

**SUBJECT: ERZ-CF, ERZ-SF SMT Molded Disc ZNR® 's**

**BULLETIN #: PDNPG3307092809**

**Date: July 28, 2009**

**LAST TIME BUY: March 25, 2010**

**LAST TIME SHIPMENT: May 31, 2010**

**SUGGESTED REPLACEMENT: Shown below**

In an effort to improve production efficiencies, and offer the highest value varistors, Panasonic is consolidating our ERZ product line up. As a result of this consolidation within the ERZ-VF series the following P/N's have been discontinued:

Discontinued

ERZCF□MK□□□

ERZSF□MK□□□



Suggested Replacement

ERZVF□M□□□

(VF Series)

In many cases, the ERZ-VF series offers better overall performance with equal to or higher power handling capacity.

Please see following pages for details.

ZNR Surge Absorbers SMD Mold Type  
Comparison CF,SF,VF Type

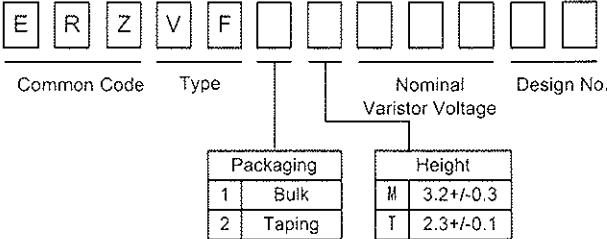
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- Comparison of Part Numbers Explanation
- Comparison of Part Numbers
- VF vs. SF Type (Dimensions)
- VF vs. SF Type (Characteristics)
- VF vs. CF Type (Dimensions)
- VF vs. CF Type (Characteristics)

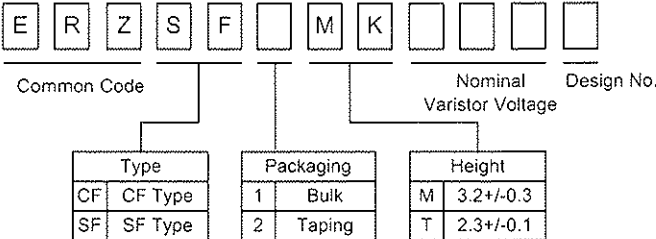
LCR DEVICE COMPANY CERAMIC BUSINESS UNIT  
MATSUSHITA ELECTRONIC COMPONENTS Co., LTD

Comparison of Part Numbers Explanation

VF Type



CF/SF Type



Comparison of Part Numbers

| Varistor Voltage | VFM Type      | CF Type        | SF Type        |
|------------------|---------------|----------------|----------------|
| 22V              | ERZVF1(2)M220 | ERZCF1(2)MK220 | ERZSF1(2)MK220 |
| 27V              | ERZVF1(2)M270 | ERZCF1(2)MK270 | ERZSF1(2)MK270 |
| 33V              | ERZVF1(2)M330 | ERZCF1(2)MK330 | ERZSF1(2)MK330 |
| 39V              | ERZVF1(2)M390 | ERZCF1(2)MK390 | ERZSF1(2)MK390 |
| 47V              | ERZVF1(2)M470 | ERZCF1(2)MK470 | ERZSF1(2)MK470 |
| 56V              | ERZVF1(2)M560 | ERZCF1(2)MK560 | ERZSF1(2)MK560 |
| 68V              | ERZVF1(2)M680 | ERZCF1(2)MK680 | ERZSF1(2)MK680 |
| 82V              | ERZVF1(2)M820 | ERZCF1(2)MK820 | ERZSF1(2)MK820 |
| 100V             | ERZVF1(2)M101 | ERZCF1(2)MK101 | ERZSF1(2)MK101 |
| 120V             | ERZVF1(2)M121 | ERZCF1(2)MK121 | ERZSF1(2)MK121 |
| 150V             | ERZVF1(2)M151 | ERZCF1(2)MK151 | ERZSF1(2)MK151 |
| 200V             | ERZVF1(2)M201 | ERZCF1(2)MK201 | ERZSF1(2)MK201 |
| 220V             | ERZVF1(2)M221 | ERZCF1(2)MK221 | ERZSF1(2)MK221 |
| 240V             | ERZVF1(2)M241 | ERZCF1(2)MK241 | ERZSF1(2)MK241 |
| 270V             | ERZVF1(2)M271 | ERZCF1(2)MK271 | ERZSF1(2)MK271 |
| 330V             | ERZVF1(2)M331 | -              | -              |
| 360V             | ERZVF1(2)M361 | ERZCF1(2)MK361 | ERZSF1(2)MK361 |
| 390V             | ERZVF1(2)M391 | ERZCF1(2)MK391 | ERZSF1(2)MK391 |
| 430V             | ERZVF1(2)M431 | ERZCF1(2)MK431 | ERZSF1(2)MK431 |
| 470V             | ERZVF1(2)M471 | ERZCF1(2)MK471 | ERZSF1(2)MK471 |

ERVSF and ERZVF is not full compatible. Please check details(Sheet::[VF vs.CF C]).

↑  
No direct  
cross-~~connected~~ only  
Alternate

VF vs. SF Type (Dimensions)

| SF Type        | W       | L       | H       | S       | E       | VFM Type      | W       | L       | H       | S       | E       |
|----------------|---------|---------|---------|---------|---------|---------------|---------|---------|---------|---------|---------|
| ERZSF1(2)MK220 |         |         |         |         |         | ERZVF1(2)M220 |         |         |         |         |         |
| ERZSF1(2)MK270 |         |         |         |         |         | ERZVF1(2)M270 |         |         |         |         |         |
| ERZSF1(2)MK330 |         |         |         |         |         | ERZVF1(2)M330 |         |         |         |         |         |
| ERZSF1(2)MK390 |         |         |         |         |         | ERZVF1(2)M390 |         |         |         |         |         |
| ERZSF1(2)MK470 |         |         |         |         |         | ERZVF1(2)M470 |         |         |         |         |         |
| ERZSF1(2)MK560 |         |         |         |         |         | ERZVF1(2)M560 |         |         |         |         |         |
| ERZSF1(2)MK680 |         |         |         |         |         | ERZVF1(2)M680 |         |         |         |         |         |
| ERZSF1(2)MK820 |         |         |         |         |         | ERZVF1(2)M820 |         |         |         |         |         |
| ERZSF1(2)MK101 |         |         |         |         |         | ERZVF1(2)M101 |         |         |         |         |         |
| ERZSF1(2)MK121 | 6.2±0.4 | 8.0±0.5 | 3.2±0.3 | 1.3±0.3 | 2.5±0.2 | ERZVF1(2)M121 | 6.0±0.4 | 8.0±0.5 | 3.2±0.3 | 1.3±0.3 | 2.5±0.2 |
| ERZSF1(2)MK151 |         |         |         |         |         | ERZVF1(2)M151 |         |         |         |         |         |
| ERZSF1(2)MK201 |         |         |         |         |         | ERZVF1(2)M201 |         |         |         |         |         |
| ERZSF1(2)MK221 |         |         |         |         |         | ERZVF1(2)M221 |         |         |         |         |         |
| ERZSF1(2)MK241 |         |         |         |         |         | ERZVF1(2)M241 |         |         |         |         |         |
| ERZSF1(2)MK271 |         |         |         |         |         | ERZVF1(2)M271 |         |         |         |         |         |
| ERZSF1(2)MK361 |         |         |         |         |         | ERZVF1(2)M331 |         |         |         |         |         |
| ERZSF1(2)MK391 |         |         |         |         |         | ERZVF1(2)M361 |         |         |         |         |         |
| ERZSF1(2)MK391 |         |         |         |         |         | ERZVF1(2)M391 |         |         |         |         |         |
| ERZSF1(2)MK431 |         |         |         |         |         | ERZVF1(2)M431 |         |         |         |         |         |
| ERZSF1(2)MK471 |         |         |         |         |         | ERZVF1(2)M471 |         |         |         |         |         |

VF vs. SF Type (Characteristics)

| SF Type        | Max. Allowable Voltage |     | Clamping Voltage |     | Rated Power | Max. Energy<br>(2ms) | Max. Peak Current<br>(8/20 $\mu$ s, 21ms) | VFM Type      | Max. Allowable Voltage |     | Clamping Voltage |     | Rated Power | Max. Energy<br>(2ms) | Max. Peak Current<br>(8/20 $\mu$ s, 21ms) |
|----------------|------------------------|-----|------------------|-----|-------------|----------------------|---|---------------|------------------------|-----|------------------|-----|-------------|----------------------|---|
|                | AC                     | DC  | VxA              | Ip  |             |                      |   |               | AC                     | DC  | VxA              | Ip  |             |                      |   |
|                | (V)                    | (V) | (A)              | (W) | (J)         | (A)                  | (V)                                       |               | (V)                    | (A) | (W)              | (J) | (A)         |                      |   |
| ERZSF1(2)MK220 | 14                     | 18  | 43               | 2.5 | 0.02        | 0.9                  | 125                                       | ERZVF1(2)M220 | 14                     | 18  | 43               | 2.5 | 0.02        | 0.9                  | 125                                       |
| ERZSF1(2)MK270 | 17                     | 22  | 53               | 2.5 | 0.02        | 1.0                  | 125                                       | ERZVF1(2)M270 | 17                     | 22  | 53               | 2.5 | 0.02        | 1.0                  | 125                                       |
| ERZSF1(2)MK330 | 20                     | 26  | 65               | 2.5 | 0.02        | 1.2                  | 125                                       | ERZVF1(2)M330 | 20                     | 26  | 65               | 2.5 | 0.02        | 1.2                  | 125                                       |
| ERZSF1(2)MK390 | 25                     | 31  | 77               | 2.5 | 0.02        | 1.5                  | 125                                       | ERZVF1(2)M390 | 25                     | 31  | 77               | 2.5 | 0.02        | 1.5                  | 125                                       |
| ERZSF1(2)MK470 | 30                     | 38  | 93               | 2.5 | 0.02        | 1.8                  | 125                                       | ERZVF1(2)M470 | 30                     | 38  | 93               | 2.5 | 0.02        | 1.8                  | 125                                       |
| ERZSF1(2)MK560 | 35                     | 45  | 110              | 2.5 | 0.02        | 2.2                  | 125                                       | ERZVF1(2)M560 | 35                     | 45  | 110              | 2.5 | 0.02        | 2.2                  | 125                                       |
| ERZSF1(2)MK680 | 40                     | 56  | 135              | 2.5 | 0.02        | 2.5                  | 125                                       | ERZVF1(2)M680 | 40                     | 56  | 135              | 2.5 | 0.02        | 2.5                  | 125                                       |
| ERZSF1(2)MK820 | 50                     | 65  | 135              | 10  | 0.25        | 3.5                  | 600                                       | ERZVF1(2)M820 | 50                     | 65  | 135              | 10  | 0.25        | 3.5                  | 600                                       |
| ERZSF1(2)MK101 | 60                     | 85  | 165              | 10  | 0.25        | 4.0                  | 600                                       | ERZVF1(2)M101 | 60                     | 85  | 165              | 10  | 0.25        | 4.0                  | 600                                       |
| ERZSF1(2)MK121 | 75                     | 100 | 200              | 10  | 0.25        | 5.0                  | 600                                       | ERZVF1(2)M121 | 75                     | 100 | 200              | 10  | 0.25        | 5.0                  | 600                                       |
| ERZSF1(2)MK151 | 95                     | 125 | 250              | 10  | 0.25        | 6.0                  | 600                                       | ERZVF1(2)M151 | 95                     | 125 | 250              | 10  | 0.25        | 6.0                  | 600                                       |
| ERZSF1(2)MK201 | 130                    | 170 | 340              | 10  | 0.25        | 8.0                  | 600                                       | ERZVF1(2)M201 | 130                    | 170 | 340              | 10  | 0.25        | 8.0                  | 600                                       |
| ERZSF1(2)MK221 | 140                    | 180 | 360              | 10  | 0.25        | 9.0                  | 600                                       | ERZVF1(2)M221 | 140                    | 180 | 360              | 10  | 0.25        | 9.0                  | 600                                       |
| ERZSF1(2)MK241 | 150                    | 200 | 395              | 10  | 0.25        | 10.0                 | 600                                       | ERZVF1(2)M241 | 150                    | 200 | 395              | 10  | 0.25        | 10.0                 | 600                                       |
| ERZSF1(2)MK271 | 175                    | 225 | 455              | 10  | 0.25        | 12.0                 | 600                                       | ERZVF1(2)M271 | 175                    | 225 | 455              | 10  | 0.25        | 12.0                 | 600                                       |
|                |                        |     |                  |     |             |                      |   | ERZVF1(2)M331 | 210                    | 270 | 545              | 10  | 0.10        | 8.0                  | 300                                       |
| ERZSF1(2)MK361 | 230                    | 300 | 595              | 10  | 0.20        | 12.0                 | 400                                       | ERZVF1(2)M361 | 230                    | 300 | 595              | 10  | 0.10        | 9.0                  | 300                                       |
| ERZSF1(2)MK391 | 250                    | 320 | 650              | 10  | 0.20        | 12.0                 | 400                                       | ERZVF1(2)M391 | 250                    | 320 | 650              | 10  | 0.10        | 9.0                  | 300                                       |
| ERZSF1(2)MK431 | 275                    | 350 | 710              | 10  | 0.20        | 14.0                 | 400                                       | ERZVF1(2)M431 | 275                    | 350 | 710              | 10  | 0.10        | 10.0                 | 300                                       |
| ERZSF1(2)MK471 | 300                    | 385 | 775              | 10  | 0.20        | 14.0                 | 400                                       | ERZVF1(2)M471 | 300                    | 385 | 775              | 10  | 0.10        | 10.0                 | 300                                       |

Direct Cross

VF vs. CF Type (Dimensions)

| CF Type        | W         | L         | H         | S         | E         | VFM Type      | W         | L         | H         | S         | E         |
|----------------|-----------|-----------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|-----------|-----------|
| ERZCF1(2)MK220 |           |           |           |           |           | ERZVF1(2)M220 |           |           |           |           |           |
| ERZCF1(2)MK270 |           |           |           |           |           | ERZVF1(2)M270 |           |           |           |           |           |
| ERZCF1(2)MK330 |           |           |           |           |           | ERZVF1(2)M330 |           |           |           |           |           |
| ERZCF1(2)MK390 |           |           |           |           |           | ERZVF1(2)M390 |           |           |           |           |           |
| ERZCF1(2)MK470 |           |           |           |           |           | ERZVF1(2)M470 |           |           |           |           |           |
| ERZCF1(2)MK560 |           |           |           |           |           | ERZVF1(2)M560 |           |           |           |           |           |
| ERZCF1(2)MK680 |           |           |           |           |           | ERZVF1(2)M680 |           |           |           |           |           |
| ERZCF1(2)MK820 |           |           |           |           |           | ERZVF1(2)M820 |           |           |           |           |           |
| ERZCF1(2)MK101 |           |           |           |           |           | ERZVF1(2)M101 |           |           |           |           |           |
| ERZCF1(2)MK121 | 6.0+/-0.4 | 8.0+/-0.5 | 3.2+/-0.3 | 1.3+/-0.3 | 2.5+/-0.2 | ERZVF1(2)M121 | 6.0+/-0.4 | 8.0+/-0.5 | 3.2+/-0.3 | 1.3+/-0.3 | 2.5+/-0.2 |
| ERZCF1(2)MK151 |           |           |           |           |           | ERZVF1(2)M151 |           |           |           |           |           |
| ERZCF1(2)MK201 |           |           |           |           |           | ERZVF1(2)M201 |           |           |           |           |           |
| ERZCF1(2)MK221 |           |           |           |           |           | ERZVF1(2)M221 |           |           |           |           |           |
| ERZCF1(2)MK241 |           |           |           |           |           | ERZVF1(2)M241 |           |           |           |           |           |
| ERZCF1(2)MK271 |           |           |           |           |           | ERZVF1(2)M271 |           |           |           |           |           |
| -              |           |           |           |           |           | ERZVF1(2)M331 |           |           |           |           |           |
| ERZCF1(2)MK361 |           |           |           |           |           | ERZVF1(2)M361 |           |           |           |           |           |
| ERZCF1(2)MK391 |           |           |           |           |           | ERZVF1(2)M391 |           |           |           |           |           |
| ERZCF1(2)MK431 |           |           |           |           |           | ERZVF1(2)M431 |           |           |           |           |           |
| ERZCF1(2)MK471 |           |           |           |           |           | ERZVF1(2)M471 |           |           |           |           |           |

### VF vs. CF Type (Characteristics)

| CF Type        | Max. Allowable Voltage |     | Clamping Voltage |     | Rated Power | Max. Energy<br>(2ms) | Max. Peak Current<br>(8/20 $\mu$ s 2times) | VFM Type      | Max. Allowable Voltage |     | Clamping Voltage |     | Rated Power | Max. Energy<br>(2ms) | Max. Peak Current<br>(8/20 $\mu$ s 2times) |
|----------------|------------------------|-----|------------------|-----|-------------|----------------------|--|---------------|------------------------|-----|------------------|-----|-------------|----------------------|--|
|                | AC                     | DC  | VxA              | Ip  |             |                      |  |               | AC                     | DC  | VxA              | Ip  |             |                      |  |
|                | (V)                    | (V) | (A)              | (W) | (J)         | (A)                  | (V)  |               | (V)                    | (A) | (W)              | (J) | (A)         |                      |  |
| ERZCF1(2)MK220 | 14                     | 18  | 48               | 1   | 0.01        | 0.4                  | 50   | ERZVF1(2)M220 | 14                     | 18  | 43               | 2.5 | 0.02        | 0.9                  | 125  |
| ERZCF1(2)MK270 | 17                     | 22  | 60               | 1   | 0.01        | 0.5                  | 50   | ERZVF1(2)M270 | 17                     | 22  | 53               | 2.5 | 0.02        | 1.0                  | 125  |
| ERZCF1(2)MK330 | 20                     | 26  | 73               | 1   | 0.01        | 0.6                  | 50   | ERZVF1(2)M330 | 20                     | 26  | 65               | 2.5 | 0.02        | 1.2                  | 125  |
| ERZCF1(2)MK390 | 25                     | 31  | 86               | 1   | 0.01        | 0.8                  | 50   | ERZVF1(2)M390 | 25                     | 31  | 77               | 2.5 | 0.02        | 1.5                  | 125  |
| ERZCF1(2)MK470 | 30                     | 38  | 104              | 1   | 0.01        | 1.0                  | 50   | ERZVF1(2)M470 | 30                     | 38  | 93               | 2.5 | 0.02        | 1.8                  | 125  |
| ERZCF1(2)MK560 | 35                     | 45  | 123              | 1   | 0.01        | 1.0                  | 50   | ERZVF1(2)M560 | 35                     | 45  | 110              | 2.5 | 0.02        | 2.2                  | 125  |
| ERZCF1(2)MK680 | 40                     | 56  | 150              | 1   | 0.01        | 1.2                  | 50   | ERZVF1(2)M680 | 40                     | 56  | 135              | 2.5 | 0.02        | 2.5                  | 125  |
| ERZCF1(2)MK820 | 50                     | 65  | 145              | 5   | 0.10        | 1.7                  | 200  | ERZVF1(2)M820 | 50                     | 65  | 135              | 10  | 0.25        | 3.5                  | 600  |
| ERZCF1(2)MK101 | 60                     | 85  | 175              | 5   | 0.10        | 2.0                  | 200  | ERZVF1(2)M101 | 60                     | 85  | 165              | 10  | 0.25        | 4.0                  | 600  |
| ERZCF1(2)MK121 | 75                     | 100 | 210              | 5   | 0.10        | 2.5                  | 200  | ERZVF1(2)M121 | 75                     | 100 | 200              | 10  | 0.25        | 5.0                  | 600  |
| ERZCF1(2)MK151 | 95                     | 125 | 260              | 5   | 0.10        | 3.0                  | 200  | ERZVF1(2)M151 | 95                     | 125 | 250              | 10  | 0.25        | 6.0                  | 600  |
| ERZCF1(2)MK201 | 130                    | 170 | 355              | 5   | 0.10        | 4.0                  | 200  | ERZVF1(2)M201 | 130                    | 170 | 340              | 10  | 0.25        | 8.0                  | 600  |
| ERZCF1(2)MK221 | 140                    | 180 | 380              | 5   | 0.10        | 4.5                  | 200  | ERZVF1(2)M221 | 140                    | 180 | 360              | 10  | 0.25        | 9.0                  | 600  |
| ERZCF1(2)MK241 | 150                    | 200 | 415              | 5   | 0.10        | 5.0                  | 200  | ERZVF1(2)M241 | 150                    | 200 | 395              | 10  | 0.25        | 10.0                 | 600  |
| ERZCF1(2)MK271 | 175                    | 225 | 475              | 5   | 0.10        | 6.0                  | 200  | ERZVF1(2)M271 | 175                    | 225 | 455              | 10  | 0.25        | 12.0                 | 600  |
|                |                        |     |                  |     |             |                      |  | ERZVF1(2)M331 | 210                    | 270 | 545              | 10  | 0.10        | 8.0                  | 300  |
| ERZCF1(2)MK361 | 230                    | 300 | 620              | 5   | 0.10        | 6.0                  | 200  | ERZVF1(2)M361 | 230                    | 300 | 595              | 10  | 0.10        | 9.0                  | 300  |
| ERZCF1(2)MK391 | 250                    | 320 | 675              | 5   | 0.10        | 6.0                  | 200  | ERZVF1(2)M391 | 250                    | 320 | 650              | 10  | 0.10        | 9.0                  | 300  |
| ERZCF1(2)MK431 | 275                    | 350 | 745              | 5   | 0.10        | 6.3                  | 200  | ERZVF1(2)M431 | 275                    | 350 | 710              | 10  | 0.10        | 10.0                 | 300  |
| ERZCF1(2)MK471 | 300                    | 385 | 810              | 5   | 0.10        | 7.0                  | 200  | ERZVF1(2)M471 | 300                    | 385 | 775              | 10  | 0.10        | 10.0                 | 300  |

Direct Cross