



Features

- SMD NTC thermistor for thermal sense
- Highly stable electrical characteristics
- Highly reliable structure
- Operating temperature: -40 °C to +125 °C
- Agency recognition: us
- RoHS compliant* and halogen free**

Applications

- Battery packs
- NBPC, smartphones
- LED displays, lighting
- Communication equipment
- AC adapters
- OA equipment

BTN02G Series – SMD NTC Thermistor for Thermal Sense

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

Bourns Part No.	Resistance @ 25 °C (Ω)	Resistance Tolerance	B Value 25/50 °C	B Value 25/85 °C	B Value Tolerance	Dissipation Factor σ (mW/°C)	Thermal Time Constant (sec.)	Max. Power Rating @ 25 °C (mW)	Operating Temperature Range (°C)										
BTN02G103F3HFT00	10k	±1 %	3380	(3435)	± 1 %	Approx. 1.0	Approx. 3.0	100	-40 to +125										
BTN02G103G3HFT00		±2 %																	
BTN02G103H3HFT00		±3 %																	
BTN02G103J3HFT00		±5 %																	
BTN02G473F4AFT00	47k	±1 %	4050	(4100)						± 1 %	Approx. 1.0	Approx. 3.0	100	-40 to +125					
BTN02G473G4AFT00		±2 %																	
BTN02G473H4AFT00		±3 %																	
BTN02G473J4AFT00		±5 %																	
BTN02G104F4EFT00	100k	±1 %	4250	(4300)											± 1 %	Approx. 1.0	Approx. 3.0	100	-40 to +125
BTN02G104G4EFT00		±2 %																	
BTN02G104H4EFT00		±3 %																	
BTN02G104J4EFT00		±5 %																	

How to Order

BTN 02 G 103 F 3H F TXX

Series Code _____

Product Size (EIA) _____
02 = 0201

Grade _____
G = General

Resistance / R25 _____
103 = 10k Ω 473 = 47k Ω
333 = 33k Ω 104 = 100k Ω

Tolerance / R25 _____
F = ±1 % H = ±3 %
G = ±2 % J = ±5 %

B Value (K) _____
3A = 3000-3050 4A = 4000-4050
3B = 3051-3100 4B = 4051-4100
3D = 3151-3200 4D = 4151-4200
3E = 3201-3250 4E = 4201-4250
3H = 3351-3400 4H = 4351-4400
3J = 3401-3450 4J = 4401-4450
3T = 3851-3900 4T = 4851-4900
3U = 3901-3950 4U = 4901-4950

B Tolerance _____
F = ±1 % G = ±2 % H = ±3 % J = ±5 %

Internal Code _____



WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

* RoHS Directive 2015/863, Mar 31, 2015 and Annex.

** Bourns considers a product to be "halogen free" if (a) the Bromine (Br) content is 900 ppm or less; (b) the Chlorine (Cl) content is 900 ppm or less; and (c) the total Bromine (Br) and Chlorine (Cl) content is 1500 ppm or less.

Specifications are subject to change without notice. Users should verify actual device performance in their specific applications. The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

Additional Information

Click these links for more information:



Agency Recognition

Description	
UL	E307915
TÜV	R50648033 (EN60539-1,-2)

Environmental Characteristics

Storage Conditions

Temperature..... +15 °C to +40 °C

Humidity..... 20 % to 70 %

BOURNS®

Americas: Tel: +1 951-781-5500

Email: americus@bourns.com

Mexico: Tel: +52-614-478-0400

Email: mexicus@bourns.com

Asia: Tel: +886-2-2562-4117

Email: asiacus@bourns.com

EMEA: Tel: +36 88 885 877

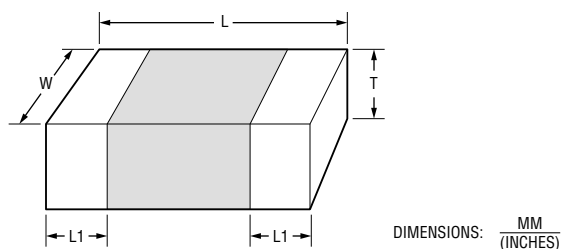
Email: euocus@bourns.com

www.bourns.com

BTN02G Series – SMD NTC Thermistor for Thermal Sense

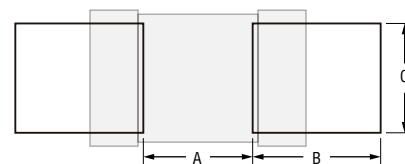
BOURNS®

Product Dimensions



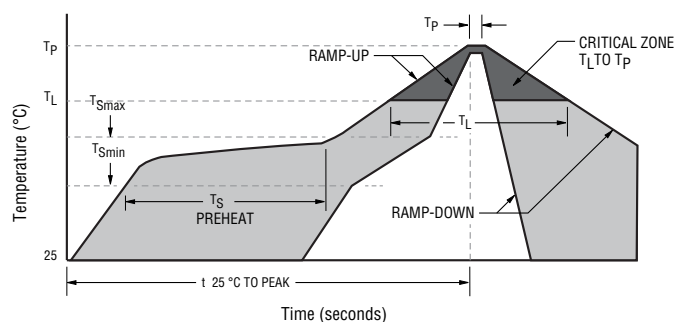
Size (EIA)	L	W	T	L1
BTN02 (0201)	0.60 ± 0.05 (.024 ± .002)	0.30 ± 0.05 (.012 ± .002)	0.30 ± 0.05 (.012 ± .002)	0.15 ± 0.05 (.006 ± .002)

Recommended Pad Layout



A	B	C
0.35 (.014)	0.35 (.014)	0.35 (.014)

Solder Reflow Recommendations



A	Stage 1 Preheat Ramp	Ambient to Preheating Temperature	3 °C/s max.
B	Stage 2 Preheat	Preheat Min./Max. Temperature Range	150 °C to 200 °C 60 s to 180 s
C	Stage 3 Preheat to Main Heating	Max. Time Above Stated Temperature	217 °C 60 s to 150 s
D	Main Heating	Max. Time Within 5 °C of Peak Temperature (260 °C)	255 °C 20 s to 40 s
E	Cool Down	Rate from Peak Temperature	6 °C/s max.

CAUTION:

- This product can be damaged by rapid heating, cooling or localized heating.
- Heat shocks should be avoided. Preheating and gradual cooling recommended.
- Solder gun tip temperature should be kept below 280 °C and should not touch the device directly. Contact should be less than 3 seconds. A solder gun under 30 watts is recommended.
- Excess solder volume can damage the body of the product.

Specifications are subject to change without notice.

Users should verify actual device performance in their specific applications.

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

BOURNS®

Technical drawing of a mechanical part, showing front and top views with dimensions in millimeters (MM) and inches (INCHES).

Front View Dimensions:

- Overall Width: 4.0 ± 0.1 (MM) / $(.157 \pm .004)$ (INCHES)
- Distance between centerlines of holes: 2.0 ± 0.05 (MM) / $(.079 \pm .002)$ (INCHES)
- Distance from right edge to centerline of last hole: 2.0 ± 0.05 (MM) / $(.079 \pm .002)$ (INCHES)
- Overall Height: W
- Distance from top edge to centerline of holes: 3.5 ± 0.05 (MM) / $(.138 \pm .002)$ (INCHES)
- Distance from bottom edge to centerline of holes: B
- Distance from left edge to centerline of first hole: D_0
- Distance from centerline of first hole to centerline of last hole: E
- Distance from centerline of first hole to centerline of last hole: A

Top View Dimensions:

- Overall Diameter: 178 ± 2.0 (MM) / $(7.008 \pm .079)$ (INCHES) DIA.
- Distance from center to hole centerline: 13 ± 0.5 (MM) / $(.512 \pm .020)$ (INCHES)
- Distance from center to hole centerline: 21 ± 0.8 (MM) / $(.827 \pm .031)$ (INCHES) DIA.
- Distance from center to hole centerline: 60 ± 0.5 (MM) / $(2.362 \pm .020)$ (INCHES)
- Distance from center to hole centerline: 10 ± 1.5 (MM) / $(.394 \pm .059)$ (INCHES)
- Distance from center to hole centerline: 2 ± 0.5 (MM) / $(.079 \pm .020)$ (INCHES)
- Distance from center to hole centerline: 1.6 (MM) / $(.063)$ (INCHES)

DIMENSIONS: MM (INCHES)

Size (EIA)	A	B	W	E	D ₀	T Max.
BTN02 (0201)	$\frac{0.38 \pm 0.1}{(.015 \pm .004)}$	$\frac{0.68 \pm 0.1}{(.027 \pm .004)}$	$\frac{8.0 \pm 0.03}{(.315 \pm .001)}$	$\frac{1.75 \pm 0.10}{(.069 \pm .004)}$	$\frac{1.50 + 0.1/-0}{(.059 + .004/-0)}$	$\frac{0.5}{(.020)}$

Pcs. / Reel	Reel / Box	Pcs. / Box
15,000	5	75,000

The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at www.bourns.com/docs/legal/disclaimer.pdf.

This legal disclaimer applies to purchasers and users of Bourns® products manufactured by or on behalf of Bourns, Inc. and its affiliates (collectively, "Bourns").

Unless otherwise expressly indicated in writing, Bourns® products and data sheets relating thereto are subject to change without notice. Users should check for and obtain the latest relevant information and verify that such information is current and complete before placing orders for Bourns® products.

The characteristics and parameters of a Bourns® product set forth in its data sheet are based on laboratory conditions, and statements regarding the suitability of products for certain types of applications are based on Bourns' knowledge of typical requirements in generic applications. The characteristics and parameters of a Bourns® product in a user application may vary from the data sheet characteristics and parameters due to (i) the combination of the Bourns® product with other components in the user's application, or (ii) the environment of the user application itself. The characteristics and parameters of a Bourns® product also can and do vary in different applications and actual performance may vary over time. Users should always verify the actual performance of the Bourns® product in their specific devices and applications, and make their own independent judgments regarding the amount of additional test margin to design into their device or application to compensate for differences between laboratory and real world conditions.

Unless Bourns has explicitly designated an individual Bourns® product as meeting the requirements of a particular industry standard (e.g., IATF 16949) or a particular qualification (e.g., UL listed or recognized), Bourns is not responsible for any failure of an individual Bourns® product to meet the requirements of such industry standard or particular qualification. Users of Bourns® products are responsible for ensuring compliance with safety-related requirements and standards applicable to their devices or applications.

Bourns® products are not recommended, authorized or intended for use in nuclear, lifesaving, life-critical or life-sustaining applications, nor in any other applications where failure or malfunction may result in personal injury, death, or severe property or environmental damage. Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any Bourns® products in such unauthorized applications might not be safe and thus is at the user's sole risk. Life-critical applications include devices identified by the U.S. Food and Drug Administration as Class III devices and generally equivalent classifications outside of the United States.

Bourns expressly identifies those Bourns® standard products that are suitable for use in automotive applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard products in an automotive application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk. If Bourns expressly identifies a sub-category of automotive application in the data sheet for its standard products (such as infotainment or lighting), such identification means that Bourns has reviewed its standard product and has determined that if such Bourns® standard product is considered for potential use in automotive applications, it should only be used in such sub-category of automotive applications. Any reference to Bourns® standard product in the data sheet as compliant with the AEC-Q standard or "automotive grade" does not by itself mean that Bourns has approved such product for use in an automotive application.

Bourns® standard products are not tested to comply with United States Federal Aviation Administration standards generally or any other generally equivalent governmental organization standard applicable to products designed or manufactured for use in aircraft or space applications. Bourns expressly identifies Bourns® standard products that are suitable for use in aircraft or space applications on such products' data sheets in the section entitled "Applications." Unless expressly and specifically approved in writing by two authorized Bourns representatives on a case-by-case basis, use of any other Bourns® standard product in an aircraft or space application might not be safe and thus is not recommended, authorized or intended and is at the user's sole risk.

The use and level of testing applicable to Bourns® custom products shall be negotiated on a case-by-case basis by Bourns and the user for which such Bourns® custom products are specially designed. Absent a written agreement between Bourns and the user regarding the use and level of such testing, the above provisions applicable to Bourns® standard products shall also apply to such Bourns® custom products.

Users shall not sell, transfer, export or re-export any Bourns® products or technology for use in activities which involve the design, development, production, use or stockpiling of nuclear, chemical or biological weapons or missiles, nor shall they use Bourns® products or technology in any facility which engages in activities relating to such devices. The foregoing restrictions apply to all uses and applications that violate national or international prohibitions, including embargos or international regulations. Further, Bourns® products and Bourns technology and technical data may not under any circumstance be exported or re-exported to countries subject to international sanctions or embargoes. Bourns® products may not, without prior authorization from Bourns and/or the U.S. Government, be resold, transferred, or re-exported to any party not eligible to receive U.S. commodities, software, and technical data.

To the maximum extent permitted by applicable law, Bourns disclaims (i) any and all liability for special, punitive, consequential, incidental or indirect damages or lost revenues or lost profits, and (ii) any and all implied warranties, including implied warranties of fitness for particular purpose, non-infringement and merchantability.

For your convenience, copies of this Legal Disclaimer Notice with German, Spanish, Japanese, Traditional Chinese and Simplified Chinese bilingual versions are available at:

Web Page: <http://www.bourns.com/legal/disclaimers-terms-and-policies>

PDF: <http://www.bourns.com/docs/Legal/disclaimer.pdf>