

## 400V, 20A ULTRAFast DUAL RECTIFIERS

### Features

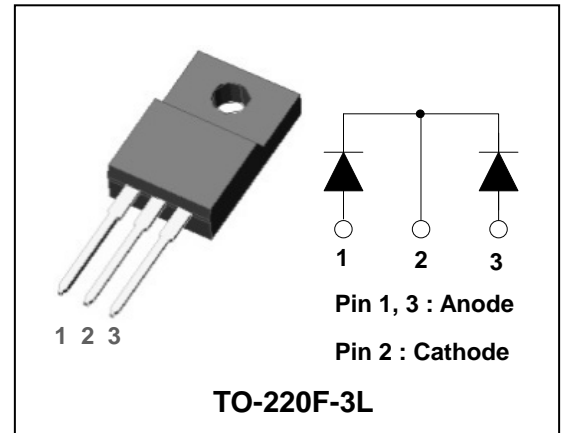
- Low forward voltage drop and leakage current
- Ultrafast reverse recovery time ( $t_{rr} < 30\text{ns}$ )
- Low power loss and high efficiency
- Dual common cathode rectifier construction
- Full lead (Pb)-free and RoHS compliant device

### Applications

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

### Description

The SF20A400HPI 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.



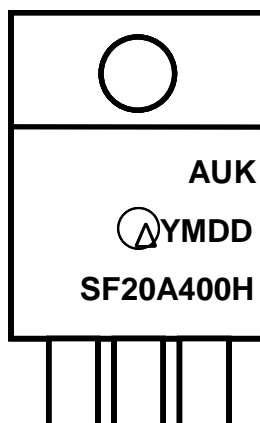
### Product Characteristics

$I_{F(AV)}$	2 X 10A
$V_{RRM}$	400V
$V_{FM}$ at 125°C	1.25V
$t_{rr}$	30ns

### Ordering Information

Device	Marking Code	Package	Packaging
SF20A400HPI	SF20A400H	TO-220F-3L	Tube

### Marking Information



AUK = Manufacture Logo

$\Delta$  = Control Code of Manufacture

YMDD = Date Code Marking

- . Y = Year Code

- . M = Monthly Code

- . DD = Daily Code

SF20A400H = 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		$V_{RRM}$ $V_{RWM}$ $V_R$	400	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 diode		$I_{FSM}$	120	A
Storage temperature range		$T_{stg}$	-45°C to +150°C	°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	

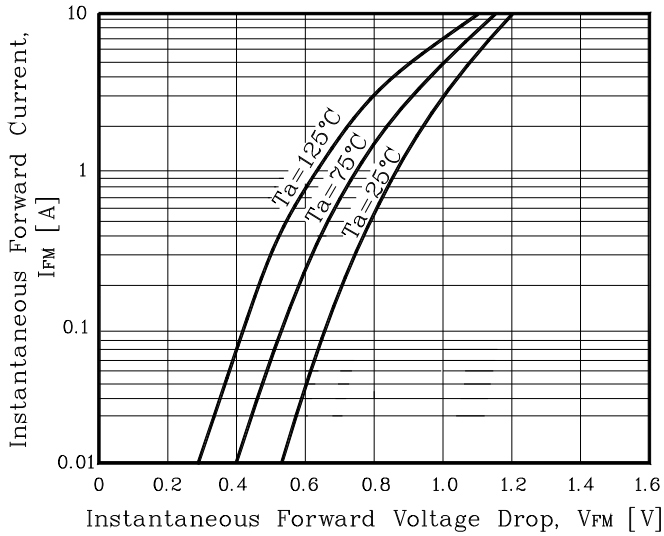
## Electrical Characteristics (Per Diode)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit	
Peak forward voltage drop	$V_{FM}^{(1)}$	$I_{FM} = 10A$	$T_j=25^\circ C$	-	-	1.40	V
			$T_j=125^\circ C$	-	-	1.25	V
Reverse leakage current	$I_{RM}^{(1)}$	$V_R = V_{RRM}$	$T_j=25^\circ C$	-	-	20	uA
			$T_j=125^\circ C$	-	-	200	uA
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	

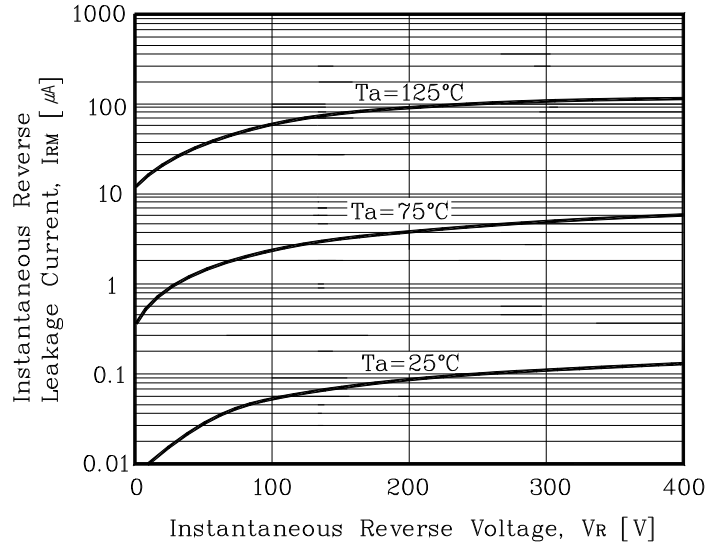
**Note :** (1) Pulse test :  $t_p \leq 380 \mu s$ , Duty cycle  $\leq 2\%$

## Rating & Electrical Characteristic Curves

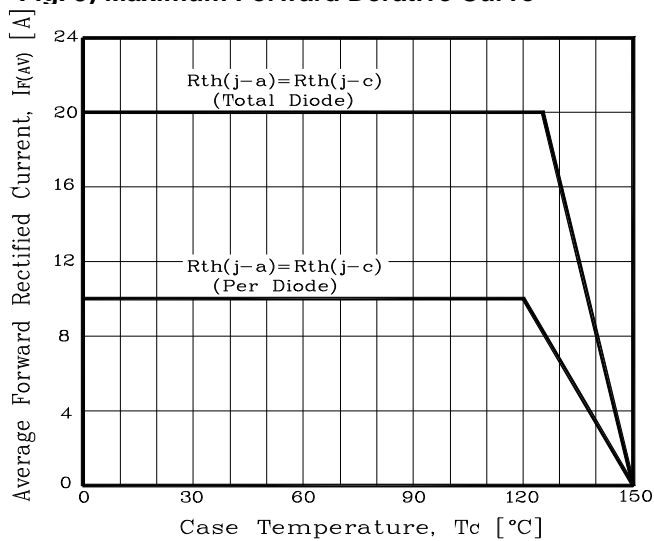
**Fig. 1) Typical Forward Characteristics (Per diode)**



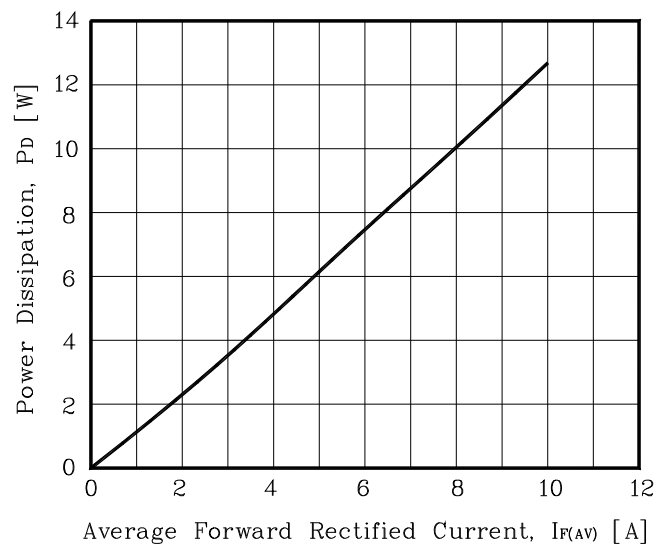
**Fig. 2) Typical Reverse Characteristics (Per diode)**



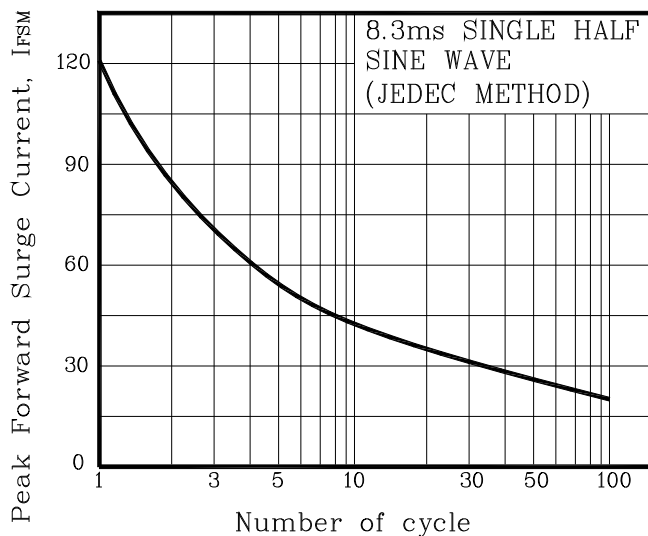
**Fig. 3) Maximum Forward Derivative Curve**



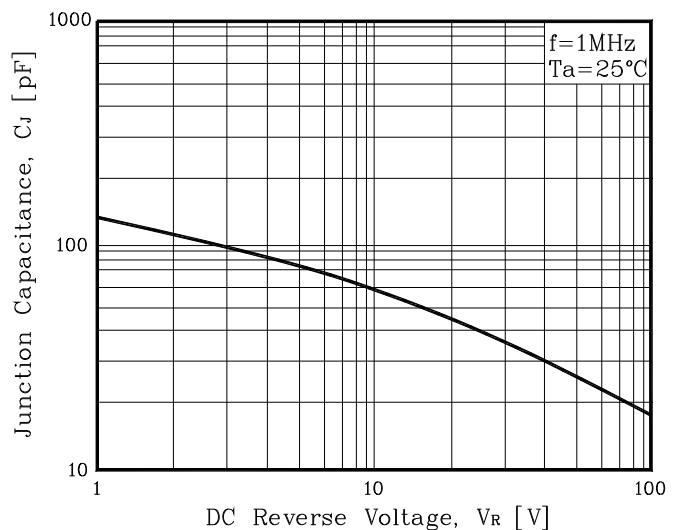
**Fig. 4) Forward Power Dissipation (Per diode)**



**Fig. 5) Maximum Non-Repetitive Peak Forward Surge Current (Per diode)**



**Fig. 6) Typical Junction Capacitance (Per diode)**



## Package Outline Dimension



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	28.00	-	28.60	
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	2.54 BSC			
L	12.40	-	13.00	
L1	3.46 BSC			

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