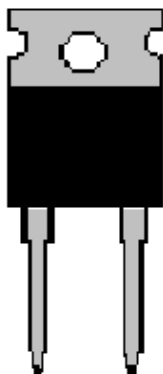
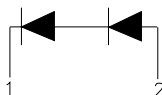




Hyperfast Rectifier, 8 A FRED Pt™



2L TO-220



FEATURES

- Hyperfast recovery time
- Low forward voltage drop
- Low leakage current
- 175°C operating junction temperature
- Designed and qualified for industrial level



HALOGEN
FREE

DESCRIPTION

8S2TH06I-N 600V series are the state of the art Tandem Ultrafast recovery rectifiers: excellent switching performance and extremely low forward voltage drop trade off is overcome, boosting overall application performance.

Specially designed for CCM PFC application, these devices show incomparable performance in every current intensive hard switching application.

Optimized reverse recovery stored charge enables downsizing of boosting switch and cooling system, increased operating frequency make possible use of smaller reactive elements. Cost effective PFC application is then possible with high efficiency over wide input voltage range and loading factor.

Plastic insulated package features easy mounting together with not insulated parts.

PRODUCT SUMMARY

t_{rr}	13 ns
$I_{F(AV)}$	8 A
V_R	600 V

ABSOLUTE MAXIMUM RATINGS FOR BOTH DIODES

PARAMETERS	SYMBOL	TEST CONDITIONS	MAX.	UNITS
Repetitive peak reverse voltage	V_{RRM}		600	V
DC forward current	I_F	50% duty cycle, rect. waveforms, $T_c = 120^\circ\text{C}$	8	A
Non-repetitive peak surge current	I_{FSM}	$T_c = 25^\circ\text{C}$	140	
Operating junction and storage temperatures	T_J, T_{Stg}		- 55 to 175	$^\circ\text{C}$

ELECTRICAL SPECIFICATIONS FOR BOTH DIODES ($T_J = 25^\circ\text{C}$ unless otherwise specified)

PARAMETERS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Breakdown voltage, blocking voltage	$V_{BR},$ V_r	$I_R = 100\mu\text{A}$	600	-	-	V
Forward voltage	V_F	$I_F = 8\text{A}$	-	2.46	3.1	V
		$I_F = 8\text{A}, T_J = 125^\circ\text{C}$	-	1.95	2.3	
		$I_F = 8\text{A}, T_J = 150^\circ\text{C}$	-	1.8	2.1	
Reverse leakage current	I_R	$V_R = V_R$ rated		< 1	10	μA
		$T_J = 125^\circ\text{C}, V_R = V_R$ rated		7	50	
		$T_J = 150^\circ\text{C}, V_R = V_R$ rated		27	80	
Junction capacitance	C_T	$V_R = 600\text{V}$		10.5		pF

DYNAMIC RECOVERY CHARACTERISTICS FOR BOTH DIODES (@ T _J = 25°C UNLESS OTHERWISE SPECIFIED)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t _{rr}	I _F = 1A, di _F /dt = -50A/μs, V _R = 30V		-	-	25	ns
		T _J = 25°C	I _F = 8A di _F /dt = -200A/μs V _R = 390V	-	13	-	
		T _J = 125°C		-	26	-	
Peak recovery current	I _{RRM}	T _J = 25°C	I _F = 8A di _F /dt = -200A/μs V _R = 390V	-	1.9	-	A
		T _J = 125°C		-	3.3	5.0	
Reverse recovery charge	Q _{rr}	T _J = 25°C	I _F = 8A di _F /dt = -200A/μs V _R = 390V	-	11	-	nC
		T _J = 125°C		-	43	-	

THERMAL-MECHANICAL SPECIFICATIONS FOR BOTH DIODES							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	T _J , T _{stg}			-55	-	175	°C
Maximum thermal resistance ,	R _{thJC}			-	2.30	2.85	°C/W
Typical thermal resistance, case to heatsink	R _{thCS}	Mounting surface, flat, smooth and greased		-	0.1	-	
Approximate weight					2	g	
					0.07	oz.	
Mounting torque	minimum				6 (5)	Kgf . cm	
	maximum				12 (10)	(lbf . in)	
Marking device		Case style 2L TO-220		8S2TH06			

Hyperfast Rectifier,
8 AFRED Pt™

Vishay High Power Products

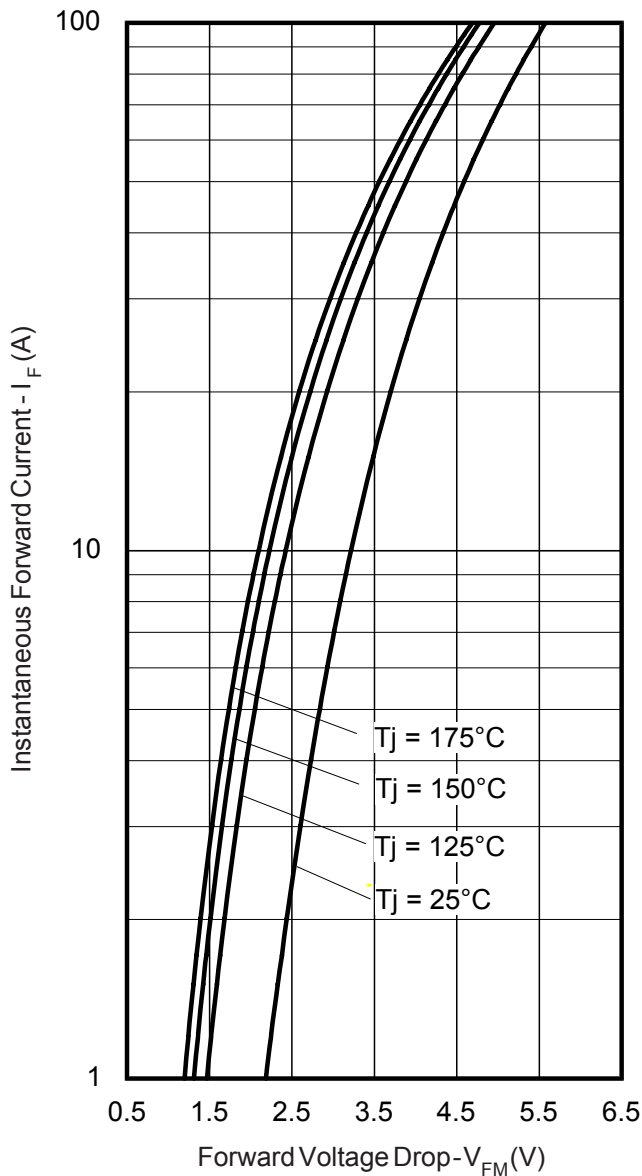


Fig. 1 - Typical Forward Voltage Drop Characteristics

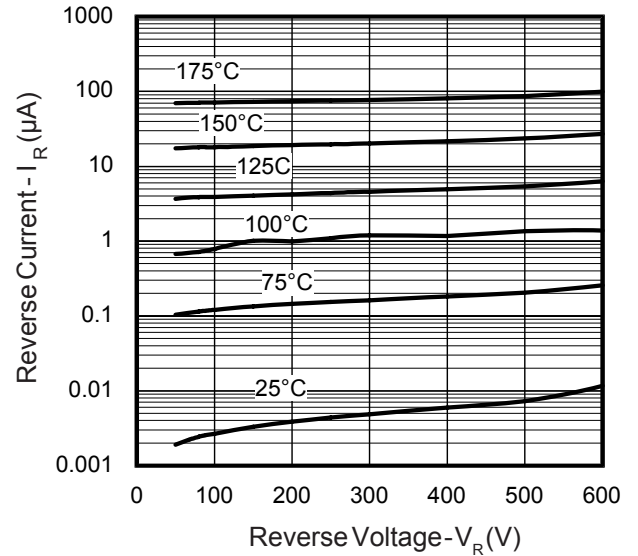


Fig. 2 - Typical Values Of Reverse Current Vs. Reverse Voltage

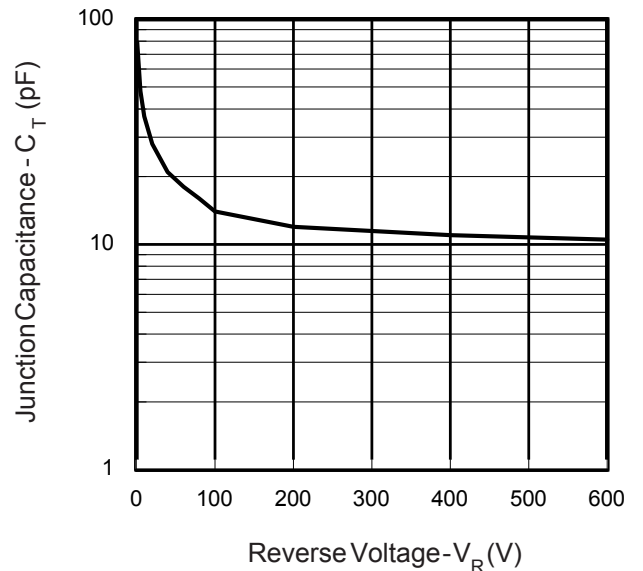


Fig. 3 - Typical Junction Capacitance Vs. Reverse Voltage

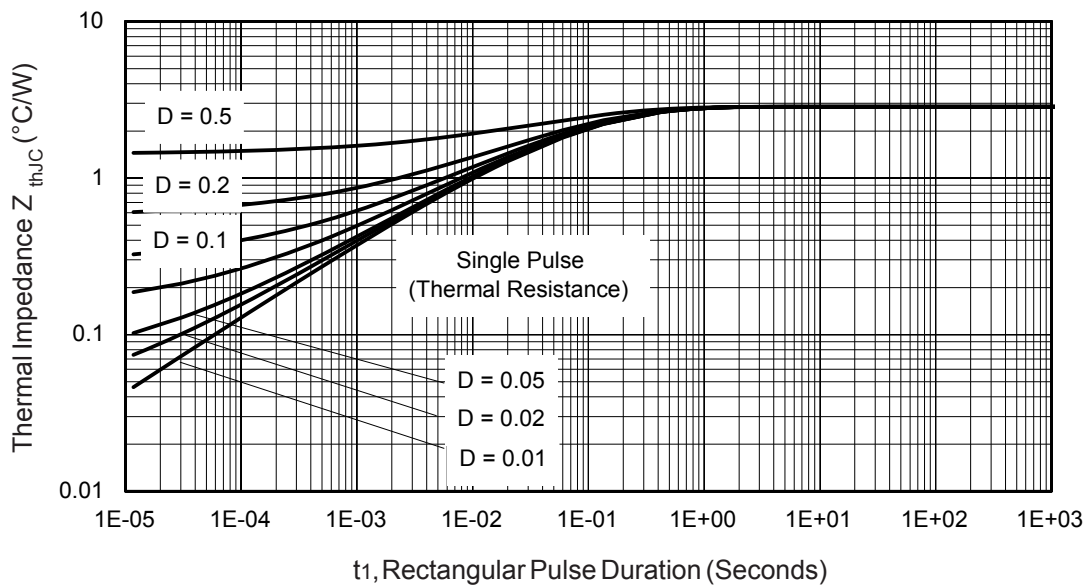


Fig. 4 - Max. Thermal Impedance Z_{thJC} Characteristics

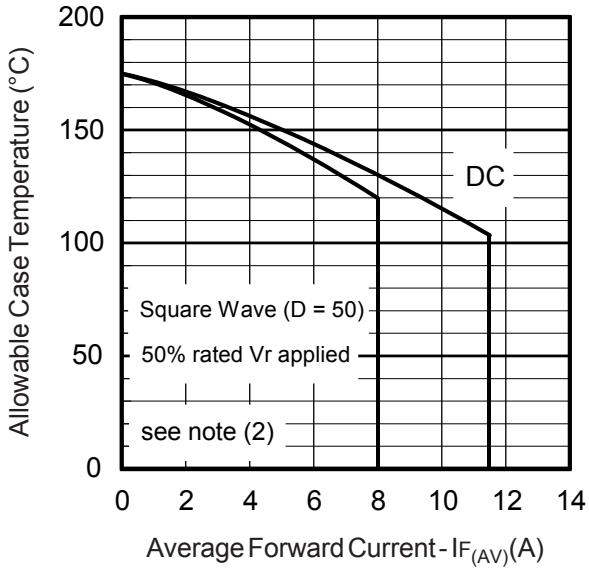


Fig. 5 - Max. Allowable Case Temperature Vs. Average Forward Current

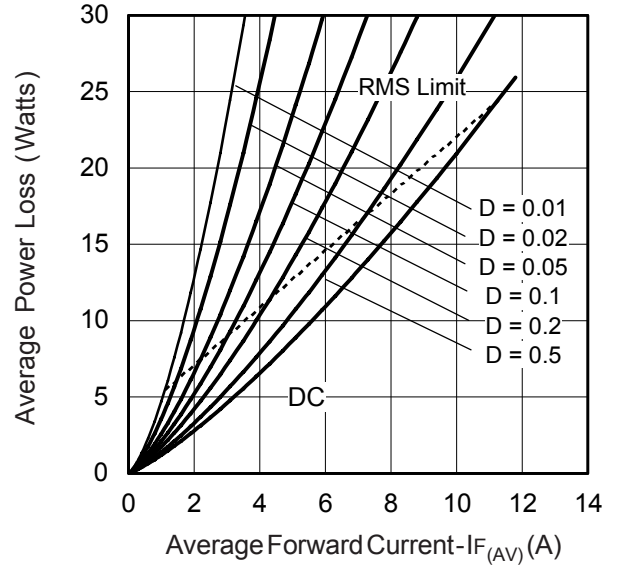


Fig. 6 - Forward Power Loss Characteristics

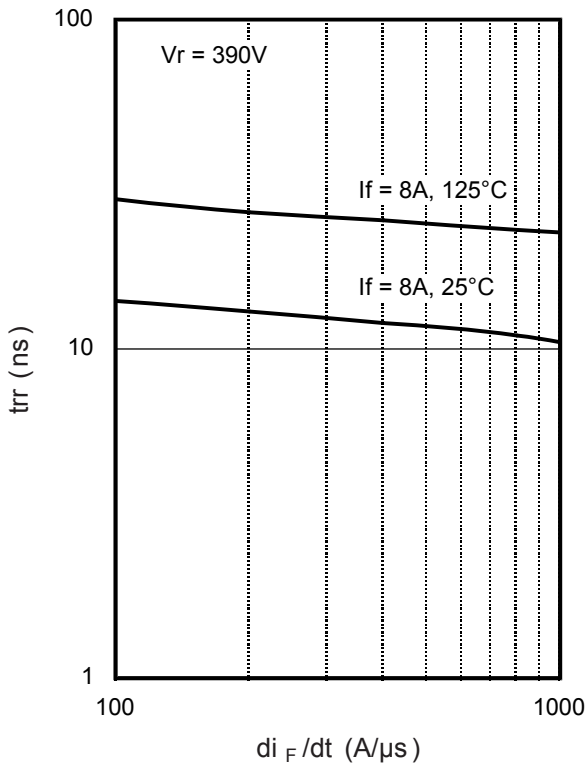


Fig. 7 - Typical Reverse Recovery vs. di_F/dt

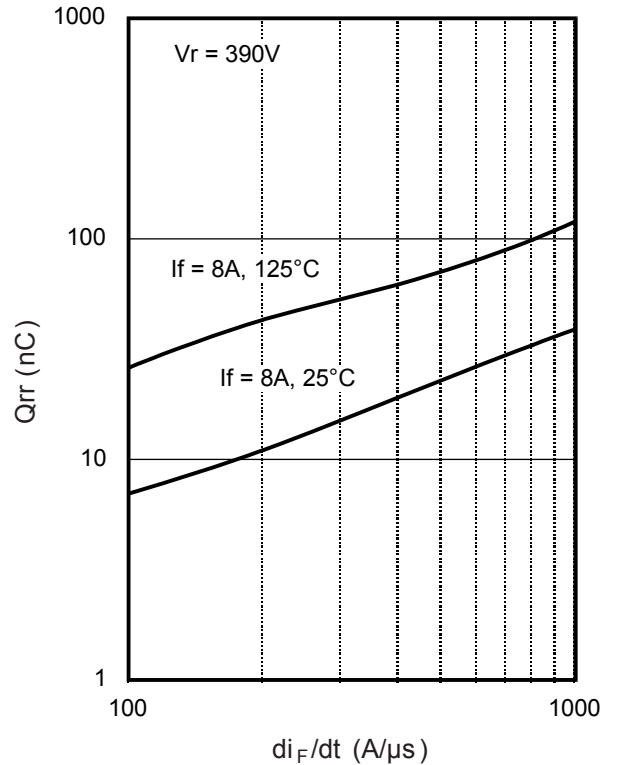


Fig. 8 - Typical Stored Charge vs. di_F/dt

(2) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;

Pd = Forward Power Loss = $I_{F(AV)} \times V_{FM} @ (I_{F(AV)} / D)$ (see Fig. 6);

Pd_{REV} = Inverse Power Loss = $V_{R1} \times I_R (1 - D)$; $I_R @ V_{R1} = 50\%$ rated V_R