

阅读申明

- 1.本站收集的数据手册和产品资料都来自互联网，版权归原作者所有。如读者和版权方有任何异议请及时告之，我们将妥善解决。
- 2.本站提供的中文数据手册是英文数据手册的中文翻译，其目的是协助用户阅读，该译文无法自动跟随原稿更新，同时也可能存在翻译上的不当。建议读者以英文原稿为参考以便获得更精准的信息。
- 3.本站提供的产品资料，来自厂商的技术支持或者使用者的心得体会等，其内容可能存在描述上的差异，建议读者做出适当判断。
- 4.如需与我们联系，请发邮件到marketing@iczoom.com，主题请标有“数据手册”字样。

Read Statement

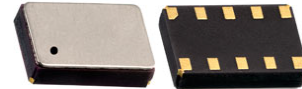
1. The datasheets and other product information on the site are all from network reference or other public materials, and the copyright belongs to the original author and original published source. If readers and copyright owners have any objections, please contact us and we will deal with it in a timely manner.
2. The Chinese datasheets provided on the website is a Chinese translation of the English datasheets. Its purpose is for reader's learning exchange only and do not involve commercial purposes. The translation cannot be automatically updated with the original manuscript, and there may also be improper translations. Readers are advised to use the English manuscript as a reference for more accurate information.
3. All product information provided on the website refer to solutions from manufacturers' technical support or users the contents may have differences in description, and readers are advised to take the original article as the standard.
4. If you have any questions, please contact us at marketing@iczoom.com and mark the subject with "Datasheets" .

Real Time Clock Module with I²C Bus

AB-RTCMC-32.768kHz-B5GA-S3



RoHS/RoHS II compliant



3.7 x 2.5 x 0.9 mm

Moisture Sensitivity Level: MSL=1

FEATURES:

- With state-of-the-art RTC Technology by Micro Crystal AG
- RTC module with built-in crystal oscillating at 32.768 kHz
- 400kHz two-wire I2C interface
- Wide Interface operating voltage: 1.8 – 5.5 V
- Wide clock operating voltage: 1.2 – 5.5 V
- Low power consumption: 250 nA typ @ 3.0V / 25°C
- Provides year, month, day, weekday, hours, minutes, seconds
- Alarm and Timer functions
- Century flag
- Low voltage detector, internal power on reset
- Programmable clock output for peripheral devices (32.768 kHz, 1024 Hz, 32 Hz, 1 Hz)
- I2C slave address: read A3h, write A2h
- Small and compact package size: 3.7 x 2.5 x 0.9 mm. RoHS-compliant and 100% leadfree

APPLICATIONS:

- Wide range in communication & measuring equipment
- Commercial & Industrial applications
- Automotive electronics applications
- Wireless communications
- PDA and Palm Pilots
- Credit Cards with Security Technology

STANDARD SPECIFICATIONS:

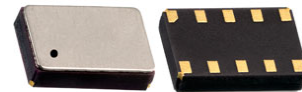
Absolute Maximum Ratings

Parameters	Min.	Typ.	Max.	Units	Notes
Supply Voltage (V_{DD})	-0.5		+6.5	V	>GND / < V_{DD}
Supply Current (I_{DD} ; I_{SS})	-50		+50	mA	V_{DD} Pin
Input Voltage (V_I)	$V_{SS}-0.5$		$V_{DD}+0.5$	V	Input Pin
Output Voltage (V_O)	$V_{SS}-0.5$		$V_{DD}+0.5$	V	\overline{INT} Pin
DC Input Current (I_I)	-10		+10	mA	
DC Output Current (I_O)	-10		+10	mA	
Operating Temperature Range (T_{OPR})	-40		+85	°C	
Storage Temperature (T_{STO})	-55		+125	°C	Stored as bare product

Frequency Characteristics

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency Accuracy ($\Delta F/F$)		±10	±20	ppm	$T_{AMB}=+25^{\circ}C$; $V_{DD}=3.0V$
Frequency vs Voltage ($\Delta F/V$)		±0.8	±1.5	ppm/V	$T_{AMB}=+25^{\circ}C$; $V_{DD}=1.8\sim 5.5V$
Frequency vs Temperature ($\Delta F/T_{OPR}$)	-0.035ppm/°C ² ($T_{OPR}-T_O$) ² ±10%			ppm	$T_{REF}=+25^{\circ}C$; $V_{DD}=3.0V$
Turnover Temperature (T_O)	+20	+25	+30	°C	
Aging (first year)	-3		+3	ppm	$T_{AMB}=+25^{\circ}C$
Start-up Time (T_{START})		350	500	ms	$T_{AMB}=+25^{\circ}C$
CLKOUT duty cycle	40	50	60	%	$T_{AMB}=+25^{\circ}C$





Static Characteristics

Parameters		Min.	Typ.	Max.	Units	Notes
Supplies						
Supply Voltage (V _{DD})		1.2		5.5	V	I ² C bus inactive T _{AMB} =+25°C
		1.8		5.5		I ² C bus active f _{SCL} = 400kHz
		V _{LOW}		5.5		For clock data integrity T _{AMB} =+25°C
Current Consumption (I _{DD0})	f _{SCL} = 400kHz			800	μA	I ² C bus active
	f _{SCL} = 100kHz			200		
Current Consumption (I _{DD}) ^{1) 2) 3)}	V _{DD} = 5.0V		275	550	nA	I ² C bus inactive(f _{SCL} =0Hz) CLKOUT disabled T _{AMB} =+25°C
	V _{DD} = 3.0V		250	500		
	V _{DD} = 2.0V		225	450		
Current Consumption (I _{DD}) ^{1) 2) 3)}	V _{DD} = 5.0V		500	750	nA	I ² C bus inactive(f _{SCL} =0Hz) CLKOUT disabled T _{AMB} =-40 ~ +85°C
	V _{DD} = 3.0V		400	650		
	V _{DD} = 2.0V		400	600		
Current Consumption (I _{DD32k}) ³⁾	V _{DD} = 5.0V		2.5	3.4	μA	I ² C bus inactive(f _{SCL} =0Hz) CLKOUT enabled (32.768kHz) Load=7.5pF / T _{AMB} = +25°C
	V _{DD} = 3.0V		1.5	2.2		
	V _{DD} = 2.0V		1.1	1.6		
Input						
LOW Level Input Voltage (V _{IL})		V _{SS} -0.5		30%* V _{DD}	V	
HIGH Level Input Voltage (V _{IH})		70%* V _{DD}		V _{DD} +0.5	V	
Input Leakage Current (I _L)		-1		+1	μA	V _I =V _{DD} or V _{SS}
Input Capacitance (C _I) ⁴⁾				7	pF	
Output						
HIGH Level Output Current (I _{OH})	Pin: CLKOUT			1	mA	V _{OH} = 4.6V; V _{DD} = 5.0V
LOW Level Output Current (I _{OL})	Pin: SDA			-3	mA	V _{OL} = 0.4V; V _{DD} = 5.0V
	Pin: $\overline{\text{INT}}$			-1		
	Pin: CLKOUT			-1		
Output Leakage Current (I _{LO})		-1	0	+1	μA	V _O = V _{DD} or V _{SS}
Voltage Detector						
Low Voltage (V _{LOW})			0.9	1.0	V	T _{AMB} =+25°C

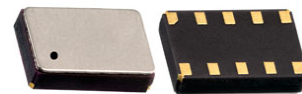
1) Timer source clock = 1/60 Hz.

2) CLKOUT disabled (FE = 0 or CLKOE = 0).

3) V_{IL} and V_{IH} with an input voltage swing of V_{SS} to V_{DD}.

4) Tested on sample basis.



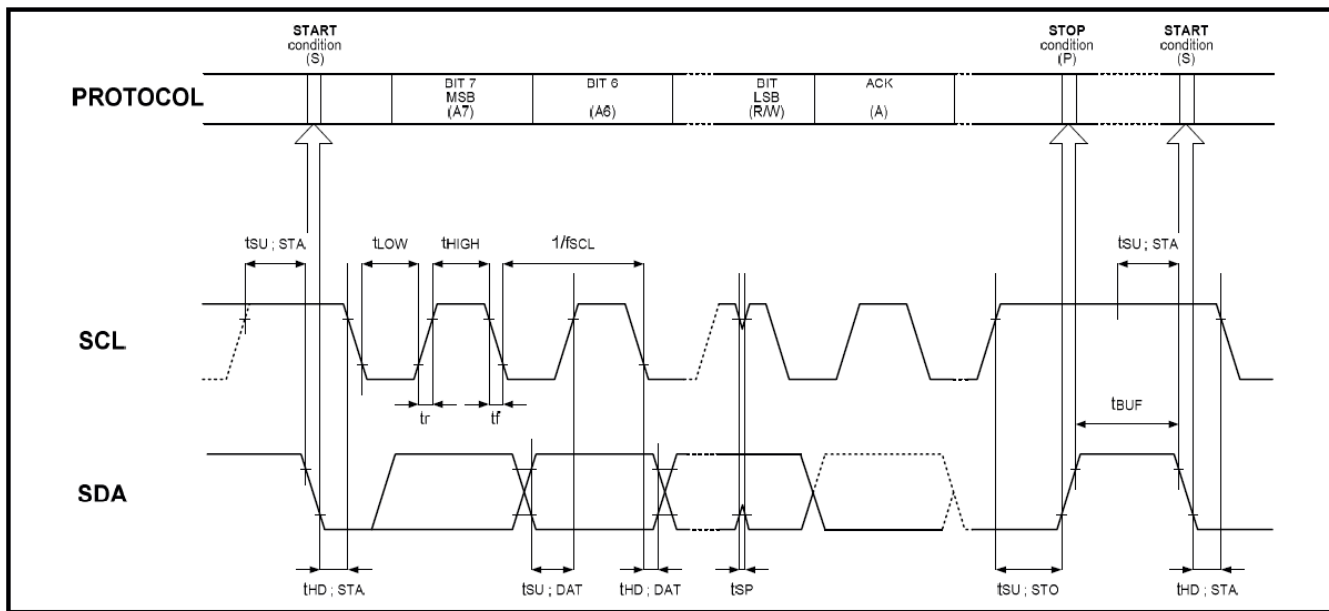


I²C Interface Dynamic Characteristics

All timing values are valid within the operating supply voltage range and references to V_{IL} and V_{IH} with an input voltage swing from V_{SS} and V_{DD} .

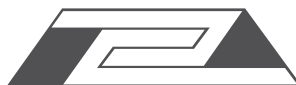
Parameters	Min.	Typ.	Max.	Units
SCL clock frequency (f_{SCL})			400	kHz
Hold time (repeated) START condition ($t_{HD,STA}$)	0.6			μ s
Startup time for repeated START condition ($t_{SU,STA}$)	0.6			μ s
LOW period of SCL clock (t_{LOW})	1.3			μ s
HIGH period of SCL clock (t_{HIGH})	0.6			μ s
Bus free time between STOP and START condition (t_{BUF})	1.3			μ s
Rise time of both SDA and SCL signals (t_r)			0.3	μ s
Fall time of both SDA and SCL signals (t_f)			0.3	μ s
Capacitive load for each bus line (C_b)			400	pF
Data setup time ($t_{SU,DAT}$)	100			ns
Data hold time ($t_{HD,DAT}$)	0			ns
Setup time for STOP condition ($t_{SU,STO}$)	0.6			μ s
Spike pulse width ($t_{w(spike)}$)			50	ns

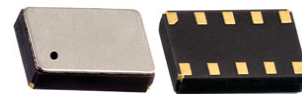
I²C Interface Timing Characteristics



Note:

The I²C BUS access time between a START and a START condition or between a START and a STOP condition to this device must be less than one second.





3.7 x 2.5 x 0.9 mm

AB-RTCMC-32.768kHz-B5GA-S3



RoHS/RoHS II compliant

PART IDENTIFICATIONS:

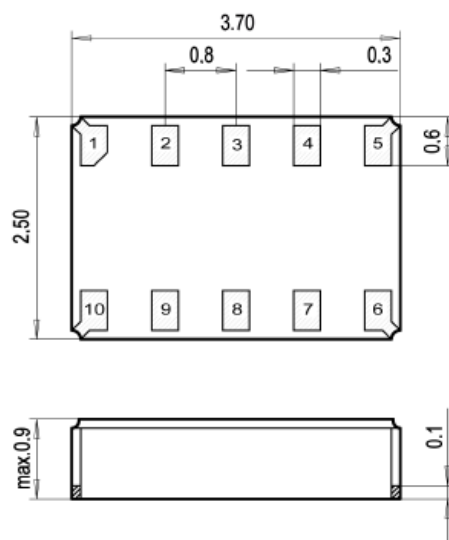
AB-RTCMC-32.768 kHz-B5GA-S3-

Packaging

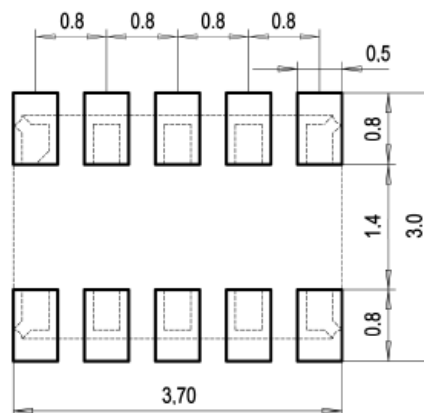
Blank: Bulk

T: 1000pcs/reel

OUTLINE DIMENSIONS:



Recommended Land Pattern



Dimensions: mm

PIN DESCRIPTIONS:

Pin No.	Pin Name	Function
1	CLKOE	CLKOUT enable/disable pin; enable is active HIGH; tie to GND when not using CLKOUT
2	V _{DD}	Positive supply voltage
3	CLKOUT	Clock Output pin; push-pull
4	SCL	Serial Clock Input pin; requires pull-up resistor
5	SDA	Serial Data Input-Output pin; open-drain; requires pull-up resistor
6	$\overline{\text{INT}}$	Interrupt Output pin; open-drain; active LOW
7	V _{SS}	Ground
8	N.C.	Not Connected
9	N.C.	Not Connected
10	N.C.	Not Connected

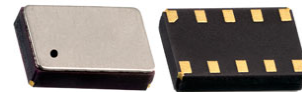


Real Time Clock Module with I²C Bus

AB-RTCMC-32.768kHz-B5GA-S3

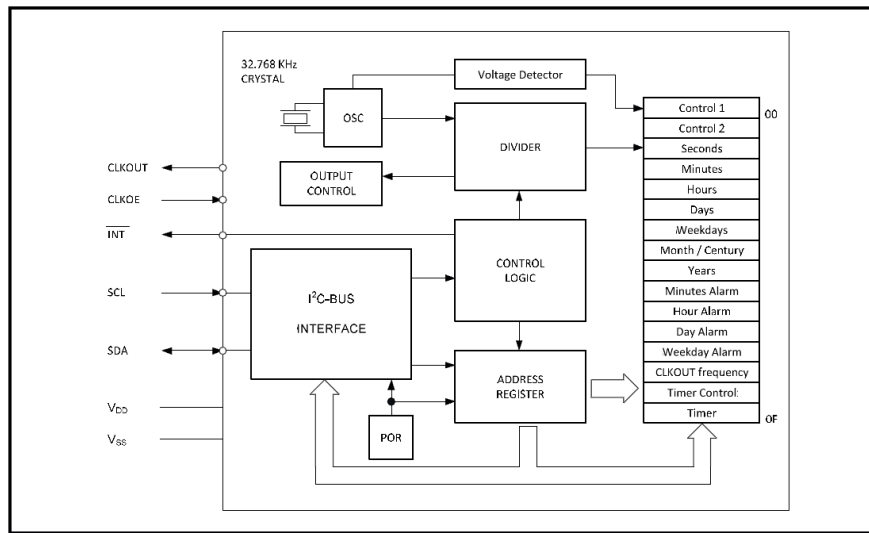


RoHS/RoHS II compliant



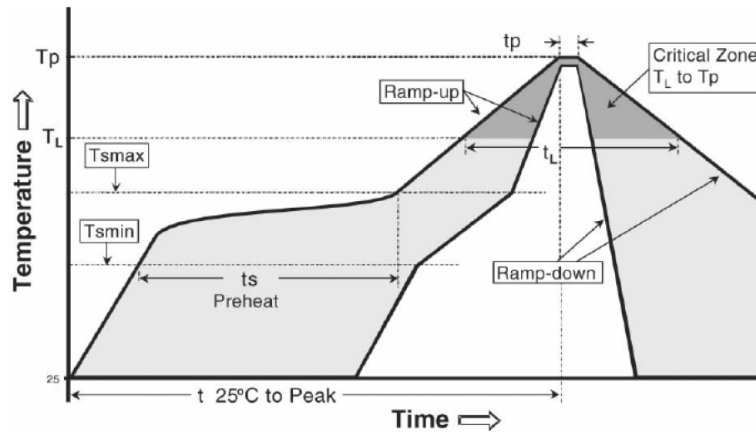
3.7 x 2.5 x 0.9 mm

BLOCK DIAGRAM:



RECOMMENDED REFLOW PROFILE:

Maximum Reflow Conditions in accordance with IPC/JEDEC J-STD-020C “Pb-free”



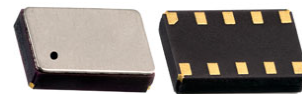
Temperature	Conditions	Units
Average Ramp-up Rate (T_{Smax} to T_p)	3°C/second max	°C/s
Ramp Down Rate (T_{cool})	6°C/second max	°C/s
Time 25°C to Peak Temperature ($T_{to-peak}$)	8 minutes max	m
Preheat		
Temperature Min (T_{Smin})	150	°C
Temperature Max (T_{Smax})	200	°C
Time T_{Smin} to T_{Smax} (t_s)	60 ~ 180	sec
Time Above Liquidus		
Temperature Liquidus (T_L)	217	°C
Time above Liquidus (t_L)	60 ~ 150	sec
Peak Temperature		
Peak Temperature (T_p)	260	°C
Time within 5°C of Peak Temperature (t_p)	20 ~ 40	sec

Real Time Clock Module with I²C Bus

AB-RTCMC-32.768kHz-B5GA-S3



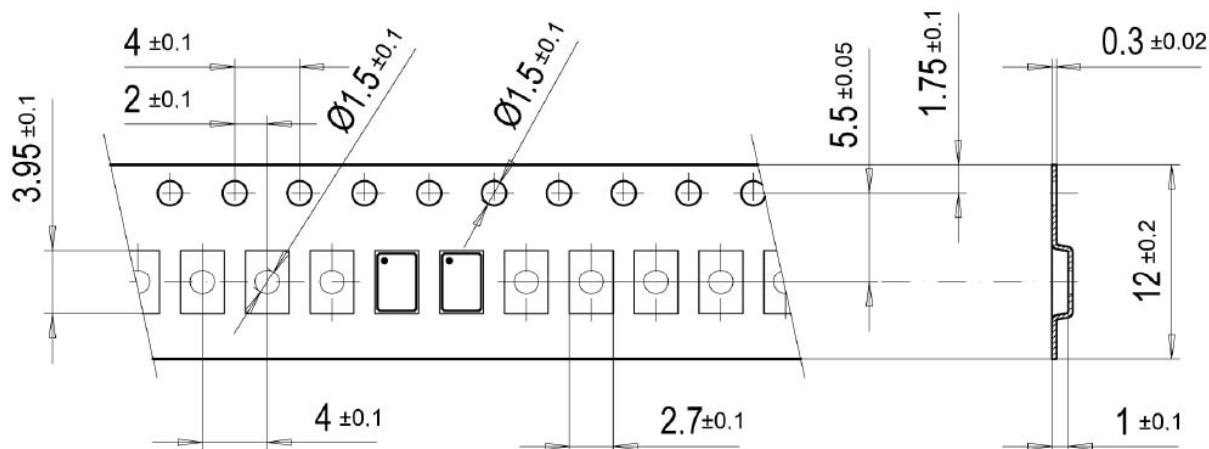
RoHS/RoHS II compliant



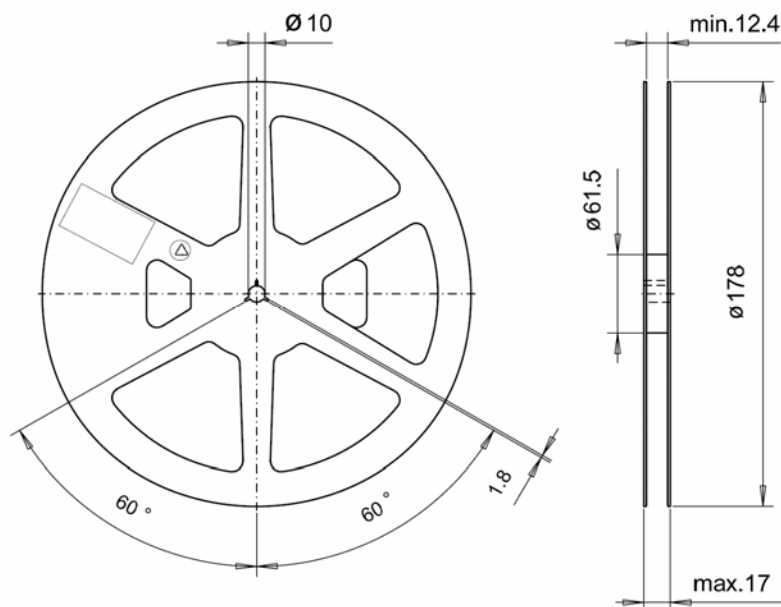
3.7 x 2.5 x 0.9 mm

TAPE & REEL:

T = 1000pcs/reel



➔ User Direction of Feed



Dimension: mm

ATTENTION: Abracon Corporation's products are COTS – Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon Corporation is required. Please contact Abracon Corporation for more information.

ABRACON IS
ISO 9001 : 2008
CERTIFIED



Visit www.abracon.com for Terms & Conditions of Sale **Revised: 02.03.13**
30332 Esperanza, Rancho Santa Margarita, California 92688
tel 949-546-8000 | fax 949-546-8001 | www.abracon.com