

## 300V, 20A ULTRAFast DUAL RECTIFIERS

### Features

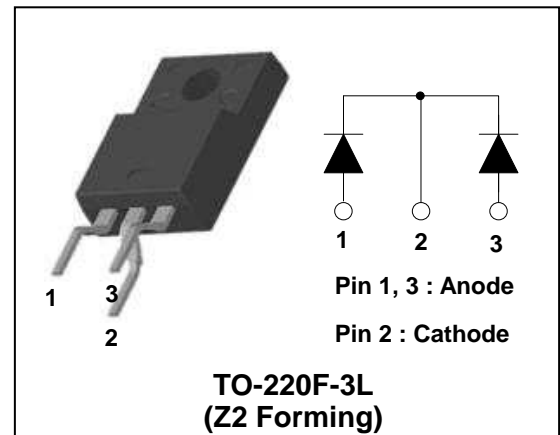
- Low forward voltage drop and leakage current
- Ultrafast reverse recovery time ( $t_{rr} < 30\text{ns}$ )
- Low power loss and high efficiency
- Dual common cathode rectifier construction
- Full lead (Pb)-free and RoHS compliant device

### Applications

- Switching power supply
- Power inverters
- Free-wheeling diode
- Power conversion system
- Motor drives

### Description

The SF20A300HZ2 is an ultrafast rectifier. It has a low forward voltage drop and reverse recovery time ( $t_{rr} < 30\text{ns}$ ). The device is intended for use as a free wheeling, clamping rectifier in a variety of switching power supplies and other power switching applications.



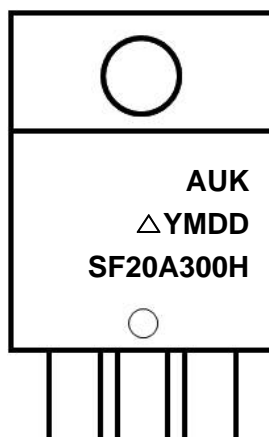
### Product Characteristics

$I_{F(AV)}$	2 x 10A
$V_{RRM}$	300V
$V_{FM} @ T_j = 125^\circ\text{C}$	0.95V (Max.)
$t_{rr}$	30ns

### Ordering Information

Device	Marking Code	Package	Packaging
SF20A300HZ2	SF20A300H	TO-220F-3L (Z2 Forming)	Tube

### Marking Information



AUK = Manufacture Logo

$\Delta$  = Control Code of Manufacture

YMDD = Date Code Marking

-. Y = Year Code

-. M = Monthly Code

-. DD = Daily Code

SF20A300H = Specific Device Code

## Absolute Maximum Ratings (Limiting Values)

Characteristic		Symbol	Value	Unit
Maximum repetitive reverse voltage Maximum working peak reverse voltage Maximum DC blocking voltage		$V_{RRM}$ $V_{RWM}$ $V_R$	300	V
Maximum average forward rectified current	per diode	$I_{F(AV)}$	10	A
	total device		20	
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load per 1 chip		$I_{FSM}$	120	A
Storage temperature range		$T_{stg}$	-45 to +150	°C
Maximum operating junction temperature		$T_j$	150	°C

## Thermal Characteristics

Characteristic		Symbol	Value	Unit
Maximum thermal resistance junction to case	per diode	$R_{th(j-c)}$	4.0	°C/W
	total device		3.6	

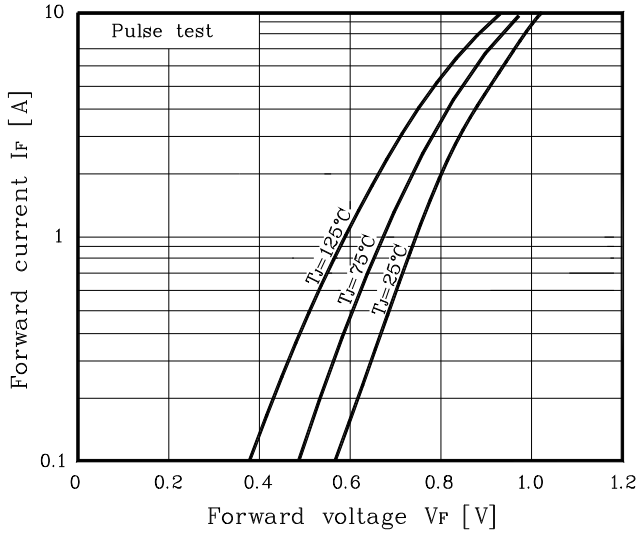
## Electrical Characteristics (Per Diode)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Peak forward voltage drop	$V_{FM}^{(1)}$	$I_{FM} = 10A$	$T_j=25^\circ C$	-	-	1.30	V
			$T_j=125^\circ C$	-	-	0.95	
Reverse leakage current	$I_{RM}^{(1)}$	$V_R = V_{RRM}$	$T_j=25^\circ C$	-	-	20	uA
			$T_j=125^\circ C$	-	-	500	
Reverse recovery time	$t_{rr}$	$I_F = 1A, di/dt = -100 A/us$	-	-	30	ns	
Junction capacitance	$C_j$	$V_R = 10V_{DC}, f=1MHz$	-	65	-	pF	

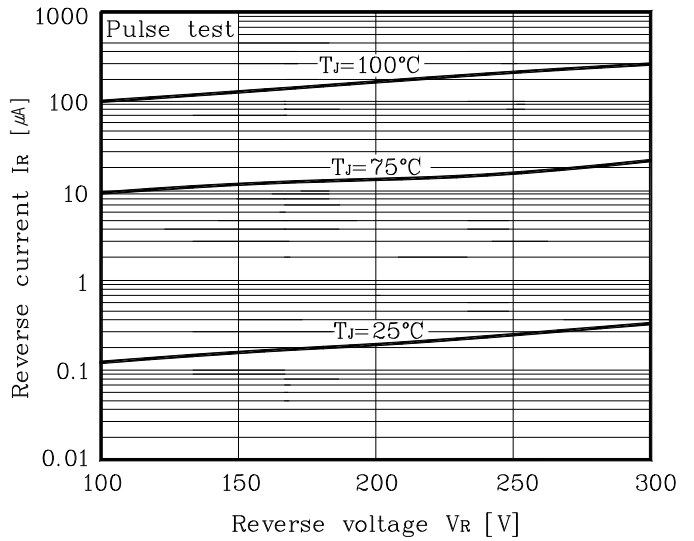
**Note :** (1) Pulse test :  $t_p \leq 380us$ , Duty cycle  $\leq 2\%$

## Electrical Characteristic Curves (Per Diode)

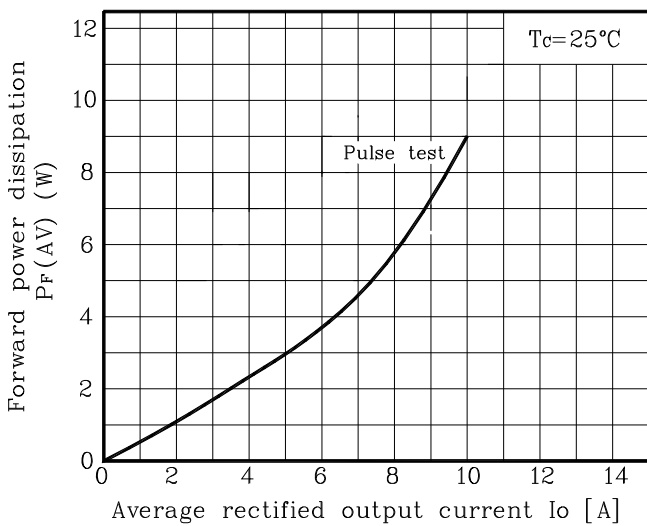
**Fig. 1  $I_F - V_F$**



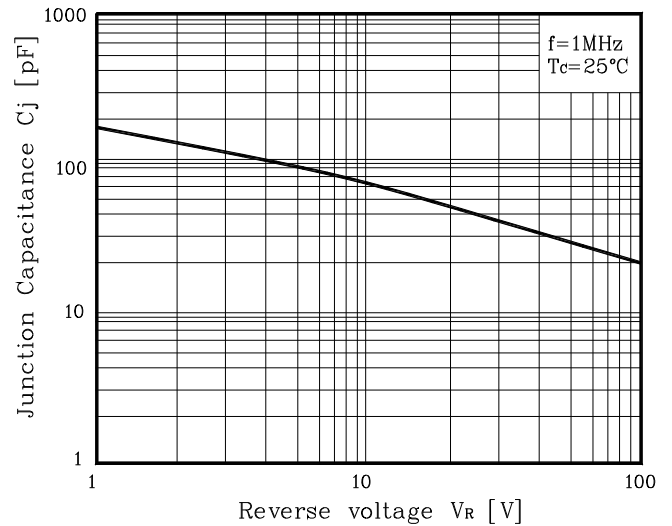
**Fig. 2  $I_R - V_R$**



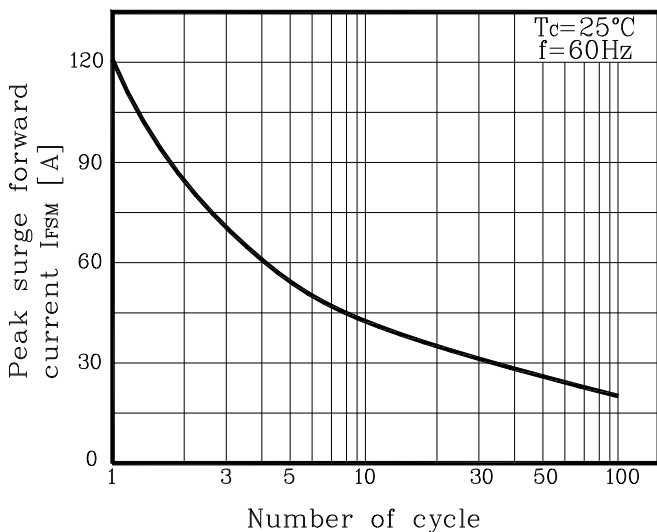
**Fig. 3  $I_O - P_F$**



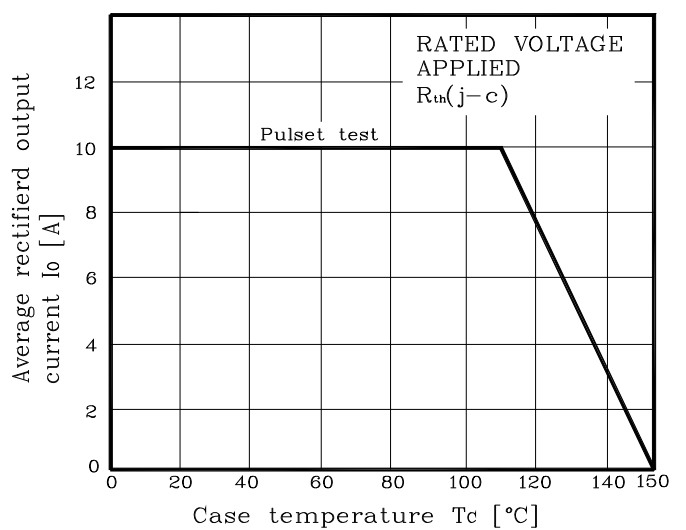
**Fig. 4  $C_T - V_R$**



**Fig. 5  $I_{FSM} - \text{Number of cycle}$**

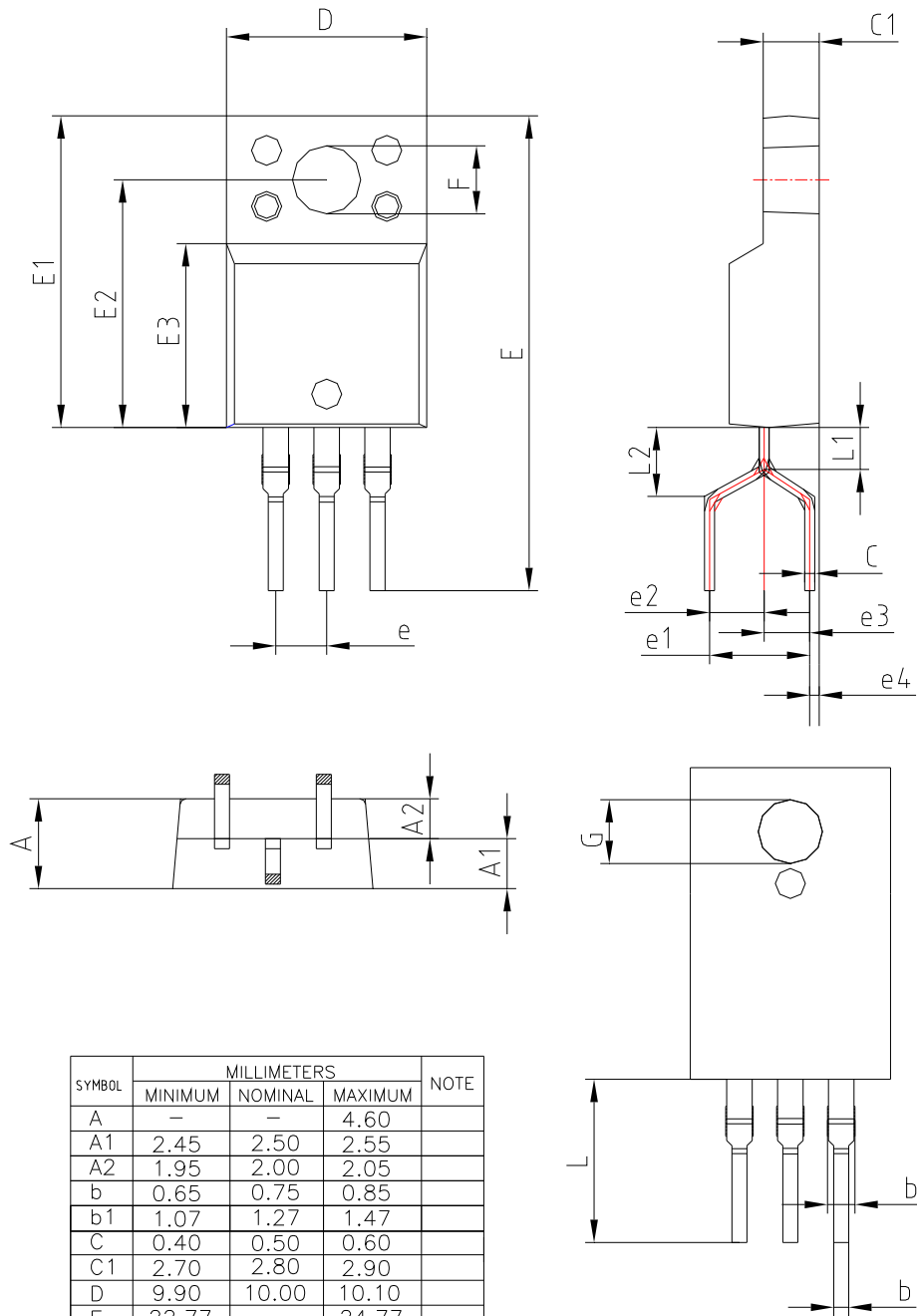


**Fig. 6  $I_O$  derating -  $T_C$**



## Package Outline Dimension

unit: mm



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	—	—	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	22.77	—	24.77	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	2.04	2.54	3.04	
e1	4.70	5.00	5.30	
e2	2.725 BSC			
e3	2.275 BSC			
e4	0.475 BSC			
L	7.17	—	9.17	
L1	2.11 BSC			
L2	3.45 BSC			

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