

# Z20-11B THRU Z20-330B

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# Z20-11B THRU Z20-330B

## 2.0W Leaded Type Zener Diodes - 11V - 330V

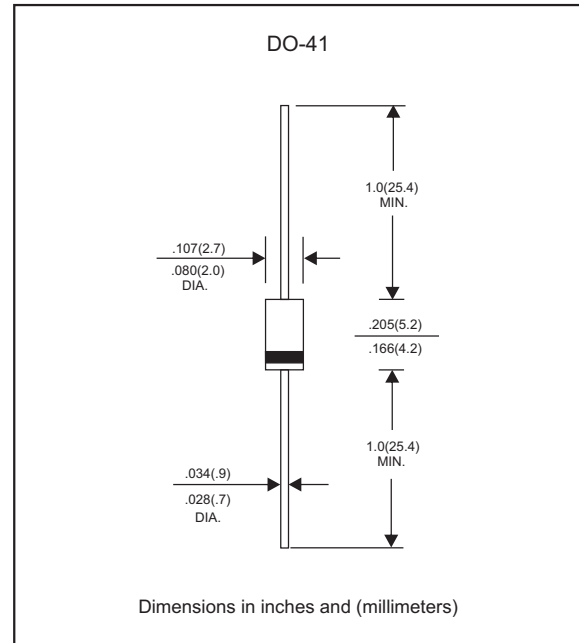
### Features

- Power dissipation up to 2.0W.
- Glass passivated chip struction.
- Wide zener reverse voltage range 11V to 330V.
- Standard zener voltage tolerance  $\pm 5\%$  with a "B" suffix.
- Low zener impedance.
- Lead-free parts meet environmental standards of MIL-STD-19500 /228
- Suffix "-H" indicates Halogen-free part, ex.Z20-11B-H.

### Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : Molded plastic, DO-41
- Terminals :Plated terminals, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.33 gram

### Package outline



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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Peak Forward Surge Current	8.3ms single half sine-wave superimposed on rated load(JEDEC method)	$I_{FSM}$			15	A
Power Dissipation		$P_D$			2.0	W
Operating temperature		$T_J$	-55		+150	$^\circ\text{C}$
Storage temperature		$T_{STG}$	-65		+175	$^\circ\text{C}$

Part No.	Marking code	Zener voltage			Test current	Zener impedance			Leakage current	
		V <sub>Z</sub> @ I <sub>ZT</sub> (Volts)			I <sub>ZT</sub>	Z <sub>ZT</sub> @ I <sub>ZT</sub>	Z <sub>ZK</sub> @ I <sub>ZK</sub>	I <sub>ZK</sub>	I <sub>R</sub>	V <sub>R</sub>
		Min.	Nom.	Max.	mA	OHMs	OHMs	mA	uA	Volts
Z20-11B	Z20-11B	10.45	11	11.55	45.5	4.0	700	0.25	1.0	8.4
Z20-12B	Z20-12B	11.40	12	12.60	41.5	4.5	700	0.25	1.0	9.1
Z20-13B	Z20-13B	12.35	13	13.65	38.5	5.0	700	0.25	0.5	9.9
Z20-14B	Z20-14B	13.30	14	14.70	35.7	5.5	700	0.25	0.5	10.6
Z20-15B	Z20-15B	14.25	15	15.75	33.4	7.0	700	0.25	0.5	11.4
Z20-16B	Z20-16B	15.20	16	16.80	31.2	8.0	700	0.25	0.5	12.2
Z20-17B	Z20-17B	16.15	17	17.85	29.4	9.0	750	0.25	0.5	13.0
Z20-18B	Z20-18B	17.10	18	18.90	27.8	10.0	750	0.25	0.5	13.7
Z20-19B	Z20-19B	18.05	19	19.95	26.3	11.0	750	0.25	0.5	14.4
Z20-20B	Z20-20B	19.00	20	21.00	25.0	11.0	750	0.25	0.5	15.2
Z20-22B	Z20-22B	20.90	22	23.10	22.8	12.0	750	0.25	0.5	16.7
Z20-24B	Z20-24B	22.80	24	25.20	20.8	13.0	750	0.25	0.5	18.2
Z20-27B	Z20-27B	25.65	27	28.35	18.5	18.0	750	0.25	0.5	20.6
Z20-28B	Z20-28B	26.60	28	29.40	17.0	19.0	750	0.25	0.5	21.0
Z20-30B	Z20-30B	28.50	30	31.50	16.6	20.0	1000	0.25	0.5	22.5
Z20-33B	Z20-33B	31.35	33	34.65	15.1	23.0	1000	0.25	0.5	25.1
Z20-36B	Z20-36B	34.20	36	37.80	13.9	25.0	1000	0.25	0.5	27.4
Z20-39B	Z20-39B	37.05	39	40.95	12.8	30.0	1500	0.25	0.5	29.7
Z20-43B	Z20-43B	40.85	43	45.15	11.6	35.0	1500	0.25	0.5	32.7
Z20-47B	Z20-47B	44.65	47	49.35	10.6	40.0	1500	0.25	0.5	35.8
Z20-51B	Z20-51B	48.45	51	53.55	9.8	48.0	1500	0.25	0.5	38.8
Z20-56B	Z20-56B	53.20	56	58.80	9.0	55.0	2000	0.25	0.5	42.6
Z20-62B	Z20-62B	58.90	62	65.10	8.1	60.0	2000	0.25	0.5	47.1
Z20-68B	Z20-68B	64.60	68	71.40	7.4	75.0	2000	0.25	0.5	51.7
Z20-75B	Z20-75B	71.25	75	78.75	6.7	90.0	2000	0.25	0.5	56.0
Z20-82B	Z20-82B	77.90	82	86.10	6.1	100	3000	0.25	0.5	62.2
Z20-91B	Z20-91B	86.45	91	95.55	5.5	125	3000	0.25	0.5	69.2
Z20-100B	Z20-100B	95.00	100	105.00	5.0	750	5000	0.25	0.5	75
Z20-110B	Z20-110B	104.50	110	115.50	5.0	750	5000	0.25	0.5	80
Z20-115B	Z20-115B	109.25	115	120.75	5.0	750	5000	0.25	0.5	85
Z20-120B	Z20-120B	114.00	120	126.00	5.0	850	5000	0.25	0.5	90
Z20-130B	Z20-130B	123.50	130	136.50	5.0	1000	5000	0.25	0.5	95
Z20-140B	Z20-140B	133.00	140	147.00	5.0	1200	5000	0.25	0.5	105
Z20-150B	Z20-150B	142.50	150	157.50	5.0	1300	5000	0.25	0.5	110
Z20-160B	Z20-160B	152.00	160	168.00	5.0	1500	5000	0.25	0.5	120
Z20-170B	Z20-170B	161.50	170	178.50	5.0	2200	5000	0.25	0.5	130
Z20-180B	Z20-180B	171.00	180	189.00	5.0	2200	5000	0.25	0.5	140
Z20-190B	Z20-190B	180.50	190	199.50	5.0	2500	5000	0.25	0.5	150
Z20-200B	Z20-200B	190.00	200	210.00	5.0	2500	8000	0.25	0.5	165
Z20-210B	Z20-210B	199.50	210	220.50	5.0	5000	9000	0.25	0.5	165
Z20-220B	Z20-220B	209.00	220	231.00	5.0	5000	8000	0.25	0.5	170
Z20-230B	Z20-230B	218.50	230	241.50	5.0	5000	9000	0.25	0.5	175
Z20-240B	Z20-240B	228.00	240	252.00	5.0	5000	8000	0.25	0.5	180
Z20-250B	Z20-250B	237.50	250	262.50	5.0	5000	9000	0.25	0.5	190
Z20-260B	Z20-260B	247.00	260	273.00	5.0	5000	8000	0.25	0.5	195
Z20-270B	Z20-270B	256.50	270	283.50	5.0	5000	9000	0.25	0.5	200
Z20-280B	Z20-280B	266.00	280	294.00	5.0	5000	8000	0.25	0.5	210
Z20-290B	Z20-290B	275.50	290	304.50	5.0	5000	9000	0.25	0.5	215
Z20-300B	Z20-300B	285.00	300	315.00	5.0	5000	9000	0.25	0.5	220
Z20-310B	Z20-310B	294.50	310	325.50	5.0	5000	9500	0.25	0.5	225
Z20-320B	Z20-320B	304.00	320	336.00	5.0	5000	9500	0.25	0.5	233
Z20-330B	Z20-330B	313.50	330	346.50	5.0	5000	9500	0.25	0.5	240

Note : 5% tolerance of Zener voltage



## Rating and characteristic curves (Z20-11B THRU Z20-330B)

FIG. 1-TYPICAL THERMAL RESPONSE L

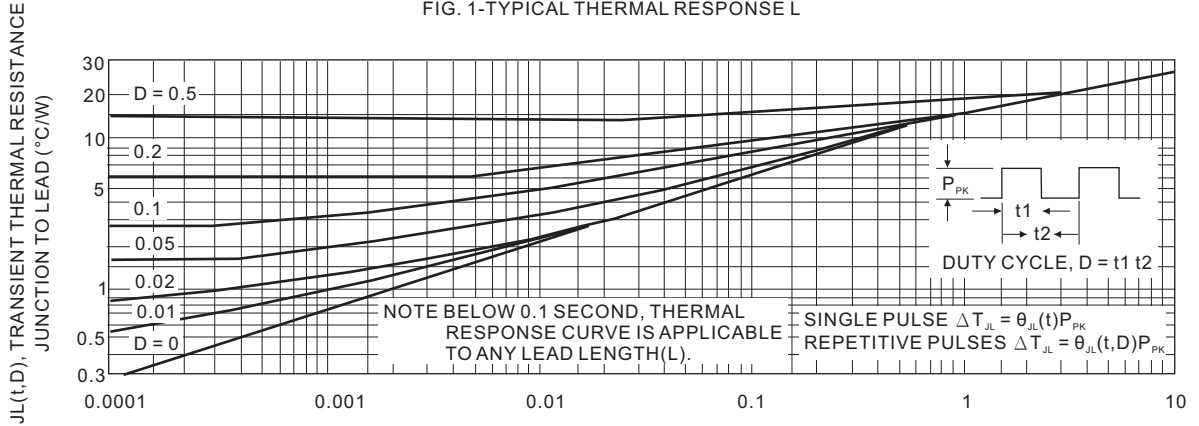


FIG. 2-MAXIMUM SURGE POWER

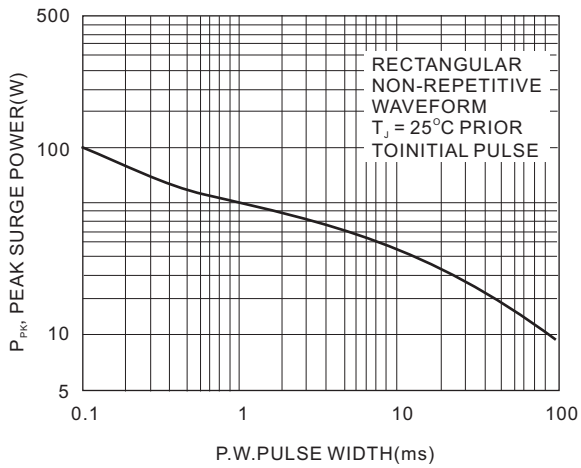
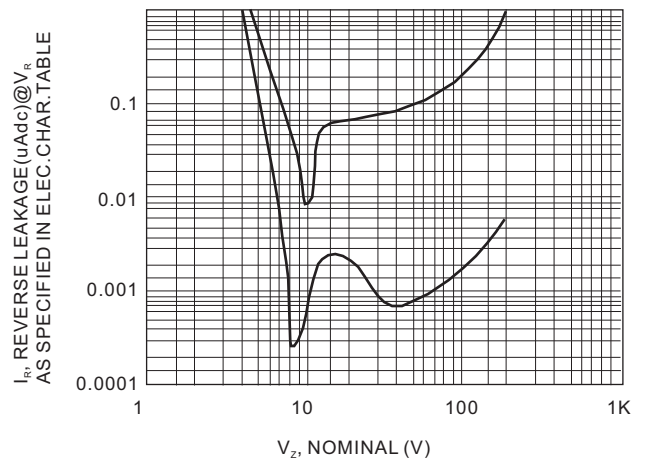


FIG. 3-TYPICAL REVERSE LEAKAGE



## Rating and characteristic curves (Z20-11B THRU Z20-330B)

FIG. 4-UNITS TO 12 VOLTS

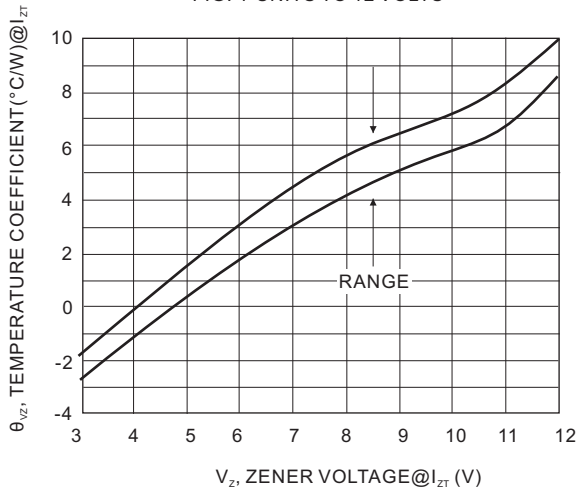


FIG. 5-UNIT 10 TO 200 VOLTS

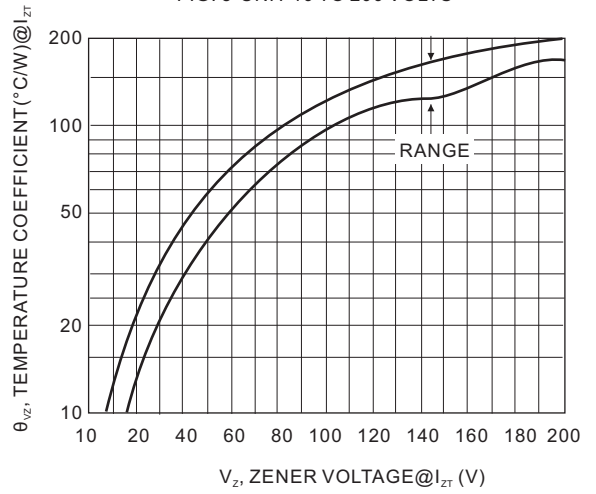


FIG. 6- $V_z = 3.9$  THRU 10 VOLTS

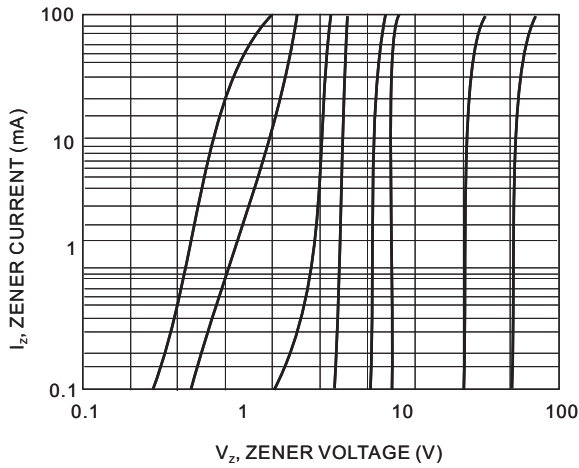


FIG. 7- $V_z = 12$  THRU 82 VOLTS

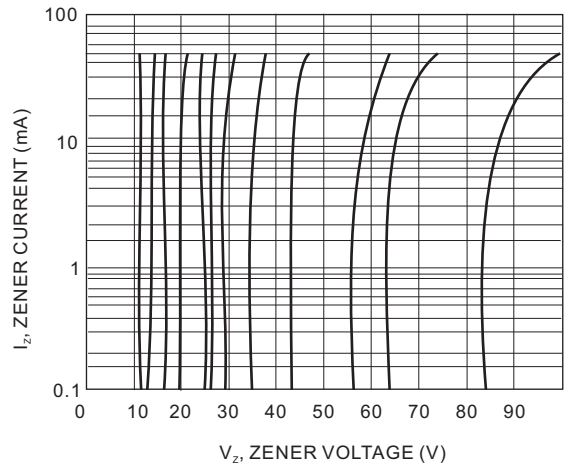


FIG. 8- $V_z = 100$  THRU 200 VOLTS

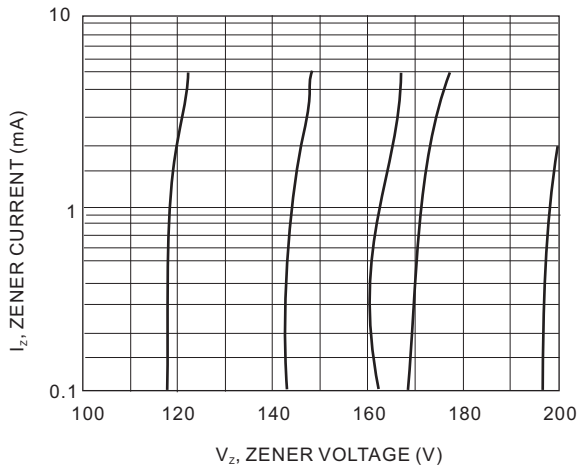
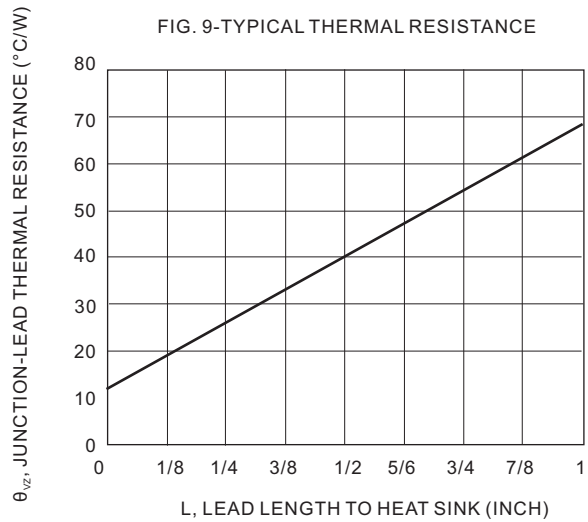




FIG. 9-TYPICAL THERMAL RESISTANCE

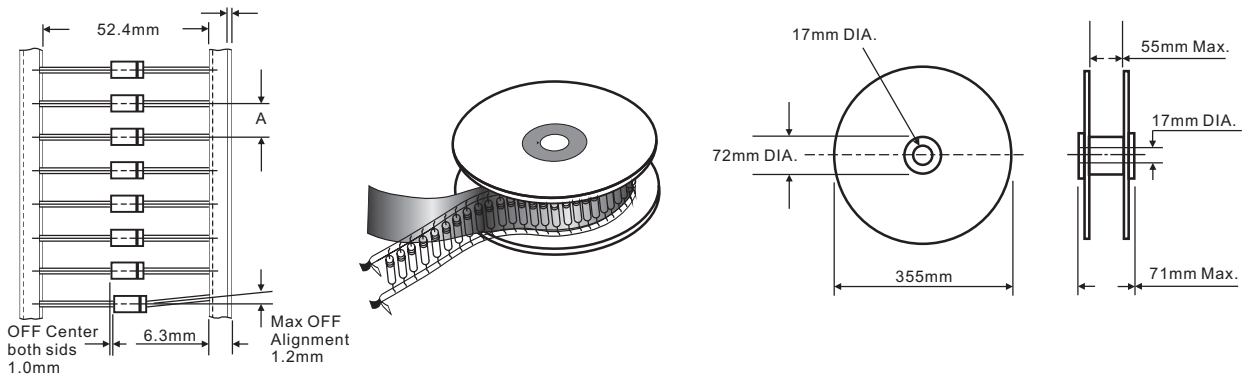


# Z20-11B THRU Z20-330B

## Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

## 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-41	5,000	5 mm	360 * 340 * 370	20,000	10.8

### 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-41	5,000	260 * 83 * 160	440 * 270 * 340	50,000	20.0

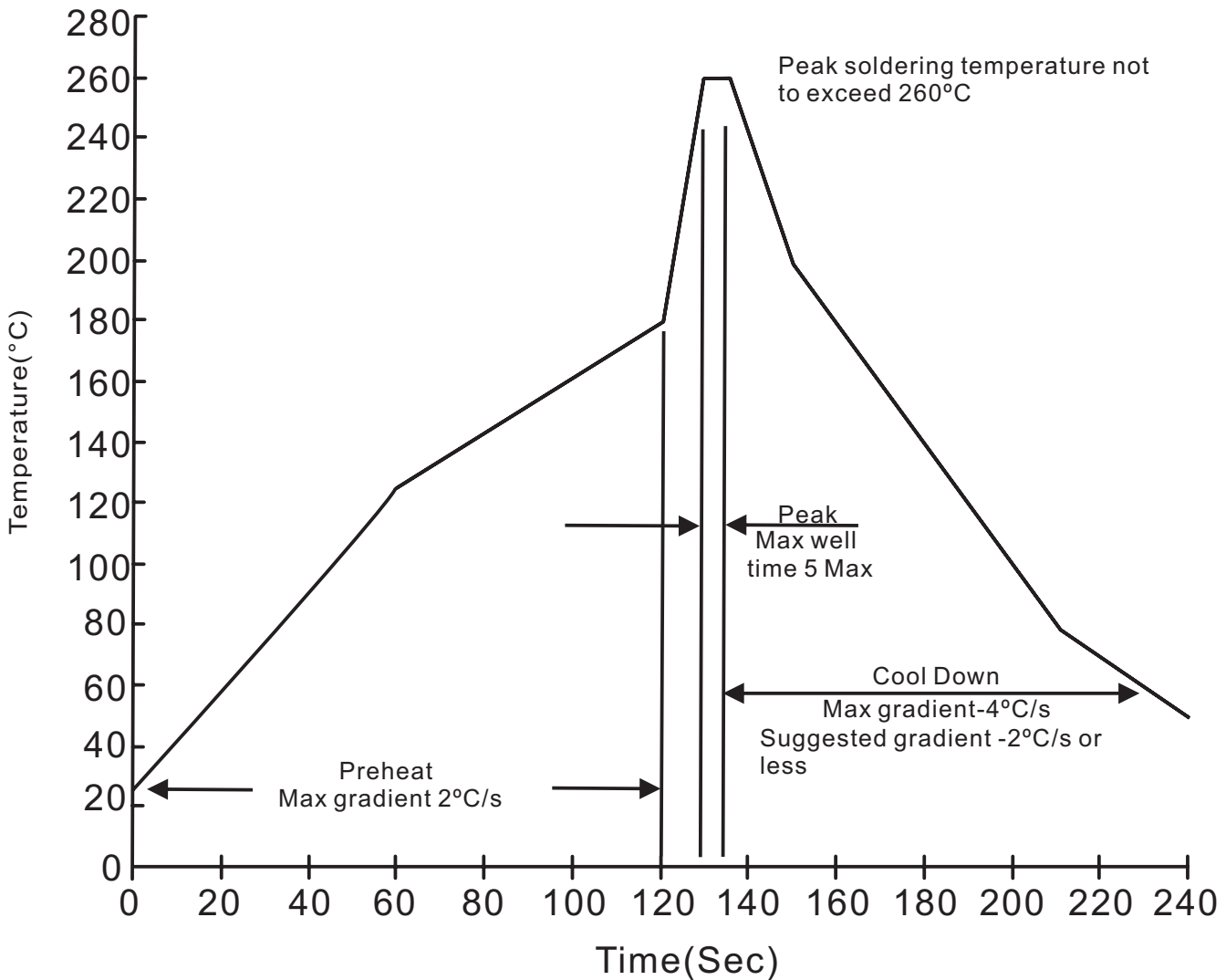
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BULK PACKING

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-41	1,000	194 * 84 * 20	465 * 220 * 260	50,000	20.6

**Suggested thermal profiles for soldering processes**

1. Lead free temperature profile wave-soldering



**Z20-11B THRU Z20-330B****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	1kg weight applied to each lead bending arc 90°±5° for 3 times.	MIL-STD-750D METHOD-2036
5. High Temperature Reverse Bias	V=V <sub>z</sub> rate at T <sub>j</sub> =150°C for 168 hrs.	MIL-STD-750D METHOD-1026
6. Pressure Cooker	15P <sub>SIG</sub> at T <sub>A</sub> =121°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	0°C for 5 min. rise to 100°C for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Humidity	at T <sub>A</sub> =85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1038
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031