SF5A05F THRU SF5A60F

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SF5A05F THRU SF5A60F

5.0A Super Fast Recovery Rectifiers - 50V-600V

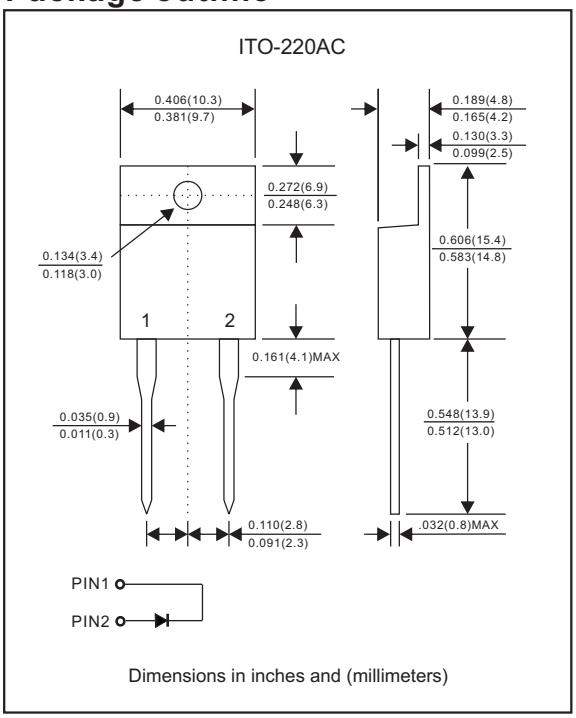
Features

- Low forward voltage, high current capability
- High surge current capability.
- Super fast recovery time for switching mode application.
- Low power loss.
- Glass passivated chip junctions.
- Lead-free parts meet environmental standards of MIL-STD-19500/228
- Suffix "-H" indicates Halogen free parts, ex. SF5A05F-H.

Mechanical data

- Epoxy : UL94-V0 rated flame retardant
- Case : JEDEC ITO-220AC molded plastic body over passivated chip
- Lead : Axial leads, solderable per MIL-STD-202, Method 208 guranteed
- Polarity: As marked
- Mounting Position : Any
- Weight : Approximated 1.7 gram

Package outline



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	SF5A05F	SF5A10F	SF5A20F	SF5A40F	SF5A60F	UNIT
Maximum repetitive peak reverse voltage	V_{RRM}	50	100	200	400	600	V
Maximum RMS voltage	V_{RMS}	35	70	140	280	420	V
Maximum DC blocking voltage	V_{DC}	50	100	200	400	600	V
Maximum average forward rectified current	I_O	5					A
Peak forward surge current 8.3ms single half sine-wave(JEDEC method)	I_{FSM}	100					A
Operating junction temperature range	T_J	-55 to +150					°C
Storage temperature range	T_{STG}	-65 to +175					°C

Electrical Characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	SYMBOLS	SF5A05F	SF5A10F	SF5A20F	SF5A40F	SF5A60F	UNIT
Maximum forward voltage at IF=5A	V_F	0.98			1.30	1.85	V
Maximum DC reverse current at TJ =25°C at rated DC blocking voltage at TJ =125°C	I_R	5.0 200					uA uA
Maximum reverse recovery time (Note 1)	trr	35					ns

Thermal Characteristics

PARAMETER	SYMBOLS	SF5A05F	SF5A10F	SF5A20F	SF5A40F	SF5A60F	UNIT
Typical thermal resistance junction to case	$R_{\theta JC}$	3.0					°C/W

Note 1: Reverse recovery time test condition, I_F=0.5A, I_R=1.0A, I_{RR}=0.25A

Rating and characteristic curves (SF5A05F THRU SF5A60F)

FIG.1-TYPICAL FORWARD CURRENT DERATING CURVE

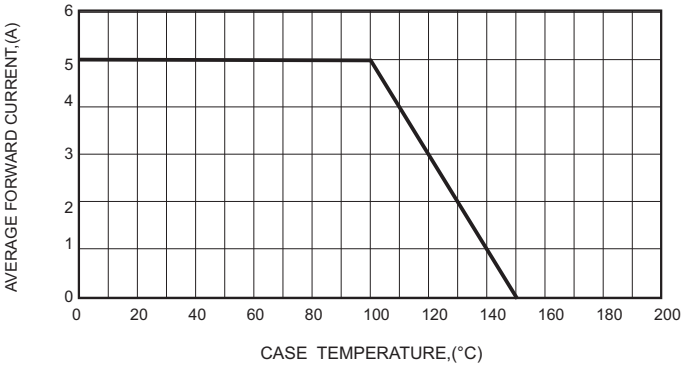


FIG.2-TYPICAL FORWARD CHARACTERISTICS

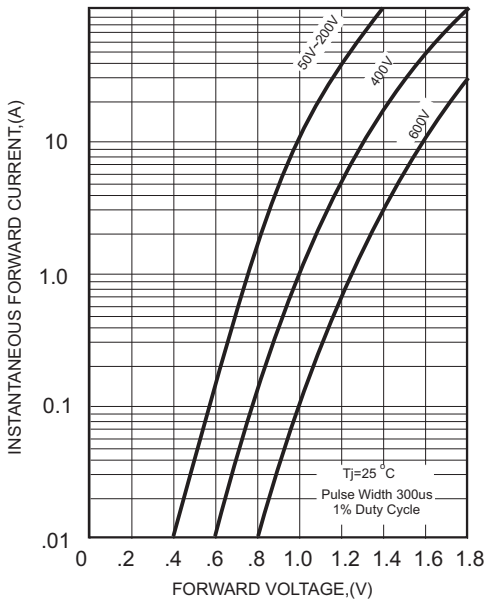


FIG.3-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT

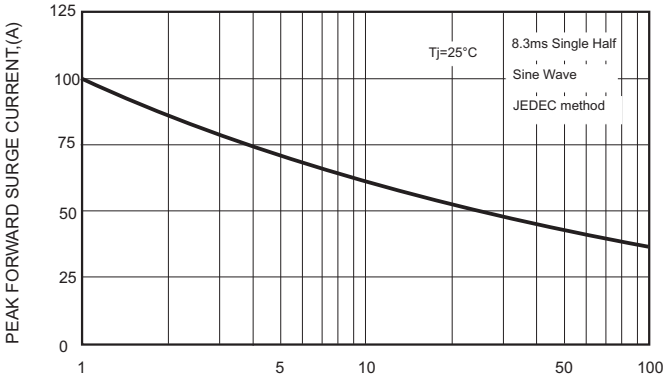


FIG.4 - TYPICAL REVERSE CHARACTERISTICS

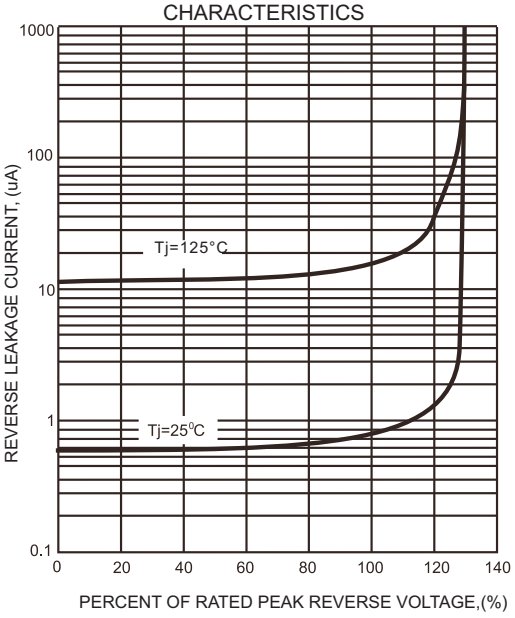
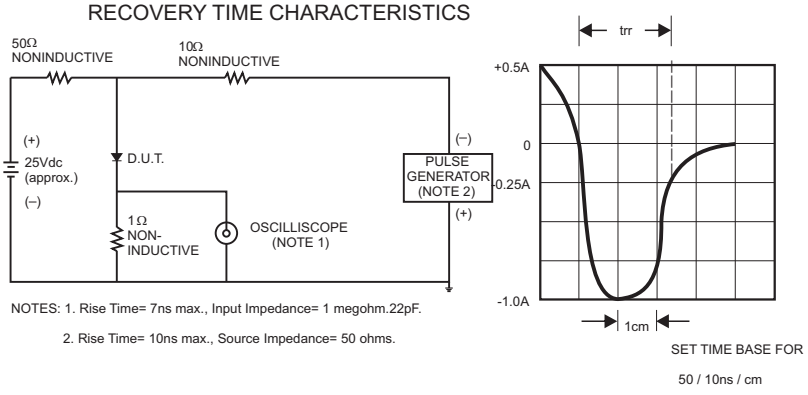


FIG.5- TEST CIRCUIT DIAGRAM AND REVERSE RECOVERY TIME CHARACTERISTICS

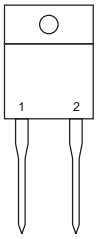
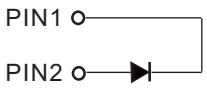


NOTES: 1. Rise Time= 7ns max., Input Impedance= 1 megohm.22pF.

2. Rise Time= 10ns max., Source Impedance= 50 ohms.

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Pinning information

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

Marking

Type number	Marking code
SF5A05F	SF5A05F
SF5A10F	SF5A10F
SF5A20F	SF5A20F
SF5A40F	SF5A40F
SF5A60F	SF5A60F

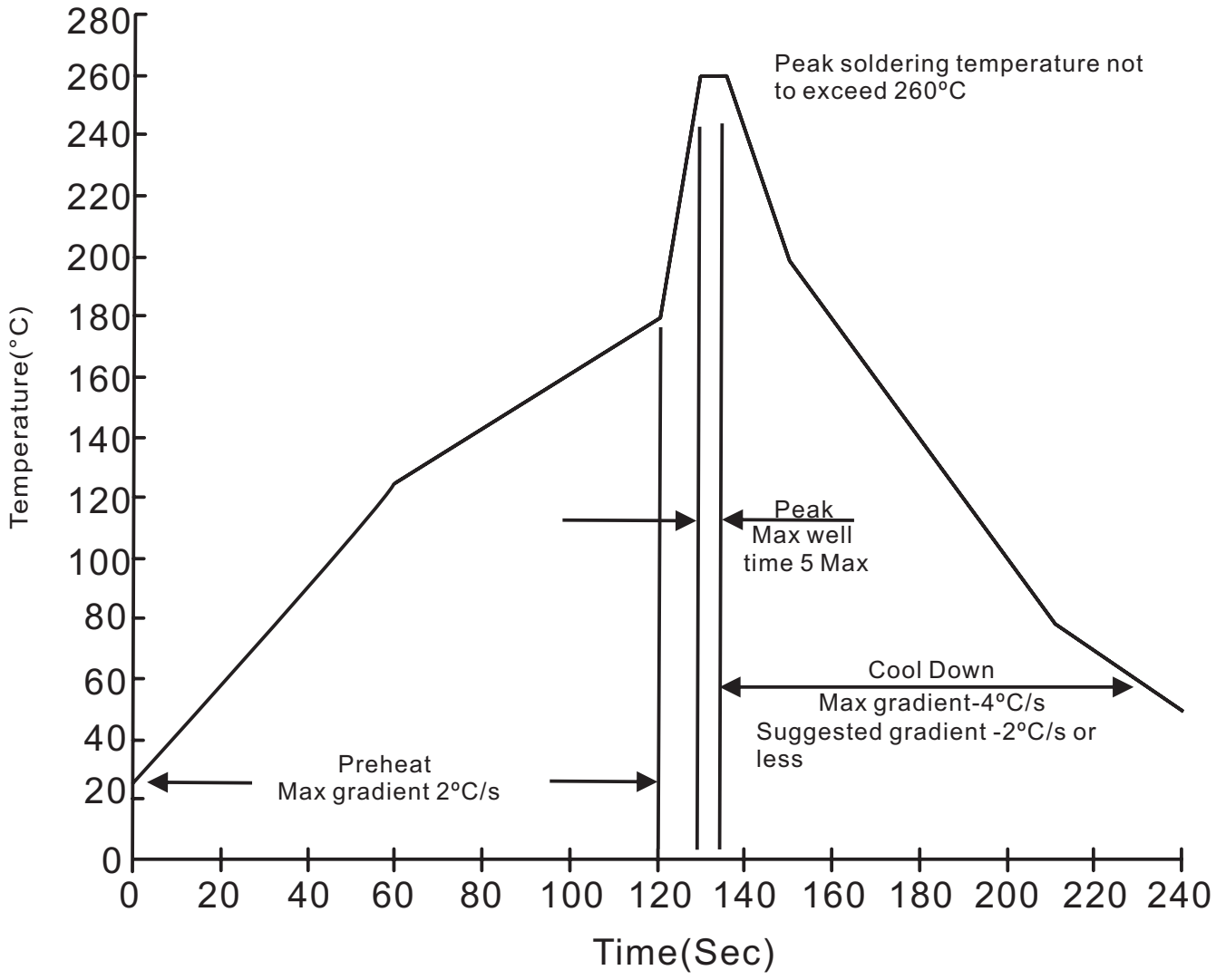
Tube packing

PACKAGE	TUBE (pcs)	TUBE SIZE (m/m)	BOX (pcs)	INNER BOX (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
ITO-220AC	50	525*32*7.0	1000	555*150*40	580*230*175	5,000	15.0

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Suggested thermal profiles for soldering processes

1.Lead free temperature profile wave-soldering



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High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°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°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	8.3ms single half sine-wave , one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031