**Features**

- 1608 size
- Monolithic construction offering high reliability
- Magnetically shielded construction providing low radiation
- Low profile
- High frequency
- RoHS compliant\*

**Applications**

- RF and wireless communication
- Noise filters
- Low voltage power supply modules
- Radio transmitters
- RF amplifiers
- Various mobile electronic devices
- Radar

**Sustainability**

- Small size reduces material use
- ISO 14001, low-impact energy
- Responsibly sourced and produced
- Meets EU 94/62/EC standards

**Product Overview**

BoURNS® CE1608Q Series Multilayer Chip Inductors feature a monolithic structure achieved through advanced multilayer technology, offering high reliability and low DC resistance in a compact form factor with a maximum profile of 0.8 mm.

The CE1608Q Series features high SRF values of up to 10,000 MHz with inductance ranges from 1.0 to 470 nH and tight tolerances. With a DCR

specification ranging from 0.05 to 2.6 Ω, rated current values from 150 to 1000 mA, and an operating temperature range from -55 °C to +125 °C, these chip inductors are well-suited for use in RF amplifiers, low-voltage power supply modules, radio transmitters, radar, wireless communication, and various mobile electronic devices.

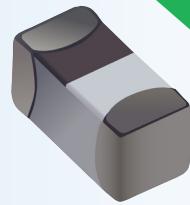
**Electrical Specifications (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)**

BoURNS Part Number	Inductance		Q Min.	Test Frequency (MHz)	SRF (MHz) Min.	DCR (Ω) Max.	Rated Current (mA) Max.	
	L (nH)	Tolerance						
CE1608Q-1N0D	1.0	±0.3 nH	8	100	10,000	0.05	1,000	
CE1608Q-1N2D	1.2				10,000	0.05	1,000	
CE1608Q-1N5D	1.5				10,000	0.10	1,000	
CE1608Q-1N8D	1.8				10,000	0.10	1,000	
CE1608Q-2N2D	2.2		10		8,000	0.10	1,000	
CE1608Q-2N7D	2.7				7,000	0.13	1,000	
CE1608Q-3N3D	3.3				6,000	0.13	1,000	
CE1608Q-3N9D	3.9				6,000	0.15	1,000	
CE1608Q-4N7D	4.7		12		5,000	0.20	1,000	
CE1608Q-5N6D	5.6				4,000	0.23	700	
CE1608Q-6N8J	6.8				4,000	0.25	700	
CE1608Q-8N2J	8.2				3,500	0.28	600	
CE1608Q-10NJ	10				3,400	0.30	600	
CE1608Q-12NJ	12				2,600	0.35	600	
CE1608Q-15NJ	15				2,300	0.40	600	
CE1608Q-18NJ	18				2,000	0.45	600	
CE1608Q-22NJ	22				1,600	0.50	600	

Continued on page 2

\* RoHS Directive 2015/863, Mar 31, 2015 and Annex. 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](http://www.bourns.com/docs/legal/disclaimer.pdf).

Electrical Specifications (@  $T_A = 25^\circ\text{C}$  Unless Otherwise Noted) - Continued

Bourns Part Number	Inductance		Q Min.	Test Frequency (MHz)	SRF (MHz) Min.	DCR ( $\Omega$ ) Max.	Rated Current (mA) Max.
	L (nH)	Tolerance** (%)					
CE1608Q-27NJ	27	$\pm 5\%$	12	100	1,400	0.55	600
CE1608Q-33NJ	33				1,200	0.60	600
CE1608Q-39NJ	39				1,100	0.65	500
CE1608Q-47NJ	47				900	0.70	500
CE1608Q-56NJ	56				900	0.75	500
CE1608Q-68NJ	68				700	0.85	400
CE1608Q-82NJ	82				600	0.95	300
CE1608Q-R10J	100				600	1.00	300
CE1608Q-R12J	120		8	50	500	1.20	300
CE1608Q-R15J	150				500	1.20	300
CE1608Q-R18J	180				400	1.30	300
CE1608Q-R22J	220				400	1.50	300
CE1608Q-R27J	270				400	1.90	200
CE1608Q-R33J	330				350	2.10	200
CE1608Q-R39J	390				350	2.30	150
CE1608Q-R47J	470				300	2.60	150

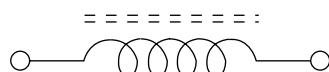
## General Specifications

Operating Temperature .....  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$   
 Moisture Sensitivity Level ..... 1  
 ESD Classification (HBM) ..... N/A

## Materials

Base Material ..... Ceramic  
 Terminal ..... Ag/Ni/Sn  
 Packaging ..... 4,000 pcs. per reel

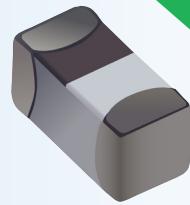
## Electrical Schematic



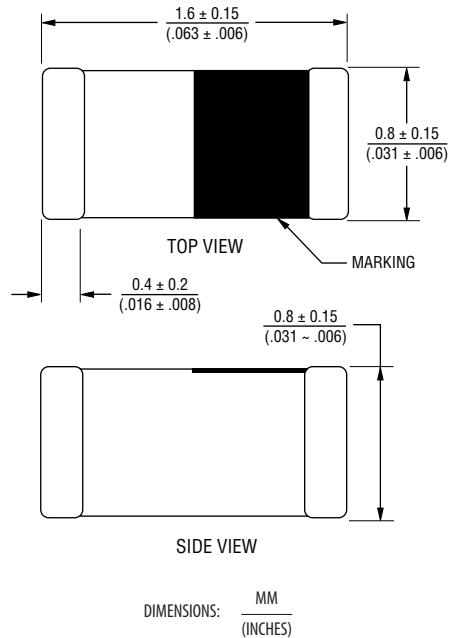
## How to Order

CE1608Q - 1N2 D

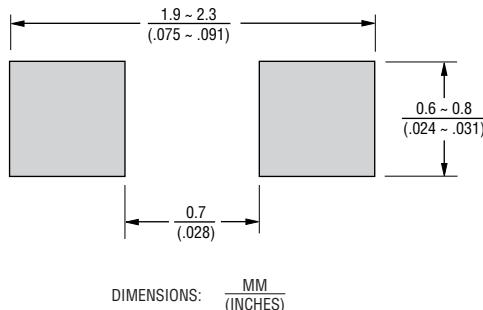
Series ..... \_\_\_\_\_  
 Value Code ..... \_\_\_\_\_  
 Tolerance ..... \_\_\_\_\_  
 D =  $\pm 0.3$  nH  
 J =  $\pm 5\%$



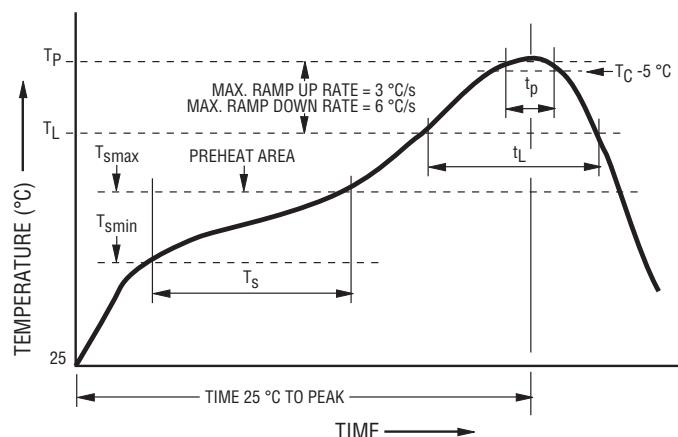
## Product Dimensions



## Recommended Layout



## Soldering Profile

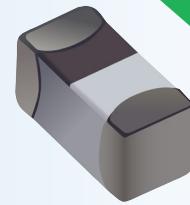


Profile Feature	Pb-Free Assembly
Preheat / Soak:	
Temperature Min. ( $T_{smin}$ )	150 °C
Temperature Max. ( $T_{smax}$ )	200 °C
Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )	60~120 seconds
Ramp Up Rate ( $T_L$ to $T_p$ )	3 °C / second max.
Liquidus Temperature ( $T_L$ )	217 °C
Time ( $t_L$ ) maintained above $T_L$	60~150 seconds
Peak Package Body Temperature ( $T_p$ )	255~260 °C
Classification Temperature ( $T_c$ )	260 °C
Time ( $t_p$ ) within 5 °C of the specified classification temperature ( $T_c$ )	< 30 seconds
Ramp Down Rate ( $T_p$ to $T_L$ )	6 °C / second max.
Time 25 °C to Peak Temperature	8 minutes max.

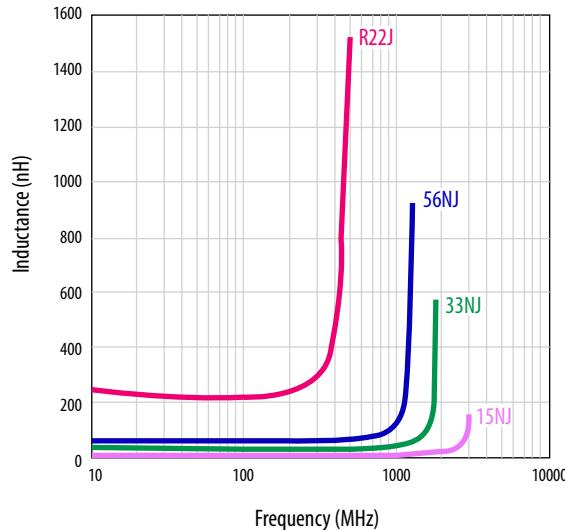
NOTE: The product has been tested under this reflow condition. Deviations from this, especially higher temperatures or longer durations, could impact performance.

Specifications are subject to change without notice.  
Users should verify actual device performance in their specific applications.

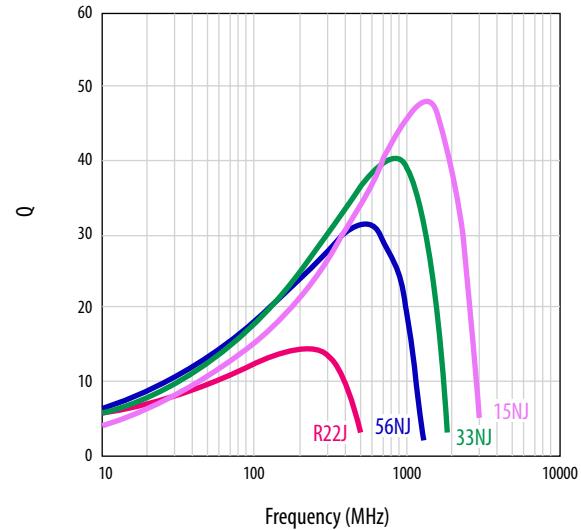
The products described herein and this document are subject to specific legal disclaimers as set forth on the last page of this document, and at [www.bourns.com/docs/legal/disclaimer.pdf](http://www.bourns.com/docs/legal/disclaimer.pdf).



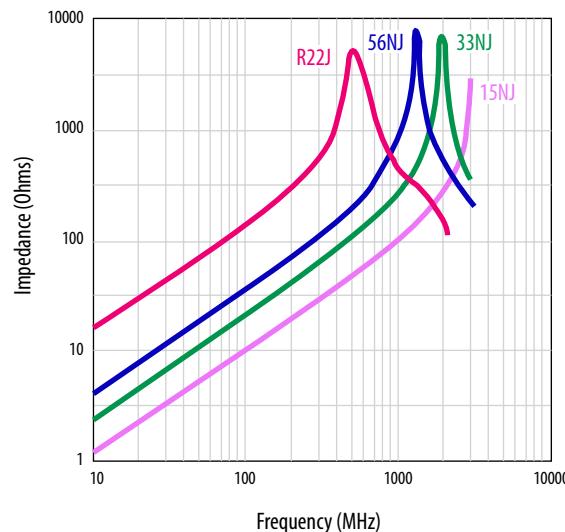
## Inductance vs. Frequency



## Typical Q vs. Frequency

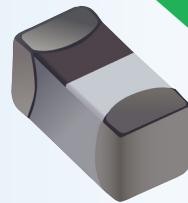


## Impedance vs. Frequency

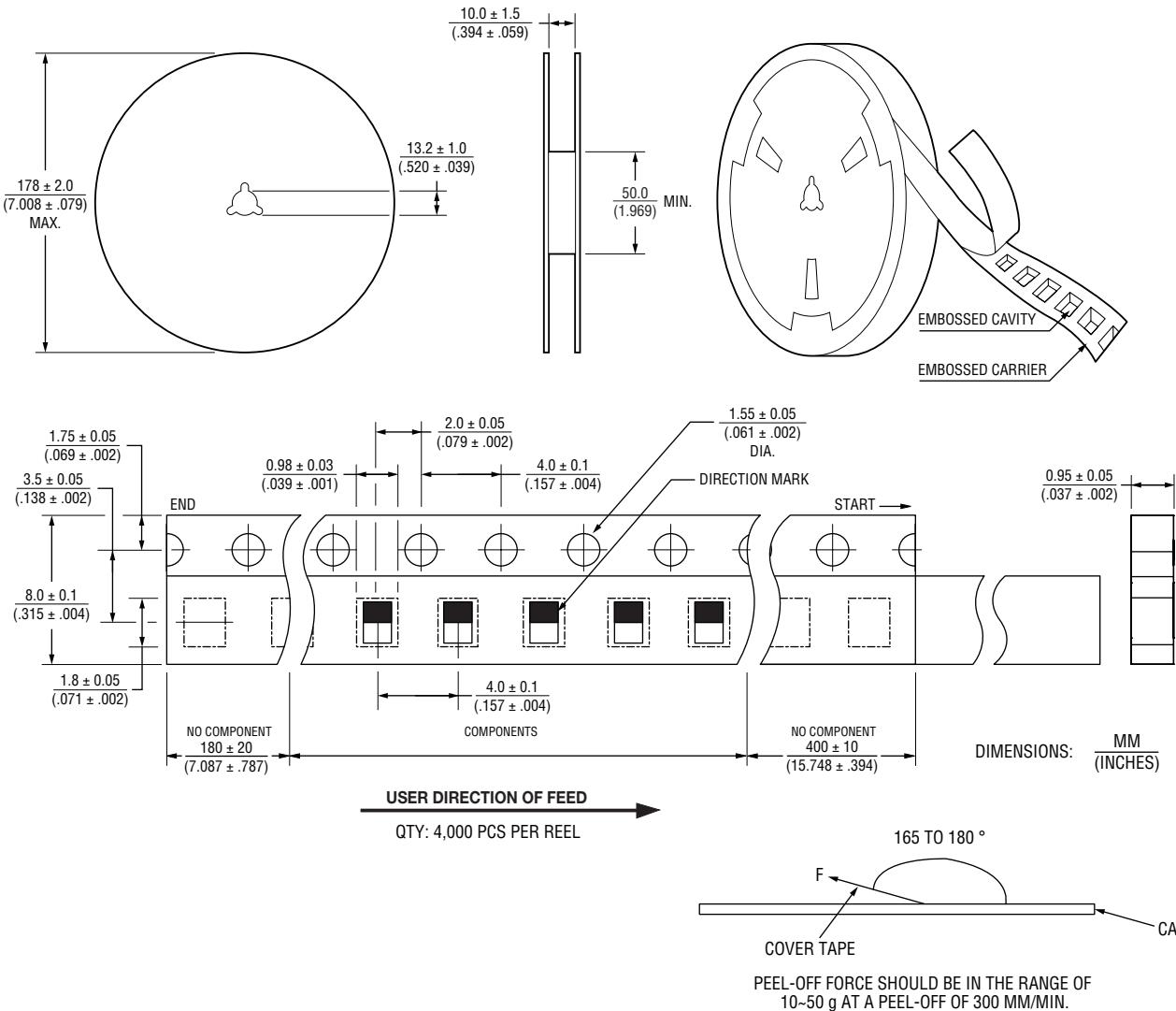


Specifications are subject to change without notice.  
Users should verify actual device performance in their specific applications.

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](http://www.bourns.com/docs/legal/disclaimer.pdf).



## Packaging Specifications



## Contact Information

	Phone	Email
www.bourns.com		
Asia-Pacific	+886-2 2562-4117	<a href="mailto:asiacus@bourns.com">asiacus@bourns.com</a>
Europe	+36 88 885 877	<a href="mailto:europus@bourns.com">europus@bourns.com</a>
Mexico	+52 614 478 0400	<a href="mailto:mexicus@bourns.com">mexicus@bourns.com</a>
The Americas	+1-951 781-5500	<a href="mailto:americus@bourns.com">americus@bourns.com</a>

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., ISO/TS 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>*



**CALIFORNIA WARNING:** Can expose you to lead, a carcinogen and reproductive toxicant.  
See [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)