

FM551V-NL1-Q1

List

List.....	1
Package outline.....	2
Features.....	2
Mechanical data.....	2
Maximum ratings and Electrical characteristics	2
Rating and characteristic curves.....	3
Pinning information.....	4
Marking.....	4
Suggested solder pad layout.....	4
Packing information.....	5
Reel packing.....	6
Suggested thermal profiles for soldering processes.....	6
High reliability test capabilities.....	7

FM551V-NL1-Q1

500mA Surface Mount Small Signal Schottky Diode 20V

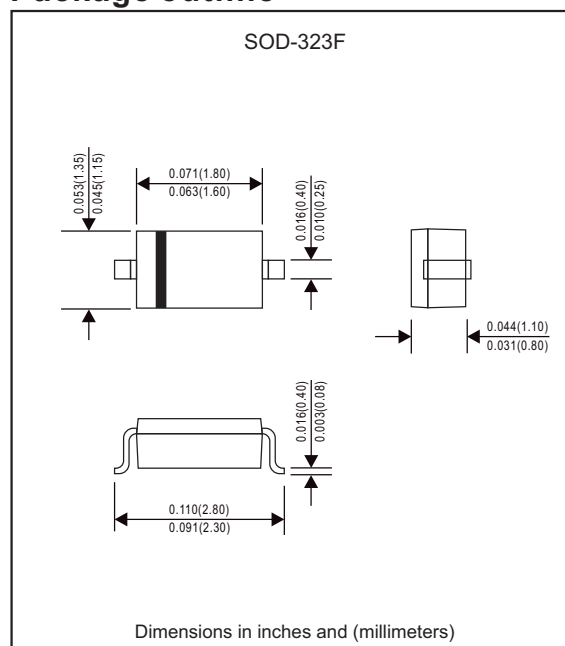
Features

- Small surface mounting type
- Ultra low VF
- High reliability
- Lead-free parts meet RoHS requirements
- Qualified to AEC-Q101 standards for high reliability
- Suffix "-H" indicates Halogen free parts, ex. FM551V-NL1-Q1-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.005 gram

Package outline



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

Parameter	Symbol	Value	Unit
Peak reverse voltage	V_{RM}	30	V
DC reverse voltage	V_R	20	V
Mean rectifying current	I_O	500	mA
Peak forward surge current (60Hz for 1 cycle)	I_{FSM}	5	A
Total device dissipation at $T_A=25^{\circ}\text{C}$	P_D	200	mW
Operating junction temperature range	T_J	-40 to +125	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-40 to +125	$^{\circ}\text{C}$

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

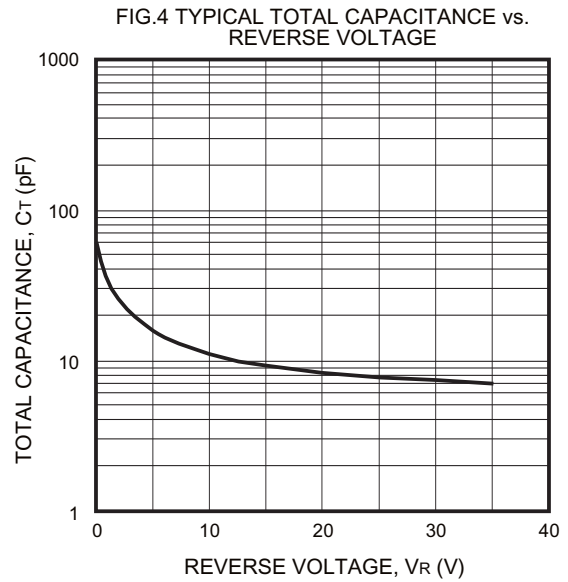
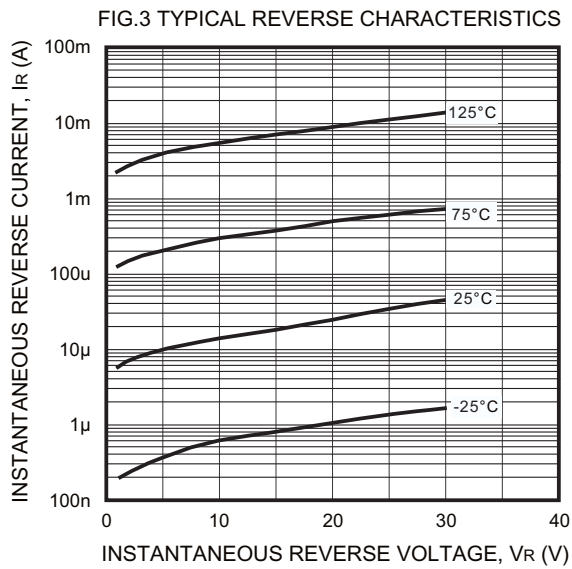
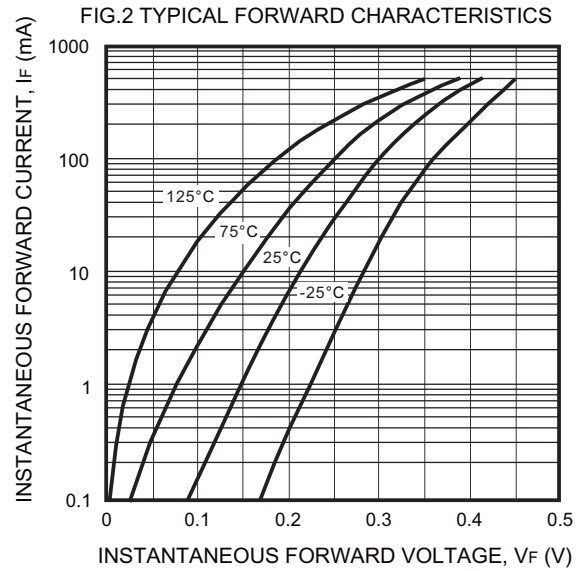
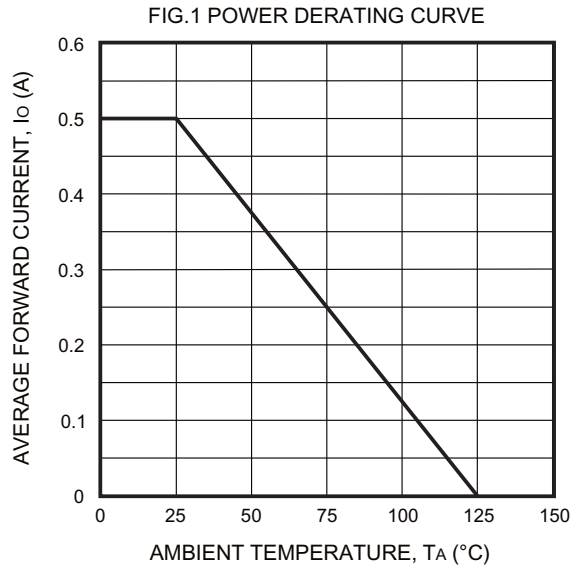
Parameter	Symbol	Value	Unit
Maximum forward voltage at $I_F=100\text{mA}$ $I_F=500\text{mA}$	V_F	0.36 0.47	V
Maximum reverse leakage current at $V_R=20\text{V}$	I_R	100	μA

Thermal characteristics

Parameter	Symbol	Value	Unit
Thermal resistance junction to ambient (Note 1)	$R_{\theta JA}$	500	$^{\circ}\text{C/W}$

1. FR-5 = $1.0 \times 0.75 \times 0.062$ in.

Rating and characteristic curves (FM551V-NL1-Q1)



FM551V-NL1-Q1

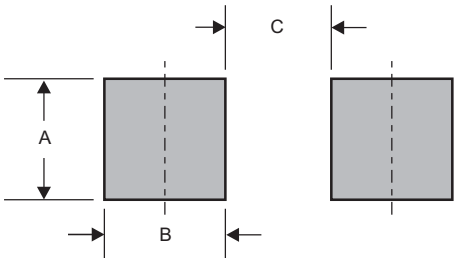
Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
FM551V-NL1-Q1	D

Suggested solder pad layout

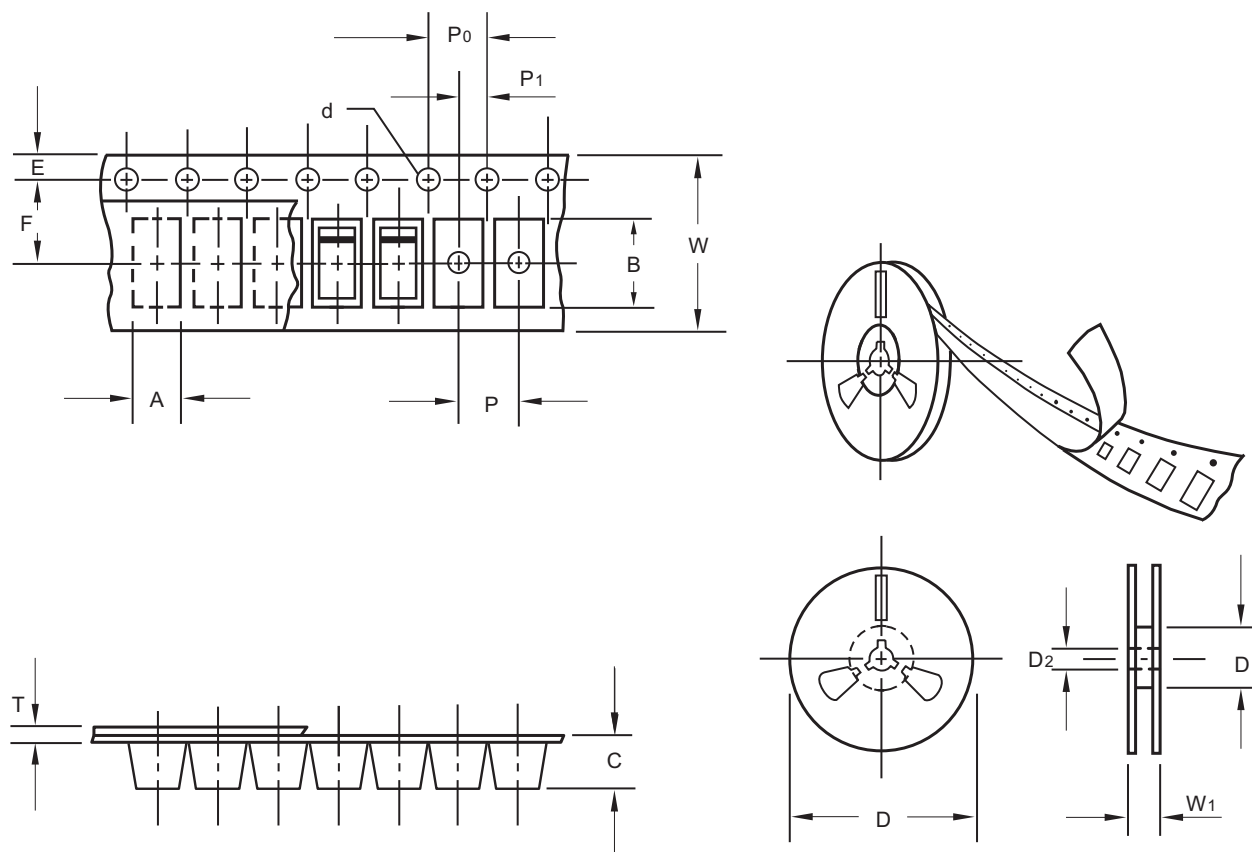


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

FM551V-NL1-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.46
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	1.25
Sprocket hole	d	0.1	1.50
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D ₁	min	62.00
Feed hole diameter	D ₂	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P ₀	0.1	4.00
Embossment center	P ₁	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W ₁	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

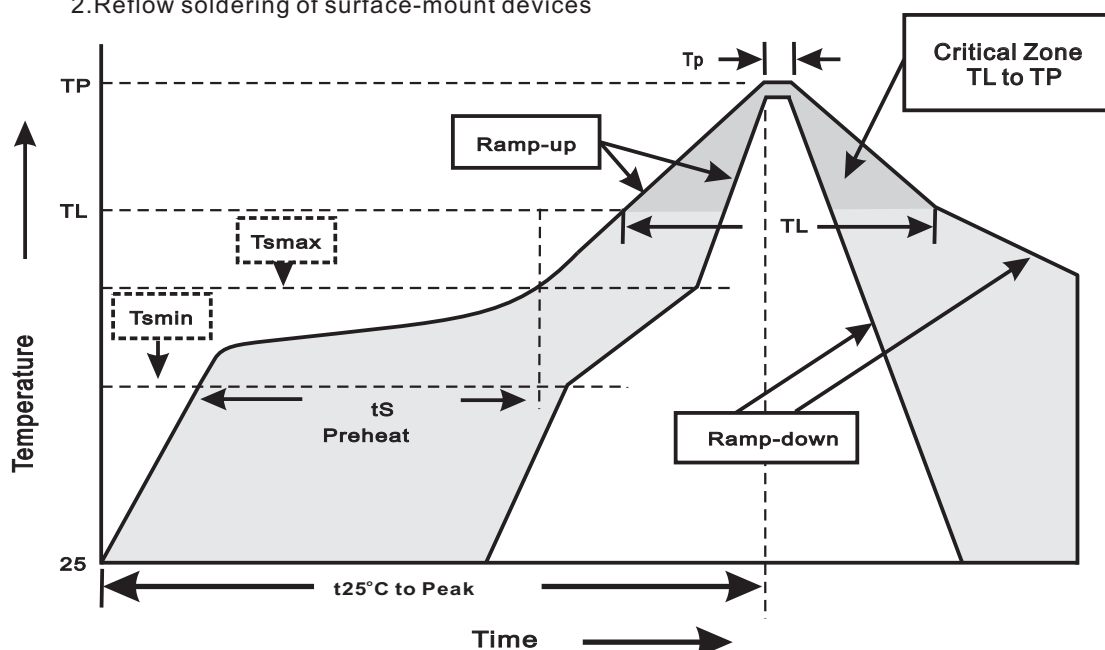
FM551V-NL1-Q1

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T _L to T _P)	<3°C/sec
Preheat -Temperature Min(T _{smmin}) -Temperature Max(T _{smmax}) -Time(min to max)(t _s)	150°C 200°C 60~120sec
T _{smmax} to T _L -Ramp-upRate	<3°C/sec
Time maintained above: -Temperature(T _L) -Time(t _L)	217°C 60~260sec
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

FM551V-NL1-Q1

High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25°C, Rated Current (Io=Io max.) Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tj max.) Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=150°C Test Duration:1000hrs	JESD22 A-103
5. Temperature Cycle	-55°C(15min) to 150°C(15min) Test Cycles:1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25°C, On/Io=Io max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101