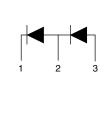


Vishay Semiconductors

Hyperfast Rectifier, 15 A FRED Pt®



Diode variation



Doubler

PRODUCT SUMMARY					
Package	3L TO-220FP				
I _{F(AV)}	15 A				
V_{R}	600 V				
V _F at I _F	2.4 V				
t _{rr} (typ.)	See Recovery table				
T _J max.	175 °C				

FEATURES

- Hyperfast recovery time, extremely low Q_{rr}
- 175 °C maximum operating junction temperature
- High frequency PFC CCM operation

Low leakage current



- Halogen-free according to IEC 61249-2-21 definition
- · Designed and qualified for industrial level

DESCRIPTION

VS-15STH06FP 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.

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	T _C = 73 °C	15	۸	
Non-repetitive peak surge current	I _{FSM}	T _C = 25 °C	115	A	
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	Ι _R = 100 μΑ	600	-	-	
Forward voltage V _F	I _F = 15 A	-	2.2	2.4	V	
	V_{F}	I _F = 15 A, T _J = 125 °C	-	1.9	2.1	
	I _F = 15 A, T _J = 150 °C	-	1.8	2		
		V _R = V _R rated	-	< 1	10	
Reverse leakage current I _R	I_R	$T_J = 125$ °C, $V_R = V_R$ rated	-	10	100	μΑ
		T _J = 150 °C, V _R = V _R rated	-	40	200	
Junction capacitance	C _T	V _R = 600 V	-	17	=	pF

VS-15STH06FP

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DYNAMIC RECOVERY CHARACTERISTICS FOR BOTH DIODES (T _J = 25 °C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS		MIN.	TYP.	MAX.	UNITS
	t _{rr}	$I_F = 1.0 A$, $dI_F/dt =$	$I_F = 1.0 \text{ A}, dI_F/dt = -50 \text{ A/}\mu\text{s}, V_R = 30 \text{ V}$		-	28	
Reverse recovery time		T _J = 25 °C	I _F = 15 A dI _F /dt = - 200 A/μs · V _R = 390 V	-	20	-	ns
		T _J = 125 °C		-	45	-	
Peak recovery current I _{RRM}	current I IRRM — ~	T _J = 25 °C		-	2.6	-	А
		T _J = 125 °C		=	5.6	6.5	A
Reverse recovery charge Q ₁)	T _J = 25 °C		-	28	-	nC
	Q _{rr}	T _J = 125 °C	=	140	-	IIC	

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}		-	-	3.9	°C/W
Thermal resistance, case to heatsink	R _{thCS}	Mounting surface, flat, smooth and greased	-	0.2	-	C/VV
Weight			-	2.0	-	g
vveignt			-	0.07	-	OZ.
Mounting torque			6.0 (5.0)	-	12 (10)	kgf · cm (lbf · in)
Marking device		Case style 3L TO-220 FULL-PAK		15ST	H06FP	•



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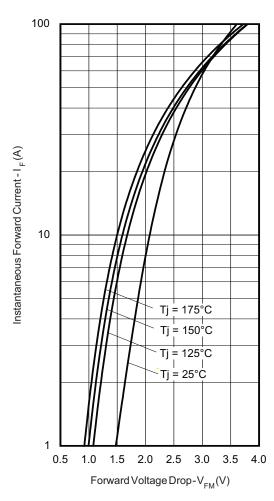


Fig. 1 - Maximum Forward Voltage Drop Characteristics

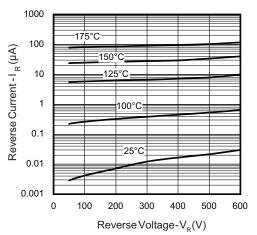


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

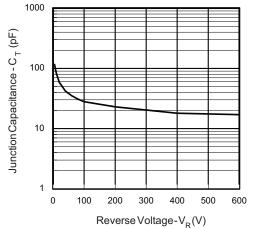


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

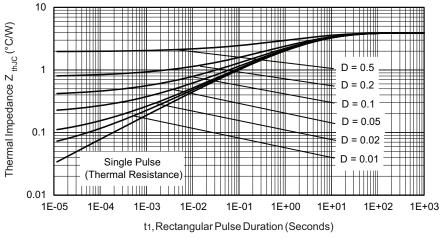


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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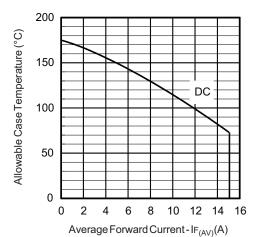


Fig. 5 - Maximum Allowable Case Temperature vs.

Average Forward Current

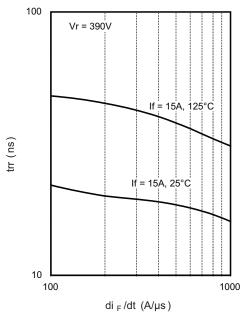


Fig. 7 - Typical Reverse Recovery Time vs. dI_F/dt

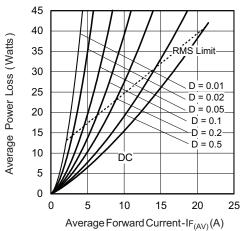


Fig. 6 - Forward Power Loss Characteristics

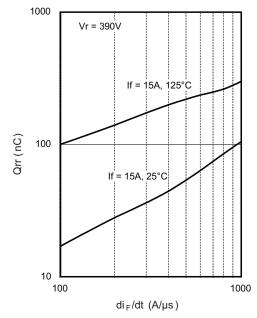


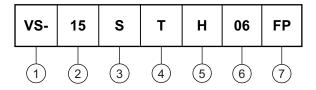
Fig. 8 - Typical Stored Charge vs. dl_F/dt



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ORDERING INFORMATION TABLE

Device code



Vishay Semiconductors product suffix

2 - Current rating (15 = 15 A)

3 - S = Doubler

4 - T = TO-220

5 - H = Hyperfast recovery

Voltage rating (06 = 600 V)

7 - FP = TO-220 FULL-PAK

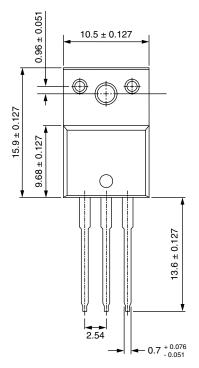
LINKS TO RELATED DOCUMENTS					
Dimensions <u>www.vishay.com/doc?95264</u>					
Part marking information	www.vishay.com/doc?95266				

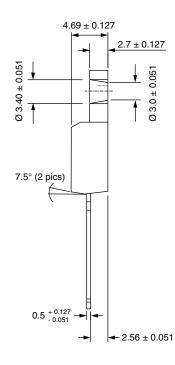


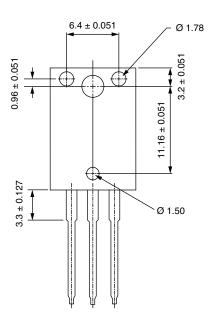
Vishay High Power Products

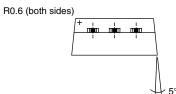
TO-220 (3 PIN) FULL-PAK Tandem

DIMENSIONS in millimeters









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Legal Disclaimer Notice



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