

## 150mW, 2V - 39V Zener Diode

### FEATURES

- Wide zener voltage range selection: 2.0V to 39V
- Designed for mounting on small surface
- Extremely thin / leadless package
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

### APPLICATIONS

- General regulation functions

### MECHANICAL DATA

- Case: 0603
- Terminal: Gold plated, solderable per MIL-STD-750, method 2026
- Polarity: Indicated by cathode band
- Weight: 3.00mg (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$P_D$	150	mW
$V_Z$	2.0 - 39	V
$T_{J\ MAX}$	125	°C
Package	0603	
Configuration	Single die	


**0603**


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

PARAMETER	SYMBOL	VALUE	UNIT
Power dissipation	$P_D$	150	mW
Forward Voltage @ $I_F = 10\text{mA}$	$V_F$	0.9	V
Surge peak forward current, 8.3ms single half sine-wave superimposed on rated	$I_{FSM}$	2	A
Junction temperature range	$T_J$	-55 to +125	°C
Storage temperature range	$T_{STG}$	-55 to +125	°C

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

PART NUMBER	MARKING CODE	ZENER VOLTAGE		TEST CURRENT	Operating Resistance		Rising Operating Resistance		LEAKAGE CURRENT	
		$V_Z @ I_Z$		$I_Z$	$Z_{ZT} @ I_{ZT}$	$I_{ZT}$	$Z_{ZT} @ I_{ZK}$	$I_{ZK}$	$I_R @ V_R$	$V_R$
		Min	Max	mA	$\Omega$	mA	$\Omega$	mA	$\mu\text{A}$	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

**ORDERING INFORMATION**

ORDERING CODE <sup>(1)</sup>	PACKAGE	PACKING
TSZU52Cx RGG	0603	4K / 7" Reel

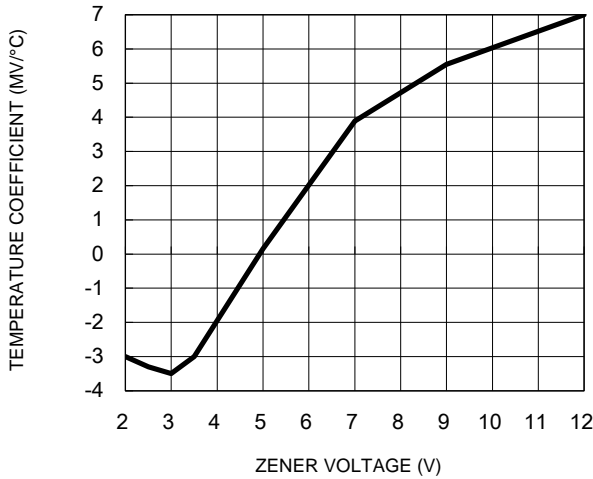
**Notes:**

- "x" defines voltage from 2.0V(TSZU52C2V0) to 39V(TSZU52C39)

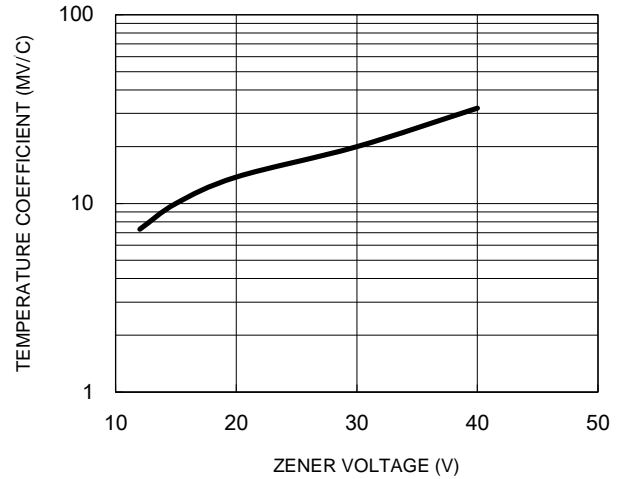
**CHARACTERISTICS CURVES**

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

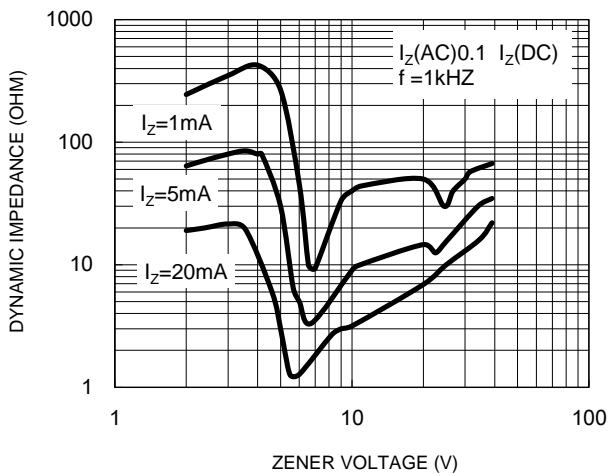
**Fig.1 Temperature Coefficients**



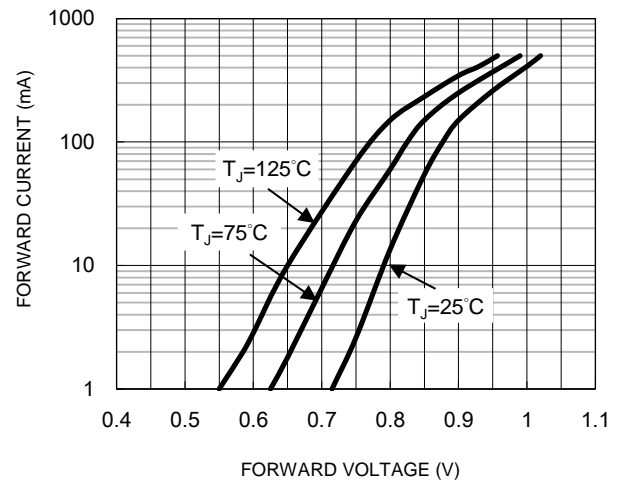
**Fig.2 Temperature Coefficients**



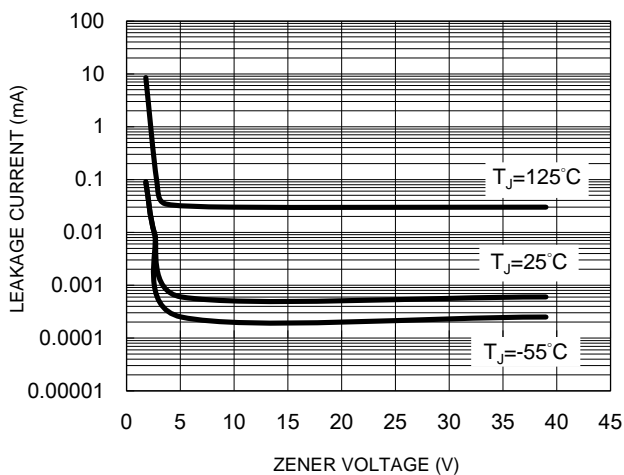
**Fig.3 Effect of Zener Voltage on Zener Impedance**



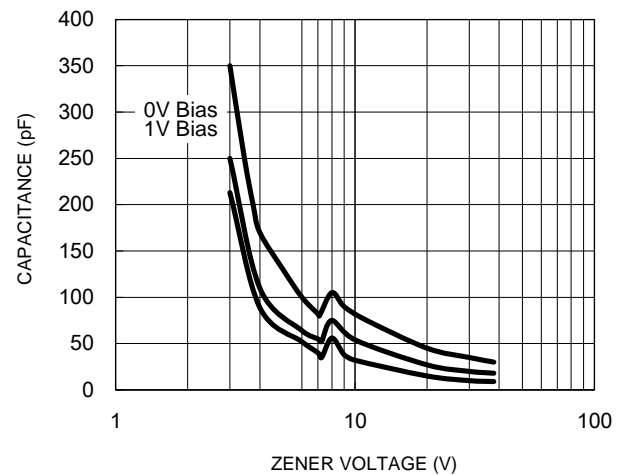
**Fig.4 Typical Forward Voltage**



**Fig.5 Typical Leakage Current**



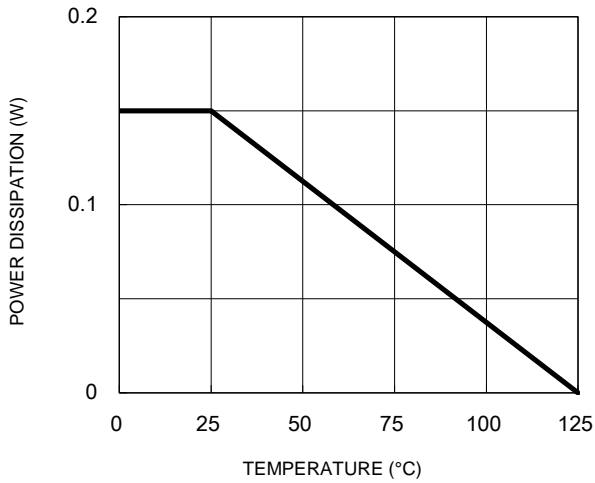
**Fig.6 Typical Capacitance**



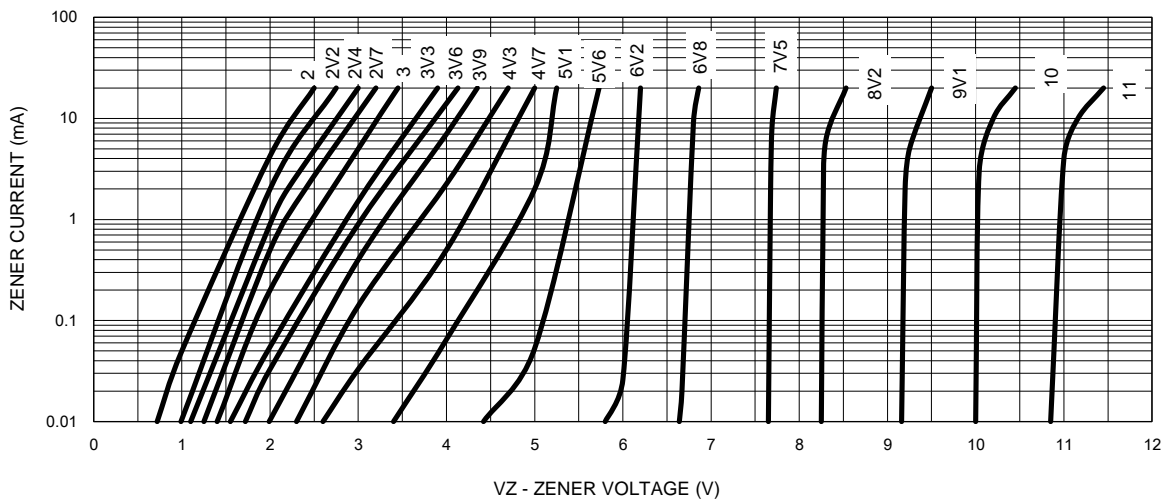
**CHARACTERISTICS CURVES**

( $T_A = 25^\circ\text{C}$  unless otherwise not)

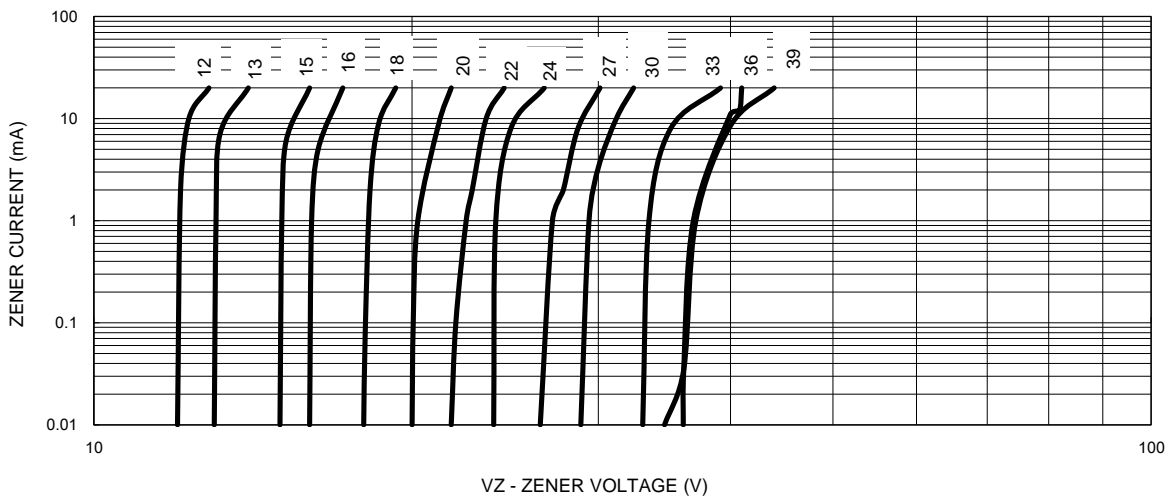
**Fig.7 Steady State Power Derating**



**Fig.8 Zener Breakdown Characteristics**

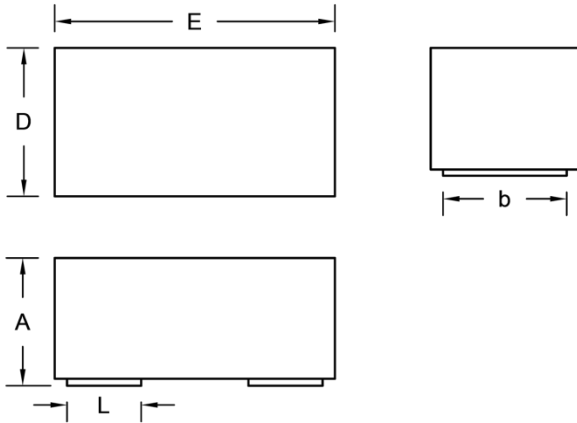


**Fig.9 Zener Breakdown Characteristics**



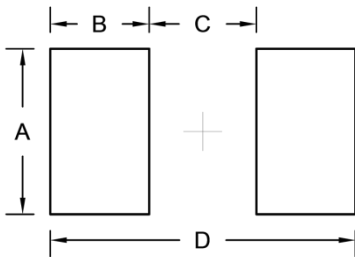
**PACKAGE OUTLINE DIMENSION**

0603



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.70	0.85	0.028	0.033
b	0.70 (TYP.)		0.028 (TYP.)	
D	0.80	1.00	0.031	0.039
E	1.60	1.80	0.063	0.071
L	0.45 (TYP.)		0.018 (TYP.)	

**SUGGESTED PAD LAYOUT**



Symbol	Unit (mm)	Unit (inch)
A	1.00	0.024
B	0.60	0.039
C	0.65	0.026
D	1.85	0.073

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