

## 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" .

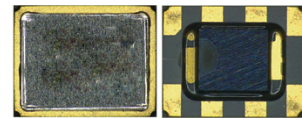
# REAL TIME CLOCK MODULE WITH 32.768kHz TCXO

AB-RTCMK-32.768kHz

Moisture Sensitivity Level: MSL=1



RoHS  
Compliant



3.2 x 2.5 x 1.0 mm

## FEATURES:

- Ultra low profile, 3.2 x 2.5 x 1.0 mm, Seam sealed SMT package
- Exceptional Frequency Stability over temperature;  $\pm 5.0$  ppm max. over  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$
- Operating Voltage; +1.30V to +5.50V
- 4.0 $\mu\text{A}$  max. current at no load
- I2C Communication
- Clock function : Hour/ Min / Sec
- Leap year automatic distinction calendar function till 2099
- Alarm interruption function for day, date, hour and minute settings
- A constant cycle timer interruption function : 244.14 $\mu\text{s}$  to 255 min
- Time update interruption function : Min / Sec
- Clock output function : 32.768kHz / 1024Hz / 32Hz / 1Hz

## APPLICATIONS:

- Smart cards
- Wireless sensors and tags
- Medical electronics
- Utility meters
- Data loggers
- Appliances
- Handsets
- Consumer electronics

## STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes
Nominal Frequency (f0)		32.768		kHz	
Frequency Tolerance (df/f0)	-3.0		+3.0	ppm	Initial + 2 times reflow Ta=+25 $\pm$ 2 $^{\circ}\text{C}$
Frequency Stability vs Temp. (df/f0)	-5.0		+5.0	ppm	Ta=-40 to +85 $^{\circ}\text{C}$
Frequency Stability vs Voltage (df/dV)	-1.0		+1.0	ppm/V	Ta=+25 $^{\circ}\text{C}$ V <sub>DD</sub> =2.0 to 5.5V
Frequency Aging Rate (dfag)	-3.0		+3.0	ppm	Ta=+25 $^{\circ}\text{C}$ , first year
Start Up Time (Tst)			1.0	sec	Ta=+25 $^{\circ}\text{C}$ V <sub>DD</sub> =1.3V
			3.0	sec	Ta=-40 to +85 $^{\circ}\text{C}$ V <sub>DD</sub> =1.3 to 5.5V
Power Supply Current 1 (I <sub>DD1</sub> )		0.6	2.0	$\mu\text{A}$	SCL=SDA=/INT=V <sub>DD</sub> CLKOUT=V <sub>SS</sub> , V <sub>DD</sub> =3V
Power Supply Current 2 (I <sub>DD2</sub> )		1.5	4.0	$\mu\text{A}$	SCL=SDA=/INT=V <sub>DD</sub> CLKOUT=V <sub>DD</sub> , V <sub>DD</sub> =3V, CL <sub>OUT</sub> =0pF
Input Leak Current (I <sub>LK</sub> )	-0.5		+0.5	$\mu\text{A}$	CLKOE,SCL,SDA V <sub>IN</sub> =V <sub>DD</sub> or V <sub>SS</sub>
Output Leak Current (I <sub>OZ</sub> )	-0.5		+0.5	$\mu\text{A}$	CLKOUT,/INT,SDA V <sub>OUT</sub> =V <sub>DD</sub> or V <sub>SS</sub>
“H” Input Voltage (V <sub>IH</sub> )	0.8 x V <sub>DD</sub>		5.5	V	CLKOE,SCL,SDA
“L” Input Voltage (V <sub>IL</sub> )	0.0		0.2 x V <sub>DD</sub>	V	CLKOE,SCL,SDA
“H” Output Voltage (V <sub>OH</sub> )	2.2		3.0	V	CLKOUT, V <sub>DD</sub> =3.0V, I <sub>OH</sub> =-1mA
“L” Output Voltage	V <sub>OL1</sub>	0.0	0.8	V	CLKOUT, V <sub>DD</sub> =3.0V, I <sub>OL</sub> =1mA
	V <sub>OL2</sub>	0.0	0.4	V	/INT, V <sub>DD</sub> =3.0V, I <sub>OL</sub> =1mA
	V <sub>OL3</sub>	0.0	0.4	V	SDA, V <sub>DD</sub> $\geq$ 2.0V, I <sub>OL</sub> =3mA
Low Voltage Detection Voltage (V <sub>DET</sub> )	1.3	1.4	1.5	V	

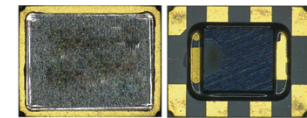
For detail data sheet, please contact [tech-support@abracon.com](mailto:tech-support@abracon.com)

ABRACON IS  
ISO 9001 : 2008  
CERTIFIED



Visit [www.abracon.com](http://www.abracon.com) for Terms & Conditions of Sale **Revised: 09.30.12**  
30332 Esperanza, Rancho Santa Margarita, California 92688  
tel 949-546-8000 | fax 949-546-8001 | [www.abracon.com](http://www.abracon.com)

# REAL TIME CLOCK MODULE WITH 32.768kHz TCXO



3.2 x 2.5 x 1.0 mm

AB-RTCMK-32.768kHz

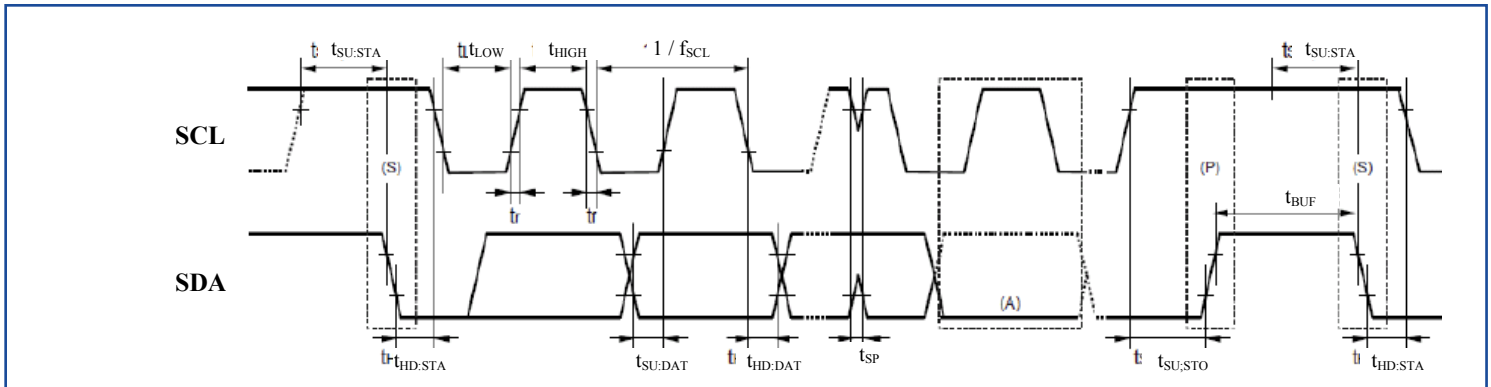


**RoHS**  
Compliant

## AC ELECTRICAL CHARACTERISTICS

Parameters	Minimum	Typical	Maximum	Units	Notes
SCL Clock Frequency ( $f_{SCL}$ )			400	kHz	
START Condition Setup Time ( $t_{SU,STA}$ )	0.6			sec	
START Condition Hold Time ( $t_{HD,STA}$ )	0.6			sec	
Data Input Setup Time ( $t_{SU,DAT}$ )	100			nsec	
Data Input Hold Time ( $t_{HD,DAT}$ )	0		900	nsec	
STOP Condition Setup Time ( $t_{SU,STO}$ )	0.6			sec	
Bus Idle Time Between START and STOP Condition ( $t_{BUF}$ )	1.3			sec	
SCL Low Time ( $t_{LOW}$ )	1.3			sec	
SCL High Time ( $t_{HIGH}$ )	0.6			sec	
SCL, SDA Rise Time ( $t_r$ )			0.3	sec	20% to 80%
SCL, SDA Fall Time ( $t_f$ )			0.3	sec	80% to 20%
Allowable Spike Time on Bus ( $t_{SP}$ )			50	nsec	

## TIMING CHART



## PART IDENTIFICATION:

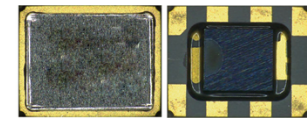
AB - RTCMK - 32.768 kHz -

Packaging
Blank: Bulk
T: 1000pcs/reel
T3*: 3000pcs/reel

\*3000pcs/reel: standard reel quantity



# REAL TIME CLOCK MODULE WITH 32.768kHz TCXO



3.2 x 2.5 x 1.0 mm

AB-RTCMK-32.768kHz

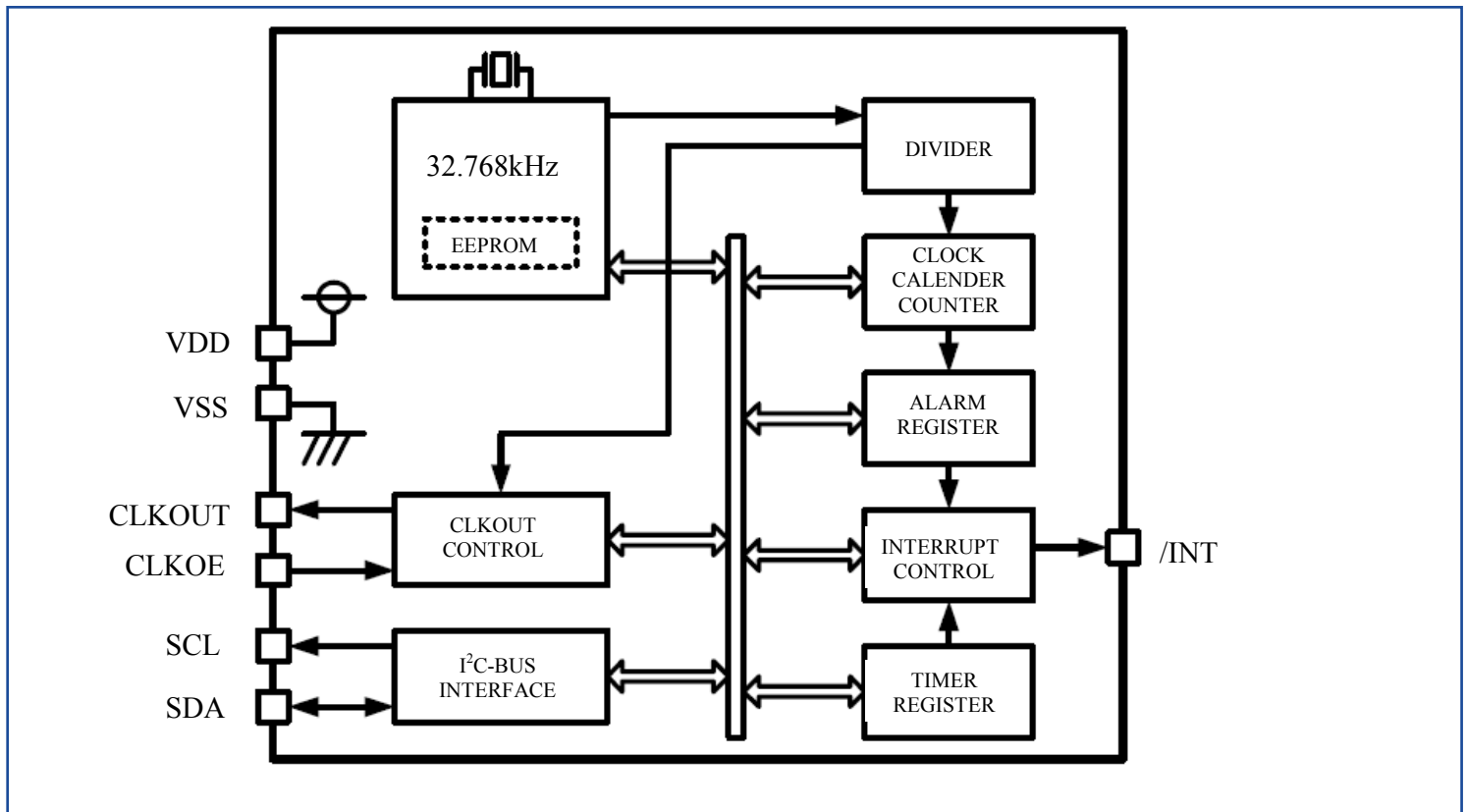


RoHS  
Compliant

## FUNCTION:

Pin No.	Pin Name	I/O	Function
1	CLKOE	Input	This is an input pin used to control the output mode of the CLKOUT pin. When this pin's level is high, the CLKOUT pin is in output mode. When it is low, the CLKOUT pin is "Hi-Z" (High Impedance).
2	/INT	Output	This pin is used to output alarm signals, timer signals, timer update signals, and other signals. This pin is an open drain pin.
3	N.C.		This pin is open.
4	VSS		This pin is connected to ground.
5	CLKOUT	Output	This pin outputs a 32.768kHz signal. This is the C-MOS output pin with output control provided via the CLKOE pin.
6	SCL	Input	This is the serial clock input for I <sup>2</sup> C BUS communications.
7	SDA	I/O	This is the serial data input/output for I <sup>2</sup> C BUS communications. This pin's signal is used for input and output of address, data, and ACK bits, synchronized with the serial clock used for I <sup>2</sup> C communication. This pin is an N-ch open drain pin during output.
8	VDD		This pin is connected to a positive power supply.

## BLOCK DIAGRAM:

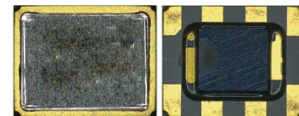


# REAL TIME CLOCK MODULE WITH 32.768kHz TCXO

AB-RTCMK-32.768kHz

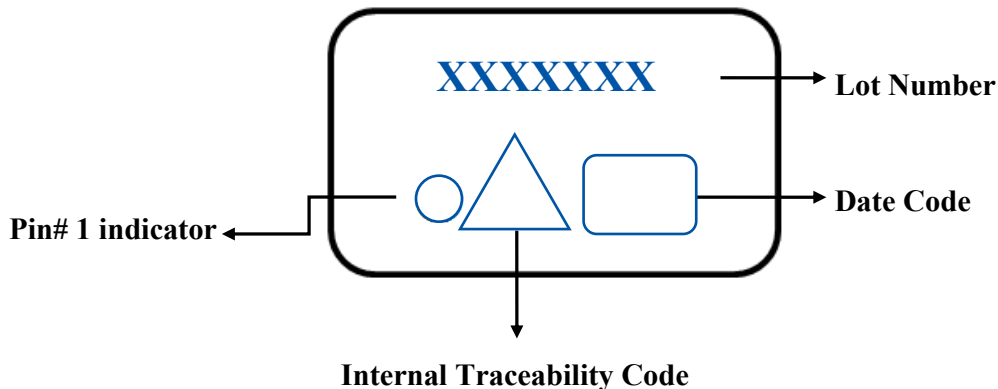


RoHS  
Compliant

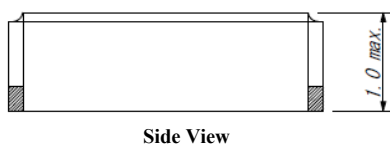
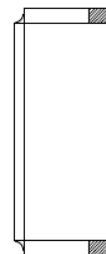
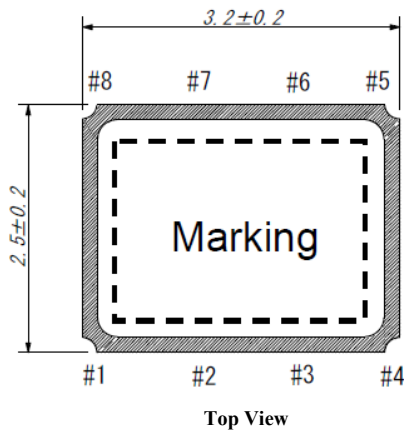


3.2 x 2.5 x 1.0 mm

## MARKING:

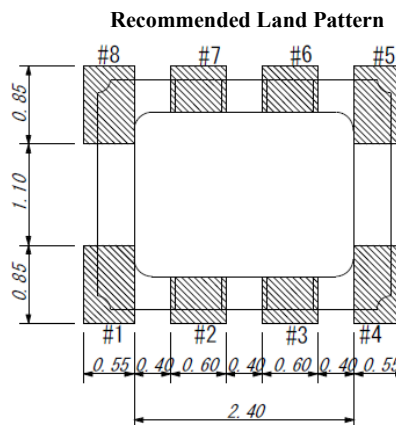
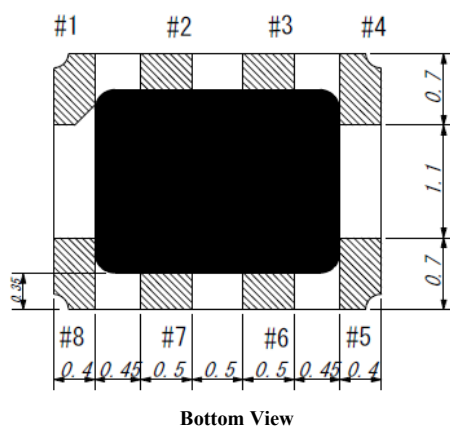


## OUTLINE DRAWING:



### PIN / Function

#1 : CLKOE	#5 : CLKOUT
#2 : /INT	#6 : SCL
#3 : N.C.	#7 : SDA
#4 : VSS	#8 : VDD



Dimension : mm

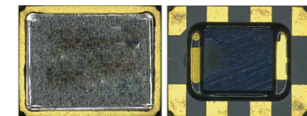
ABRACON IS  
ISO 9001 : 2008  
CERTIFIED



ABRACON  
CORPORATION

Visit [www.abracon.com](http://www.abracon.com) for Terms & Conditions of Sale **Revised: 09.30.12**  
30332 Esperanza, Rancho Santa Margarita, California 92688  
tel 949-546-8000 | fax 949-546-8001 | [www.abracon.com](http://www.abracon.com)

# REAL TIME CLOCK MODULE WITH 32.768kHz TCXO



3.2 x 2.5 x 1.0 mm

AB-RTCMK-32.768kHz

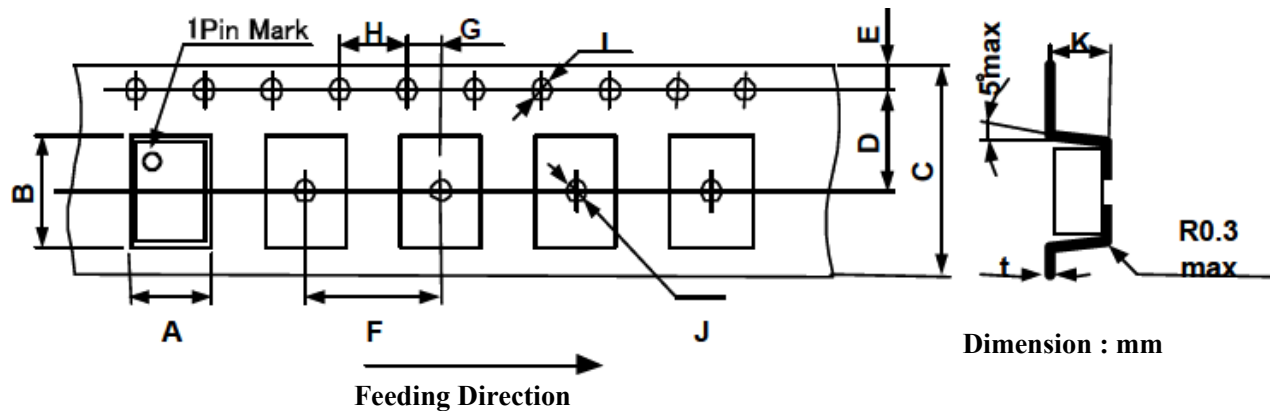


RoHS  
Compliant

## TAPE & REEL:

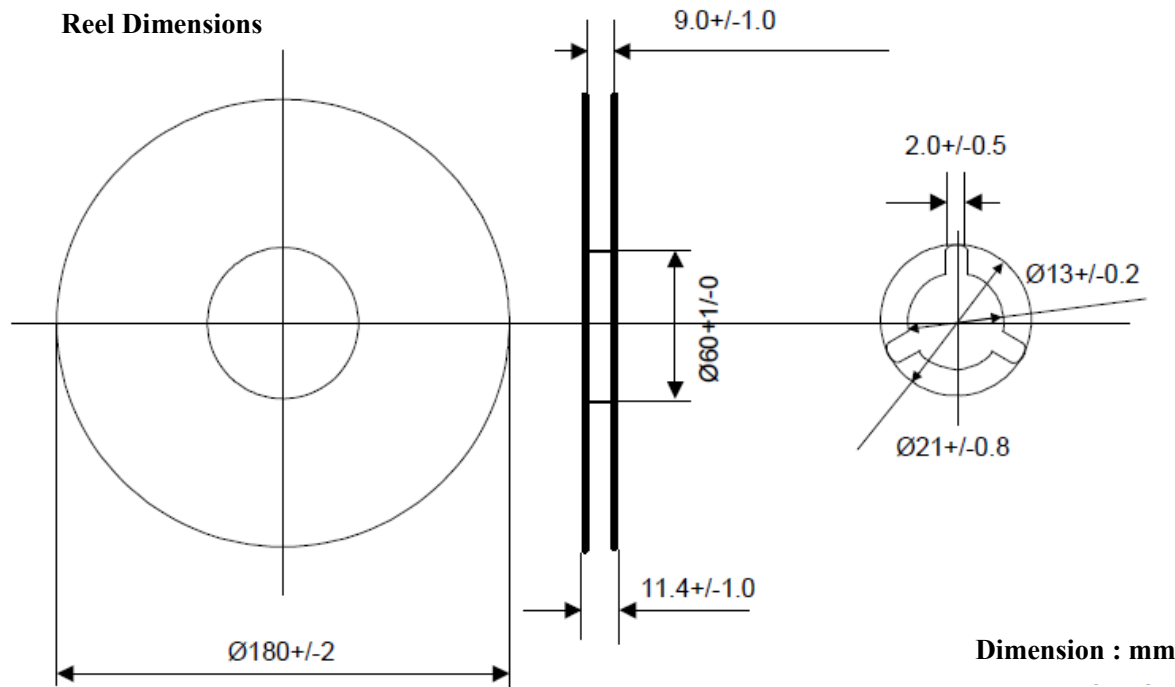
T: 1000pcs/reel

T3: 3000pcs/reel (standard reel quantity)



A	B	C	D	E	F
2.80 ± 0.1	3.50 ± 0.1	8.00 ± 0.3	3.50 ± 0.05	1.75 ± 0.1	4.00 ± 0.1
G	H	I	J	K	T
2.00 ± 0.05	4.00 ± 0.1	ø1.5 +1.0/-0	ø 1.5 +1.0/-0	1.10 ± 0.1	0.25 ± 0.05

### Reel Dimensions



For detail data sheet, please contact [tech-support@abracon.com](mailto:tech-support@abracon.com)

**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](http://www.abracon.com) for Terms & Conditions of Sale **Revised: 09.30.12**  
30332 Esperanza, Rancho Santa Margarita, California 92688  
tel 949-546-8000 | fax 949-546-8001 | [www.abracon.com](http://www.abracon.com)