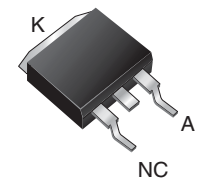
Ultrafast Recovery Rectifier

D²PAK (TO-263AB)



FEATURES

- Power pack
- Oxide planar chip junction
- Ultrafast recovery times
- Soft recovery characteristics
- Low switching losses, high efficiency
- High forward surge capability
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

TYPICAL APPLICATIONS

For use in high frequency rectification and freewheeling application in switching mode converter and inverter for consumer.

MECHANICAL DATA

Case: D²PAK (TO-263AB)

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	
$I_{F(AV)}$	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	D²PAK (TO-263AB)
Circuit configurations	Single

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	UHB10FT	UNIT
Max. repetitive peak reverse voltage	V_{RRM}	300	V
Max. average forward rectified current (Fig. 1)	$I_{F(AV)}$	10	A
Peak forward surge current 10 ms single half sine-wave superimposed on rated load	I_{FSM}	180	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	°C

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)						
PARAMETER	**TEST CONDITIONS**		**SYMBOL**	**TYP.**	**MAX.**	**UNIT**
Max. instantaneous forward voltage (1)	I_F = 5.0 A	T_J = 25 °C	V_F	0.96	-	V
	I_F = 5.0 A	T_J = 125 °C		0.77	-	
	I_F = 10 A	T_J = 25 °C		1.0	1.2	
	I_F = 10 A	T_J = 125 °C		0.83	0.90	
Max. reverse current (2)	V_R = 300 V	T_J = 25 °C	I_R	0.5	5	µA
		T_J = 125 °C		25	150	
Max. reverse recovery time	I_F = 0.5 A, I_R = 1.0 A, I_{rr} = 0.25 A		t_{rr}	20	25	ns
Max. reverse recovery time	I_F = 1.0 A, dI/dt = 50 A/µs, V_R = 30 V, I_{rr} = 0.1 I_{RM}		t_{rr}	28	35	ns
Typical softness factor (t_b/t_a)	I_F = 10 A, dI/dt = 200 A/µs, V_R = 200 V, T_J = 125 °C		S	0.36	-	-
Typical reverse recovery current			I_{RM}	7.0	-	ns
Typical stored charge			Q_{rr}	160	-	A
Typical forward recovery time	I_F = 10 A, dI/dt = 80 A/µs, V_{FR} = 1.1 x $V_{F\ max.}$		t_{fr}	150	-	ns

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: Pulse width ≤ 40 ms

THERMAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**UHB10FT**	**UNIT**
Typical thermal resistance	$R_{\theta JC}$	2.0	°C/W

ORDERING INFORMATIONS (Example)					
PACKAGE	**PREFERRED P/N**	**UNIT WEIGHT (g)**	**PACKAGE CODE**	**BASE QUANTITY**	**DELIVERY MODE**
TO-263AB	UHB10FT-E3/4W	1.32	4W	50/tube	Tube
TO-263AB	UHB10FT-E3/8W	1.32	8W	800/reel	Tape and reel

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

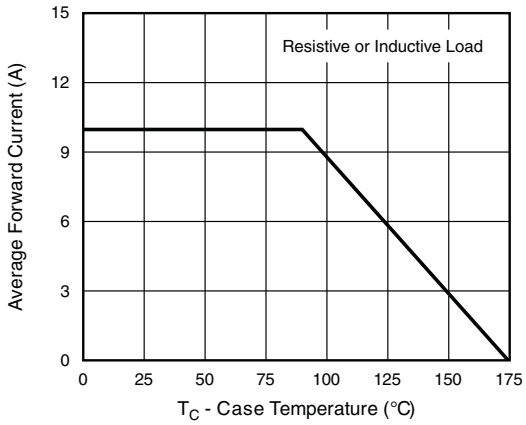


Fig. 1 - Max. Forward Current Derating Curve

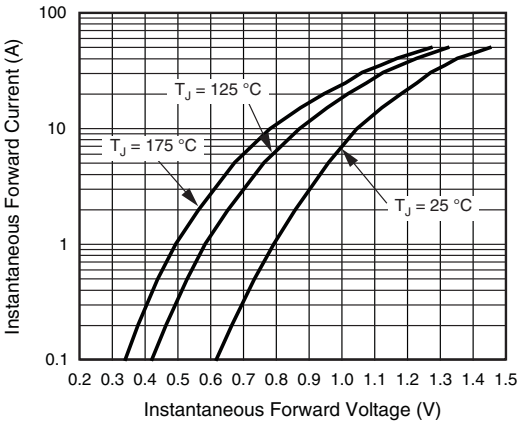


Fig. 4 - Typical Instantaneous Forward Characteristics

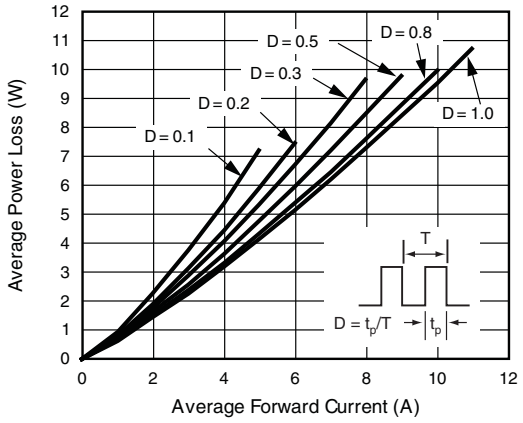


Fig. 2 - Forward Power Loss Characteristics

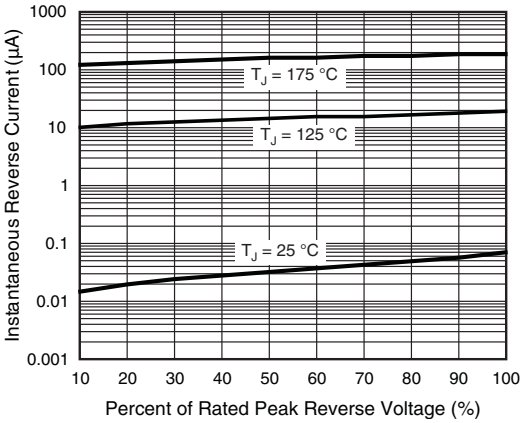


Fig. 5 - Typical Reverse Leakage Charactersitics

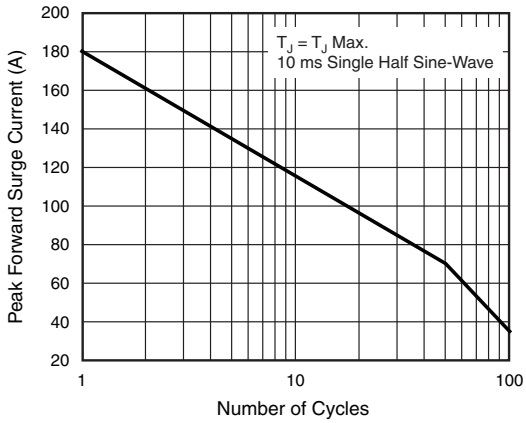


Fig. 3 - Max. Non-Repetitive Peak Forward Surge Current

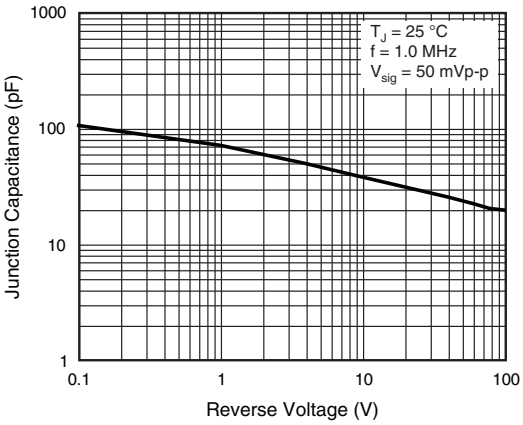
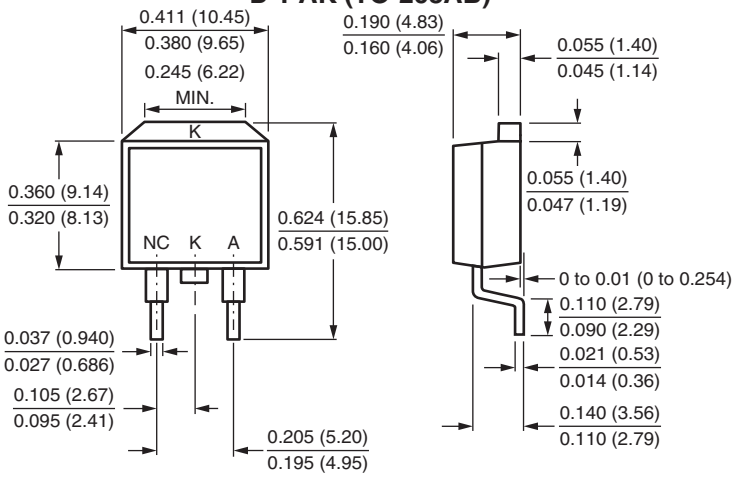


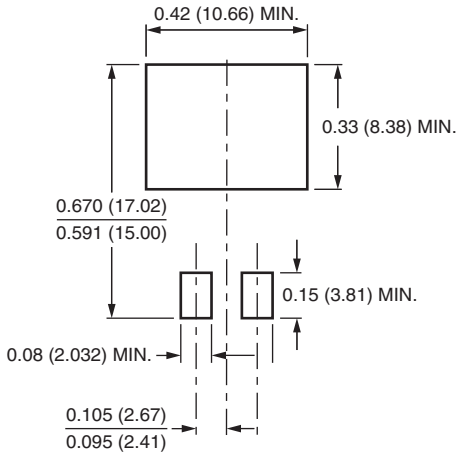
Fig. 6 - Typical Junction Capacitance

PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

D^2PAK (TO-263AB)



Mounting Pad Layout



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