

## Electrical Characteristics (at TA=25°C unless otherwise noted)

| Part Number    | Marking Code | Zener Voltage |     |       |         | Operating resistance |         | Rising operating Resistance |         | Reverse current |        |
|----------------|--------------|---------------|-----|-------|---------|----------------------|---------|-----------------------------|---------|-----------------|--------|
|                |              | Vz (V)        |     |       |         | ZzT (Ω)              |         | ZzK (Ω)                     |         | IR (uA)         |        |
|                |              | Min           | Typ | Max   | Iz (mA) | Max                  | Iz (mA) | Max                         | Iz (mA) | Max             | VR (V) |
| CZRQR52C2-HF   | Z0           | 1.90          | 2.0 | 2.10  | 5       | 100                  | 5       | 600                         | 1       | 100             | 1      |
| CZRQR52C2V2-HF | Z1           | 2.09          | 2.2 | 2.31  | 5       | 100                  | 5       | 600                         | 1       | 100             | 1      |
| CZRQR52C2V4-HF | Z2           | 2.28          | 2.4 | 2.52  | 5       | 85                   | 5       | 600                         | 1       | 100             | 1      |
| CZRQR52C2V7-HF | Z3           | 2.57          | 2.7 | 2.84  | 5       | 83                   | 5       | 500                         | 1       | 75              | 1      |
| CZRQR52C3-HF   | Z4           | 2.85          | 3.0 | 3.15  | 5       | 95                   | 5       | 500                         | 1       | 50              | 1      |
| CZRQR52C3V3-HF | Z5           | 3.14          | 3.3 | 3.47  | 5       | 95                   | 5       | 500                         | 1       | 25              | 1      |
| CZRQR52C3V6-HF | Z6           | 3.42          | 3.6 | 3.78  | 5       | 95                   | 5       | 500                         | 1       | 15              | 1      |
| CZRQR52C3V9-HF | Z7           | 3.71          | 3.9 | 4.10  | 5       | 95                   | 5       | 500                         | 1       | 10              | 1      |
| CZRQR52C4V3-HF | Z8           | 4.09          | 4.3 | 4.52  | 5       | 95                   | 5       | 500                         | 1       | 5               | 1      |
| CZRQR52C4V7-HF | Z9           | 4.47          | 4.7 | 4.94  | 5       | 78                   | 5       | 500                         | 1       | 5               | 2      |
| CZRQR52C5V1-HF | ZA           | 4.85          | 5.1 | 5.36  | 5       | 60                   | 5       | 480                         | 1       | 0.1             | 0.8    |
| CZRQR52C5V6-HF | ZB           | 5.32          | 5.6 | 5.88  | 5       | 40                   | 5       | 400                         | 1       | 0.1             | 1      |
| CZRQR52C6V2-HF | ZC           | 5.89          | 6.2 | 6.51  | 5       | 10                   | 5       | 200                         | 1       | 0.1             | 2      |
| CZRQR52C6V8-HF | ZE           | 6.46          | 6.8 | 7.14  | 5       | 8                    | 5       | 150                         | 1       | 0.1             | 3      |
| CZRQR52C7V5-HF | ZF           | 7.13          | 7.5 | 7.88  | 5       | 7                    | 5       | 50                          | 1       | 0.1             | 5      |
| CZRQR52C8V2-HF | ZG           | 7.79          | 8.2 | 8.61  | 5       | 7                    | 5       | 50                          | 1       | 0.1             | 6      |
| CZRQR52C9V1-HF | ZH           | 8.65          | 9.1 | 9.56  | 5       | 10                   | 5       | 50                          | 1       | 0.1             | 7      |
| CZRQR52C10-HF  | ZJ           | 9.50          | 10  | 10.50 | 5       | 15                   | 5       | 70                          | 1       | 0.1             | 7.5    |
| CZRQR52C11-HF  | ZK           | 10.45         | 11  | 11.55 | 5       | 20                   | 5       | 70                          | 1       | 0.1             | 8.5    |
| CZRQR52C12-HF  | ZM           | 11.40         | 12  | 12.60 | 5       | 20                   | 5       | 90                          | 1       | 0.1             | 9      |
| CZRQR52C13-HF  | ZN           | 12.35         | 13  | 13.65 | 5       | 25                   | 5       | 110                         | 1       | 0.1             | 10     |
| CZRQR52C15-HF  | ZP           | 14.25         | 15  | 15.75 | 5       | 30                   | 5       | 110                         | 1       | 0.1             | 11     |
| CZRQR52C16-HF  | ZQ           | 15.20         | 16  | 16.80 | 5       | 40                   | 5       | 170                         | 1       | 0.1             | 12     |
| CZRQR52C18-HF  | ZR           | 17.10         | 18  | 18.90 | 5       | 50                   | 5       | 170                         | 1       | 0.1             | 14     |
| CZRQR52C20-HF  | ZS           | 19.00         | 20  | 21.00 | 5       | 50                   | 5       | 220                         | 1       | 0.1             | 15     |
| CZRQR52C22-HF  | ZT           | 20.90         | 22  | 23.10 | 5       | 55                   | 5       | 220                         | 1       | 0.1             | 17     |
| CZRQR52C24-HF  | ZU           | 22.80         | 24  | 25.20 | 5       | 80                   | 5       | 220                         | 1       | 0.1             | 18     |
| CZRQR52C27-HF  | ZV           | 25.65         | 27  | 28.35 | 5       | 80                   | 5       | 250                         | 1       | 0.1             | 20     |
| CZRQR52C30-HF  | ZW           | 28.50         | 30  | 31.50 | 5       | 80                   | 5       | 250                         | 1       | 0.1             | 23     |
| CZRQR52C33-HF  | ZX           | 31.35         | 33  | 34.65 | 5       | 80                   | 5       | 250                         | 1       | 0.1             | 25     |
| CZRQR52C36-HF  | ZY           | 34.20         | 36  | 37.80 | 5       | 90                   | 5       | 250                         | 1       | 0.1             | 27     |
| CZRQR52C39-HF  | ZZ           | 37.05         | 39  | 40.95 | 5       | 90                   | 5       | 300                         | 1       | 0.1             | 29     |

Company reserves the right to improve product design , functions and reliability without notice.

REV:B

## RATING AND CHARACTERISTIC CURVES (CZRQR52C2-HF Thru CZRQR52C39-HF)

Fig.1 TEMPERATURE COEFFICIENTS

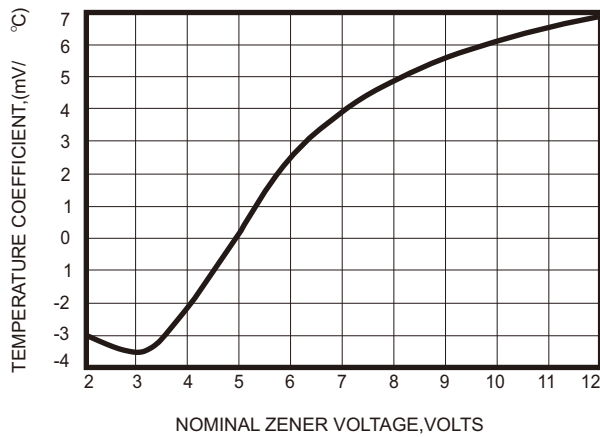


Fig.2 TEMPERATURE COEFFICIENTS

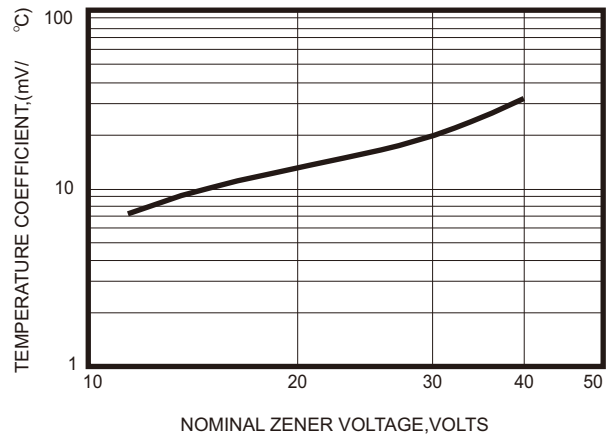


Fig.3 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

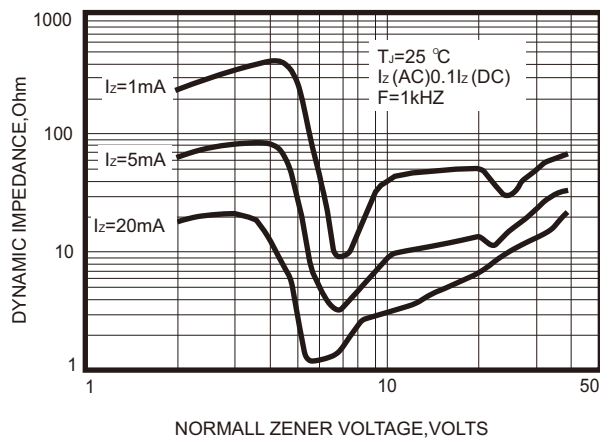


Fig.4 TYPICAL FORWARD VOLTAGE

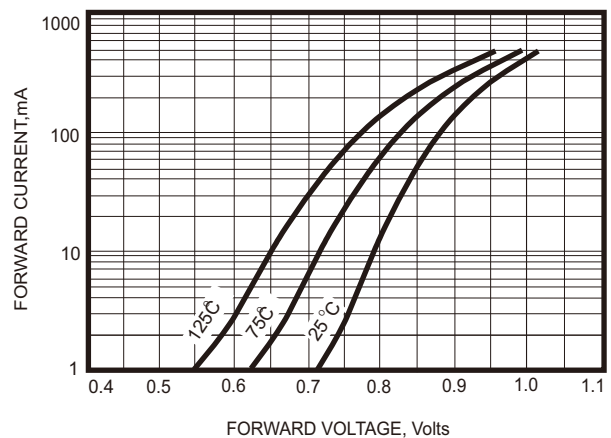


Fig.5 TYPICAL LEAKAGE CURRENT

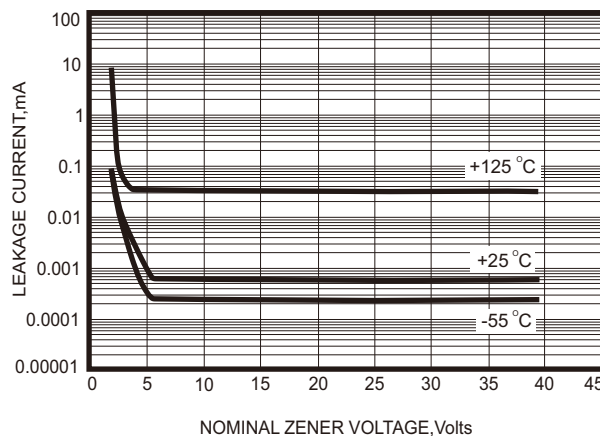
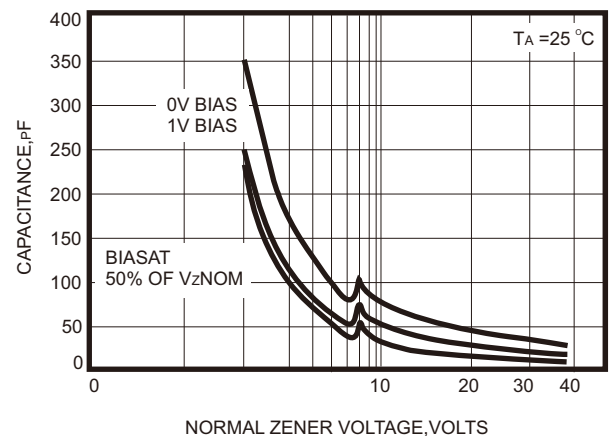


Fig.6 TYPICAL CAPACITANCE



RATING AND CHARACTERISTIC CURVES (CZRQR52C2-HF Thru CZRQR52C39-HF)

Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

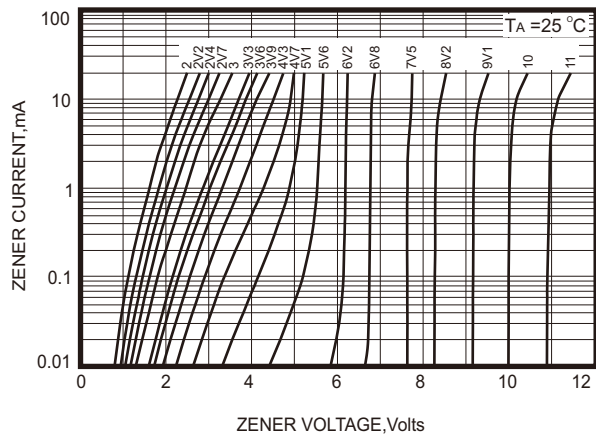


Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT

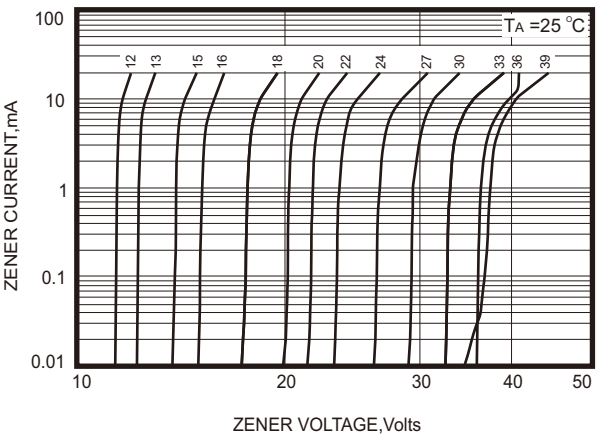
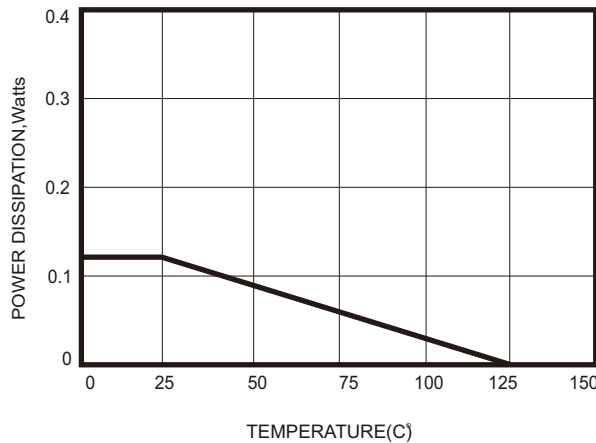
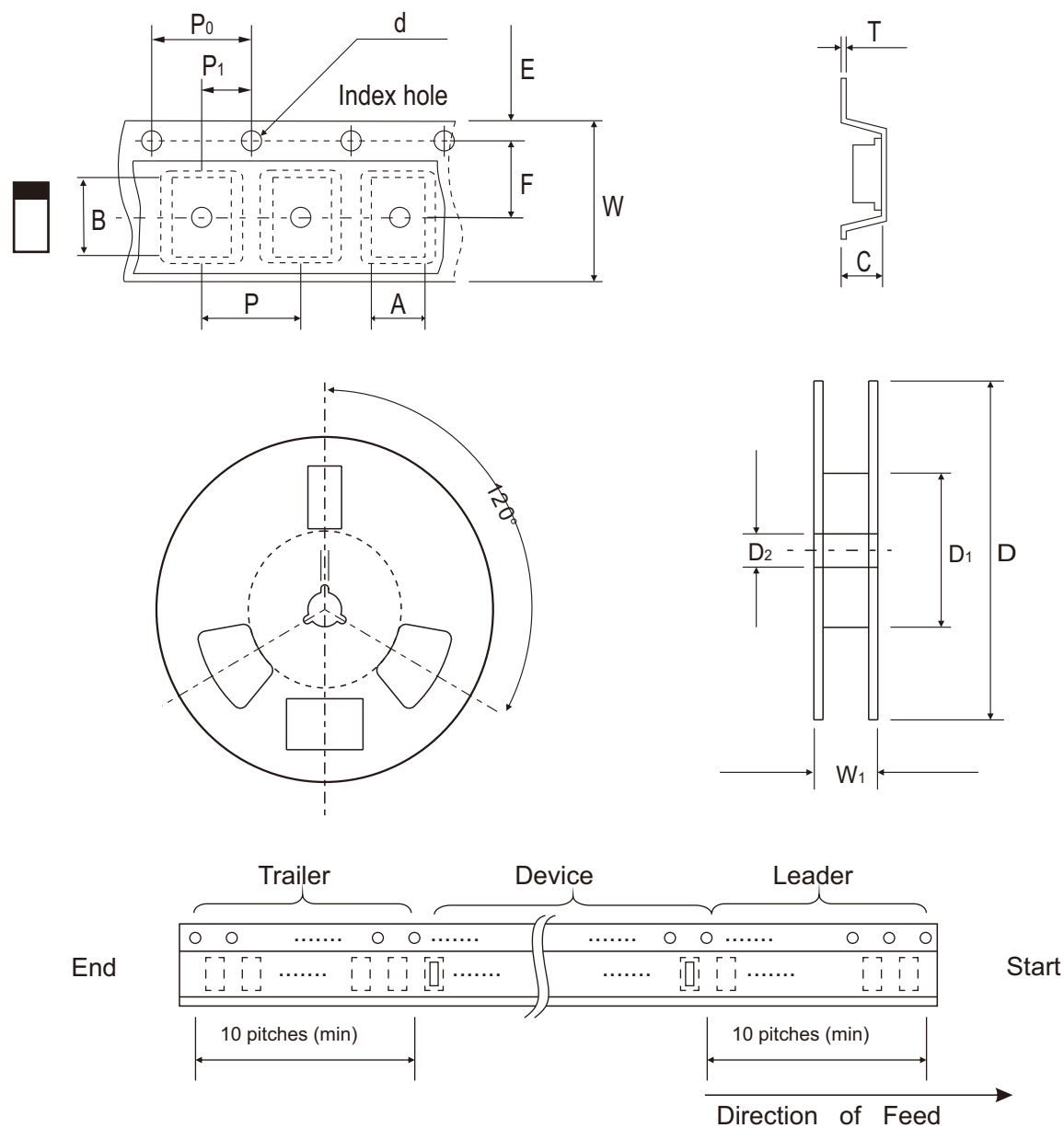


Fig.9 STEADY STATE POWER DERATING



Reel Taping Specification

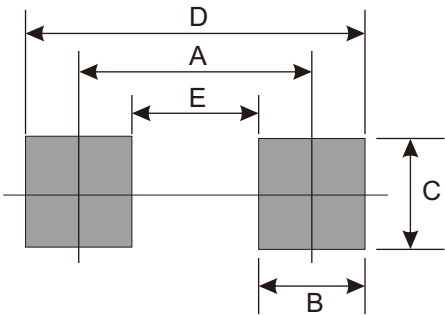


| 0402<br>(SOD-923F) | SYMBOL | A             | B             | C             | d                    | D             | D <sub>1</sub>       | D <sub>2</sub> |
|--------------------|--------|---------------|---------------|---------------|----------------------|---------------|----------------------|----------------|
|                    | (mm)   | 0.75 ± 0.05   | 1.17 ± 0.05   | 0.65 ± 0.05   | 1.50 + 0.10<br>- 0   | 178 ± 1       | 60.0 + 0.50<br>- 0   | 13.0 ± 0.20    |
|                    | (inch) | 0.030 ± 0.002 | 0.046 ± 0.002 | 0.026 ± 0.002 | 0.059 + 0.004<br>- 0 | 7.008 ± 0.039 | 2.362 + 0.020<br>- 0 | 0.512 ± 0.008  |

| 0402<br>(SOD-923F) | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | T                        | W             | W <sub>1</sub> |
|--------------------|--------|---------------|---------------|---------------|----------------|----------------|--------------------------|---------------|----------------|
|                    | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.10   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.10    | 0.20 + 0.02<br>- 0.05    | 8.00 ± 0.20   | 12.0 ± 0.15    |
|                    | (inch) | 0.069 ± 0.004 | 0.138 ± 0.004 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.004  | 0.008 + 0.001<br>- 0.002 | 0.315 ± 0.008 | 0.472 ± 0.006  |

Suggested PAD Layout

| SIZE | 0402/SOD-923F |        |
|------|---------------|--------|
|      | (mm)          | (inch) |
| A    | 0.750         | 0.030  |
| B    | 0.500         | 0.020  |
| C    | 0.700         | 0.028  |
| D    | 1.250         | 0.049  |
| E    | 0.250         | 0.010  |



Standard Packaging

| Case Type     | Qty Per Reel | Reel Size |
|---------------|--------------|-----------|
|               | (Pcs)        | (inch)    |
| 0402/SOD-923F | 5,000        | 7         |