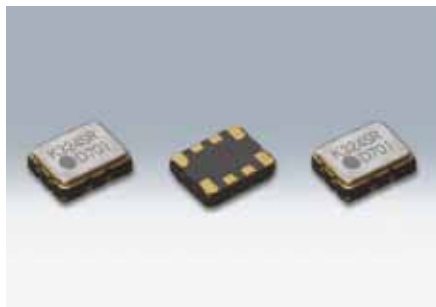


# SMD Real Time Clock Module (For Automotive)

## DSK324SR



Actual size

### Features

- Digital temperature compensated type
- High precision:  $\pm 5.0 \times 10^{-6}$  (-40 to +85°C)  
 $\pm 3.8 \times 10^{-6}$  (-10 to +60°C)
- Low current consumption
- Low voltage operation:  
+2.0 to +5.5V (Temperature Compensated Operating)  
+1.3 to +5.5V (Clock Timing Operating)
- 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: 244μs to 255min
- Time update interrupt function: minute-second
- Clock output function: 32.768kHz, 1024Hz, 32Hz, 1Hz
- Supply voltage detection function:  
+2.0V temperature compensation operating voltage detection.  
+1.5V supply voltage undervoltage detection
- AEC-Q100/AEC-Q200 Compliant



### Applications

- High precision clock source

"I<sup>2</sup>C-BUS" is a registered trademark of NXP Semiconductor

### Standard Specification

Item	Legend	Spec.			Unit	Condition
		min.	typ.	max.		
Output Frequency	f <sub>o</sub>	-	32.768	-	kHz	
Supply Voltage Range	V <sub>cc</sub>	+1.3	-	+5.5	V	(Clock Timing Operating)
	V <sub>tem</sub>	+2.0	-	+5.5		(Temperature Compensated Operating)
	V <sub>int</sub>	+1.5	-	+5.5		(Interface Operation) I <sup>2</sup> C-BUS
Frequency Tolerance	f <sub>tol</sub>	-5.0	-	+5.0	× 10 <sup>-6</sup>	-40 to +85°C
		-3.8	-	+3.8		-10 to +60°C
Current Consumption	l <sub>cc1</sub>	-	+0.6	+2.0	μA	V <sub>cc</sub> = +3.0V, Temperature Compensation Interval: 30s, SCL = SDA = INTN = V <sub>cc</sub> , CLKOE = GND (Output Off)
	l <sub>cc2</sub>	-	+1.5	+4.0	μA	V <sub>cc</sub> = +3.0V, Temperature Compensation Interval: 30, No Load, SCL = SDA = INTN = CLKOE = V <sub>cc</sub> (Output On)
Load Condition	L <sub>CMOS</sub>	-	-	15	pF	
Start Up Time	T <sub>start</sub>	-	-	1.0	s	T <sub>a</sub> = +25°C, V <sub>cc</sub> = +1.3V
		-	-	3.0		T <sub>a</sub> = -40 to +85°C, V <sub>cc</sub> = +1.3 to +5.5V
Power Supply Detection Voltage	V <sub>DET1</sub> (1)	+1.8	+1.9	+2.0	V	Temperature Compensated Operation Detection Voltage
	V <sub>DET2</sub> (2)	+1.3	+1.4	+1.5		Power Supply Undervoltage Detection
Reliability						AEC-Q100/AEC-Q200
Packing Unit (3)						2000pcs./reel (φ 180)

- (1) When V<sub>cc</sub> falls below V<sub>DET1</sub>, the internal detection circuit operates, and the intermittent temperature compensating stops. At the same time, the current temperature compensating data value is retained. When V<sub>cc</sub> rises above V<sub>DET1</sub> again, the intermittent temperature compensating is enabled.
- (2) The Detection circuit operates at the temperature compensation interval.
- (3) Moisture prevention packing is unnecessary.  
Moisture Sensitivity Level: LEVEL 1 (IPC/JEDEC J-STD-033)

### Description

Pin No.	Name	I/O	Function
#1	OE	I	Output control enable input (L: High impedance, H: Clock output)
#2	INTN	O	1Hz signal, alarm interrupt signal, fixed-cycle timer interrupt signal, and time update interrupt signal, Nch open-drain output.
#3	N.C.	-	None connection
#4	GND	-	Ground connection.
#5	Output	O	Clock output connection.
#6	SCL	I	I <sup>2</sup> C-BUS serial interface clock input connection.
#7	SDA	I/O	I <sup>2</sup> C-BUS serial interface data input/output connection.
#8	V <sub>cc</sub>	-	Supply Voltage

Consult our sales representative for other specifications.

[mm]

#### Dimensions

#### Pin Connections

Pin No.	Connection
#1	OE(Output Enable)
#2	INTN
#3	N.C.
#4	GND
#5	Output
#6	SCL
#7	SDA
#8	V <sub>cc</sub>

#### Function

#1 Input	#5 Output condition
H	Oscillation out
L	High Z

#### Recommended Land Pattern <Top View>