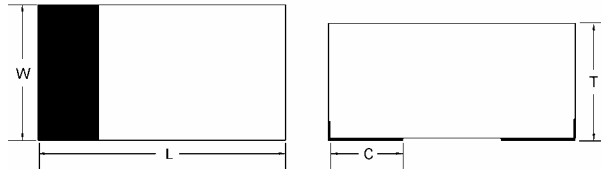
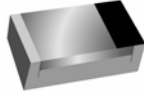


# TSZU52C2V4 – TSZU52C39

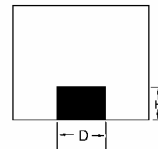
## 150mW SMD Zener Diode

### 0603



### Features

- ✧ 150mW Power dissipation.
- ✧ High voltages from 2 ~ 39V
- ✧ Designed for mounting on small surface
- ✧ Extremely thin/leadless package
- ✧ Pb free product



### Mechanical Data

- ✧ Cases: 0603 standard package, molded plastic
- ✧ Terminals: Gold plated, solderable per MIL-STD-750, method 2026,
- ✧ Polarity: Indicated by cathode band
- ✧ Weight: 0.003 gram (approximately)

| Item | 0603                       |
|------|----------------------------|
| L    | 0.071(1.80)<br>0.063(1.60) |
| W    | 0.039(1.00)<br>0.031(0.80) |
| T    | 0.033(0.85)<br>0.027(0.70) |
| C    | 0.014(0.35)<br>Typical     |
| D    | 0.018(0.45)<br>Typical     |
| H    | 0.012(0.30) Typ.           |

Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics

Rating at 25 °C ambient temperature unless otherwise specified.  
Single phase, half wave, 60 Hz, resistive or inductive load.  
For capacitive load, derate current by 20%

| Type Number                                                                                            | Symbol         | Value       | Units |
|--------------------------------------------------------------------------------------------------------|----------------|-------------|-------|
| Maximum Forward Voltage Drop at $I_F=10\text{mA}$                                                      | $V_F$          | 0.9         | V     |
| Maximum Power Dissipation                                                                              | $P_d$          | 150         | mW    |
| Forward Current, Surge Peak<br>8.3ms Single half Sine-Wave superimposed on Rate Load<br>(JEDEC method) | $I_{FSM}$      | 2.0         | A     |
| Operating Junction and Storage Temperature Range                                                       | $T_{STG}, T_J$ | -65 to +125 | °C    |

# RATINGS AND CHARACTERISTIC CURVES (TSZU52C2 THRU TSZU52C39)

Fig.1 TEMPERATURE COEFFICIENTS

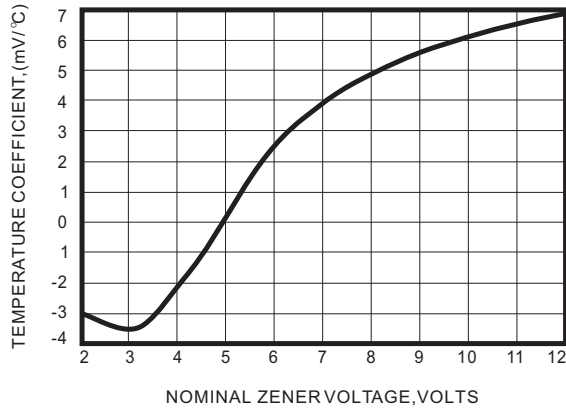


Fig.2 TEMPERATURE COEFFICIENTS

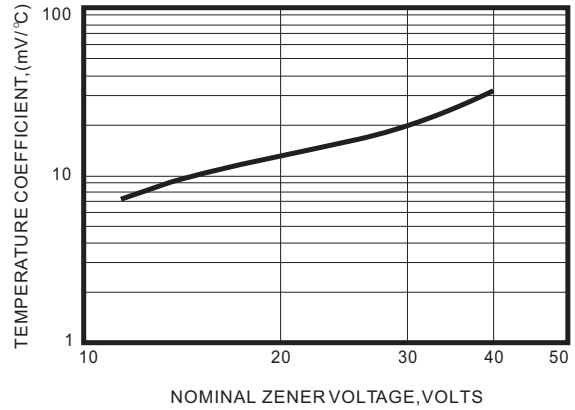


Fig.3 EFFECT OF ZENER VOLTAGE ON ZENER IMPEDANCE

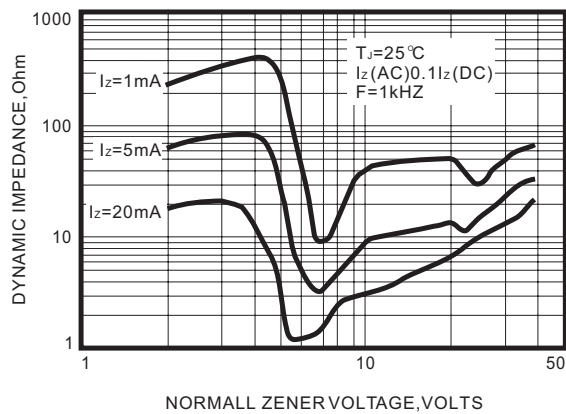


Fig.4 TYPICAL FORWARD VOLTAGE

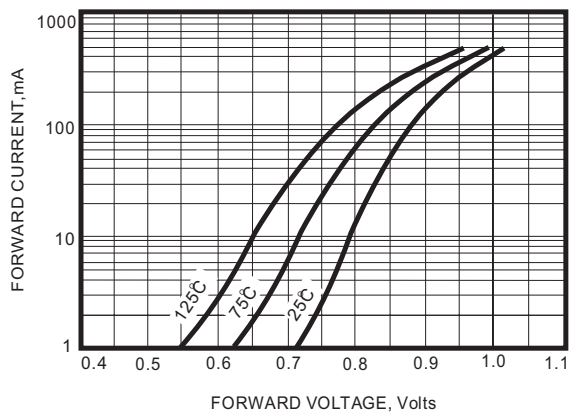


Fig.5 TYPICAL LEAKAGE CURRENT

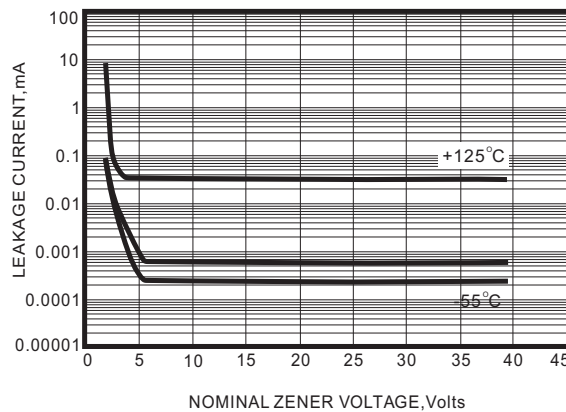
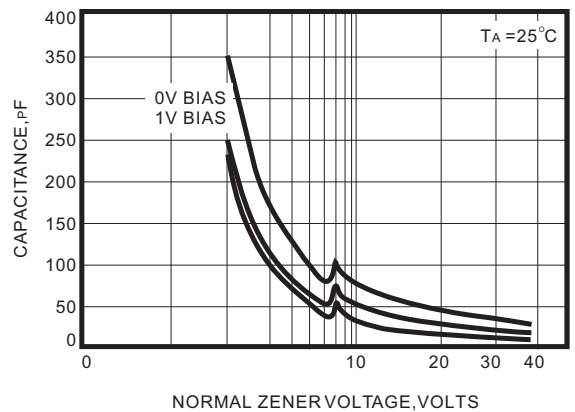


Fig.6 TYPICAL CAPACITANCE



# RATINGS AND CHARACTERISTIC CURVES (TSZU52C2 THRU TSZU52C39)

Fig.7 ZENER VOLTAGE VERSUS ZENER CURRENT

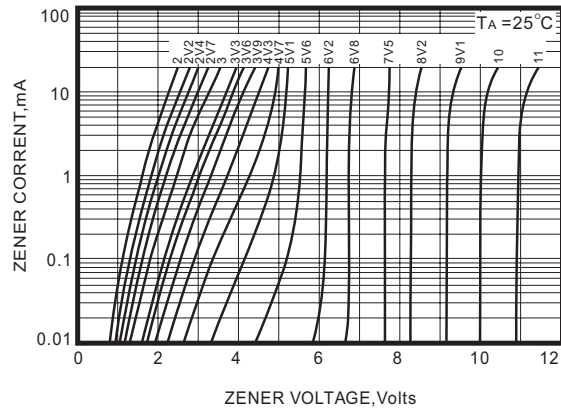


Fig.8 ZENER VOLTAGE VERSUS ZENER CURRENT

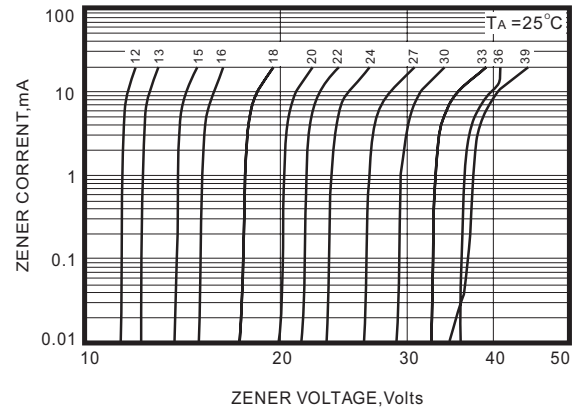
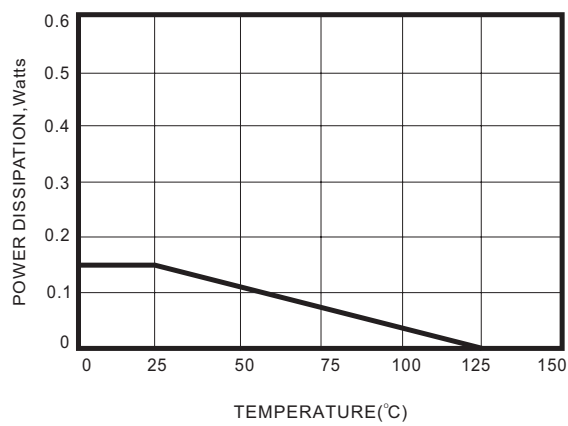


Fig.9 STEADY STATE POWER DERATING



**ELECTRICAL CHARACTERISTICS** (TA=25°C unless otherwise noted)

| Device     | Device Marking Code | Zener Voltage      |       |                     | Operating Resistance |                     | Rising Operating Resistance |                     | Reverse Current     |                    |
|------------|---------------------|--------------------|-------|---------------------|----------------------|---------------------|-----------------------------|---------------------|---------------------|--------------------|
|            |                     | V <sub>Z</sub> (V) |       |                     |                      |                     |                             |                     |                     |                    |
|            |                     | Min                | Max   | I <sub>Z</sub> (mA) | ZZT(Ohm)             |                     | ZZK(Ohm)                    |                     | I <sub>R</sub> (uA) |                    |
|            |                     |                    |       |                     | Max                  | I <sub>Z</sub> (mA) | Max                         | I <sub>Z</sub> (mA) | Max                 | V <sub>R</sub> (V) |
| TSZU52C2V4 | Z2                  | 2.28               | 2.52  | 5                   | 85                   | 5                   | 600                         | 1                   | 100                 | 1.0                |
| TSZU52C2V7 | Z3                  | 2.57               | 2.84  | 5                   | 83                   | 5                   | 500                         | 1                   | 75                  | 1.0                |
| TSZU52C3V0 | Z4                  | 2.85               | 3.15  | 5                   | 95                   | 5                   | 500                         | 1                   | 50                  | 1.0                |
| TSZU52C3V3 | Z5                  | 3.14               | 3.47  | 5                   | 95                   | 5                   | 500                         | 1                   | 25                  | 1.0                |
| TSZU52C3V6 | Z6                  | 3.42               | 3.78  | 5                   | 95                   | 5                   | 500                         | 1                   | 15                  | 1.0                |
| TSZU52C3V9 | Z7                  | 3.71               | 4.10  | 5                   | 95                   | 5                   | 500                         | 1                   | 10                  | 1.0                |
| TSZU52C4V3 | Z8                  | 4.09               | 4.52  | 5                   | 95                   | 5                   | 500                         | 1                   | 5.0                 | 1.0                |
| TSZU52C4V7 | Z9                  | 4.47               | 4.94  | 5                   | 78                   | 5                   | 500                         | 1                   | 5.0                 | 2.0                |
| TSZU52C5V1 | ZA                  | 4.85               | 5.36  | 5                   | 60                   | 5                   | 480                         | 1                   | 0.1                 | 0.8                |
| TSZU52C5V6 | ZB                  | 5.32               | 5.88  | 5                   | 40                   | 5                   | 400                         | 1                   | 0.1                 | 1.0                |
| TSZU52C6V2 | ZC                  | 5.89               | 6.51  | 5                   | 10                   | 5                   | 200                         | 1                   | 0.1                 | 2.0                |
| TSZU52C6V8 | ZE                  | 6.46               | 7.14  | 5                   | 8                    | 5                   | 150                         | 1                   | 0.1                 | 3.0                |
| TSZU52C7V5 | ZF                  | 7.13               | 7.88  | 5                   | 7                    | 5                   | 50                          | 1                   | 0.1                 | 5.0                |
| TSZU52C8V2 | ZG                  | 7.79               | 8.61  | 5                   | 7                    | 5                   | 50                          | 1                   | 0.1                 | 6.0                |
| TSZU52C9V1 | ZH                  | 8.65               | 9.56  | 5                   | 10                   | 5                   | 50                          | 1                   | 0.1                 | 7.0                |
| TSCU52C10  | ZJ                  | 9.50               | 10.50 | 5                   | 15                   | 5                   | 70                          | 1                   | 0.1                 | 7.5                |
| TSZU52C11  | ZK                  | 10.45              | 11.55 | 5                   | 20                   | 5                   | 70                          | 1                   | 0.1                 | 8.5                |
| TSZU52C12  | ZM                  | 11.40              | 12.60 | 5                   | 20                   | 5                   | 90                          | 1                   | 0.1                 | 9.0                |
| TSZU52C13  | ZN                  | 12.35              | 13.65 | 5                   | 25                   | 5                   | 110                         | 1                   | 0.1                 | 10                 |
| TSZU52C15  | ZP                  | 14.25              | 15.75 | 5                   | 30                   | 5                   | 110                         | 1                   | 0.1                 | 11                 |
| TSZU52C16  | ZQ                  | 15.20              | 16.80 | 5                   | 40                   | 5                   | 170                         | 1                   | 0.1                 | 12                 |
| TSZU52C18  | ZR                  | 17.10              | 18.90 | 5                   | 50                   | 5                   | 170                         | 1                   | 0.1                 | 14                 |
| TSZU52C20  | ZS                  | 19.00              | 21.00 | 5                   | 50                   | 5                   | 220                         | 1                   | 0.1                 | 15                 |
| TSZU52C22  | ZT                  | 20.90              | 23.10 | 5                   | 55                   | 5                   | 220                         | 1                   | 0.1                 | 17                 |
| TSZU52C24  | ZU                  | 22.80              | 25.20 | 5                   | 80                   | 5                   | 220                         | 1                   | 0.1                 | 18                 |
| TSZU52C27  | ZV                  | 25.65              | 28.35 | 5                   | 80                   | 5                   | 250                         | 1                   | 0.1                 | 20                 |
| TSZU52C30  | ZW                  | 28.50              | 31.50 | 5                   | 80                   | 5                   | 250                         | 1                   | 0.1                 | 23                 |
| TSZU52C33  | ZX                  | 31.35              | 34.65 | 5                   | 80                   | 5                   | 250                         | 1                   | 0.1                 | 25                 |
| TSZU52C36  | ZY                  | 34.20              | 37.80 | 5                   | 90                   | 5                   | 250                         | 1                   | 0.1                 | 27                 |
| TSZU52C39  | ZZ                  | 37.05              | 40.95 | 5                   | 90                   | 5                   | 300                         | 1                   | 0.1                 | 29                 |