> =+5.0V                                                                                                                               |
| Load Condition                                                            | L <sub>CMOS</sub>  | —                    | —      | 15                   | pF               |                                                                                                                                                      |
| Symmetry                                                                  | SYM                | 40                   | —      | 60                   | %                | 50%V <sub>cc</sub>                                                                                                                                   |
| 0 Level Output Voltage                                                    | V <sub>OH</sub>    | 2.9                  | —      | 3.0                  | V                | V <sub>cc</sub> =3.0V, I <sub>OH</sub> =−100 $\mu\text{A}$                                                                                           |
| 1 Level Output Voltage                                                    | V <sub>OL</sub>    | Gnd                  | —      | Gnd+0.1              | V                | V <sub>cc</sub> =3.0V, I <sub>OL</sub> =+100 $\mu\text{A}$                                                                                           |
| Rise and Fall Time                                                        | tr/tf              | —                    | —      | 100                  | ns               | 20 to 80% V <sub>cc</sub> Level                                                                                                                      |
| OE Pin 0 Level Input Voltage                                              | V <sub>IH</sub>    | 0.95×V <sub>cc</sub> | —      | V <sub>cc</sub>      | V                |                                                                                                                                                      |
| OE Pin 1 Level Input Voltage                                              | V <sub>IL</sub>    | Gnd−0.3              | —      | 0.05×V <sub>cc</sub> | V                |                                                                                                                                                      |
| Start Up Time                                                             | T <sub>start</sub> | —                    | —      | 1                    | s                | V <sub>cc</sub> =+3V, Ta=+25°C                                                                                                                       |
| Packing Unit (1)                                                          |                    | 2000pcs./reel (φ180) |        |                      |                  |                                                                                                                                                      |

(1) Moisture prevention packing  
Moisture sensitivity level : Level 2 (IPC/JEDEC J-STD-033)

Consult our sales representative for other specifications.

[mm]

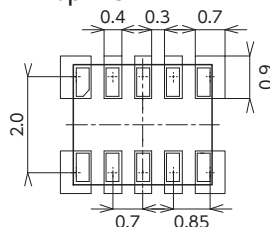
### Dimensions



| Function      |                                                     |
|---------------|-----------------------------------------------------|
| #1 Input      | #4 Output Condition                                 |
| H             | Oscillation out                                     |
| L             | High Z                                              |
| Marking       |                                                     |
| (1) Type      | DD32TQA                                             |
| (2) Logo      | D                                                   |
| (3) Date code | Year(1digit) + Week(2digits)<br>e.g. 2026/1/1 → 601 |

### Recommended Land Pattern

<Top View>



### Pin Function

| No. | Name            | I/O | Function                                                           |
|-----|-----------------|-----|--------------------------------------------------------------------|
| #1  | OE              | I   | Output control enable input (L:High impedance,H:Clock output)      |
| #2  | V <sub>cc</sub> | -   | Supply voltage                                                     |
| #3  | EVENT           | I   | Trigger input for Time stamp request                               |
| #4  | Output          | O   | Clock output connection                                            |
| #5  | SCL             | I   | I <sup>2</sup> C-BUS serial interface clock input connection       |
| #6  | SOUT            | O   | CMOS output for forinternal status output                          |
| #7  | SDA             | I/O | I <sup>2</sup> C-BUS serial interface data input/output connection |
| #8  | N.C.            | -   |                                                                    |
| #9  | Gnd             | -   | Ground connection                                                  |
| #10 | INTN            | O   | Interrupt signal output, open-drain output                         |