

# CZRA4728-HF Thru. CZRA4764-HF

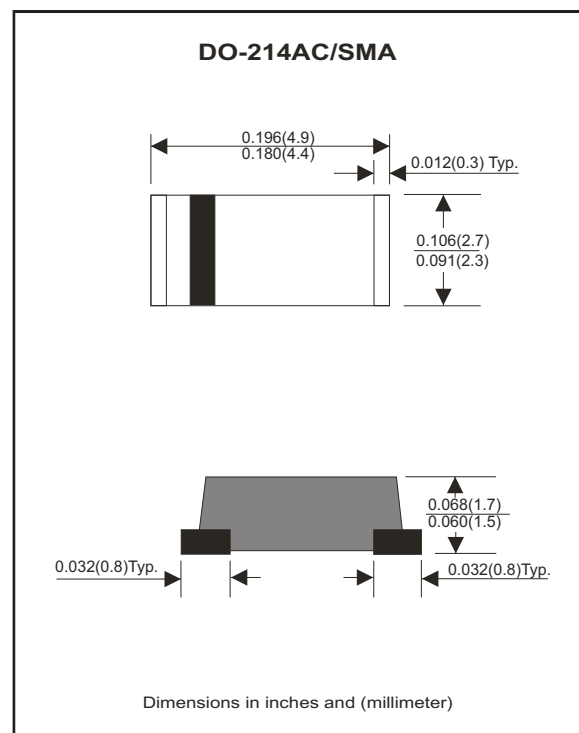
**Voltage: 3.3 to 100 Volts****Power: 1.0 Watts****RoHS Device****Halogen Free**

## Features

- Batch process design, excellent power dissipation offers better reverse leakage current and thermal resistance.
- Standard zener voltage tolerance  $\pm 5\%$ .
- Low inductance.
- Low profile package.
- Built-in strain relief.

## Mechanical data

- Epoxy: UL94V-0 rated flame retardant.
- Case: Molded plastic, JEDEC DO-214AC/SMA
- Terminals: Solder Plated, solderable per MIL-STD-750, method 2026.
- Polarity: Indicated by cathode band.
- Mounting position: Any.
- Weight: 0.05 gram(approx.).



## Maximum Ratings (T<sub>A</sub>=25°C, unless otherwise noted)

| Parameter             | Condition                    | Symbol           | MIN. | TYP. | MAX. | Units |
|-----------------------|------------------------------|------------------|------|------|------|-------|
| Forward voltage       | IF = 200 mA                  | V <sub>F</sub>   |      |      | 1.20 | V     |
| Power Dissipation     | @TL = 75°C                   | P <sub>D</sub>   |      |      | 1000 | mW    |
| Thermal resistance    | Junction to case (Note 1)    | R <sub>θJC</sub> |      | 30   |      | °C/W  |
|                       | Junction to ambient (Note 1) | R <sub>θJA</sub> |      | 50   |      | °C/W  |
| Operating temperature |                              | T <sub>J</sub>   | -55  |      | +150 | °C    |
| Storage temperature   |                              | T <sub>STG</sub> | -65  |      | +175 | °C    |

Note: 1. Mounted on 0.2"x0.2" (5x5mm) FR-4 PCB.

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

| Part Number | Marking Code | Zener Voltage | Test Current | Zener Impedance |           |      | Leakage Current |       | Surge Current |
|-------------|--------------|---------------|--------------|-----------------|-----------|------|-----------------|-------|---------------|
|             |              | Vz@IzT        | IzT          | ZzT @ IzT       | Zzk @ IzK | IzK  | IR              | VR    | Isurge        |
|             |              | Volts         | mA           | oHMs            | oHMs      | mA   | uA              | Volts | mA            |
| CZRA4728-HF | Z3V3         | 3.3           | 76           | 10              | 400       | 1.0  | 100             | 1.0   | 1380          |
| CZRA4729-HF | Z3V6         | 3.6           | 69           | 10              | 400       | 1.0  | 100             | 1.0   | 1260          |
| CZRA4730-HF | Z3V9         | 3.9           | 64           | 9               | 400       | 1.0  | 50              | 1.0   | 1190          |
| CZRA4731-HF | Z4V3         | 4.3           | 58           | 9               | 400       | 1.0  | 10              | 1.0   | 1070          |
| CZRA4732-HF | Z4V7         | 4.7           | 53           | 8               | 500       | 1.0  | 10              | 1.0   | 970           |
| CZRA4733-HF | Z5V1         | 5.1           | 49           | 7               | 550       | 1.0  | 10              | 1.0   | 890           |
| CZRA4734-HF | Z5V6         | 5.6           | 45           | 5               | 600       | 1.0  | 10              | 2.0   | 810           |
| CZRA4735-HF | Z6V2         | 6.2           | 41           | 2               | 700       | 1.0  | 10              | 3.0   | 730           |
| CZRA4736-HF | Z6V8         | 6.8           | 37           | 3.5             | 700       | 1.0  | 10              | 4.0   | 660           |
| CZRA4737-HF | Z7V5         | 7.5           | 34           | 4               | 700       | 0.5  | 10              | 5.0   | 605           |
| CZRA4738-HF | Z8V2         | 8.2           | 31           | 4.5             | 700       | 0.5  | 10              | 6.0   | 550           |
| CZRA4739-HF | Z9V1         | 9.1           | 28           | 5               | 700       | 0.5  | 10              | 7.0   | 500           |
| CZRA4740-HF | Z10          | 10            | 25           | 7               | 700       | 0.25 | 10              | 7.6   | 454           |
| CZRA4741-HF | Z11          | 11            | 23           | 8               | 700       | 0.25 | 5               | 8.4   | 414           |
| CZRA4742-HF | Z12          | 12            | 21           | 9               | 700       | 0.25 | 5               | 9.1   | 380           |
| CZRA4743-HF | Z13          | 13            | 19           | 10              | 700       | 0.25 | 5               | 9.9   | 344           |
| CZRA4744-HF | Z15          | 15            | 17           | 14              | 700       | 0.25 | 5               | 11.4  | 304           |
| CZRA4745-HF | Z16          | 16            | 15.5         | 16              | 700       | 0.25 | 5               | 12.2  | 285           |
| CZRA4746-HF | Z18          | 18            | 14           | 20              | 750       | 0.25 | 5               | 13.7  | 250           |
| CZRA4747-HF | Z20          | 20            | 12.5         | 22              | 750       | 0.25 | 5               | 15.2  | 225           |
| CZRA4748-HF | Z22          | 22            | 11.5         | 23              | 750       | 0.25 | 5               | 16.7  | 205           |
| CZRA4749-HF | Z24          | 24            | 10.5         | 25              | 750       | 0.25 | 5               | 18.2  | 190           |
| CZRA4750-HF | Z27          | 27            | 9.5          | 35              | 750       | 0.25 | 5               | 20.6  | 170           |
| CZRA4751-HF | Z30          | 30            | 8.5          | 40              | 1000      | 0.25 | 5               | 22.8  | 150           |
| CZRA4752-HF | Z33          | 33            | 7.5          | 45              | 1000      | 0.25 | 5               | 25.1  | 135           |
| CZRA4753-HF | Z36          | 36            | 7.0          | 50              | 1000      | 0.25 | 5               | 27.4  | 125           |
| CZRA4754-HF | Z39          | 39            | 6.5          | 60              | 1000      | 0.25 | 5               | 29.7  | 115           |
| CZRA4755-HF | Z43          | 43            | 6.0          | 70              | 1500      | 0.25 | 5               | 32.7  | 110           |

## Electrical Characteristics ( at $T_A = 25^\circ\text{C}$ unless otherwise noted)

| Part Number | Marking Code | Zener Voltage  | Test Current | Zener Impedance   |                   |          | Leakage Current      |       | Surge Current      |
|-------------|--------------|----------------|--------------|-------------------|-------------------|----------|----------------------|-------|--------------------|
|             |              | $V_Z @ I_{ZT}$ | $I_{ZT}$     | $Z_{ZT} @ I_{ZT}$ | $Z_{ZK} @ I_{ZK}$ | $I_{ZK}$ | $I_R$                | $V_R$ | $I_{\text{surge}}$ |
|             |              | Volts          | mA           | ( $\Omega$ )Max   | ( $\Omega$ )Max   | mA       | ( $\mu\text{A}$ )Max | Volts | mA                 |
| CZRA4756-HF | Z47          | 47             | 5.5          | 80                | 1500              | 0.25     | 5                    | 35.8  | 95                 |
| CZRA4757-HF | Z51          | 51             | 5.0          | 95                | 1500              | 0.25     | 5                    | 38.8  | 90                 |
| CZRA4758-HF | Z56          | 56             | 4.5          | 110               | 2000              | 0.25     | 5                    | 42.6  | 80                 |
| CZRA4759-HF | Z62          | 62             | 4.0          | 125               | 2000              | 0.25     | 5                    | 47.1  | 70                 |
| CZRA4760-HF | Z68          | 68             | 3.7          | 150               | 2000              | 0.25     | 5                    | 51.7  | 65                 |
| CZRA4761-HF | Z75          | 75             | 3.3          | 175               | 2000              | 0.25     | 5                    | 56.0  | 60                 |
| CZRA4762-HF | Z82          | 82             | 3.0          | 200               | 3000              | 0.25     | 5                    | 62.2  | 55                 |
| CZRA4763-HF | Z91          | 91             | 2.8          | 250               | 3000              | 0.25     | 5                    | 69.2  | 50                 |
| CZRA4764-HF | Z100         | 100            | 2.5          | 350               | 3000              | 0.25     | 5                    | 76.0  | 45                 |

Note: 5% tolerance of Zener voltage.

## RATING AND CHARACTERISTIC CURVES (CZRA4728-HF Thru. CZRA4764-HF)

Fig.1 - Max. Continuous Power Derating

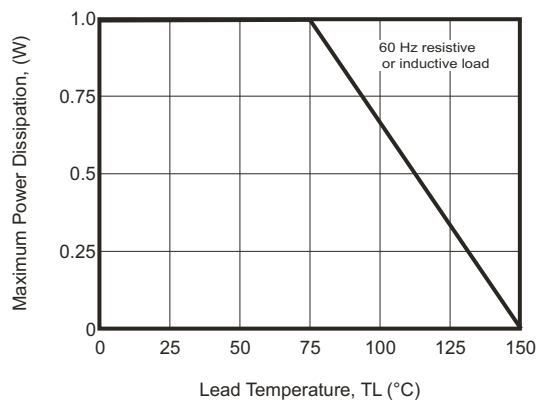
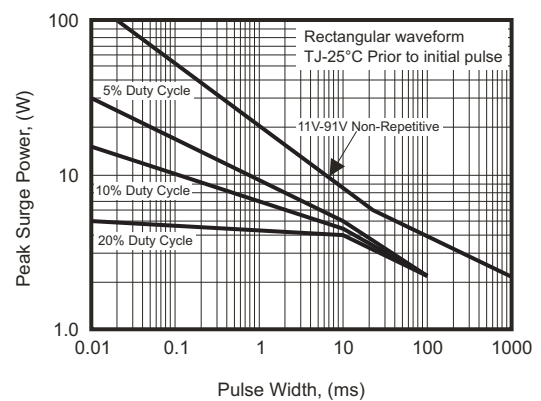


Fig.2 - Maximum surge power



## RATING AND CHARACTERISTIC CURVES (CZRA4728-HF Thru. CZRA4764-HF)

FIG 3A. Range for Units to 12 Volts

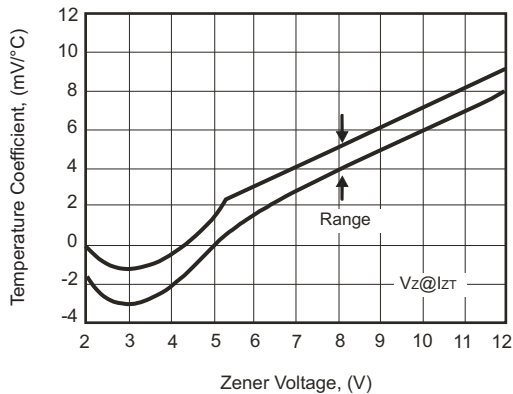


FIG 3B. Range for Units 12 to 100 Volts

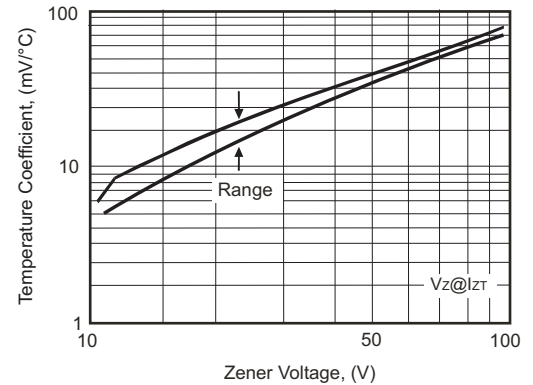


FIG 4. Temperature Coefficients (-55°C to +150°C temperature change ; 90% of the units are in the ranges indicated.)

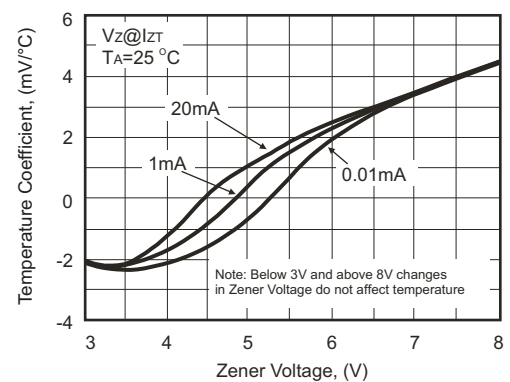
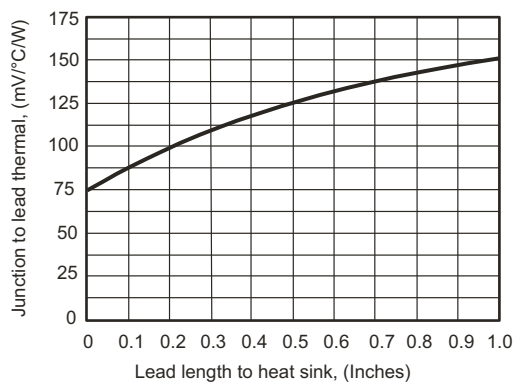


FIG 5. Typical Thermal Resistance Versus Lead

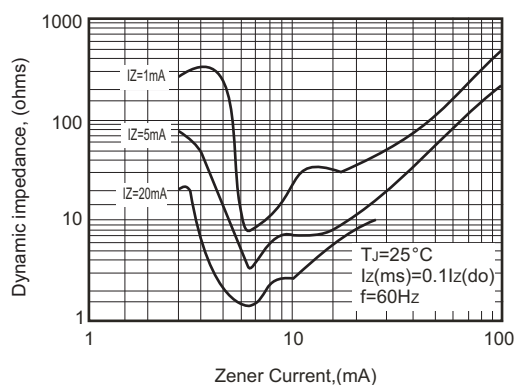
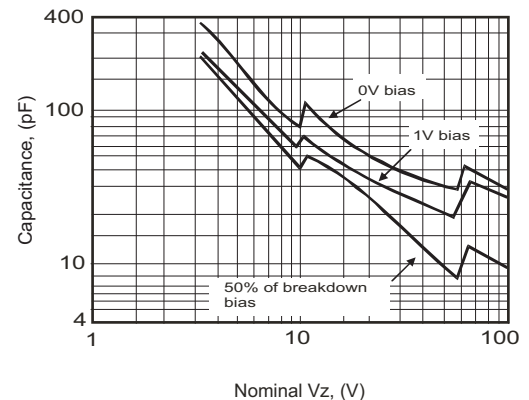
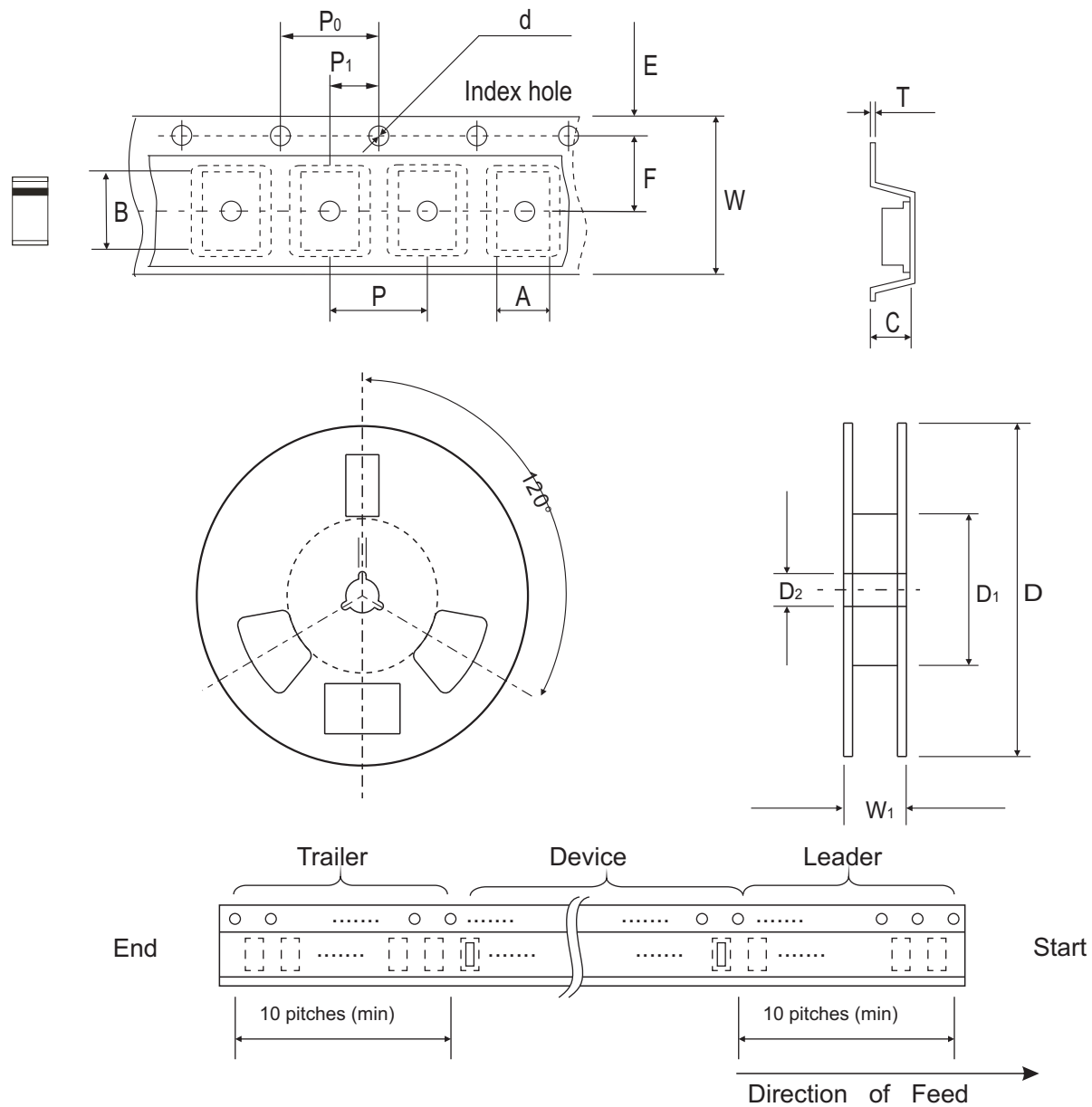


FIG 6. Effect of Zener Current



Reel Taping Specification



| DO-214AC (SMA) | SYMBOL | A             | B             | C             | d             | D             | D1         | D2            |
|----------------|--------|---------------|---------------|---------------|---------------|---------------|------------|---------------|
|                | (mm)   | 2.8 ± 0.10    | 5.00 ± 0.10   | 1.90 ± 0.10   | 1.50 ± 0.10   | 178 ± 2.00    | 62.0 MIN.  | 13.0 ± 0.50   |
|                | (inch) | 0.110 ± 0.004 | 0.197 ± 0.004 | 0.075 ± 0.004 | 0.059 ± 0.004 | 7.008 ± 0.078 | 2.441 MIN. | 0.512 ± 0.008 |

| DO-214AC (SMA) | SYMBOL | E             | F             | P             | P0            | P1            | W             | W1            |
|----------------|--------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
|                | (mm)   | 1.75 ± 0.10   | 5.50 ± 0.10   | 4.00 ± 0.10   | 4.00 ± 0.10   | 2.00 ± 0.10   | 12.00 ± 0.30  | 18.00 ± 1.00  |
|                | (inch) | 0.069 ± 0.004 | 0.217 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004 | 0.079 ± 0.004 | 0.472 ± 0.012 | 0.709 ± 0.040 |

## Pinning information

| Pin                          | Simplified outline                                                                | Symbol                                                                             |
|------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| PIN 1 Cathode<br>PIN 2 Anode |  |  |

## Marking Code

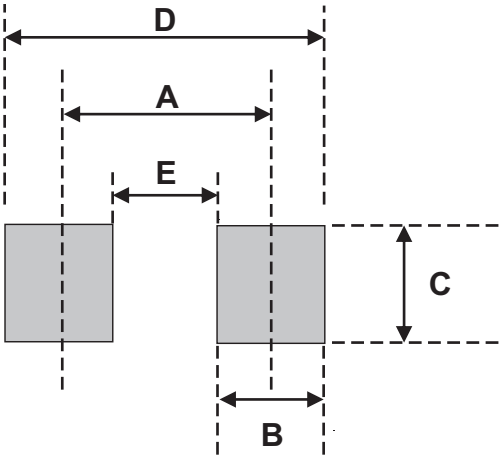
| Part Number               | Marking Code |
|---------------------------|--------------|
| CZRA4728-HF ~ CZRA4764-HF | XXXX         |



Product type marking code (see page.2~3)

## Suggested PAD Layout

| SIZE | DO-214AC (SMA) |        |
|------|----------------|--------|
|      | (mm)           | (inch) |
| A    | 3.80           | 0.150  |
| B    | 1.60           | 0.063  |
| C    | 2.80           | 0.110  |
| D    | 5.40           | 0.213  |
| E    | 2.20           | 0.087  |



## Standard Packaging

| Case Type         | REEL PACK       |                     |
|-------------------|-----------------|---------------------|
|                   | REEL<br>( pcs ) | Reel Size<br>(inch) |
| DO-214AC<br>(SMA) | 2,000           | 7                   |