

Small Signal Product

## SMD Zener Diode

### FEATURES

- Wide zener voltage range selection: 2.0V to 39V
- Designed for mounting on small surface
- Extremely thin / leadless package
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21


**0603**

### MECHANICAL DATA

- Case: 0603
- Terminal: Gold plated, solderable per MIL-STD-750, method 2026
- Polarity: Indicated by cathode band
- Weight: 3 mg (approximately)

<b>MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS</b> ( $T_A=25^\circ\text{C}$ unless otherwise noted)			
<b>PARAMETER</b>	<b>SYMBOL</b>	<b>VALUE</b>	<b>UNIT</b>
Power Dissipation	$P_D$	150	mW
Forward Voltage @ $I_F = 10\text{mA}$	$V_F$	0.9	V
Forward Current, Surge Peak 8.3 ms Single Half Sine-Wave Superimposed on Rate Load	$I_{FSM}$	2	A
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +125	$^\circ\text{C}$

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**ELECTRICAL CHARACTERISTICS** (  $T_A = 25^\circ\text{C}$  unless otherwise noted )

Device	Device Marking Code	Zener Voltage			Operating Resistance		Rising Operating Resistance		Reverse Current	
		$V_Z$ (Volt)		$I_Z$ (mA)	$Z_{ZT}$ (Ohm)		$Z_{ZK}$ (Ohm)		$I_R$ (uA)	
		Min	Max		Max	$I_Z$ (mA)	Max	$I_Z$ (mA)	Max	$V_R$ (V)
TSZU52C2V0	Z0	1.90	2.10	5	100	5	600	1	100	1.0
TSZU52C2V2	Z1	2.09	2.31	5	100	5	600	1	100	1.0
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
TSZU52C10	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

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**RATINGS AND CHARACTERISTICS CURVES**

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

Fig. 1 Temperature Coefficients



Fig. 2 Temperature Coefficients

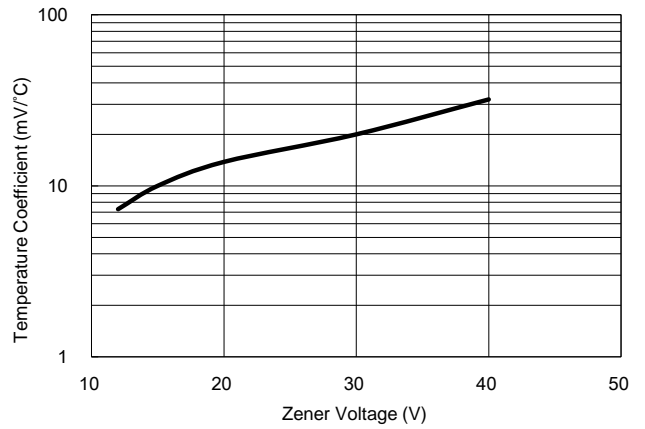


Fig. 3 Effect of Zener Voltage on Zener Impedance



Fig. 4 Typical Forward Voltage

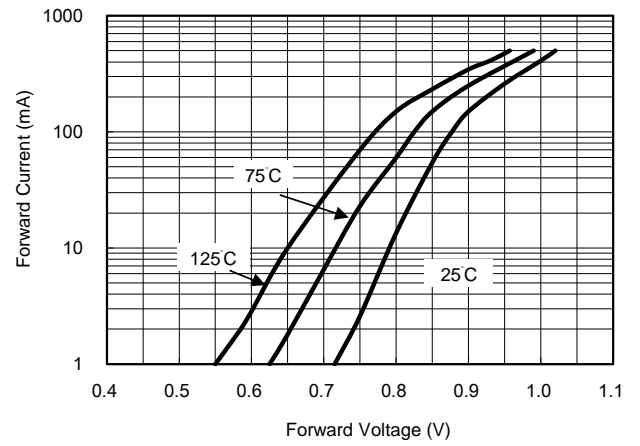
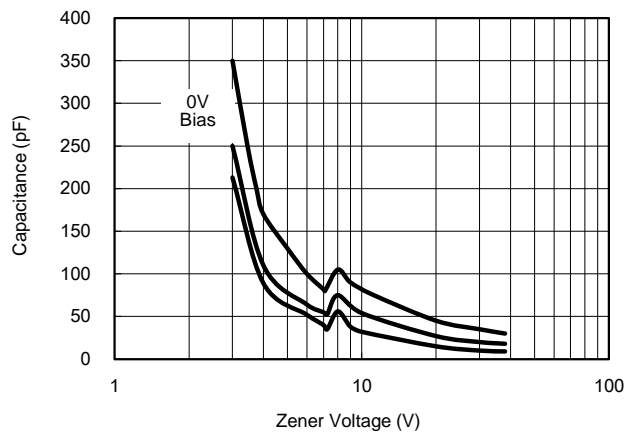


Fig. 5 Typical Leakage Current



Fig. 6 Typical Capacitance



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Fig. 7 Zener Voltage VS. Zener Current



Fig. 8 Zener Voltage vs. Zener Current

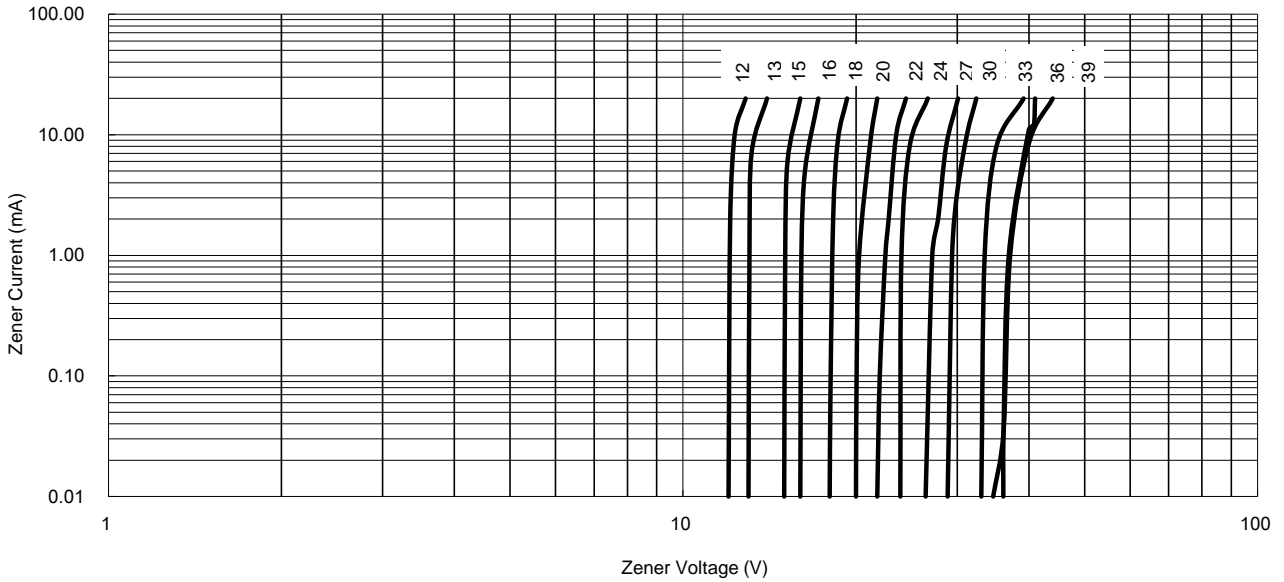


Fig. 9 Steady State Power Derating



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**ORDERING INFORMATION**

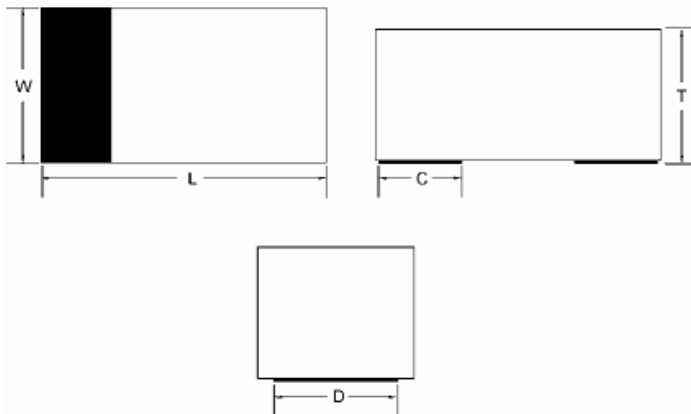
PART NO.	PACKING CODE	PACKING CODE SUFFIX	PACKAGE	PACKING
TSZU52Cxxx (Note1, 2)	RG	G	0603	4K / 7" Reel

Note 1: "xxx" defines voltage from 2.0V (TSZU52C2V0) to 39V (TSZU52C39)

Note 2: Whole series with green compound

**EXAMPLE**

EXAMPLE P/N	PART NO.	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
TSZU52C39 RGG	TSZU52C39	RG	G	Green compound

**PACKAGE OUTLINE DIMENSION**
**0603**


DIM.	Unit (mm)			Unit (inch)		
	Min	Typ.	Max	Min	Typ.	Max
L	1.60	-	1.80	0.063	-	0.071
W	0.80	-	1.00	0.031	-	0.039
T	0.70	-	0.85	0.028	-	0.033
C	-	0.45	-	-	0.018	-
D	-	0.70	-	-	0.028	-

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[TSZU52C20](#) [TSZU52C24](#) [TSZU52C27](#) [TSZU52C2V2](#) [TSZU52C2V4](#) [TSZU52C2V7](#) [TSZU52C3](#) [TSZU52C30](#)  
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[TSZU52C22 RZ](#) [TSZU52C3V0 RZ](#) [TSZU52C10 RG](#) [TSZU52C11 RG](#) [TSZU52C12 RG](#) [TSZU52C13 RG](#)  
[TSZU52C15 RG](#) [TSZU52C16 RG](#) [TSZU52C18 RG](#) [TSZU52C20 RG](#) [TSZU52C22 RG](#) [TSZU52C24 RG](#) [TSZU52C27](#)  
[RG](#) [TSZU52C2V0 RG](#) [TSZU52C2V2 RG](#) [TSZU52C2V4 RG](#) [TSZU52C2V7 RG](#) [TSZU52C30 RG](#) [TSZU52C33 RG](#)  
[TSZU52C36 RG](#) [TSZU52C39 RG](#) [TSZU52C3V0 RG](#) [TSZU52C3V3 RG](#) [TSZU52C3V6 RG](#) [TSZU52C3V9 RG](#)  
[TSZU52C4V3 RG](#) [TSZU52C4V7 RG](#) [TSZU52C4V7 RGG](#) [TSZU52C5V1 RG](#) [TSZU52C5V6 RG](#) [TSZU52C6V2 RG](#)  
[TSZU52C6V8 RG](#) [TSZU52C7V5 RG](#) [TSZU52C8V2 RG](#) [TSZU52C9V1 RG](#) [TSZU52C22 RGG](#) [TSZU52C39 RGG](#)  
[TSZU52C7V5 RGG](#) [TSZU52C2V7 RGG](#) [TSZU52C5V6 RGG](#) [TSZU52C3V6 RGG](#) [TSZU52C2V2 RGG](#) [TSZU52C8V2](#)  
[RGG](#) [TSZU52C3V0 RGG](#) [TSZU52C12 RGG](#) [TSZU52C5V1 RGG](#) [TSZU52C33 RGG](#) [TSZU52C3V3 RGG](#)  
[TSZU52C9V1 RGG](#) [TSZU52C36 RGG](#) [TSZU52C6V8 RGG](#) [TSZU52C2V0 RGG](#) [TSZU52C6V2 RGG](#) [TSZU52C27](#)  
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[TSZU52C4V3 RGG](#)