

1SS133M

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Taping & bulk specifications for AXIAL devices.....	4
Suggested thermal profiles for soldering processes.....	5
High reliability test capabilities.....	6

1SS133M

300mW Axial Lead Switching Diode-90V

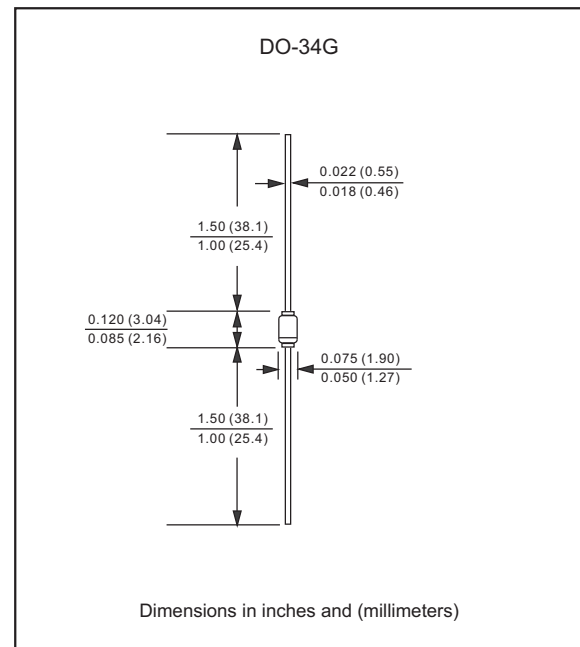
Features

- Fast Switching Device ($t_{rr} < 4.0 \text{ ns}$)
- Through-Hole Device Type Mounting
- Hermetically Sealed Glass
- Compression Bonded Construction
- All External Surfaces Are Corrosion Resistant And Leds Are Readily Solderable
- RoHS Compliant
- Solder Hot Dip Tin (Sn) Terminal Finish
- Cathode Indicated By Polarity Band

Mechanical data

- Case : Glass, DO-34G
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity : Indicated by cathode band
- Mounting Position : Any

Package outline



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

PARAMETER	Symbol	Value	UNIT
Power Dissipation	P_D	300	mW
Working Inverse Voltage	V_R	90	V
Non-repetitive Peak Forward Current	I_{FM}	450	mA
Average Rectified Current	I_O	150	mA
Peak Forward Surge Current (Pulse Width=1us)	I_{FSM}	2	A
Operating temperature range	T_J	-65~+150	$^\circ\text{C}$
Storage temperature range	T_{STG}	-65~+150	$^\circ\text{C}$

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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Breakdown Voltage	$I_R = 500 \text{ nA}$	V_B	80			V
Reverse Leakage Current	$V_R = 80 \text{ V}$	I_R			500	nA
Forward Voltage	$I_F = 100 \text{ mA}$	V_F			1.2	V
Reverse Recovery Time	$I_F = I_R = 10 \text{ mA}, R_L = 100 \Omega, I_{RR} = 1 \text{ mA}$	t_{rr}			4.0	ns
Capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$	C_J			4.0	pF

Rating and characteristic curves (1SS133M)

Figure 1. Power Dissipation vs Ambient Temperature

Valid provided leads at a distance of 0.8mm from case are kept at ambient temperature

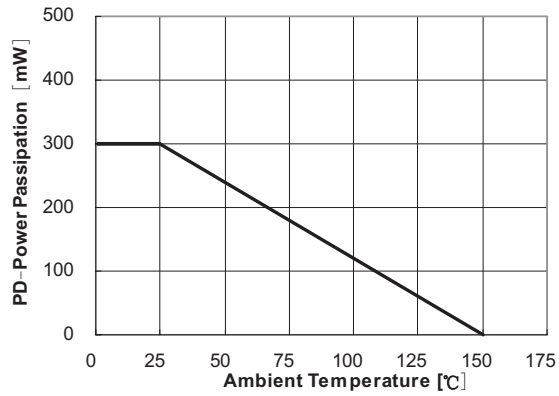


Figure 2. Total Capacitance

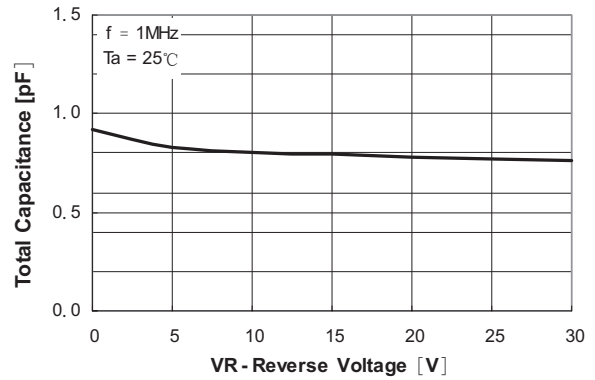


Figure 3. VF-IF Characteristics

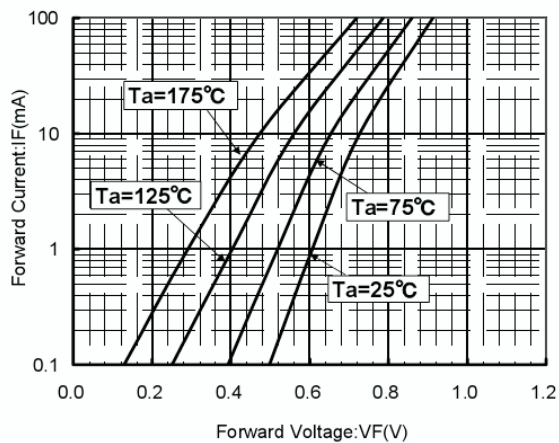
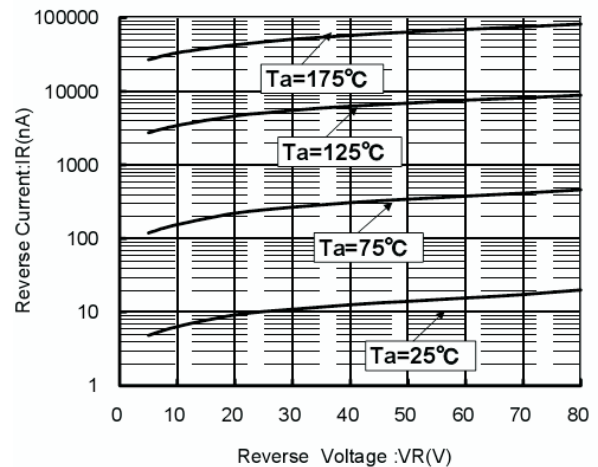


Figure 4. VR-IR Characteristics



1SS133M

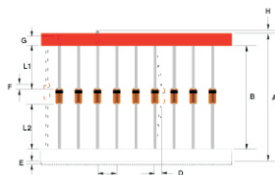
Pinning information

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

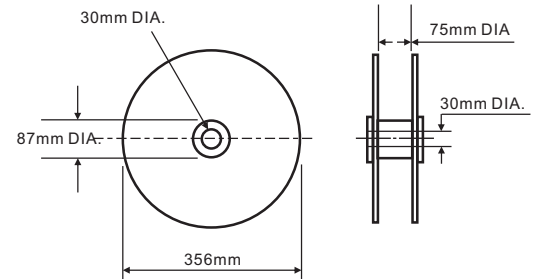
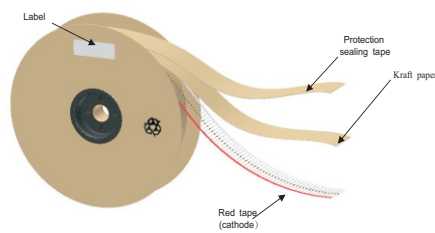
Marking

Type number	Marking code
1SS133M	133

Taping & bulk specifications for AXIAL devices



Description	Millimeters	
Standard Width	52	26
Tape Spacing (B)	52.37±1.5	26±0.5
Component Pitch (C)	5.08±0.4	5.08±0.4
Untaped Lead (L1-L2)	±1.2	±1.0
Bent (D)	1.2 Max	1.2 Max
Tape Mismatch (E)	0.75 Max	0.75 Max
Glass Offset (F)	±0.69	±0.69
Taped Lead (G)	2.0 Min	2.0 Min
Lead Beyond Tape (H)	0	0



REEL PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / REEL)
DO-34G/52mm	10,000

AMMO PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)
DO-34G/26mm	5,000	258 * 49 * 99
DO-34G/52mm	10,000	260 * 76 * 122

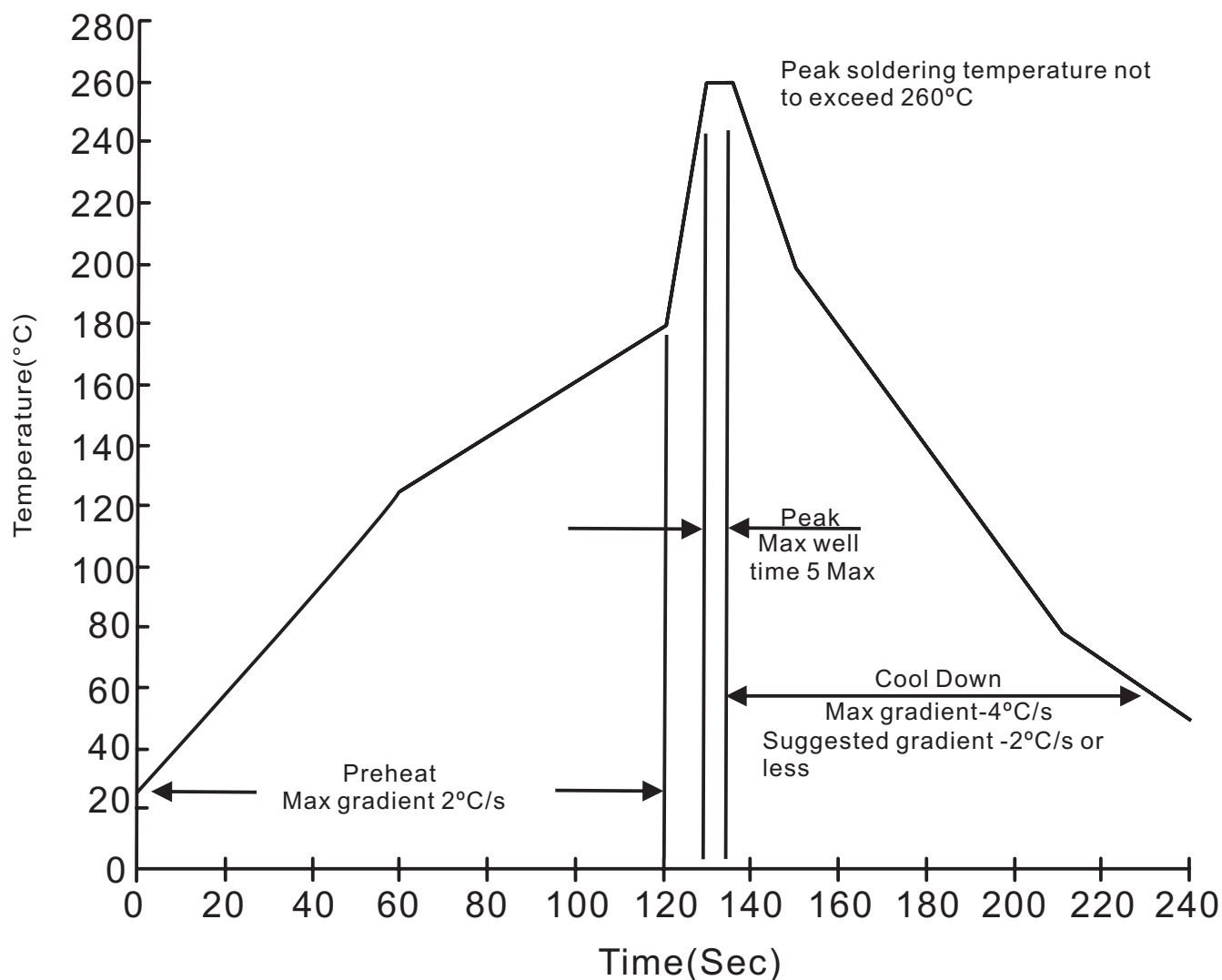
BULK PACKING

DEVICE CASE TYPE	Q'TY 1 (PCS / BOX)	INNER BOX SIZE (m/m)	Q'TY 2 (PCS / CARTON)
DO-34G	1,000	250 * 80 * 80	10,000

1SS133M

Suggested thermal profiles for soldering processes

1. Lead free temperature profile wave-soldering



1SS133M

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at $260\pm 5^{\circ}\text{C}$ for $10\pm 2\text{sec.}$ immerse body into solder $1/16''\pm 1/32''$	MIL-STD-750D METHOD-2031
2. Solderability	at $245\pm 5^{\circ}\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. Pull Test	0.25kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036
4. Bend Lead	0.25kg weight applied to each lead bending arc $90^{\circ}\pm 5^{\circ}$ for 3 times.	MIL-STD-750D METHOD-2036
5. High Temperature Reverse Bias	$V_R=80\%$ rate at $T_J=150^{\circ}\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
6. Forward Operation Life	Rated average rectifier current at $T_A=25^{\circ}\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
7. Intermittent Operation Life	$T_A = 25^{\circ}\text{C}$, $I_F = I_O$ 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 $T_A=121^{\circ}\text{C}$ for 4 hrs.	JESD22-A102
9. Temperature Cycling	-55°C to $+125^{\circ}\text{C}$ 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	Peak forward surge current $t = 1 \text{ us}$	MIL-STD-750D METHOD-4066-2
12. Humidity	at $T_A=85^{\circ}\text{C}$, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
13. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031