

## 20A, 200V SUPER-FAST RECOVERY RECTIFIER

### GENERAL DESCRIPTION

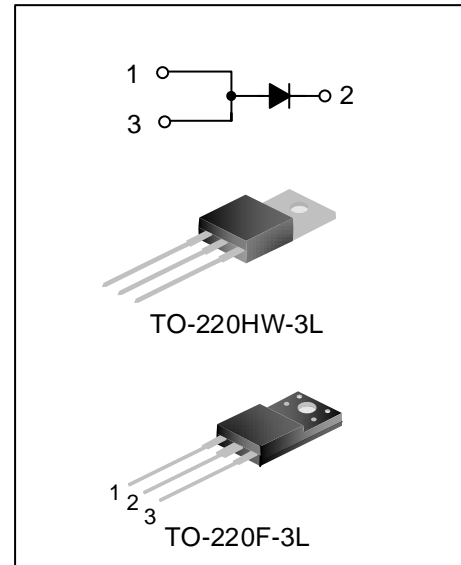
SFR20S20ET(F) is a Super-Fast Recovery Diode, fabricated in advanced silicon planar epitaxial technology. The process parameter and the device structure are fine tuned with optimized performance of forward voltage drop and reverse recovery time.

Accuracy epitaxial dope control, advanced planar junction terminal structure and the platinum doped life control, guarantee the best overall performance, ruggedness and reliability characteristics.

SFR20S20ET is intended for use in the output rectification stage of SMPS, UPS, DC-DC converters as well as free-wheeling diode in low voltage inverters and chopper motor drivers.

### FEATURES

- ♦ Ultrafast 25 Nanosecond Recovery Time
- ♦ Low Forward Voltage Drop
- ♦ Low reverse current leakage



### ORDERING INFORMATION

Part No.	Package	Marking	Hazardous Substance Control	Packing
SFR20S20ET	TO-220HW-3L	20S20ET	Pb free	Tube
SFR20S20EF	TO-220F-3L	20S20EF	Pb free	Tube

## ABSOLUTE MAXIMUM RATINGS

Characteristics		Symbol	Rating	Unit
Peak Repetitive Reverse Voltage		$V_{RRM}$	200	V
Average Rectified Forward Current	Per Leg	$I_{F(AV)}$	10	A
	Total Device		20	
Peak Forward Surge Current @8.3ms	Per Leg	$I_{FSM}$	150	A
Operation Junction Temperature Range		$T_J$	-55~+150	°C
Storage Temperature Range		$T_{stg}$	-55~+150	°C

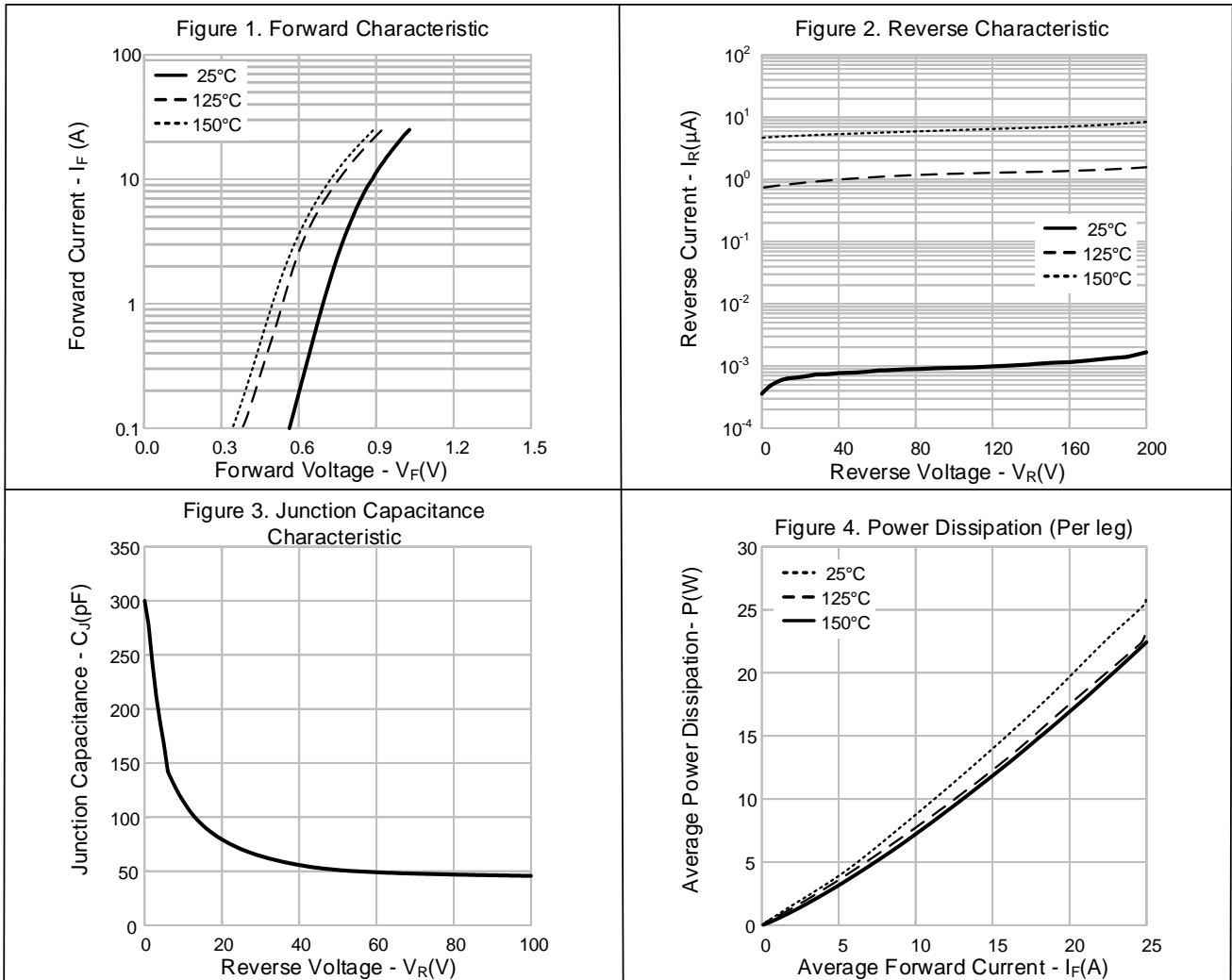
## THERMAL CHARACTERISTICS (PER LEG)

Characteristics	Symbol	Ratings	Unit
Thermal Resistance, Junction-to-Case (TO-220HW-3L)	$R_{\theta JC}$	1.5	°C/W
Thermal Resistance, Junction-to-Case (TO-220F-3L)	$R_{\theta JC}$	6.0	°C/W

## ELECTRICAL CHARACTERISTICS (PER LEG)

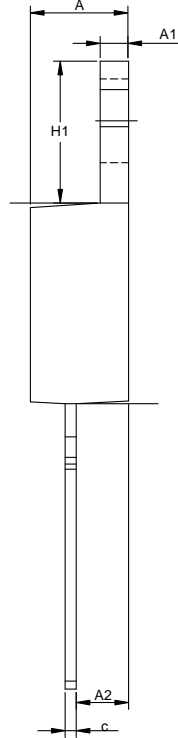
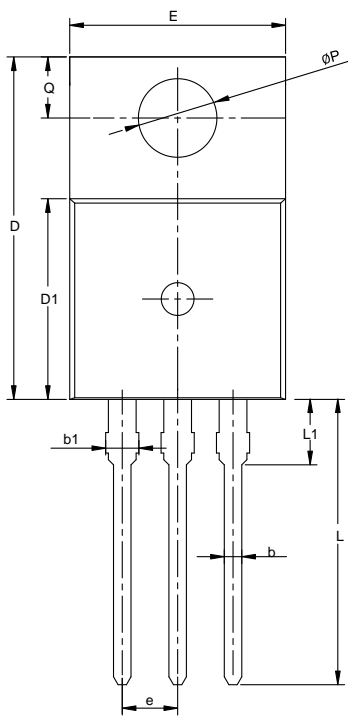
Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Maximum Forward Voltage	$V_F$	$I_F=10\text{Amps}$ , $T_C=25^\circ\text{C}$	--	0.89	1.0	V
		$I_F=10\text{Amps}$ , $T_C=125^\circ\text{C}$	--	0.76	0.86	V
Maximum Reverse Leakage Current	$I_R$	Rated dc voltage, $T_C=25^\circ\text{C}$	--	--	5.0	$\mu\text{A}$
		Rated dc voltage, $T_C=125^\circ\text{C}$	--	--	50	$\mu\text{A}$
Maximum Reverse Recovery Time	$t_{rr}$	$I_F=0.5\text{Amps}$ , $I_R=1.0\text{Amps}$ , $I_{REC}=0.25\text{Amps}$	--	25	--	ns
Reverse Recovery Time	$T_{rr}$	$V_R=200\text{V}$ , $I_F=10\text{A}$ , $di_F/dt=200.0\text{A}/\mu\text{s}$	--	40	--	ns
Reverse Recovery Charge	$Q_{rr}$		--	66	--	nC
Reverse Recovery Current	$I_{rrm}$		--	3.5	--	A

**TYPICAL CHARACTERISTICS**



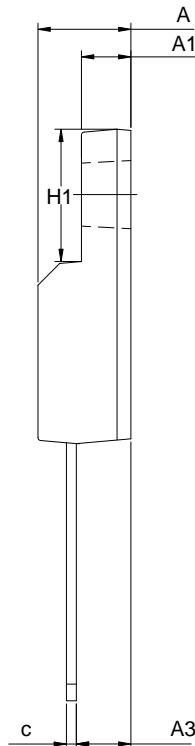
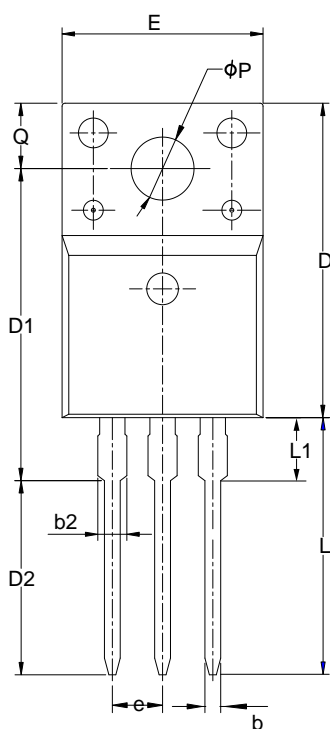
**PACKAGE OUTLINE**

**TO-220HW-3L** UNIT: mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.30	4.50	4.77
A1	1.25	1.27	1.42
A2	1.80	2.50	2.89
b	0.70	0.80	0.96
b1	1.22	1.33	1.50
c	0.33	0.38	0.48
D	15.10	15.70	16.10
D1	8.80	9.15	9.40
E	9.60	10.20	10.40
e	2.54 BSC		
H1	6.10	6.50	7.00
L	12.60	13.10	14.30
L1	—	—	3.50
Q	2.54	—	2.94
$\phi P$	3.66	3.86	4.06

**TO-220F-3L** UNIT: mm



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	4.42	4.70	5.02
A1	2.30	2.54	2.80
A3	2.50	2.76	3.10
b	0.70	0.80	0.90
b2	—	—	1.47
c	0.35	0.50	0.65
D	15.25	15.87	16.25
D1	15.30	15.75	16.30
D2	9.30	9.80	10.30
E	9.73	10.16	10.36
e	2.54BSC		
H1	6.40	6.68	7.00
L	12.48	12.98	13.48
L1	—	—	3.50
$\phi P$	3.00	3.18	3.40
Q	3.05	3.30	3.55



## MOS DEVICES OPERATE NOTES:

Electrostatic charges may exist in many things. Please take following preventive measures to prevent effectively the MOS electric circuit as a result of the damage which is caused by discharge:

- The operator must put on wrist strap which should be earthed to against electrostatic.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed in antistatic/conductive containers for transportation.

**Important notice :**

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Rev.: 1.2

Revision History:

1. Modify the electrical diagram
  2. Modify the important notice
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Rev.: 1.1

Revision History:

1. Add package of SFR20S20EF(TO-220F-3L)
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Rev.: 1.0

Revision History:

1. First release
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