




**SPECIFICATION SHEET**

<b>SPECIFICATION SHEET NO.</b>	N0310-SMAFES1JF0S160
<b>DATE</b>	Mar. 10, 2021
<b>REVISION</b>	A0
<b>DESCRIPTION</b>	<p>SMD Super Fast Recovery Rectifier, SMAF series, ES1JF Type, 2 Pads</p> <p>Reverse recovery Time 35 ns Max.</p> <p>Reverse Voltage 600V Max. Forward Current 1.0A Max.</p> <p>Operating Temp. Range -55°C ~+150°C</p> <p>Package in Tape/Reel, 2000pcs/Reel</p> <p>RoHS/RoHS III compliant</p>
<b>CUSTOMER</b>	
<b>CUSTOMER PART NUMBER</b>	
<b>CROSS REF. PART NUMBER</b>	
<b>ORIGINAL PART NUMBER</b>	MDD ES1JF
<b>PART CODE</b>	SMAFES1JF0S160

<b>VENDOR APPROVE</b>			
Issued/Checked/Approved			
DATE: March 10, 2021			

<b>CUSTOMER APPROVE</b>	
DATE:	

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**

**MAIN FEATURE**



- The plastic package carries Underwriters Laboratory Flammability Classification 94V-0
- Low reverse leakage
- Built-in strain relief
- High forward surge current capability
- High temperature soldering guaranteed: 250°C/ 10 seconds at terminals
- Glass passivated chip junction

**APPLICATION**

- For SMD application

**RFQ**

[Request For Quotation](#)

**PART CODE GUIDE**

SMAF	ES1JFO	S	160
1	2	3	4

- 1) **SMAF**: SMD Super Fast Recovery Rectifier, SMAF series code
- 2) **ES1JFO**: Type code for ES1JF
- 3) **S**: Package code, Tape/reel, 2000pcs/reel.
- 4) **160**: Specification code for Forward Current 1.0A Max. Reverse Voltage 600V Max.

**MORE ITEMS AVAILABLE**

SMAFES1AFOS105	SMAFES1BFOS110	SMAFES1CFOS115	SMAFES1DFOS120	SMAFES1EFOS130
SMAFES1GFOS140	<b>SMAFES1JFOS160</b>			
SMAFES2AFOS205	SMAFES2BFOS210	SMAFES2CFOS215	SMAFES2DFOS220	SMAFES2EFOS230
SMAFES2GFOS240	SMAFES2JFOS260			
SMAFES3AFOS305	SMAFES3BFOS310	SMAFES3CFOS315	SMAFES3DFOS320	SMAFES3EFOS330
SMAFES3GFOS340	SMAFES3JFOS360			

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**

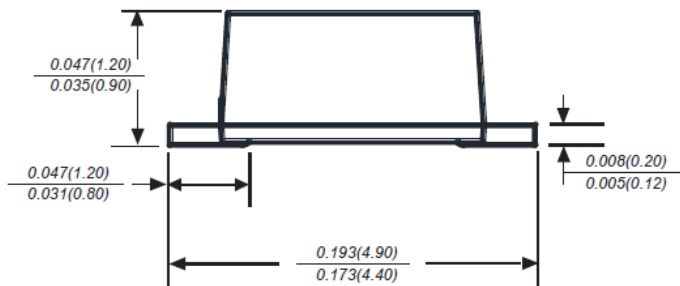
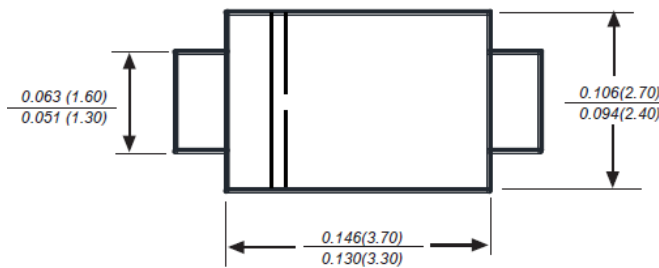
**DIMENSION (Unit: Inch/mm)**

Image for reference

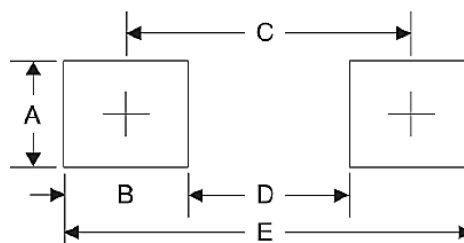


Marking: ES1JF

SMAF



**Recommend Pad Layout**



Symbol	Unit (Inch)	Unit (mm)
A	0.071	1.80
B	0.063	1.60
C	0.150	3.80
D	0.087	2.21
E	0.213	5.40

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**
**MECHANICAL DATA**

Case	Terminals	Polarity	Mounting Position	Weight per piece
JEDEC SMAF molded plastic body	Solder plated, Solderable per MIL-STD-750, Method 2026	Color band denotes cathode end	Any	0.0018 Ounce, 0.0510 grams

**MAX. RATING & CHARACTERISTICS**

Parameter	SYMBOLS	VALUE			UNITS
		Min.	Typical	Max.	
Repetitive peak reverse voltage	V <sub>RRM</sub>			600	Volts
RMS voltage	V <sub>RMS</sub>			420	Volts
DC blocking voltage	V <sub>DC</sub>			600	Volts
Average forward output rectified current at TL= 55°C	I <sub>AV</sub>			1.0	A
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method)	I <sub>FSM</sub>		30		A
Instantaneous forward voltage at 1.0A	V <sub>F</sub>			1.70	Volts
DC reverse current at rated DC blocking voltage	I <sub>R</sub>	TA=25°C		5	μA
		TA=125°C		50	μA
Reverse recovery Time (Note 2)	t <sub>rr</sub>			35	ns
Junction capacitance (NOTE 3)	C <sub>J</sub>		15		pF
Thermal resistance (Note 4)	R <sub>QJA</sub>		60		°C/W
Operating junction temperature range	T <sub>J</sub>	-55		+150	°C
Storage temperature range	T <sub>STG</sub>	-55		+150	°C

**Note**

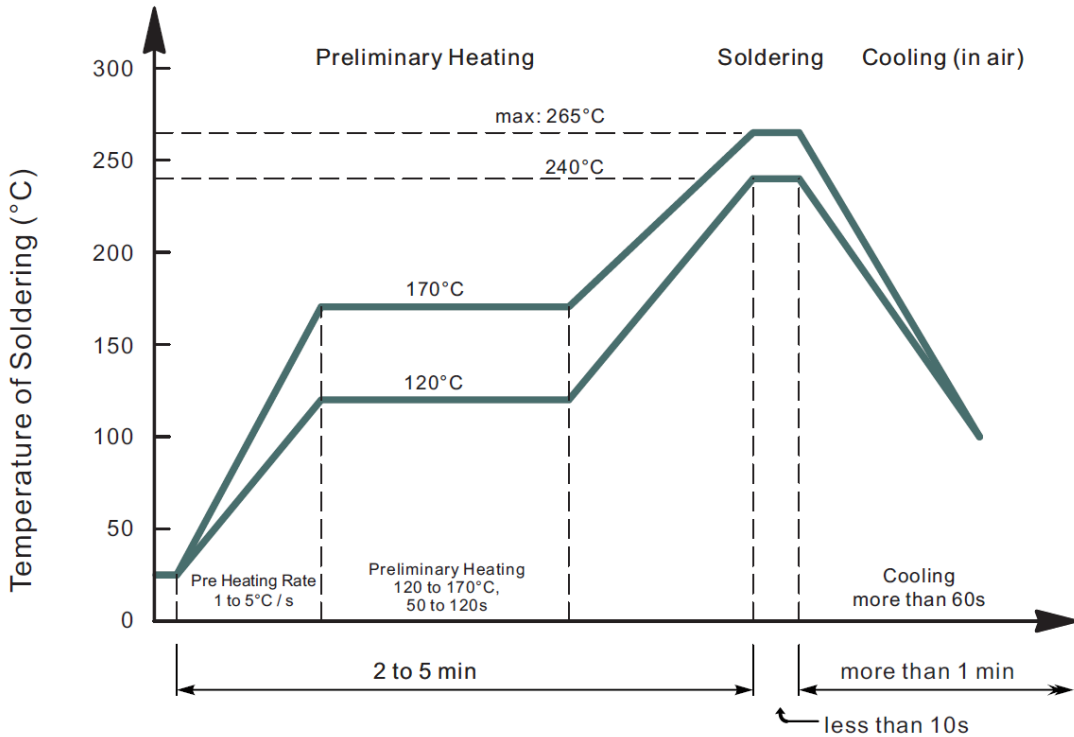
- Ratings at 25 C ambient temperature unless otherwise specified. Single phase half-wave 60Hz, resistive or inductive load, for capacitive load current derate by 20%.
- Reverse recovery condition IF=0.5A,IR=1.0A,Irr=0.25A
- Measured at 1.0MHz and applied reverse voltage of 4.0Voltage
- P.C.B. mounted with 0.2x0.2"(5.0x5.0mm) copper pad areas.

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**
**RELIABILITY**

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	TA=100°C for 1000 Hours at VR=80% Rated VR	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, TA=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	TA=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**

**SUGGESTED REFLOW PROFILE (For Reference Only)**



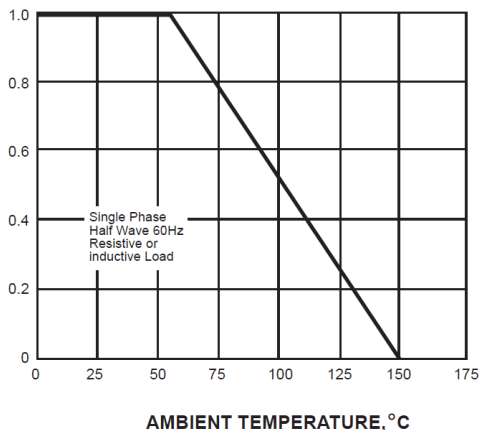
- Recommended peak temperature is over 245°C, If peak temperature is below 245 °C, you may adjust the following parameters; time length of peak temperature (longer), time length of soldering (longer), thickness of solder paste (thicker)
- Welding shall not exceed 2 times
- Remark: lead free solder paste (96.5 sn/3.0 Ag/0.5Cu)

**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**

**RATINGS AND CHARACTERISTIC CURVES (For Reference Only)**

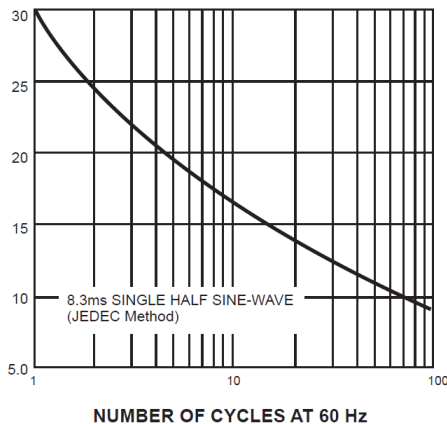
AVERAGE FORWARD RECTIFIED CURRENT, AMPERES

FIG. 1- FORWARD CURRENT DERATING CURVE



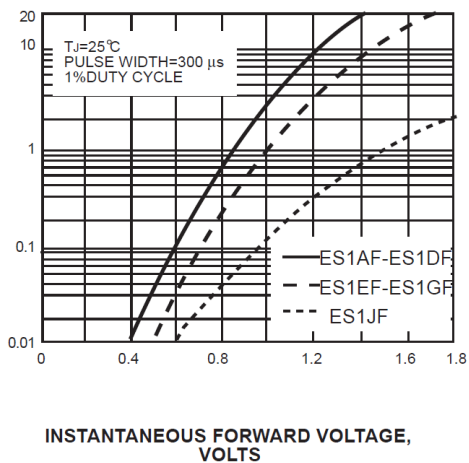
PEAK FORWARD SURGE CURRENT, AMPERES

FIG. 2-MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



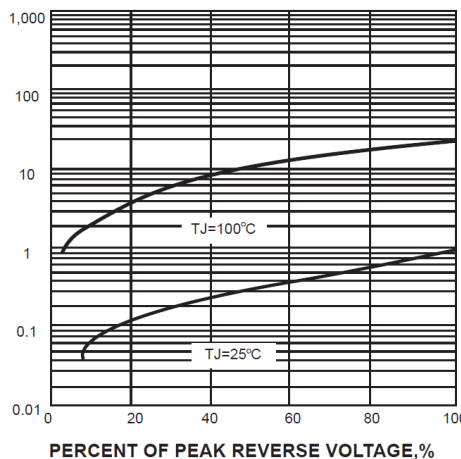
INSTANTANEOUS FORWARD CURRENT, AMPERES

FIG. 3-TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS



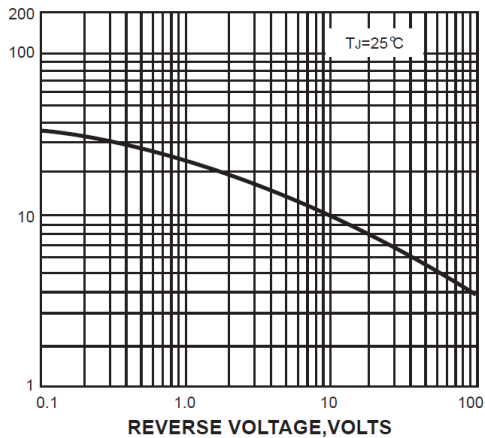
INSTANTANEOUS REVERSE CURRENT, MICROAMPERES

FIG. 4-TYPICAL REVERSE CHARACTERISTICS



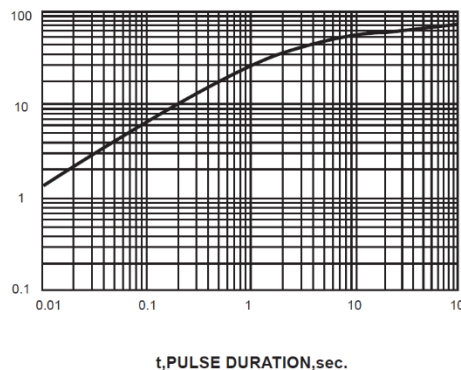
JUNCTION CAPACITANCE, pF

FIG. 5-TYPICAL JUNCTION CAPACITANCE



TRANSIENT THERMAL IMPEDANCE, °C/W

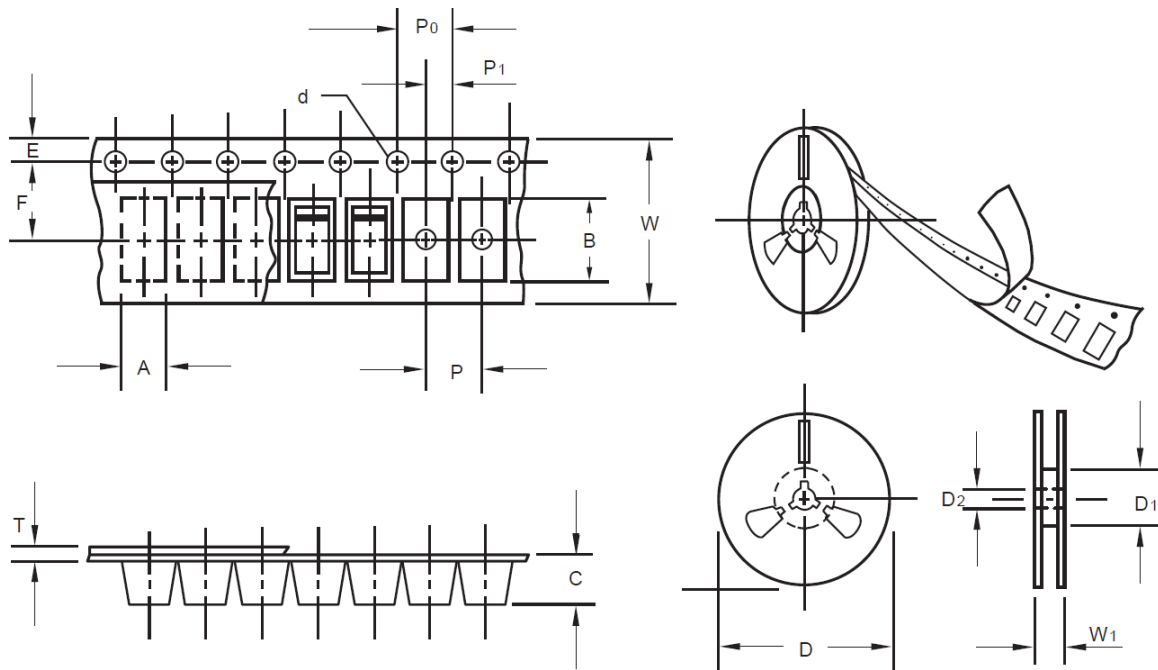
FIG. 6-TYPICAL TRANSIENT THERMAL IMPEDANCE



**SMD SUPER FAST RECOVERY RECTIFIER SMAF SERIES**

**TAPE/REEL (Unit: mm)**

All Devices are packed in accordance with EIA standard RS-481-A and specifications.



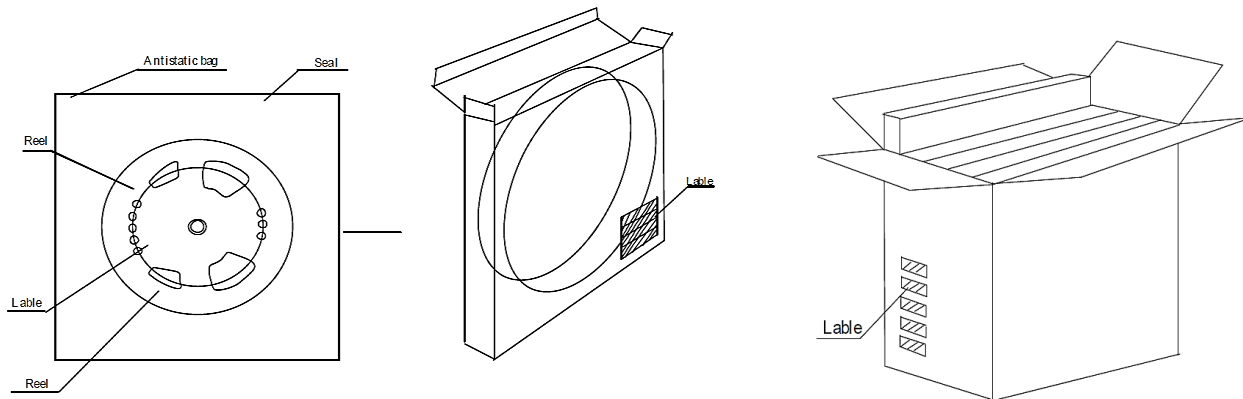
Item	Symbol	Tolerance	SMAF
Carrier width	A	0.1	2.80
Carrier Length	B	0.1	4.75
Carrier Depth	C	0.1	1.42
Sprocket hole	d	0.05	1.50
7"Reel outside diameter	D	2.0	178.00
7"Reel inner diameter	D1	Min.	54.40
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	5.05
Punch 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	0.30
Tape width	W	0.3	8.00
Reel width	W1	1.0	12.30



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**PACKAGE**

Case Code	Reel Size	MPQ (pcs)	Component Spacing (mm)	Qty. Per Box (pcs)	Inner Box L*W*H (mm)	Reel Size (mm)	Carton size L*W*H (mm)	Qty. Per Carton (pcs)	G. W (kg)
SMAF	7"	3,000		6,000	210*208*203	178	400*400*250	120,000	10.0



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