# Bourns® SinglFuse™ SMD Fuses

## Product Selection Worksheet

Selecting the appropriate SinglFuse™ SMD Fuse for your application is easy - *just follow these simple steps:*

## Step 1. What is the preferred product footprint?

❑ 0402 – refer to the following data sheets:

- SF-0402F Series
- SF-0402FP Series
- SF-0402FPxxxF Series
- SF-0402S Series
- SF-0402SxxxM Series

❑ 0603 – refer to the following data sheets:

- SF-0603F Series
- SF-0603FP Series
- SF-0603FPxxxF Series
- SF-0603FPxxxM Series
- SF-0603S Series
- SF-0603SxxxM Series
- SF-0603SP Series
- SF-0603SPxxxM Series
- SF-0603HIxxxF Series
- SF-0603HIxxxM Series

❑ 1206/1210 – refer to the following data sheets:

- SF-1206F Series
- SF-1206FP Series
- SF-1206SP Series
- SF-1206SPxxxM Series
- SF-1206S Series
- SF-1206SxxxM Series
- SF-1206SxxxW Series
- SF-1210SxxxW Series
- SF-1206HHxxM Series
- SF-1206HIxxxM Series
- SF-1206HVxxM Series

❑ 2410 – refer to the following data sheets:

- SF-2410FxxxW Series
- SF-2410F-T Series
- SF-2410FPxxxW Series
- SF-2410FP-T Series
- SF-2410SPxxxW Series
- SF-2410HI-T Series

❑ 2923 – refer to the following data sheets:

- SF-2923HC-C Series
- SF-2923UC-C Series

❑ 3812 – refer to the following data sheets:

- SF-3812F-T Series
- SF-3812FG-T Series
- SF-3812SP-T Series
- SF-3812TL-T Series
- SF-3812TM-T Series

## Step 2. What is the normal operating current of the circuit?

(This is the equivalent of the Rated Current specification of the SinglFuse™ SMD fuses.)

***Hint:*** *Select a SinglFuse™ SMD fuse with a rated current greater than the operating current since a fuse is typically derated 25 % for operation at 25 °C to avoid nuisance blowing. For example, if a customer wants a 1206 surface mount one-time fuse and has an operating current of 5.5 A, a fuse with a rated current greater than 7.3 A will be recommended (5.5 A / 0.75 = 7.3 A).*

| Series | Rated Current | Rated Voltage | Fusing Time | Typical $I^2t$ ($A^2s$) | Operating Temperature |
|---|---|---|---|---|---|
| SF-1206SxxxM | 0.5 – 8 A | 32 – 63 VDC | 5 sec @ 250 % $I_r$ | 0.002 – 2.3 | –55 to 125 °C |
| SF-1206SxxxW | 1.5 – 15 A | 32 – 65 VDC | 5 sec @ 250 % $I_r$ | 0.37 – 24.5 | –55 to 125 °C |
| SF-1206SP | 0.5 – 7 A | 32 – 63 VDC | 1 - 120 sec @ 200 % $I_r$ | 0.027 – 10.17 | –20 to 105 °C |
| SF-1206SPxxxM | 1 – 8 A | 24 – 63 VDC | 1 - 120 sec @ 200 % $I_r$ | 0.11 – 16.9 | –55 to 125 °C |
| SF-1206F | 0.5 – 7 A | 32 – 63 VDC | 60 sec @ 200 % $I_r$ | 0.011 – 3.25 | –20 to 105 °C |
| SF-1206FP | 0.5 – 7 A | 32 – 63 VDC | 5 sec @ 200 % $I_r$ | 0.015 – 3.3 | –20 to 105 °C |
| SF-1206HIxxxM | 1 – 8 A | 24 – 63 VDC | 60 sec @ 200 % $I_r$ | 0.11 – 60 | –55 to 125 °C |
| SF-1206HHxxM | 10 – 30 A | 24 VDC | 5 sec @ 350 % $I_r$ | 12 – 270 | –55 to 125 °C |
| SF-1206HVxxM | 10 – 40 A | 35 VDC | 5 sec @ 350 % $I_r$ | 15 – 240 | –55 to 125 °C |

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## Step 3. What is the ambient temperature of the circuit?

***Hint:*** *Refer to the Operating Temperature of the data sheet and select a SinglFuse™ SMD fuse which is suitable for the ambient temperature. For example, if a customer wants a 1206 surface mount one-time fuse with a rated current greater than 7.3 A and it will be used at an ambient temperature of 115 °C, then the SF-1206SxxxM / SF-1206SxxxW / SF-1206SPxxxM / SF-1206HIxxxM / SF-1206HHxxM / SF-1206HVxxM series will be suitable as the rated current and ambient temperature requirements can be satisfied.*

## Step 4. What is the maximum circuit voltage?

***Hint:*** *Select a SinglFuse™ SMD fuse with a rated voltage equal to or greater than the circuit voltage.*
*For example, if a customer wants a 1206 surface mount one-time fuse with a rated current greater than 7.3 A, an ambient temperature of 115 °C, and a maximum circuit voltage of 32 V, then part numbers SF-1206S800M-2 / SF-1206S800W-2 / SF-1206HV10M-2 will be suitable as the rated voltage is equal to or greater than the circuit voltage of 32 V while the operating current and ambient temperature requirements are also met.*

| Series | Part Number | Rated Current | Rated Voltage | Fusing Time | Typical $I^2t$ ($A^2s$) | Operating Temperature |
|---|---|---|---|---|---|---|
| **SF-1206SxxxM** | SF-1206S800M-2 | 8 A | 32 VDC | 5 sec @ 250 % $I_r$ | 2.3 | –55 to 125 °C |
| **SF-1206SxxxW** | SF-1206S800W-2 | 8 A | 32 VDC | 5 sec @ 250 % $I_r$ | 13.5 | –55 to 125 °C |
| **SF-1206SPxxxM** | SF-1206SP800M-2 | 8 A | 24 VDC | 1 – 120 sec @ 250 % $I_r$ | 16.9 | –55 to 125 °C |
| **SF-1206HIxxxM** | SF-1206HI800M-2 | 8 A | 24 VDC | 60 sec @ 200 % $I_r$ | 60 | –55 to 125 °C |
| **SF-1206HHxxM** | SF-1206HH10M-2 | 10 A | 24 VDC | 5 sec @ 350 % $I_r$ | 12 | –55 to 125 °C |
| **SF-1206HVxxM** | SF-1206HV10M-2 | 10 A | 35 VDC | 5 sec @ 350 % $I_r$ | 15 | –55 to 125 °C |

*This model satisfies all the customer's requirements in this example*

## Step 5. What is the nominal melt $I^2t$?

***Hint:*** *Refer to the Typical $I^2t$ of the data sheet and select a SinglFuse™ SMD fuse with suitable $I^2t$ to avoid blowing by pulse current in the circuit.*
*For example, if a customer wants a 1206 surface mount one-time fuse with a rated current greater than 7.3 A, ambient temperature of 115 °C, maximum circuit voltage of 32 V, and a nominal melt $I^2t$ of 14 $A^2$sec, then part number* ***SF-1206HV10M-2*** *would be a suitable model as the typical $I^2t$ of 15 $A^2$sec is greater than nominal melt $I^2t$ of 14 $A^2$sec.*

## Step 6. Request samples from your nearest Bourns representative and start testing in your application.

*Additional product selection support is available using the Bourns Parametric Search tool:*
*www.bourns.com/parametric-search*


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