

# Type C2Q

## Surface Mount Very Fast-Acting Chip Fuse

HF  C2Q Series – 0603 Size

RoHS 2 Compliant



### Features

- Fast-acting
- Small size, 0603 SMD
- Current rating from 250mA to 5A
- Wide operating temperature range from -55°C to 125°C
- Tape and Reel for automatic SMD placement
- Compatible with 260°C IR Pb-free and wave soldering process
- RoHS 2 compliant (MSL = 1)
- Halogen Free
- Lead Free



### Applications


- Notebook
- LCD monitor
- PC computer
- Office electronic equipment
- Industrial equipment
- Medical equipment
- POE, POE+
- LCD / LED monitor
- Power supply
- LCD / LED TV
- DC-DC Converter

LEAD FREE =   
 HALOGEN FREE = 

### Electrical Characteristics (UL STD.248-14)



Testing Current	Blow Time	
	Minimum	Maximum
100%	4 Hrs.	N/A
200%	N/A	5 Sec
300%	N/A	0.2 Sec

### Safety Agency Approvals

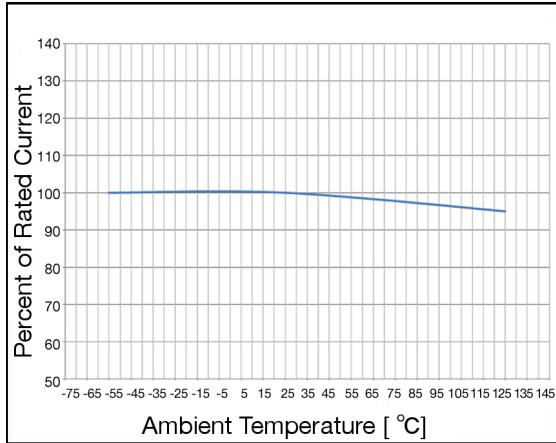
Safety Agency	Safety Agency Certificate	Voltage Rating (V)	Ampere Range / Volt @ I.R. ability*
	E20624	250mA-4A/32V AC 63V DC	250mA-4A/32V AC @ 35A 63V DC @ 50A
		5A / 32V AC & DC	5A / 32V AC & DC @ 50A

\*I.R.= Interrupting Rating = Short Circuit Rating(Amps)

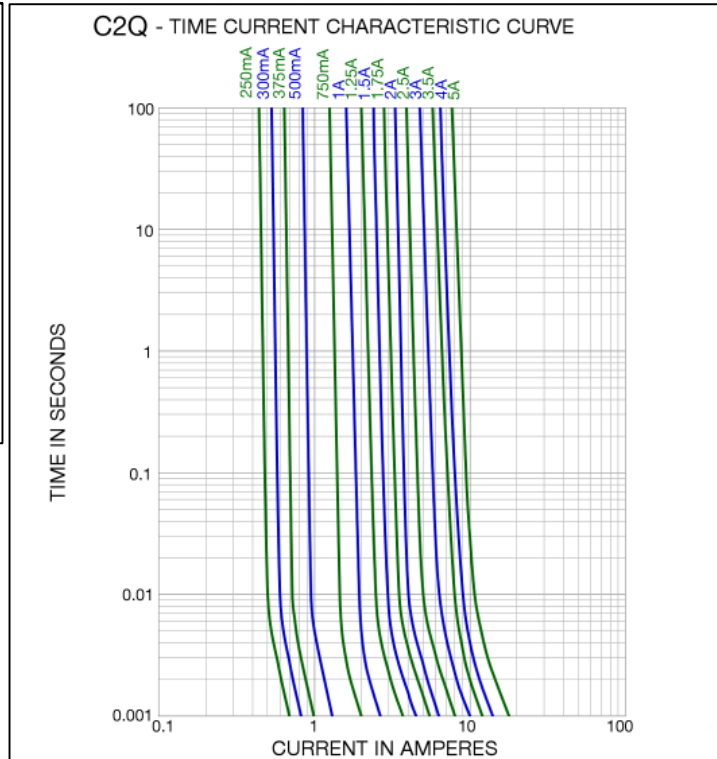
### Physical Specifications

Materials	Body : Ceramic Substrate
	Terminations : Ag / Ni / Sn (100% Lead-free)
	Element Cover Coating : Lead-free Glass
Marking	On Fuse :
	None
	On Label :
	"bel", "C2Q", "Current Rating", "Voltage Rating", "Interrupting Rating", "Appropriate Safety Logos" and  , "  " (China RoHS compliant).

## Temperature Derating Curve



## Average Time Current Curve



## Electrical Specifications

Catalog Number	Ampere Rating (A)	Nominal Cold Resistance (ohms)	Nominal Volt-drop @100% In (Volt)	Voltage and Interrupting Ratings	Nominal Melting I <sup>2</sup> T @ 10 In (A <sup>2</sup> Sec)	Nominal Power Dissipation @ 100% In (W)	Agency Approvals
C2Q 250	250mA	0.77	0.243	See Table of Safety Approvals on Page 1 for Voltage and associated Interrupting Ratings	0.00001	0.06	Y
C2Q 300	300mA	0.54	0.217		0.00003	0.07	Y
C2Q 375	375mA	0.42	0.196		0.00004	0.07	Y
C2Q 500	500mA	0.28	0.171		0.00015	0.09	Y
C2Q 750	750mA	0.17	0.159		0.0005	0.12	Y
C2Q 1	1A	0.122	0.154		0.0010	0.15	Y
C2Q 1.25	1.25A	0.092	0.152		0.0018	0.19	Y
C2Q 1.5	1.5A	0.073	0.146		0.0025	0.22	Y
C2Q 1.75	1.75A	0.063	0.144		0.0044	0.25	Y
C2Q 2	2A	0.053	0.133		0.0063	0.27	Y
C2Q 2.5	2.5A	0.042	0.130		0.0074	0.33	Y
C2Q 3	3A	0.034	0.130		0.018	0.39	Y
C2Q 3.5	3.5A	0.028	0.131		0.021	0.46	Y
C2Q 4	4A	0.023	0.131		0.042	0.52	Y
C2Q 5	5A	0.019	0.131		0.055	0.66	Y

Consult manufacturer for other ratings



Specifications subject to change without notice

Bel Fuse Inc.  
206 Van Vorst Street  
Jersey City, NJ 07302 USA

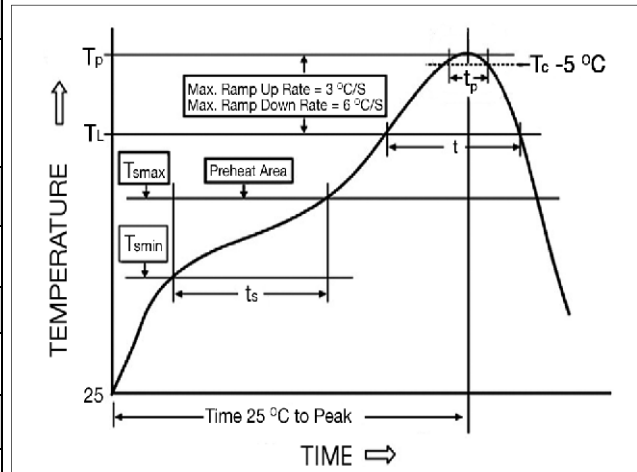
+1 201.432.0463  
Bel.US.CS@belf.com  
[belfuse.com/circuit-protection](http://belfuse.com/circuit-protection)

## Environmental Specifications

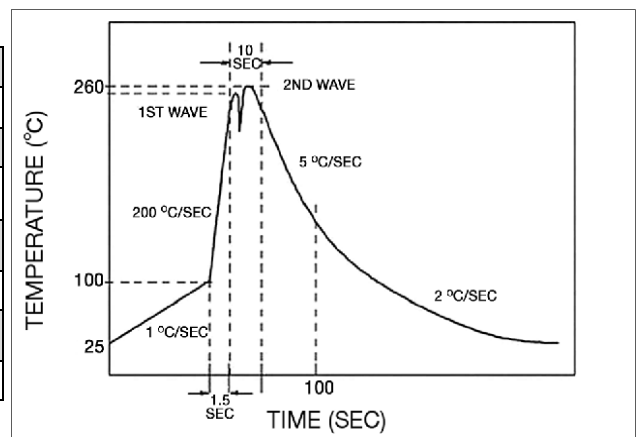
Shock Resistance	MIL-STD-202G, Method 213B, Test Condition 1 (100 G's peak for 6 milliseconds; Sawtooth waveform)
Vibration Resistance	MIL-STD-202G, Method 201A (10-55 Hz, 0.06 inch, total excursion).
Salt Spray Resistance	MIL-STD-202G, Method 101E, Test Condition B (48 hrs.).
Insulation Resistance	MIL-STD-202G, Method 302, Test Condition A (After Opening) 10,000 ohms minimum.
Solderability	MIL-STD-202G, Method 208H
Resistance to solder Heat	MIL-STD-202G, Method 210F, Test Condition C. Top Side (260°C, 20 sec) MIL-STD-202G, Method 210F, Test Condition D. Bottom Side (260°C, 10 sec)
Thermal Shock	MIL-STD-202G, Method 107G, Test Condition B (-65°C to +125°C).
Operating Temperature	-55°C to +125°C
Moisture Sensitivity Level	1 (According to IPC J-Std-020)

## Soldering Parameters

IR Reflow Profile (IPC/JEDEC J-STD-020D)	
<b>Preheat &amp; Soak</b>	
Temperature min ( $T_{smin}$ )	150°C
Temperature max ( $T_{smax}$ )	200°C
Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )	60-120 seconds
Average ramp-up rate ( $T_{smax}$ to $T_p$ )	3°C/second max.
Liquidous temperature ( $T_L$ )	217°C
Time at liquidous ( $t_L$ )	60-150 seconds
Peak temperature ( $T_p$ )	260°C max
Time ( $t_p$ ) within 5°C of the specified classification temperature ( $T_c$ )	30 seconds
Average ramp-down rate ( $T_p$ to $T_{smax}$ )	6°C/second max.
Time 25°C to peak temperature	8 minutes max.



Lead-free Wave Soldering Profile	
Wave Soldering Parameter	
Average ramp-up rate	200°C / second
Heating rate during preheat	typical 1 - 2°C / second Max 4°C / second
Final preheat temperature	within 125°C of soldering temperature
Peak temperature $T_p$	260°C
Time within +0°C / -5°C of actual peak temperature	10 seconds
Ramp-down rate	5°C / second max.



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## Fuse FGNO Explanation

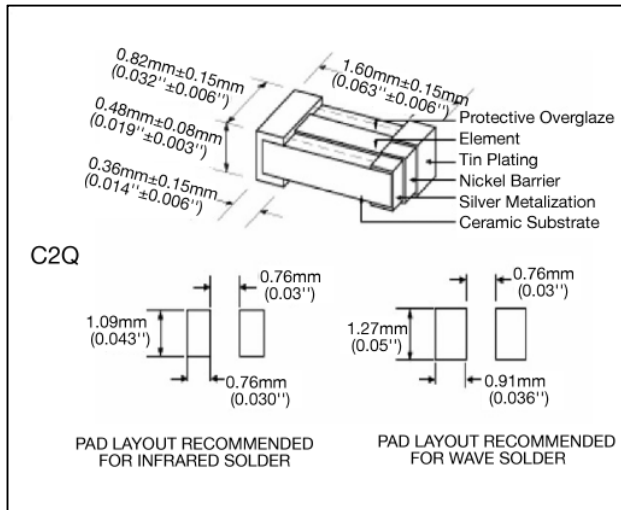
0686 - [XXXX] -XX

0686=C2Q; [XXXX]=Ampere Rating; XX=See Ordering Information as below

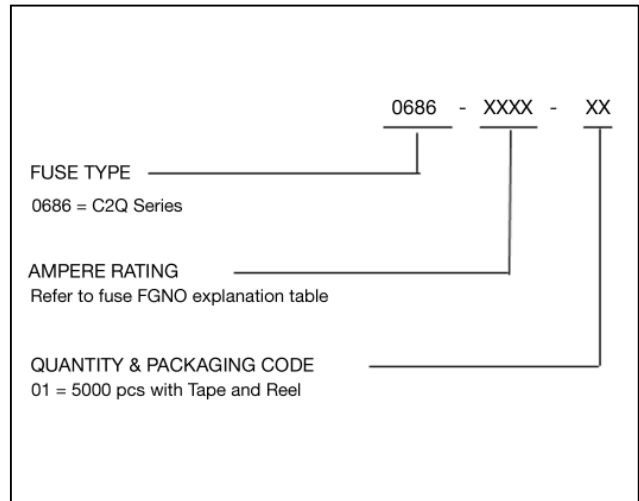
Fraction	Decimal	Milliamps	Bel FGNO[XXXX]
1/4	0.250	250	0250
3/10	.300	300	0300
3/8	.375	375	0375
1/2	.500	500	0500
3/4	.750	750	0750

Fraction	Decimal	Amps	Bel FGNO[XXXX]
	1.0	1	1000
1-1/4	1.25	1.25	1250
1-1/2	1.50	1.5	1500
	1.75	1.75	1750
	2.0	2	2000
2-1/2	2.5	2.5	2500
	3.0	3	3000
3-1/2	3.5	3.5	3500
	4.0	4	4000
	5.0	5	5000

## Mechanical Dimensions



## Ordering Information



## Packaging

Packaging Tape & Reel	Packaging Specification	Quantity	Quantity & Packaging Code
8 mm wide tape with 7 inches Diameter reel	EIA Standard 481-E	5000	0686-XXXX-01