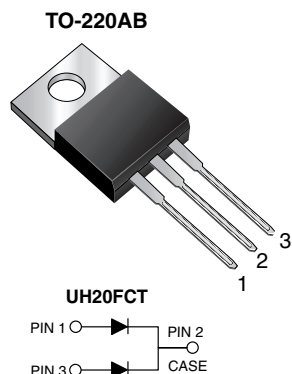


# Dual Common Cathode Ultrafast Recovery Rectifier



## FEATURES

- Power pack
- Oxide planar chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Solder bath temperature 275 °C maximum, 10 s per JESD 22-B106
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



## LINKS TO ADDITIONAL RESOURCES



## TYPICAL APPLICATIONS

For use in high frequency power factor correctors, switching mode power supplies, freewheeling diodes and secondary DC/DC rectification application.

## MECHANICAL DATA

**Case:** TO-220AB

Molding compound meets UL 94V-0 flammability rating Base P/N-E3 - RoHS-compliant, commercial grade

**Terminals:** matte tin plated leads, solderable per J-STD-002 and JESD22-B102

E3 suffix meets JESD 201 class 1A whisker test

**Polarity:** as marked

**Mounting Torque:** 10 in-lbs max.

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	2 x 10 A
$V_{RRM}$	300 V
$I_{FSM}$	180 A
$t_{rr}$	25 ns
$V_F$ at $I_F$	0.83 V
$T_J$ max.	175 °C
Package	TO-220AB
Circuit configuration	Common cathode

MAXIMUM RATINGS ( $T_A = 25\text{ °C}$ unless otherwise noted)				
PARAMETER	SYMBOL	UH20FCT	UNIT	
Max. repetitive peak reverse voltage	$V_{RRM}$	300	V	
Max. average forward rectified current (see Fig.1)	$I_{F(AV)}$	20	A	per device
		10		per diode
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	$I_{FSM}$	180	A	per diode
Operating junction and storage temperature range	$T_J, T_{STG}$	-55 to +175	°C	

**ELECTRICAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	TEST CONDITIONS	SYMBOL	TYP.	MAX.	UNIT
Max. instantaneous forward voltage per diode <sup>(1)</sup>	$I_F = 5.0\text{ A}$ , $T_J = 25\text{ }^{\circ}\text{C}$	$V_F$	0.96	-	V
	$I_F = 5.0\text{ A}$ , $T_J = 125\text{ }^{\circ}\text{C}$		0.77	-	
	$I_F = 10\text{ A}$ , $T_J = 25\text{ }^{\circ}\text{C}$		1.0	1.2	
	$I_F = 10\text{ A}$ , $T_J = 125\text{ }^{\circ}\text{C}$		0.83	0.90	
Max. reverse current per diode <sup>(2)</sup>	$V_R = 300\text{ V}$ , $T_J = 25\text{ }^{\circ}\text{C}$	$I_R$	0.5	5	$\mu\text{A}$
	$T_J = 125\text{ }^{\circ}\text{C}$		25	150	
Max. reverse recovery time	$I_F = 0.5\text{ A}$ , $I_R = 1.0\text{ A}$ , $I_{rr} = 0.25\text{ A}$	$t_{rr}$	20	25	ns
Max. reverse recovery time per diode	$I_F = 1.0\text{ A}$ , $dI/dt = 50\text{ A}/\mu\text{s}$ , $V_R = 30\text{ V}$ , $I_{rr} = 0.1 I_{RM}$	$t_{rr}$	28	35	ns
Typical softness factor ( $t_b/t_a$ )	$I_F = 10\text{ A}$ , $dI/dt = 200\text{ A}/\mu\text{s}$ , $V_R = 200\text{ V}$ , $T_J = 125\text{ }^{\circ}\text{C}$ per diode	$S$	0.36	-	-
Typical reverse recovery current		$I_{RM}$	7.0	-	A
Typical stored charge		$Q_{rr}$	160	-	nC
Typical forward recovery time per diode	$I_F = 10\text{ A}$ , $dI/dt = 80\text{ A}/\mu\text{s}$ , $V_{FR} = 1.1 \times V_{F\text{ max.}}$	$t_{fr}$	150	-	ns

**Notes**<sup>(1)</sup> Pulse test: 300  $\mu\text{s}$  pulse width, 1 % duty cycle<sup>(2)</sup> Pulse test: Pulse width  $\leq 40\text{ ms}$ **THERMAL CHARACTERISTICS** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)

PARAMETER	SYMBOL	UH20FCT	UNIT
Typical thermal resistance per diode	$R_{\theta JC}$	2.0	$^{\circ}\text{C}/\text{W}$

**ORDERING INFORMATION** (Example)

PACKAGE	PREFERRED P/N	UNIT WEIGHT (g)	PACKAGE CODE	BASE QUANTITY	DELIVERY MODE
TO-220AB	UH20FCT-E3/4W	1.88	4W	50/tube	Tube

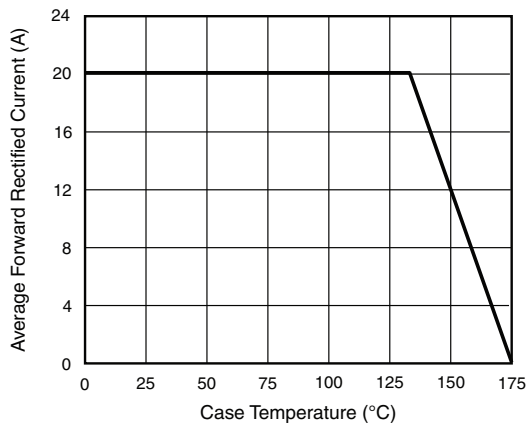
**RATINGS AND CHARACTERISTICS CURVES** ( $T_A = 25\text{ }^{\circ}\text{C}$  unless otherwise noted)


Fig. 1 - Max. Forward Current Derating Curve

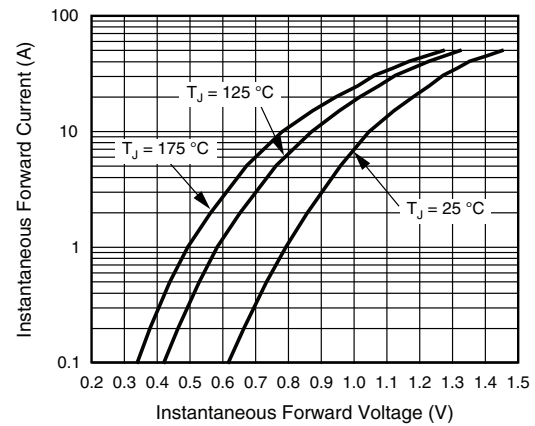


Fig. 4 - Typical Instantaneous Forward Characteristics Per Diode

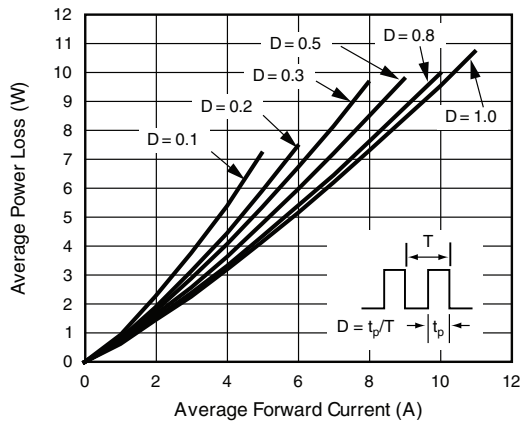


Fig. 2 - Forward Power Loss Characteristics Per Diode

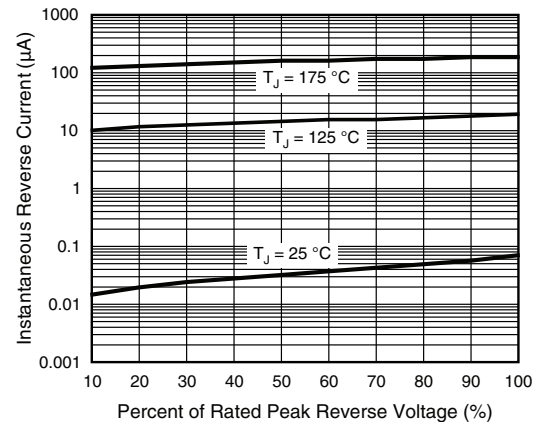


Fig. 5 - Typical Reverse Leakage Characteristics Per Diode

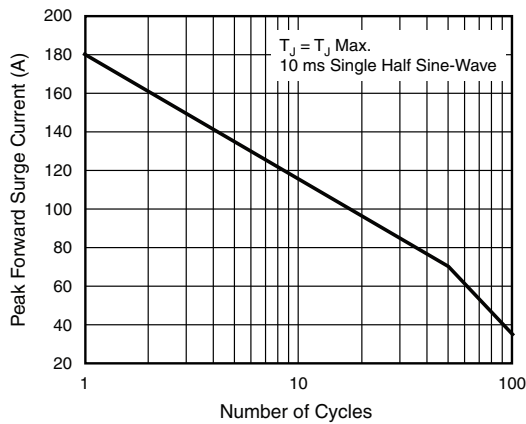


Fig. 3 - Max. Non-Repetitive Peak Forward Surge Current Per Diode

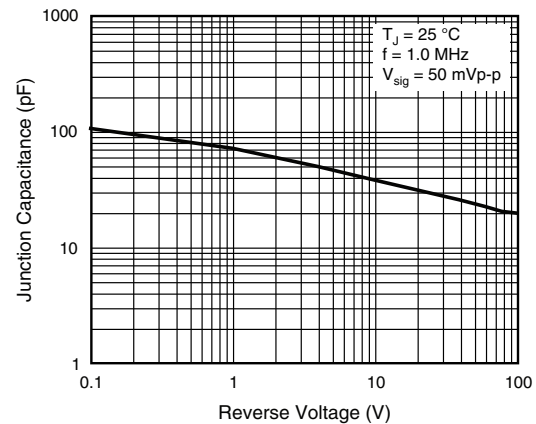
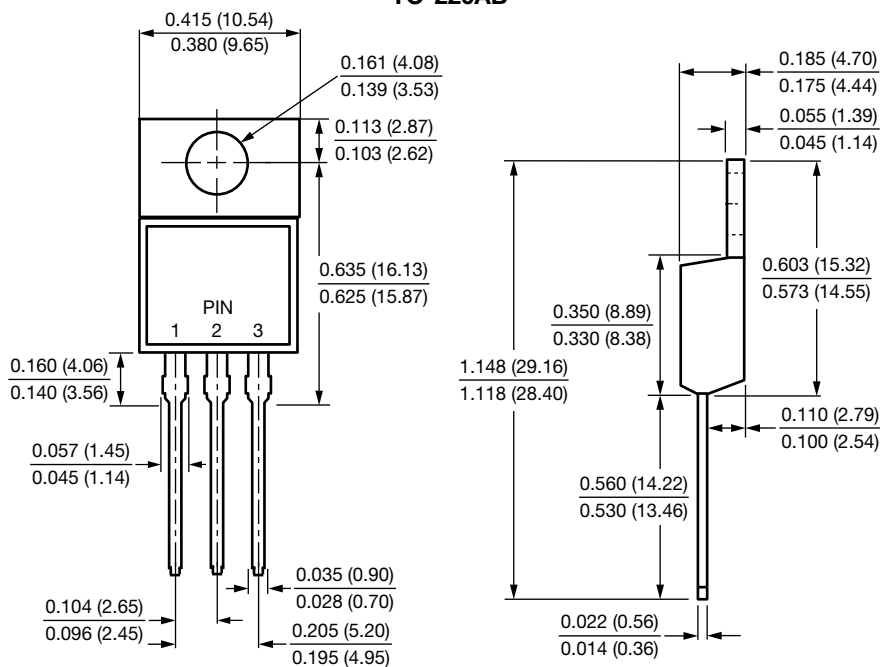


Fig. 6 - Typical Junction Capacitance Per Diode

**PACKAGE OUTLINE DIMENSIONS** in inches (millimeters)

**TO-220AB**




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