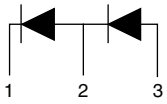
Hyperfast Rectifier, 8 A FRED Pt™



3L TO-220 FULL-PAK

FEATURES

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

RoHS COMPLIANT

DESCRIPTION

8STH06FP 600 V series are the state of the art tandem hyperfast 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}	19 ns
$I_{F(AV)}$	8 A
V_R	600 V

ABSOLUTE MAXIMUM RATINGS FOR BOTH DIODES				
PARAMETER	**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 = 93 °C	8	A
Non-repetitive peak surge current	I_{FSM}	T_C = 25 °C	100	
Operating junction and storage temperatures	T_J, T_{Stg}		- 55 to 175	°C

ELECTRICAL SPECIFICATIONS FOR BOTH DIODES (T_J = 25 °C unless otherwise specified)						
PARAMETER	**SYMBOL**	**TEST CONDITIONS**	**MIN.**	**TYP.**	**MAX.**	**UNITS**
Breakdown voltage, blocking voltage	V_{BR}, V_R	I_R = 100 µA	600	-	-	V
Forward voltage	V_F	I_F = 8 A	-	2.1	2.4	
		I_F = 8 A, T_J = 125 °C	-	1.7	2	
		I_F = 8 A, T_J = 150 °C	-	1.6	1.8	
Reverse leakage current	I_R	V_R = V_R rated	-	< 1	10	µA
		T_J = 125 °C, V_R = V_R rated	-	7	80	
		T_J = 150 °C, V_R = V_R rated	-	27	100	
Junction capacitance	C_T	V_R = 600 V	-	12	-	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 = 1.0 A, dI_F/dt = - 50 A/µs, V_R = 30 V		-	-	25	ns
		T_J = 25 °C	I_F = 8 A dI_F/dt = - 200 A/µs V_R = 390 V	-	19	-	
		T_J = 125 °C		-	35	-	
Peak recovery current	I_{RRM}	T_J = 25 °C		-	2.8	-	A
		T_J = 125 °C		-	4.6	5.5	
Reverse recovery charge	Q_{rr}	T_J = 25 °C		-	26	-	nC
		T_J = 125 °C		-	84	-	

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
Thermal resistance, junction to case	R_{thJC}		-	4.1	4.8	°C/W
Thermal resistance, case to heatsink	R_{thCS}	Mounting surface, flat, smooth and greased	-	0.2	-	
Weight			-	2.0	-	g
			-	0.07	-	oz.
Mounting torque			6.0 (5.0)	-	12 (10)	kgf · cm (lbf · in)
Marking device		Case style 3L TO-220 FULL-PAK	8STH06FP			

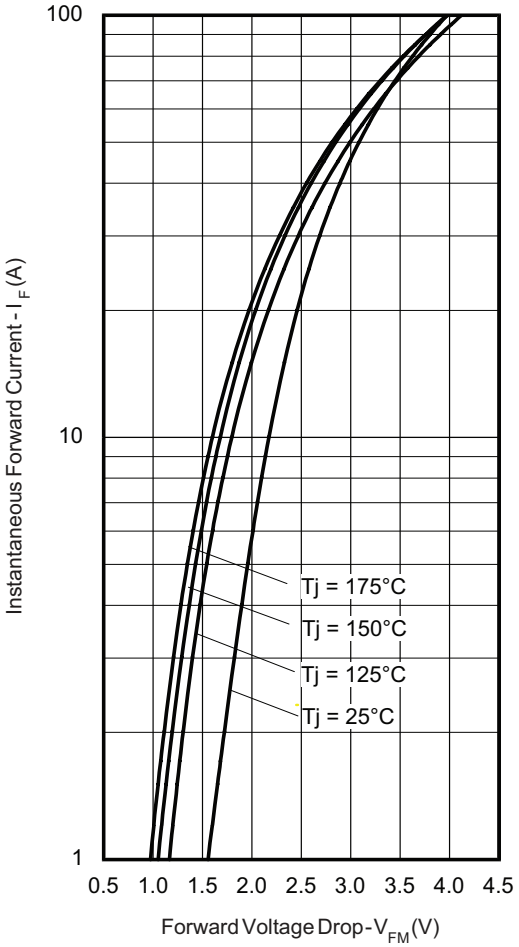


Fig. 1 - Maximum Forward Voltage Drop Characteristics

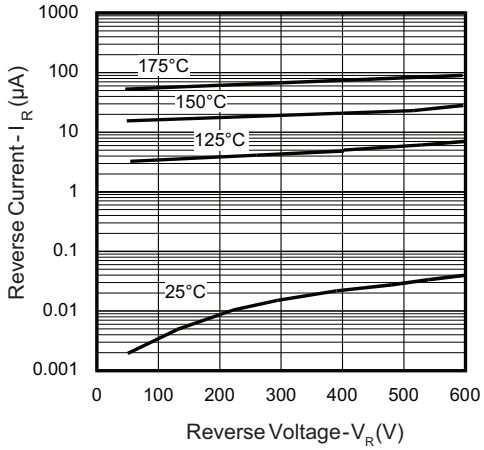


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

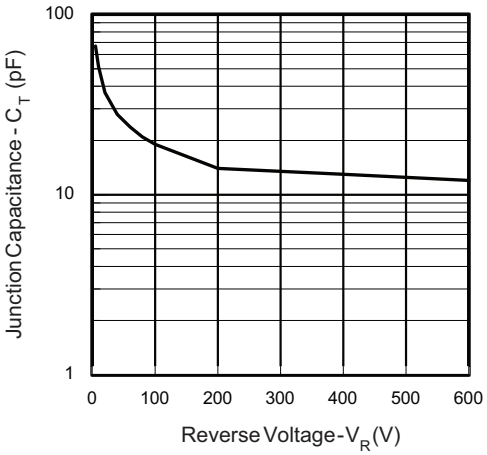


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

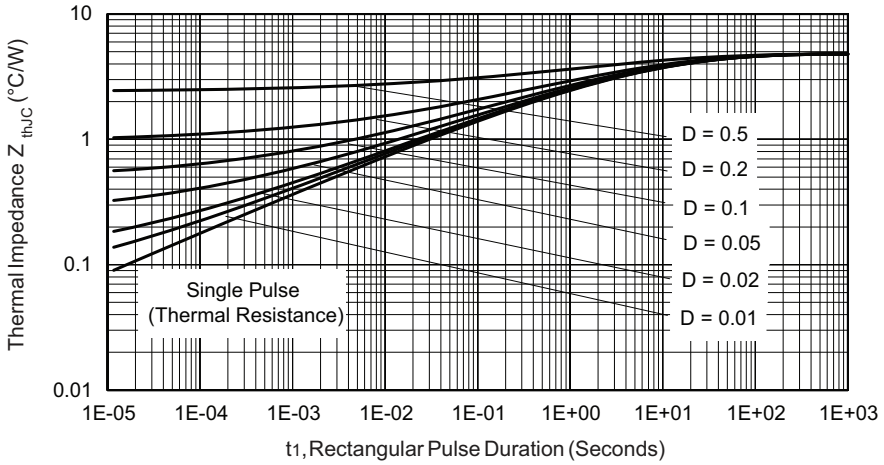


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

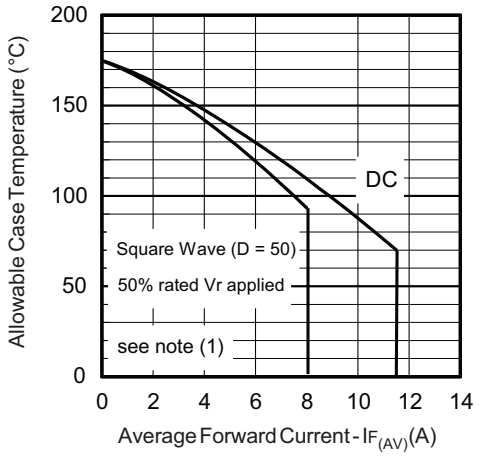


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

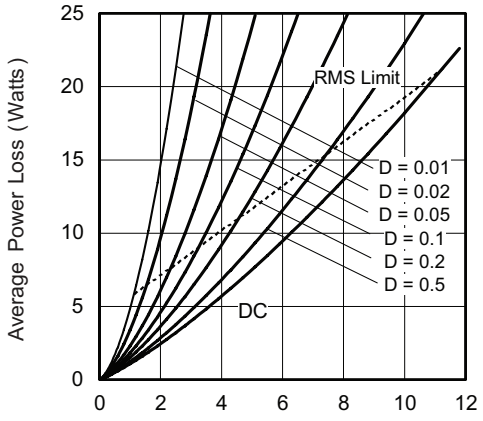


Fig. 6 - Forward Power Loss Characteristics

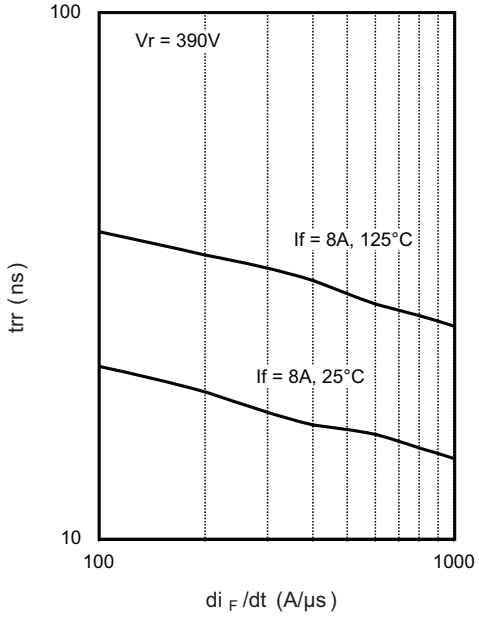


Fig. 7 - Typical Reverse Recovery Time vs. dI_F/dt

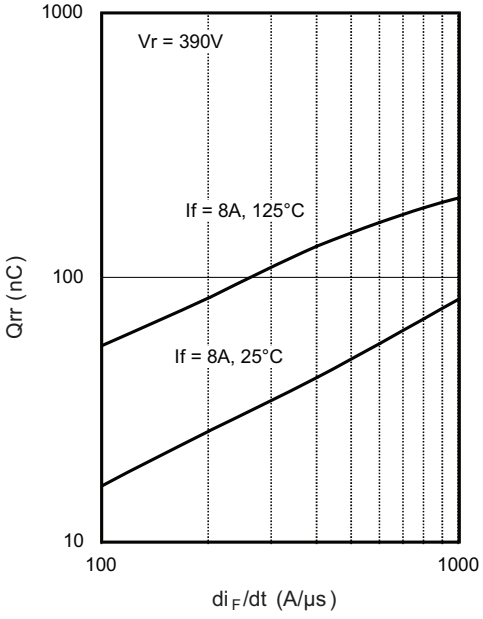


Fig. 8 - Typical Stored Charge vs. dI_F/dt

Note

(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at ($I_{F(AV)}$/D) (see fig. 6);
Pd_{REV} = Inverse power loss = $V_{R1} \times I_R$ (1 - D); I_R at V_{R1} = 50 % rated V_R

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95264
Part marking information	http://www.vishay.com/doc?95266

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