BZX55C2V4 THRU BZX55C100

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BZX55C2V4 THRU BZX55C100

500mW Surface Mount Zener Diodes - 2.4V-51V

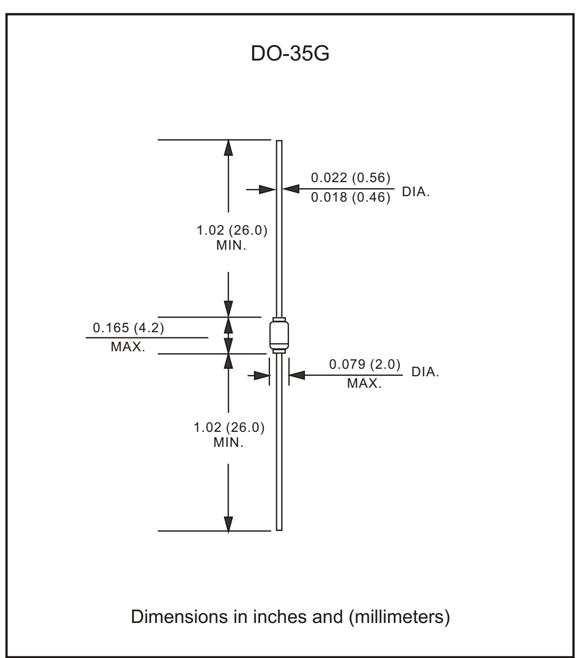
Features

- Silicon epitaxial planar chip structure.
- Glass hermetically sealed package.
- Wide zener reverse voltage range 2.4V to 51V.
- Small package size for high density applications.
- Ideally suited for automated assembly processes.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228

Mechanical data

- Case : Glass, DO-35G
- Terminals : Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.12 gram

Package outline



Maximum ratings (at T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Forward voltage	I_F = 200 mADC	V_F			1.50	V
Power Dissipation		P_D			500	mW
Storage temperature		T_{STG}	-65		+175	°C
Operating temperature		T_J	-55		+150	°C

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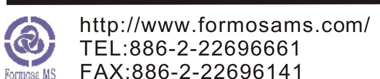
Electrical characteristics (at T_A=25°C unless otherwise noted)

Part No.	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_{Surge}
		Volts	mA	OHMs	OHMs	mA	uA	Volts	mA
BZX55C2V4	BZX55C2V4	2.4	5.0	85	600	0.25	50	1.0	
BZX55C2V7	BZX55C2V7	2.7	5.0	85	600	0.25	10	1.0	
BZX55C3V0	BZX55C3V0	3.0	5.0	90	600	0.25	4.0	1.0	
BZX55C3V3	BZX55C3V3	3.3	5.0	90	600	0.25	2.0	1.0	
BZX55C3V6	BZX55C3V6	3.6	5.0	90	600	0.25	2.0	1.0	
BZX55C3V9	BZX55C3V9	3.9	5.0	90	600	0.25	2.0	1.0	
BZX55C4V3	BZX55C4V3	4.3	5.0	90	600	0.25	1.0	1.0	
BZX55C4V7	BZX55C4V7	4.7	5.0	80	600	0.25	0.5	1.0	
BZX55C5V1	BZX55C5V1	5.1	5.0	60	550	0.25	0.1	1.0	
BZX55C5V6	BZX55C5V6	5.6	5.0	40	450	0.25	0.1	1.0	
BZX55C6V2	BZX55C6V2	6.2	5.0	10	200	0.25	0.1	2.0	
BZX55C6V8	BZX55C6V8	6.8	5.0	8	150	0.25	0.1	3.0	
BZX55C7V5	BZX55C7V5	7.5	5.0	7	50	0.25	0.1	5.0	
BZX55C8V2	BZX55C8V2	8.2	5.0	7	50	0.25	0.1	6.2	
BZX55C9V1	BZX55C9V1	9.1	5.0	10	50	0.25	0.1	6.8	
BZX55C10	BZX55C10	10	5.0	15	70	0.25	0.1	7.5	
BZX55C11	BZX55C11	11	5.0	20	70	0.25	0.1	8.2	
BZX55C12	BZX55C12	12	5.0	20	90	0.25	0.1	9.1	
BZX55C13	BZX55C13	13	5.0	26	110	0.25	0.1	10	
BZX55C15	BZX55C15	15	5.0	30	110	0.25	0.1	11	
BZX55C16	BZX55C16	16	5.0	40	170	0.25	0.1	12	
BZX55C18	BZX55C18	18	5.0	50	170	0.25	0.1	13	
BZX55C20	BZX55C20	20	5.0	55	220	0.25	0.1	15	
BZX55C22	BZX55C22	22	5.0	55	220	0.25	0.1	16	
BZX55C24	BZX55C24	24	5.0	80	220	0.25	0.1	18	
BZX55C27	BZX55C27	27	5.0	80	220	0.25	0.1	20	
BZX55C30	BZX55C30	30	5.0	80	220	0.25	0.1	22	
BZX55C33	BZX55C33	33	5.0	80	220	0.25	0.1	24	
BZX55C36	BZX55C36	36	5.0	80	220	0.25	0.1	27	
BZX55C39	BZX55C39	39	2.5	90	500	0.25	0.1	30	
BZX55C43	BZX55C43	43	2.5	90	600	0.50	0.1	33	
BZX55C47	BZX55C47	47	2.5	110	700	0.50	0.1	36	
BZX55C51	BZX55C51	51	2.5	125	700	0.50	0.1	39	
BZX55C56	BZX55C56	56	5.0	135	1000	0.50	0.1	43	
BZX55C62	BZX55C62	62	5.0	150	1000	0.50	0.1	47	
BZX55C68	BZX55C68	68	2.5	200	1000	0.50	0.1	51	
BZX55C75	BZX55C75	75	2.5	250	1500	0.50	0.1	56	
BZX55C82	BZX55C82	82	2.5	300	2000	0.50	0.1	62	
BZX55C91	BZX55C91	91	1.0	450	5000	0.10	0.1	58	
BZX55C100	BZX55C100	100	1.0	450	5000	0.10	0.1	75	

Note : 5% tolerance of Zener voltage



Rating and characteristic curves (BZX55C2V4 THRU BZX55C100)

FIG.1-TOTAL POWER DISSIPATION VS. AMBIENT TEMPERATURE

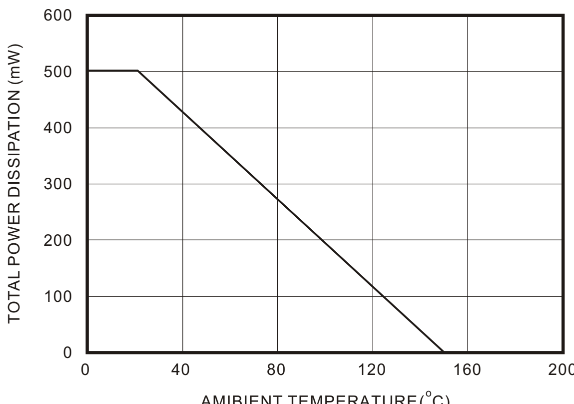


FIG. 2-TYPICAL CHANGE OF WORKING VOLTAGE UNDER OPERATING CONDITIONS AT T_A =25°C

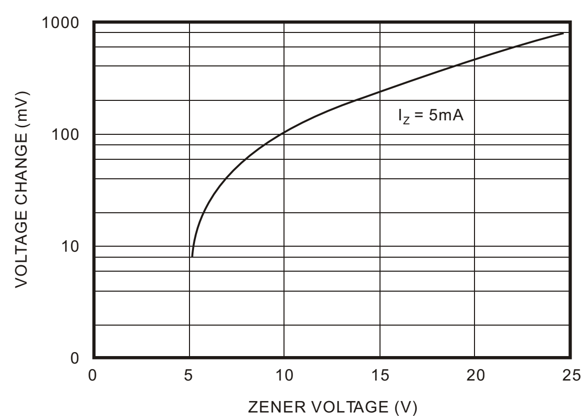


FIG. 3-TYPICAL CHANGE OF WORKING VOLTAGE VS. JUNCTION TEMPERATURE

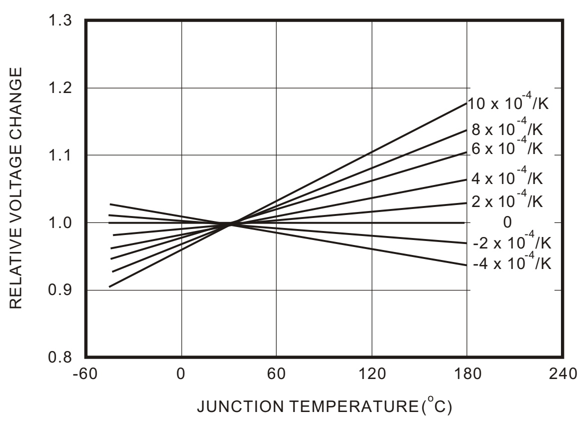


FIG. 4-TEMPERATURE COEFFICIENT OF VZ VS. Z-VOLTAGE

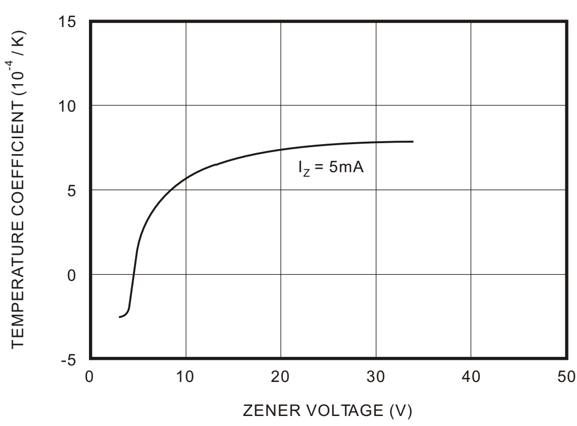
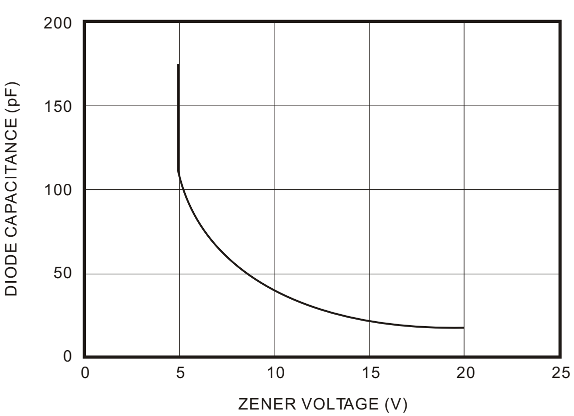


FIG. 5-DIODE CAPACITANCE VS. Z-VOLTAGE



Rating and characteristic curves (BZX55C2V4 THRU BZX55C100)

FIG. 6-FORWARD CURRENT VS. FORWARD VOLTAGE

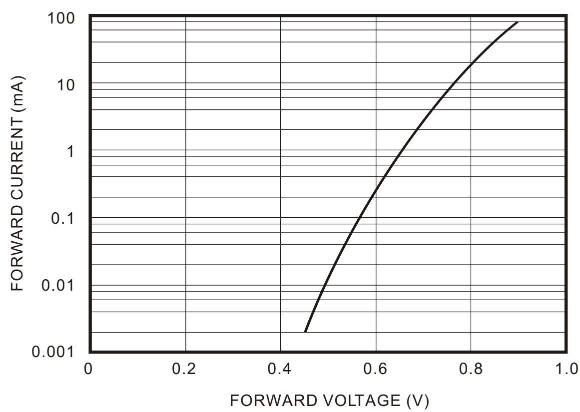


FIG. 7-Z-CURRENT VS. Z-VOLTAGE

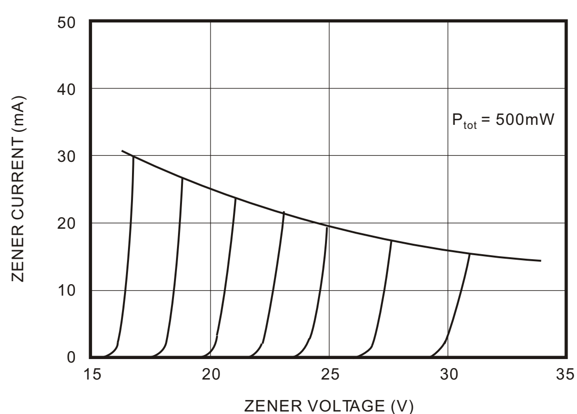


FIG. 8-Z-CURRENT VS. Z-VOLTAGE

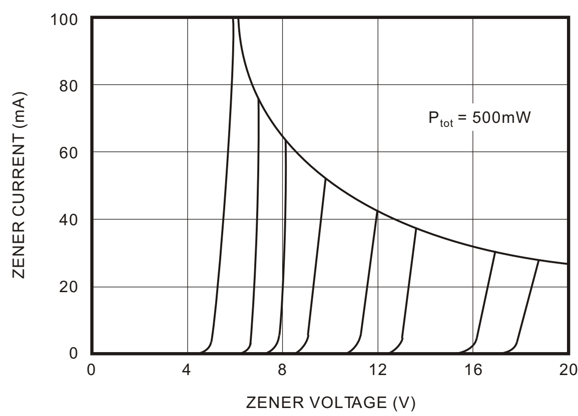


FIG. 9-DIFFERENTIAL Z-RESISTANCE VS. Z-VOLTAGE

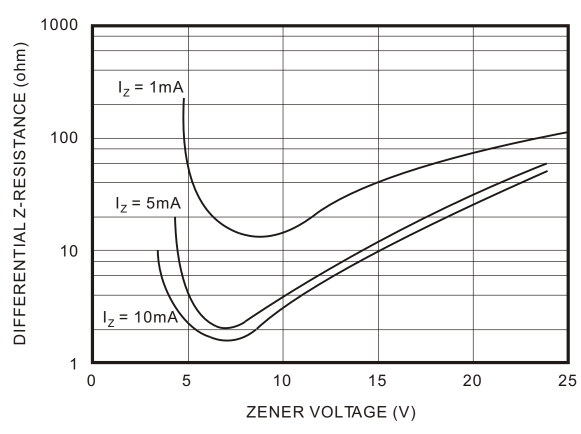
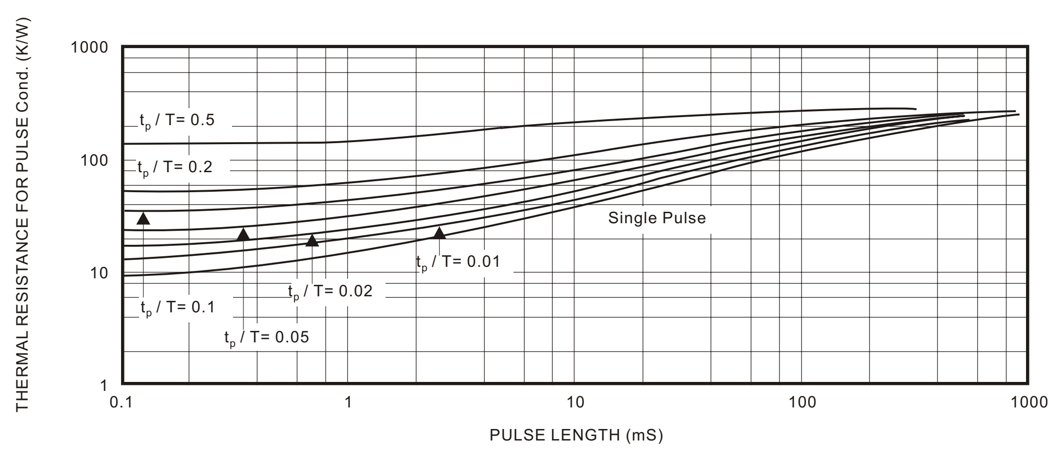


FIG. 10-THERMAL RESPONSE



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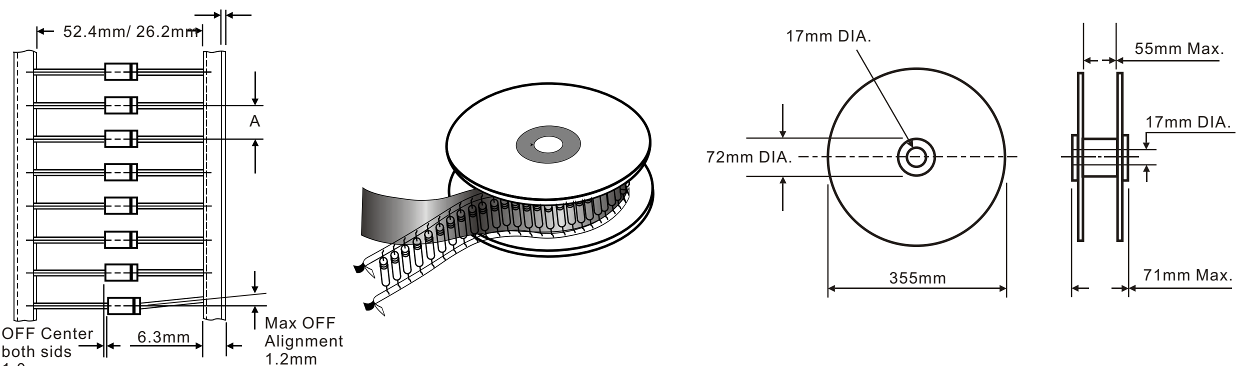
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode	1 2	1 2

Taping & bulk specifications for AXIAL devices



REEL PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / REEL)	COMPONENT SPACING "A" in FIG. A	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
DO-35G/52mm	5,000	5 mm	360 * 340 * 370	20,000	7.3

AMMO PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
DO-35G/26mm	5,000	250 * 78 *48	420 * 270 * 330	150,000	16.7
DO-35G/52mm	5,000	250 *7 8 *78	420 * 270 * 330	100,000	15.0

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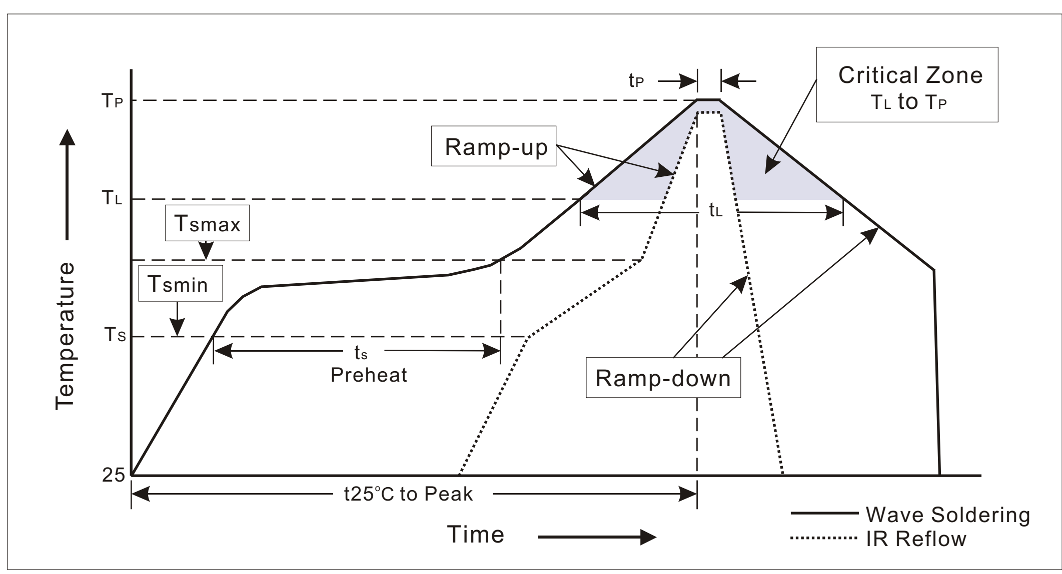
BULK PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	CARTON SIZE (m/m)	Q'TY 2 (PCS / CARTON)	APPROX. CROSS WEIGHT(kg)
DO-35G	2,000	96 * 80 * 42	410 * 335 * 265	120,000	17.4

Suggested thermal profiles for soldering processes

1.Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2.Reflow soldering of surface-mount devices



3.Flow (wave)soldering (solder dipping)

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	<3°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	100°C 150°C 60~120sec
Tsmax to T_L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T_L) -Time(t_L)	183°C 60~150sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_P)	10~30sec
Ramp-down Rate	<6°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. Pull Test	1kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036
4. Bend Lead	0.5kg weight applied to each lead bending arc 90°±5° for 3 times.	MIL-STD-750D METHOD-2036
5. High Temperature Reverse Bias	V_R=V_Z rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1026
6. Forward Operation Life	Rated zener current at T=25°C for 500hrs.	MIL-STD-750D METHOD-1027
7. Intermittent Operation Life	T_A = 25°C, I_F =200mA_O On state: power on for 5 min. off state: power off for 5 min, on and off for 500 cycles.	MIL-STD-750D METHOD-1036
8. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	
9. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
10. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
11. Forward Surge	8.3ms single half sine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
12. Humidity	at T_A=65°C, RH=98% for 1000hrs.	MIL-STD-750D METHOD-1038
13. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031
14. Solvent Resistance	Dip into Freon at 25°C for 1 min.	MIL-STD-202F METHOD-215