

# FM500V-NS

## List

List..... 1

Package outline..... 2

Features..... 2

Mechanical data..... 2

Maximum ratings ..... 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



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# FM500V-NS

## 100mA Surface Mount Small Signal Schottky Barrier Diode-40V

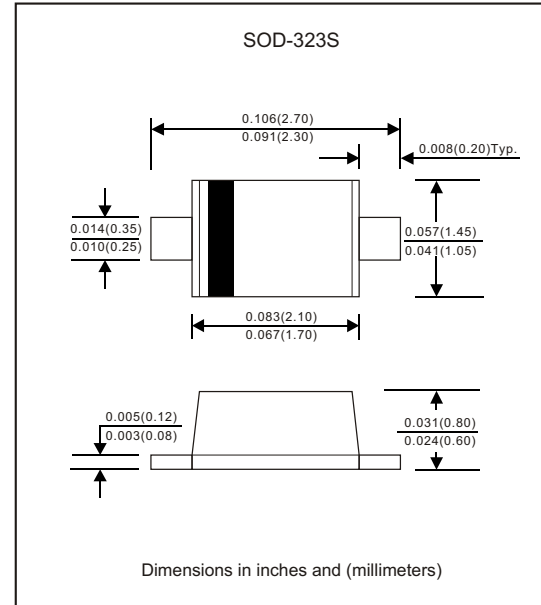
### Features

- Low current rectification and high speed switching.
- Batch process design offers good power dissipation.
- Extremely small surface mount type.
- Up to 10.0mA current capability.
- Low forward voltage drop ( $V_F = 0.45V$  typ. @100.0mA)
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500/228

### Mechanical data

- Epoxy: UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323S
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.003 gram

### Package outline



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

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Repetitive peak reverse voltage		$V_{RM}$			40	V
Continuous reverse voltage		$V_R$			40	V
Mean rectifying current		$I_O$			100	mA
Forward surge current	"8.3ms single halfsine-wave superimposed on rate load (JEDEC methode)"	$I_{FSM}$			1000	mA
Capacitance between terminals	f=1MHz and applied 10V DC reverse voltage	$C_T$		20		pF
Storage temperature		$T_J$	-55		+125	$^\circ C$
Operating temperature		$T_{STG}$	-65		+175	$^\circ C$
Forward voltage	$I_F = 10$ mADC	$V_F$			0.45	V
Reverse current	$V_R = 10$ V	$I_R$			1.0	$\mu A$

## Rating and characteristic curves (FM500V-NS)

FIG.1-TYPICAL FORWARD CHARACTERISTICS

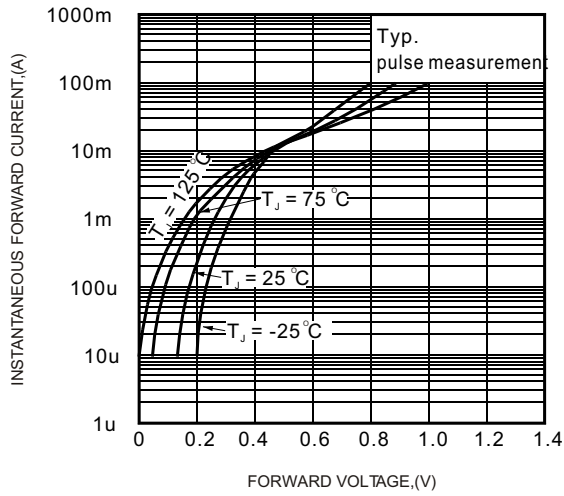


FIG.2 - TYPICAL REVERSE CHARACTERISTICS

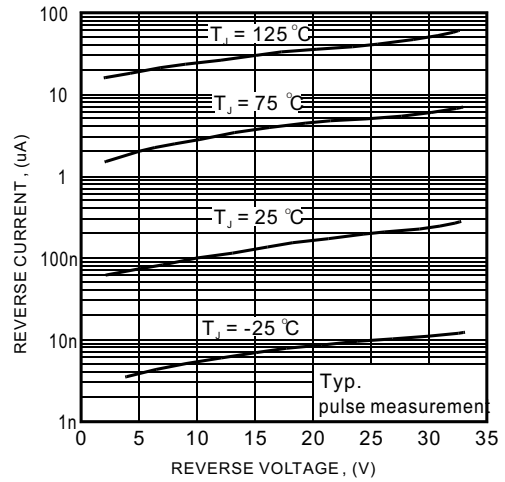
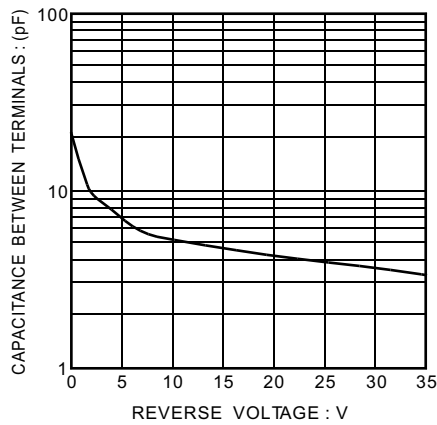




FIG.3-TYPICAL TERMINALS CAPACITANCE



# FM500V-NS

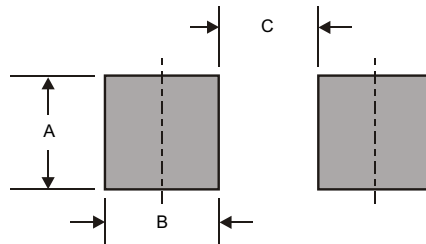
## Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

## Marking

Type number	Marking code
FM500V-NS	2

## Suggested solder pad layout

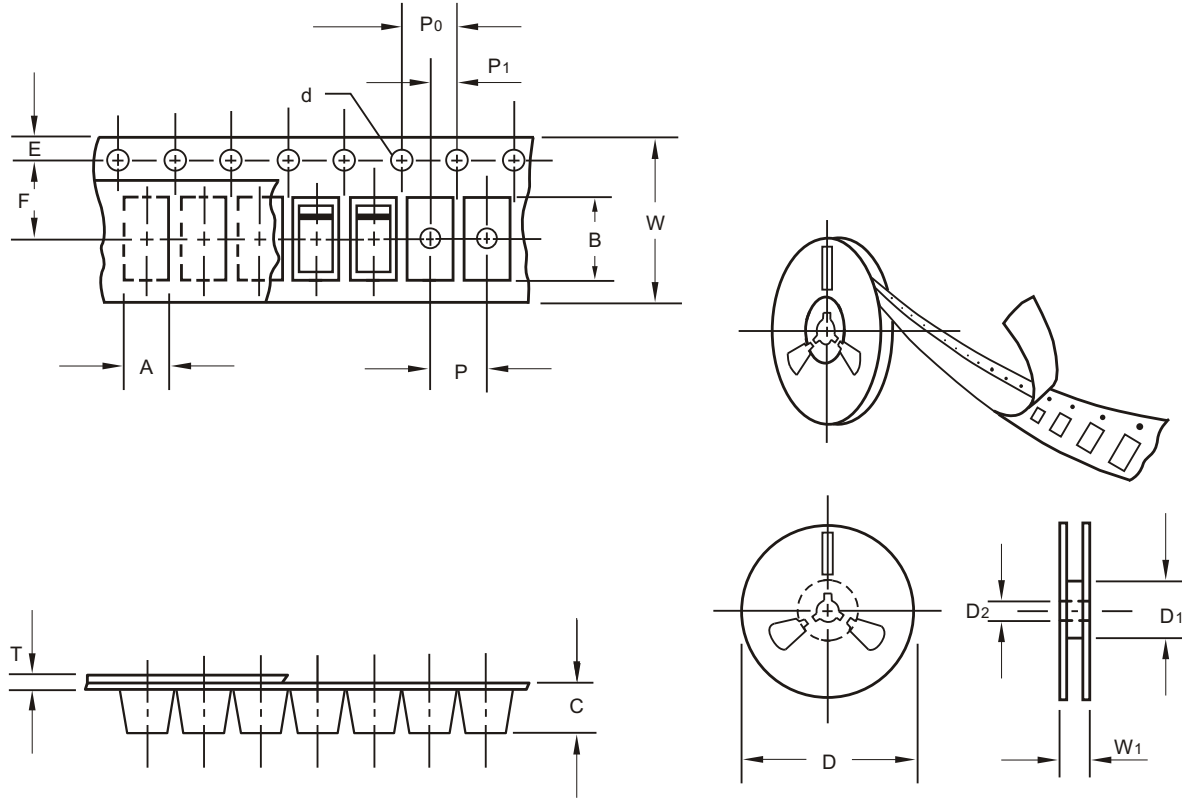


Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323S	0.024 (0.60)	0.031 (0.80)	0.059 (1.50)

# FM500V-NS

## Packing information



unit:mm

Item	Symbol	Tolerance	SOD-323S
Carrier width	A	0.1	1.40
Carrier length	B	0.1	2.95
Carrier depth	C	0.1	0.95
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	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	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

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

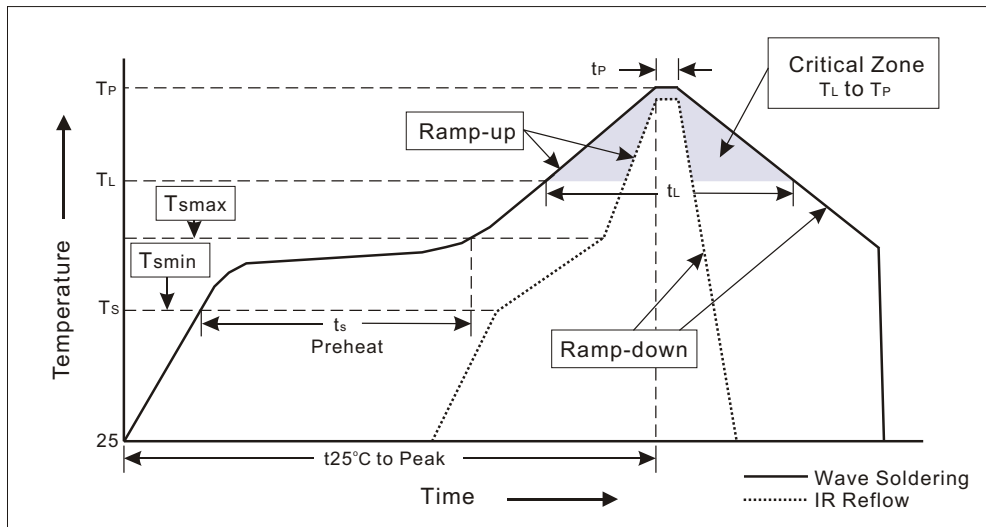
# FM500V-NS

## 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-323S	7"	5000	4.0	20,000	185*185*51	178	430*190*220	160,000	4.9

## 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( $T_{smin}$ ) -Temperature Max( $T_{smax}$ ) -Time(min to max)( $t_s$ )	100°C 150°C 60~120sec
$T_{smax}$ 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

**FM500V-NS****High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2$ 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. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_A = 125^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1026
4. Forward Operation Life	Rated average rectifier current at $T = 25^\circ\text{C}$ for 500 hrs.	MIL-STD-750D METHOD-1027
5. 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
6. Pressure Cooker	$15P_{SIG}$ at $T_A = 121^\circ\text{C}$ for 4 hrs.	
7. Temperature Cycling	$-55^\circ\text{C}$ to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Thermal Shock	$0^\circ\text{C}$ for 5 min. rise to $100^\circ\text{C}$ for 5 min. total 10 cycles.	MIL-STD-750D METHOD-1056
9. Forward Surge	8.3ms single half sine-wave superimposed on rated load, one surge.	MIL-STD-750D METHOD-4066-2
10. Humidity	at $T_A = 65^\circ\text{C}$ , RH=98% for 1000 hrs.	MIL-STD-750D METHOD-1038
11. High Temperature Storage Life	at $175^\circ\text{C}$ for 1000 hrs.	MIL-STD-750D METHOD-1031
12. Solvent Resistance	Dip into Freon at $25^\circ\text{C}$ for 1 min.	MIL-STD-202F METHOD-215