# Accu-Guard®

### Introduction



#### **ACCU-GUARD® TECHNOLOGY**

The Accu-Guard® series of fuses is based on thin-film techniques. This technology provides a level of control on the component electrical and physical characteristics that is generally not possible with standard fuse technologies. This has allowed AVX to offer a series of devices which are designed for modern surface mount circuit boards which require protection.

#### **FEATURES**

- Accurate current rating
- Fast acting
- Small-standard 0402, 0603, 0805, 1206 and 0612 chip sizes
- Taped and reeled
- Completely compatible with all soldering systems used for SMT
- Lead Free Series (F0402G, F0603G, F0402E, F0603E, F0805B, F1206B)

#### **APPLICATIONS**

- Two-Way Radios
- Home Appliances
- **Battery Management Systems**
- **Battery Chargers**
- Rechargeable Battery Packs
- Computers
- Hard Disk Drives
- PDA's
- LCD Screens
- SCSI Interface
- **Digital Cameras**
- Video Cameras



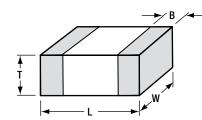
For RoHS compliant products, please select correct termination style.

#### **APPROVAL FILE NUMBERS**

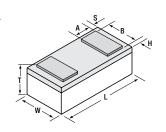
• UL, cUL: RCD#E143842

#### **DIMENSIONS** millimeters (inches)

F0603C, F0805B, F1206A and F1206B



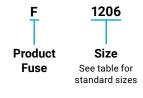
F0402E and F0603E



F0402G and F0603G

	F0402G	F0603G	F0402E	F0603E	F0603C	F0805B	F1206A/B	F0612D
L	1.00±0.05	1.60±0.10	1.00±0.10	1.60±0.10	1.65±0.25	2.10±0.20	3.10±0.20	1.65±0.25
	(0.039±0.002)	(0.063±0.004)	(0.039±0.004)	(0.063±0.004)	(0.065±0.010)	(0.083±0.008)	(0.122±0.008)	(0.065±0.010)
W	0.58 ±0.04	0.81±0.10	0.55±0.07	0.81±0.10	0.80±0.15	1.27±0.10	1.60±0.10	3.10±0.20
	(0.023±0.002)	(0.032±0.004)	(0.022±0.003)	(0.032±0.004)	(0.031±0.006)	(0.050±0.004)	(0.063±0.004)	(0.122±0.008)
Т	0.35±0.05	0.61±0.10	0.40±0.10	0.63±0.10	0.70±0.15	0.90±0.2	1.20±0.20	0.90±0.20
	(0.014±0.002)	(0.024±0.004)	(0.016±0.004)	(0.025±0.004)	(0.028±0.006)	(0.035±0.008)	(0.047±0.008)	(0.036±0.008)
В	0.48±0.05	0.71±0.05	0.20±0.10	0.35±0.15	0.35±0.15	0.30±0.15	0.43±0.25	0.35±0.15
	(0.019±0.002)	(0.028±0.002)	(0.008±0.004)	(0.014±0.006)	(0.014±0.006)	(0.012±0.006)	(0.017±0.010)	(0.014±0.006)
Α	0.20±0.05 (0.008±0.002)	0.28±0.05 (0.011±0.002)						
S, H	0.05±0.05 (0.002±0.002)	0.06±0.05 (0.002±0.002)						

#### **HOW TO ORDER**





A=Accu-Guard® B=Accu-Guard® II C=Accu-Guard® II 0603 D=Accu-Guard® II 0612 E=Accu-Guard® II 0402, 0603 G=Accu-Guard® II Low Current 0402,0603



**Rated Current** Current expressed in Amps. Letter R denotes decimal point e.g. 0.20A=0R20 1.75A=1R75



**Fuse Speed** F=Fast

**Termination** 

S=Nickel/Lead-Free Solder coated (Sn 100), SMD W=Nickel/solder coated (Sn 63, Pb 37) Solder Coated (Sn100) N=Nickel/Lead-Free Solder Coated (Sn100), LGA



**Packaging** TR=Tape and reel

# **Accu-Guard® II Low Current**

#### **LGA Miniature 0402 and 0603 Size Thin-Film Fuses**



The new F0402G and F0603G Accu-Guard® series of fuses is based on thinfilm technology which allows precise control of the component electrical and physical characteristics that is not possible with standard fuse technologies. The Accu-Guard Low Current series encompasses the lowest current ratings in compact 0402 and 0603 packages and features LGA terminations.

#### **ELECTRICAL SPECIFICATIONS**

Operating temperature: -55°C to +125°C Current carrying capacity:

-55°C to -11°C 107% of rating

-10°C to +60°C 100% of rating

+61°C to +100°C 85% of rating

+101°C to +125°C 80% of rating Rated voltage: 63V (F0603G), 32V (F0402G)

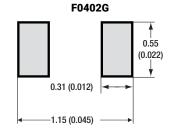
Post-fusing resistance:  $>1M\Omega$ 

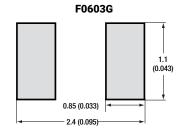
Interrupt rating: 50A

#### **RECOMMENDED PAD LAYOUT**

millimeters (inches)







Part Number	Current Rating A	Resistance @0.1 x I rated Ω (max.)	Voltage Drop @ I rated mV (max.)	Fusing Current (within 5 sec) A	Pre-Arc I2t @10x I rated A²- sec (typ)	Color Code
F0402G0R02FNTR F0603G0R02FNTR	0.028	7.5	290	0.070	6 x 10 <sup>-7</sup>	Green
F0402G0R03FNTR F0603G0R03FNTR	0.0375	4.8	230	0.094	8 x 10 <sup>-7</sup>	Red
F0402G0R05FNTR F0603G0R05FNTR	0.050	3.4	250	0.125	2 x 10 <sup>-6</sup>	Blue
F0402G0R06FNTR F0603G0R06FNTR	0.062	2.5	280	0.155	2 x 10 <sup>-6</sup>	Yellow
F0402G0R07FNTR F0603G0R07FNTR	0.075	2.0	280	0.188	4 x 10 <sup>-6</sup>	Brown
F0402G0R10FNTR F0603G0R10FNTR	0.100	2.4	300	0.250	7 x 10 <sup>-6</sup>	Red
F0402G0R12FNTR F0603G0R12FNTR	0.125	1.6	250	0.312	1 x 10 <sup>-5</sup>	White
F0402G0R15FNTR F0603G0R15FNTR	0.150	1.2	220	0.375	2 x 10 <sup>-5</sup>	Green
F0402G0R20FNTR F0603G0R20FNTR	0.200	0.8	210	0.500	4 x 10 <sup>-5</sup>	Pink

#### **ENVIRONMENTAL CHARACTERISTICS**

Test	Conditions	Required		
Solderability	Components completely immersed in a solder bath at 245 ±5°C for 3 secs.	Total area of imperfections in solder coatup to 5% of the land suface area		
Leach Resistance	Components completely immersed in a solder bath at 255 ±5°C for 60 secs.	Dissolution of termination ≤ 15% of the land surface area		
Storage	12 months minimum with components stored in "as received" packaging.	Good solderability		
Shear	Components mounted to a substrate. Increasing shearing force applied paralled to the sufstrate till destruction.	Destruction at 5N force minimum		
Temperature Cycling	Components mounted to a flexible substrate (e.g. FR – 4). 1000 cycles -55°C to +125°C.	No Visible damage ΔR/R<10%		
Bend	Tested as shown in diagram 3 mm Deflection 45mm 45mm 45mm	No visible damage ΔR/R<10%		

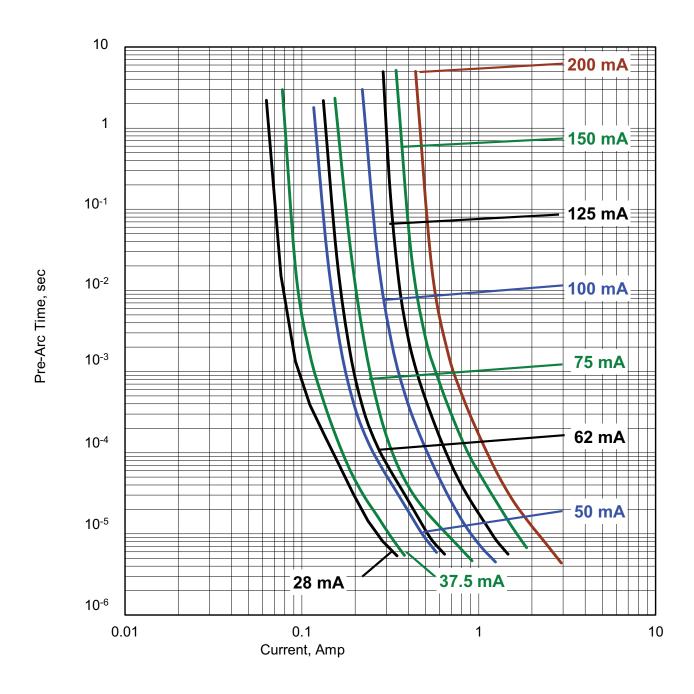


# **Accu-Guard® II Low Current**

## **LGA Miniature 0402 and 0603 Size Thin-Film Fuses**

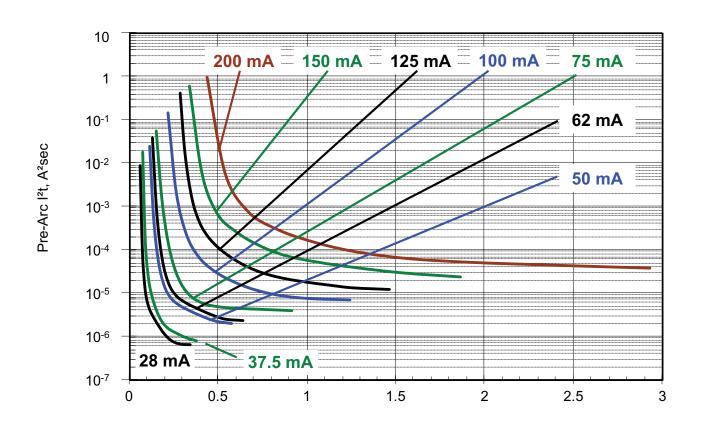


#### **FUSE TIME-CURRENT CHARACTERISTICS**





#### **FUSE PRE-ARC JOULE INTEGRALS VS CURRENT**



Current, Amp

# **Accu-Guard® II Low Current LGA Miniature 0402 and 0603 Size Thin-Film Fuses**



#### **FUSE PRE-ARC JOULE INTEGRALS VS PRE-ARC TIME**

