

## Common Mode for Signal Line, SMD Type, SPF Series

### Overview

The KEMET SPF coils are common mode chokes with a wide variety of characteristics. These SMD toroidal coils are designed with our proprietary ferrite cores and are suitable for noise countermeasure in DC signal line circuits.

### Applications

- Base station

### Benefits

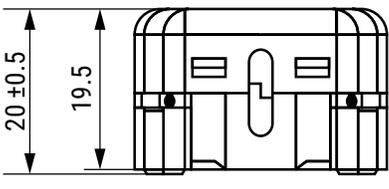
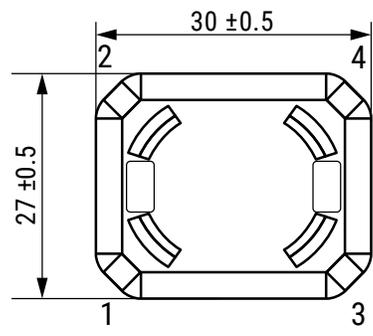
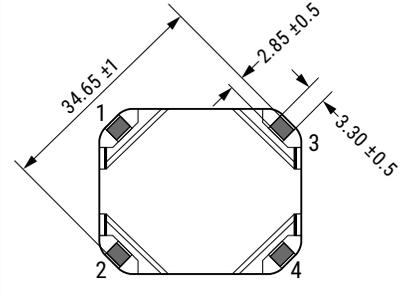
- Proprietary S15H ferrite material
- High L due to ferrite material
- High current due to our unique design
- Withstanding voltage: 600 VDC  
(one minute, between lines)
- Insulation resistance: more than 10 MΩ  
(250 VDC, between lines)
- SMD
- Operating temperature range from -40°C to +120°C
- UL94 V-0 flame retardant rated cap
- RoHS Compliant



### Part Number System

| SPF-   | 100-              | 1R1A   | 010                  |
|--------|-------------------|--|----------------------|
| Series | Rated Current (A) | Wire Diameter (mm)                             | Inductance Code (mH) |
| SPF-   | 100 = 10 A        | R = Decimal point<br>Example:<br>1R1A = 1.1 mm | 010 = 1.0 mH         |

## Dimensions – Millimeters

| Part Number     | Dimensions - Millimeters  | Top View - Millimeters   | Bottom View - Millimeters   |
|-----------------|---|--|---|
| SPF-100-1R1A010 |  <p><i>* Dimension is for reference only. Values not guaranteed.</i></p> |  |  <p><i>The bottom view shows terminal dimension.</i></p> |

## Environmental Compliance

All KEMET DC line filters are RoHS Compliant.



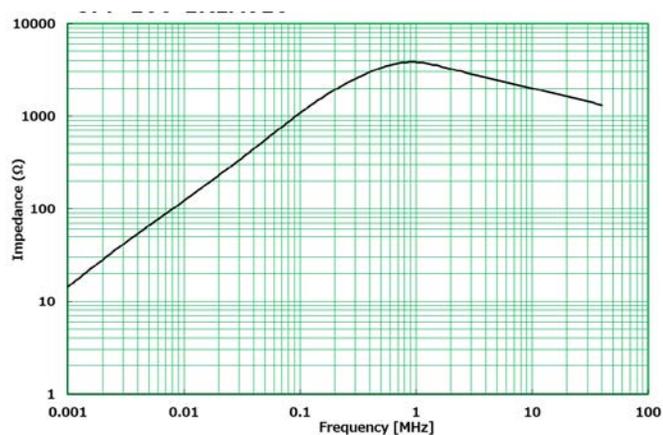
## Performance Characteristics

| Item                             | Performance Characteristics                           |
|----------------------------------|---|
| Rated Voltage                    | 150 VDC   |
| Withstanding Voltage             | 600 VDC (1 minute, between lines)                     |
| Insulation Resistance            | > 10 MΩ at 250 VDC (between lines)                    |
| Rated Current                    | 10 A  |
| Rated Inductance                 | 1 mH minimum  |
| Inductance Measurement Condition | 10 kHz  |
| Rated DC Resistance              | 12 mΩ maximum   |
| Operating Temperature            | -40°C to +120°C (not including self-temperature rise) |

**Table 1 – Ratings & Part Number Reference**

| Part Number     | Rated Voltage DC (V) | Rated Current DC (A) | Inductance (mH) Minimum | DC Resistance/Line (mΩ) Maximum | Weight (g) |
|-----------------|----------------------|----------------------|-------------------------|---------------------------------|------------|
| SPF-100-1R1A010 | 150                  | 10                   | 1                       | 10                              | 26         |

## Frequency Characteristics

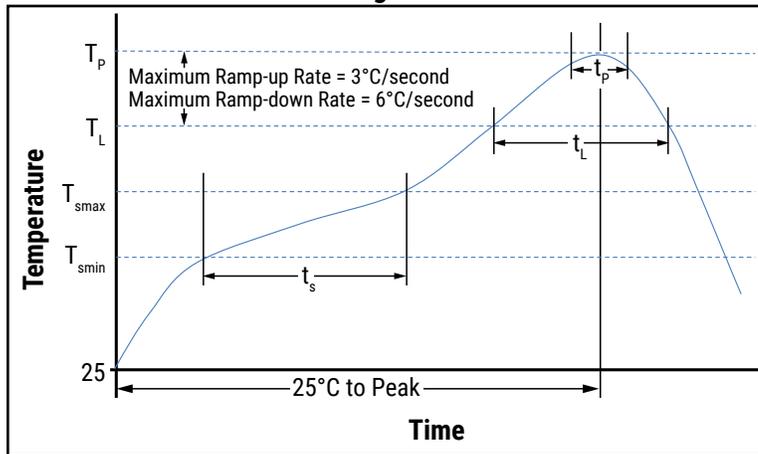


## Packaging

| Part Type       | Packaging Type | Pieces per Package | Pieces per Box |
|-----------------|----------------|--------------------|----------------|
| SPF-100-1R1A010 | Tray           | 35                 | 210            |

## Soldering Process

### Recommended Reflow Soldering Profile:



### Reference ICP/JEDEC J-STD-020E

| Profile Feature                                       | Pb-Free Assembly   |
|---|--------------------|
| Preheat/Soak  |                    |
| Temperature Minimum ( $T_{smin}$ )                    | 150°C              |
| Temperature Maximum ( $T_{smax}$ )                    | 180°C              |
| Time ( $t_s$ ) from $T_{smin}$ to $T_{smax}$          | 80 – 120 seconds   |
| Ramp-up Rate ( $T_L$ to $T_p$ )                       | 3°C/second maximum |
| Liquidous Temperature ( $T_L$ )                       | 230°C              |
| Time Above Liquidous ( $t_L$ )                        | 30 – 40 seconds    |
| Peak Temperature ( $T_p$ )                            | 250°C              |
| Time within 5°C of Maximum Peak Temperature ( $t_p$ ) | 5 seconds maximum  |
| Ramp-down Rate ( $T_p$ to $T_L$ )                     | 6°C/second maximum |
| Time 25°C to Peak Temperature                         | 8 minutes maximum  |

## Handling Precautions

### Precautions for product storage

DC Line Filters should be stored in normal working environments. While the chokes themselves are quite robust in other environments, solderability will be degraded by exposure to high temperatures, high humidity, corrosive atmospheres, and long term storage.

KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 70% relative humidity. Atmospheres should be free of chlorine and sulfur bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts. Do not store near strong magnetic fields, as this might magnetize the product.

For optimized solderability, DC line filter stock should be used promptly, preferably within six months of receipt.

### Product temperature rise values

The values listed for temperature rise are the result of self-heating in wires when the rated current (commercial frequency) is applied. When using, check and evaluate the value of the core temperature rise under actual operating conditions.

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