



**THE DATASHEET OF  
BZG04-220TR3**



## Zener Diodes with Surge Current Specification

### Features

- Glass passivated junction
- High reliability
- Stand-off Voltage range 8.2 V to 220 V
- Excellent clamping capability
- Fast response time (typ.  $\leq 1$  ps from 0 to  $V_{Zmin}$ )
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



### Applications

Protection from high voltage, high energy transients

### Mechanical Data

**Case:** DO-214AC

**Weight:** approx. 77 mg

**Packaging Codes/Options:**

TR / 1.5 k 7 " reel

TR3 / 6 k 13 " reel 6 k/box

### Absolute Maximum Ratings

$T_{amb} = 25$  °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$R_{thJA} < 25$ K/W, $T_{amb} = 100$ °C	$P_{diss}$	3	W
	$R_{thJA} < 100$ K/W, $T_{amb} = 50$ °C	$P_{diss}$	1.25	W
Non repetitive peak surge power dissipation	$t_p = 10/1000$ $\mu$ s sq.pulse, $T_j = 25$ °C prior to surge	$P_{ZSM}$	300	W
Peak forward surge current	10 ms single half sine wave	$I_{FSM}$	50	A
Junction temperature		$T_j$	150	°C
Storage temperature range		$T_{stg}$	- 65 to + 150	°C

### Thermal Characteristics

$T_{amb} = 25$  °C, unless otherwise specified

Parameter	Test condition	Symbol	Value	Unit
Junction lead		$R_{thJL}$	25	K/W
Junction ambient	mounted on epoxy-glass hard tissue, Fig. 1a	$R_{thJA}$	150	K/W
	mounted on epoxy-glass hard tissue, Fig. 1b	$R_{thJA}$	125	K/W
	mounted on Al-oxid-ceramic ( $Al_2O_3$ ), Fig. 1b	$R_{thJA}$	100	K/W

### Electrical Characteristics

$T_{amb} = 25$  °C, unless otherwise specified

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage	$I_F = 0.5$ A	$V_F$			1.2	V

## Electrical Characteristics

Partnumber	Standoff Voltage		Breakdown Voltage		TK <sub>VZ</sub> @ I <sub>R</sub>		Clamping Voltage		Junction Capacitance
	V <sub>R</sub>	I <sub>R</sub>	V <sub>(BR)</sub> @ I <sub>R</sub>				V <sub>CL(R)</sub> @ I <sub>PP</sub>	@ I <sub>ZT</sub>	C <sub>j</sub> @ V <sub>R</sub> = 0 V, f = 1 MHz
	V	μA	V	mA	%K		V <sup>*)</sup>	A <sup>*)</sup>	pF
		max	min		typ	max	max		typ
BZG04-8V2	8.2	20	9.4	50	0.05	0.09	14.8	20.3	1200
BZG04-9V1	9.1	5	10.4	50	0.05	0.1	15.7	19.1	1100
BZG04-10	10	5	11.4	50	0.05	0.1	17	17.7	1000
BZG04-11	11	5	12.4	50	0.05	0.1	18.9	15.9	850
BZG04-12	12	5	13.8	50	0.05	0.1	20.9	14.4	815
BZG04-13	13	5	15.3	25	0.06	0.11	22.9	13.1	785
BZG04-15	15	5	16.8	25	0.06	0.11	25.6	11.7	710
BZG04-16	16	5	18.8	25	0.06	0.11	28.4	10.6	655
BZG04-18	18	5	20.8	25	0.06	0.11	31	9.7	610
BZG04-20	20	5	22.8	25	0.06	0.11	33.8	8.9	570
BZG04-22	22	5	25.1	25	0.06	0.11	38.1	7.9	545
BZG04-24	24	5	28	25	0.06	0.11	42.2	7.1	505
BZG04-27	27	5	31	25	0.06	0.11	46.2	6.5	475
BZG04-30	30	5	34	10	0.06	0.11	50.1	6.0	450
BZG04-33	33	5	37	10	0.06	0.11	54.1	5.5	420
BZG04-36	36	5	40	10	0.07	0.12	60.7	4.9	390
BZG04-39	39	5	44	10	0.07	0.12	65.5	4.6	370
BZG04-43	43	5	48	10	0.07	0.12	70.8	4.2	350
BZG04-47	47	5	52	10	0.07	0.12	78.6	3.8	330
BZG04-51	51	5	58	10	0.08	0.13	86.5	3.5	310
BZG04-56	56	5	64	10	0.08	0.13	94.4	3.2	291
BZG04-62	62	5	70	10	0.08	0.13	103.5	2.9	280
BZG04-68	68	5	77	10	0.08	0.13	114	2.6	275
BZG04-75	75	5	85	5	0.09	0.13	126	2.4	260
BZG04-82	82	5	94	5	0.09	0.13	139	2.2	250
BZG04-91	91	5	104	5	0.09	0.13	152	2.0	243
BZG04-100	100	5	114	5	0.09	0.13	167	1.8	170
BZG04-110	110	5	124	5	0.09	0.13	185	1.6	153
BZG04-120	120	5	138	5	0.09	0.13	204	1.5	150
BZG04-130	130	5	153	5	0.09	0.13	224	1.3	145
BZG04-150	150	5	168	5	0.09	0.13	249	1.2	140
BZG04-160	160	5	188	5	0.09	0.13	276	1.1	135
BZG04-180	180	5	208	2	0.09	0.13	305	1.0	131
BZG04-200	200	5	228	2	0.09	0.13	336	0.9	122
BZG04-220	220	5	251	2	0.09	0.13	380	0.8	120

<sup>\*)</sup> 10/1000 μs pulse

## Typical Characteristics ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)



Figure 1. Boards for  $R_{thJA}$  definition (copper overlay  $35\mu$ )



Figure 3. Forward Current vs. Forward Voltage



Figure 2. Typ. Thermal Resistance vs. Lead Length

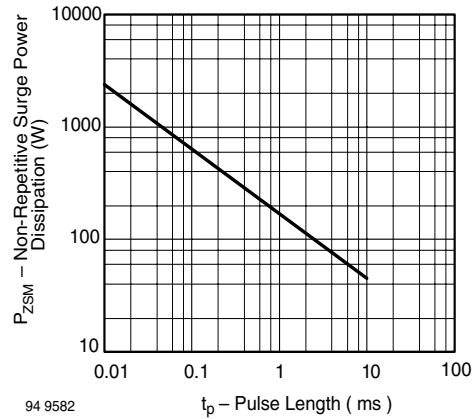


Figure 4. Non Repetitive Surge Power Dissipation vs. Pulse Length

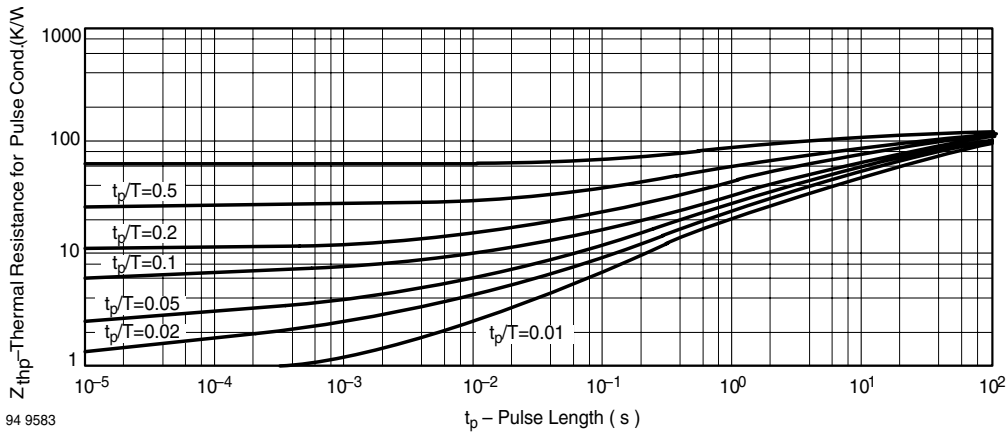


Figure 5. Thermal Response

# BZG04-Series

Vishay Semiconductors



## Package Dimensions in mm (Inches)



19628

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