SEMICONDUCTOR

SF1040M3

GLASS PASSIVATED SUPER FAST RECTIFIER

Reverse Voltage - 400 Volts

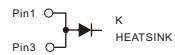
Forward Current - 10.0Amperes

Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Fast switching for high efficiency
- Low forward voltage drop
- Single rectifier construction
- High surge capability
- High temperature soldering guaranteed:260°C/10 seconds,
- Component in accordance to RoHS 2015/863/EU

TO-252

DPAK



Mechanical Data

- Case: JEDEC TO-252(DPAK) molded plastic body
- Terminals: Solderable per MIL-STD-202,method 208
- Polarity: As marked
- Mounting Position: Any

Typical Applications

- For use in boost stage in SMPS
- High frequency inverters for solar inverters
- DC/DC converters
- High frequency output rectification of battery chargers
- Free wheeling diodes in motor drivers

Primary Characteristics	
$I_{F(AV)}$	10A
V_{RRM}	400V
I_{FSM}	200A
V_F at I_F=10A(125℃)	1.00V
$I_{R(Max)}$	2μA
$T_{J(Max)}$	175℃
Package	TO-252

Maximum Ratings And Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified ,Single phase ,half wave ,resistive or inductiveload. For capacitive load,derate by 20%.)

Parameters	Symbol	Value	Unit
Maximum repetitive peak reverse voltage	V_{RRM}	400	V
Maximum average forward rectified current	$I_{F(AV)}$	10	A
Peak forward surge current 8.3mS single half sine-wave superimposed on rated load (JEDEC method,Total device)	I_{FSM}	200	A
Rating for fusing(t<8.3ms)	I^2t	93.375	A^2S
Operating junction temperature range	T_J	-55 to 175	℃
Storge temperature range	Tstg	-55 to 175	℃

RATINGS AND CHARACTERISTICS OF SF1040M3

Electrical Characteristcs(T_a=25℃ Unless Otherwise Noted)

Parameters	Test Conditions		Symbol	Min.	Typ.	Max.	Units
Breakdown voltage Blocking voltage	I_R=200μA		V_{BR} V_R	400	-	-	V
Instaneous forward voltage	T_J=25℃	I_F=1.0A	V_F 1)	-	0.81	-	V
		I_F=3.0A		-	0.96	-	
		I_F=10A		-	1.15	1.30	
	T_J=125℃	I_F=1.0A		-	0.59	-	
		I_F=3.0A		-	0.74	-	
		I_F=10A		-	1.00	-	
Reverse current	T_J=25℃	V_R=400V	I_R 2)	-	-	2.0	μA
	T_J=100℃			-	-	20	μA
	T_J=125℃			-	-	100	
Junction capacitance	4V,1MHz		C_J	-	77	-	pF

Notes: 1.Pulse Test:300μS pulse width,1% duty cycle

2.Pulse test:pulse width≤40ms

Dynamic Recovery Characteristcs（t_j=25℃）

Parameters	Test Conditions	Symbol	Min.	Typ.	Max.	Units
Reverse recovery time	I_F=0.5A,I_R=1A,I_{RR}=0.25A	trr	-	27	35	ns

RATINGS AND CHARACTERISTICS OF SF1040M3

Thermal Characteristics

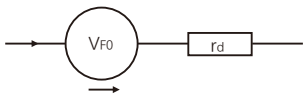
Parameter	Symbol	TO-252	Unit
Typical thermal resistance [3]	$R_{\theta JC}$	2.5	℃/W

3. Thermal resistance from junction to case

Available Pack Information

Product code	Pack	Box Size L×W×H(mm)	Quantity(pcs/box)	Carton SizeL×W×H(mm)	Quantity(box/carton)
SF1040M3-TO-252	Tube	558×148×38	4000	565×225×170	5
SF1040M3-TO-252	Tape & reel(13")	346×346×23	2500	364×364×250	10

Equivalent circuits for forward power loss calculation



V_{f0}: threshold voltage 0.95V

r_d: Dynamic resistance 0.033Ω

Forward power loss of diode=$V_{F0}\times I_{F(AV)}+r_d\times I_{F(RMS)}^2$

Fig.1-Forward Current Derating Curve

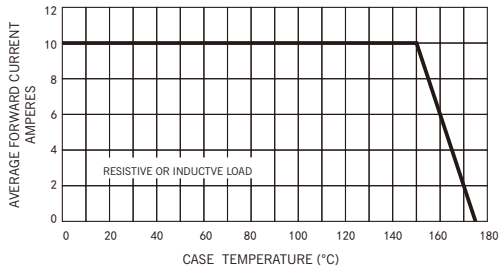
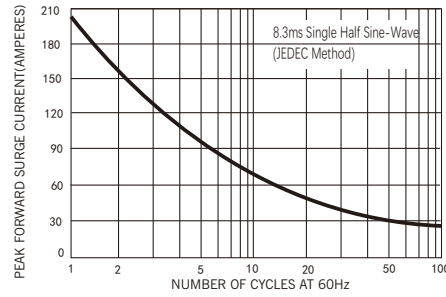


Fig.2-Maximum Non-repetitive Peak Forward Surge Current



RATINGS AND CHARACTERISTICS OF SF1040M3

Fig.3-Typical Instantaneous Forward Characteristics

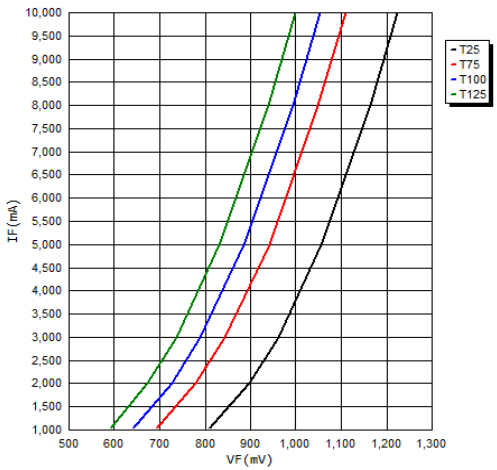
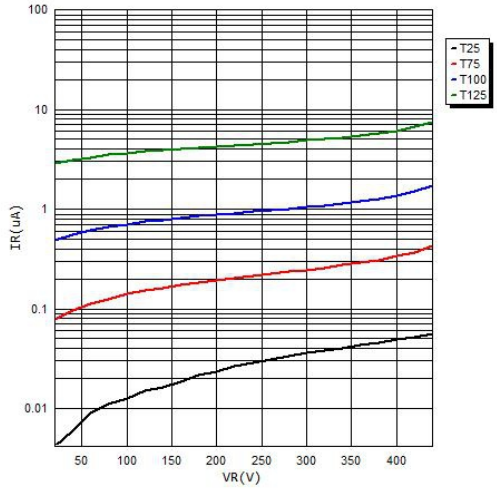
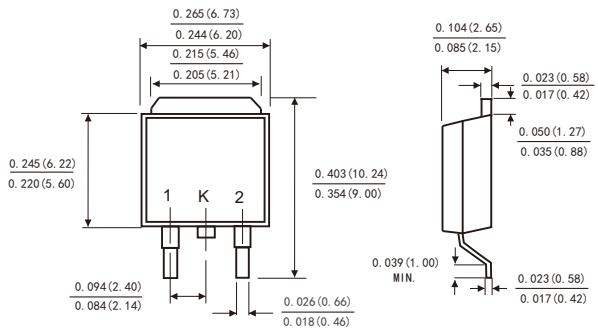


Fig.4-Typical Reverse Characteristics



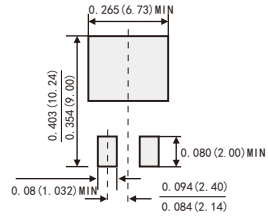
Package Outline Dimensions

TO-252(DPAK)



Suggested Pad Layout

（TO-252）



Dimensions in inches and (millimeters)

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