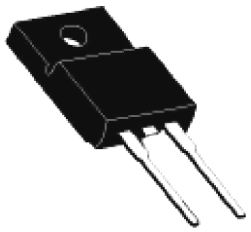
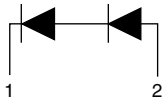
Hyperfast Rectifier, 15 A FRED Pt®



2L TO-220 FULL-PAK



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

RoHS COMPLIANT
HALOGEN FREE

DESCRIPTION

VS-15S2TH06FP 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	
Package	2L 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
Diode variation	Doubler

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	A
Non-repetitive peak surge current	I_{FSM}	T_C = 25 °C	115	
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 = 15 A	-	2.2	2.4	
		I_F = 15 A, T_J = 125 °C	-	1.9	2.1	
		I_F = 15 A, T_J = 150 °C	-	1.8	2	
Reverse leakage current	I_R	V_R = V_R rated	-	< 1	10	µA
		T_J = 125 °C, V_R = V_R rated	-	10	100	
		T_J = 150 °C, V_R = V_R rated	-	40	200	
Junction capacitance	C_T	V_R = 600 V	-	17	-	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		-	-	28	ns
		T_J = 25 °C	I_F = 15 A dI_F/dt = - 200 A/µs V_R = 390 V	-	20	-	
		T_J = 125 °C		-	45	-	
Peak recovery current	I_{RRM}	T_J = 25 °C		-	2.6	-	A
		T_J = 125 °C		-	5.6	6.5	
Reverse recovery charge	Q_{rr}	T_J = 25 °C		-	28	-	nC
		T_J = 125 °C		-	140	-	

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	-	
Weight			-	2.0	-	g
			-	0.07	-	oz.
Mounting torque			6.0 (5.0)	-	12 (10)	kgf · cm (lbf · in)
Marking device		Case style 2L TO-220 FULL-PAK	15S2TH06FP			

For technical questions within your region, please contact one of the following:
DiodesAmericas@vishay.com, DiodesAsia@vishay.com, DiodesEurope@vishay.com

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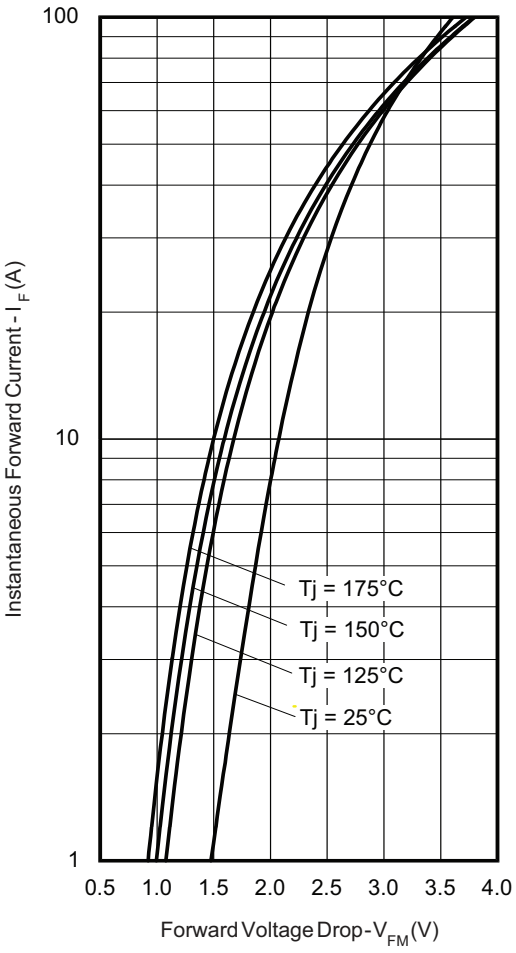

Fig. 1 - Maximum Forward Voltage Drop Characteristics

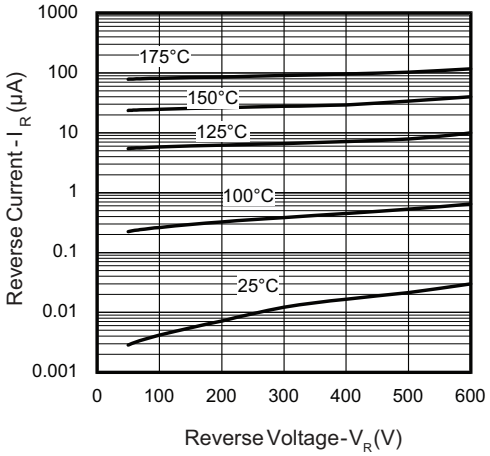

Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

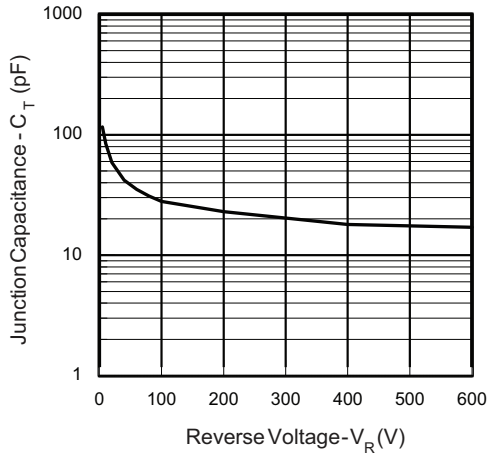

Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

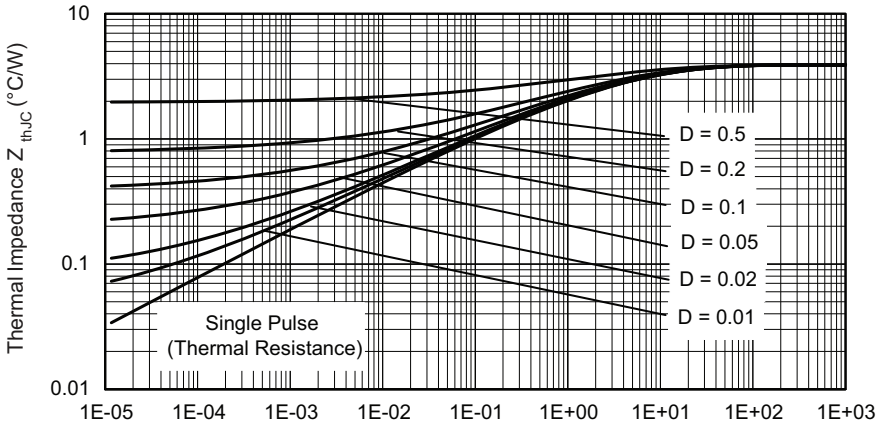

Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

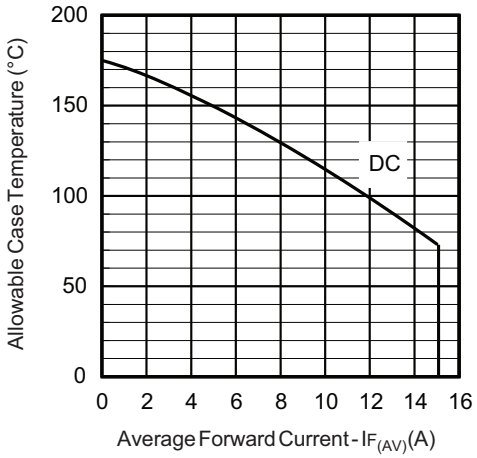

Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

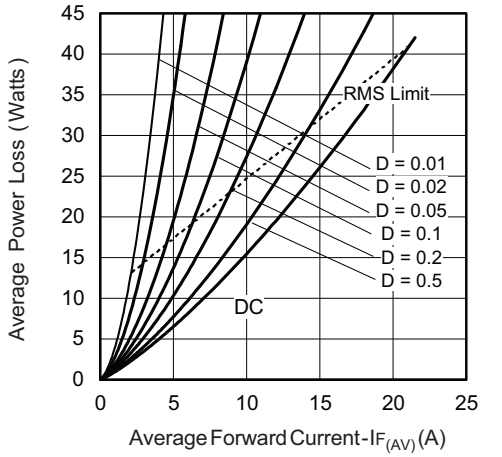

Fig. 6 - Forward Power Loss Characteristics

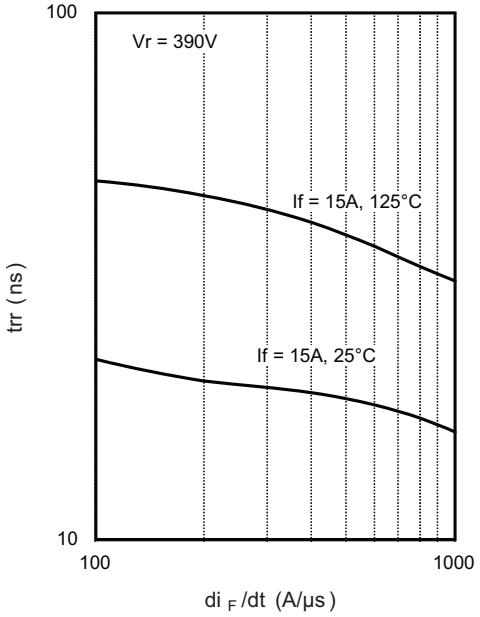

Fig. 7 - Typical Reverse Recovery Time vs. dI_F/dt

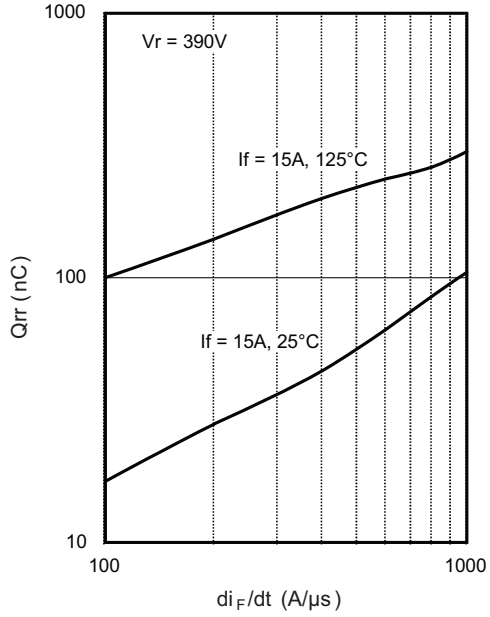

Fig. 8 - Typical Stored Charge vs. dI_F/dt

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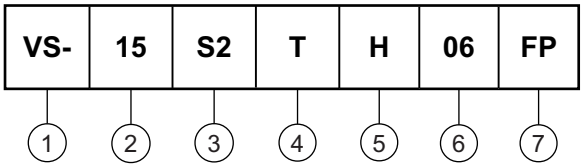
ORDERING INFORMATION TABLE

Device code

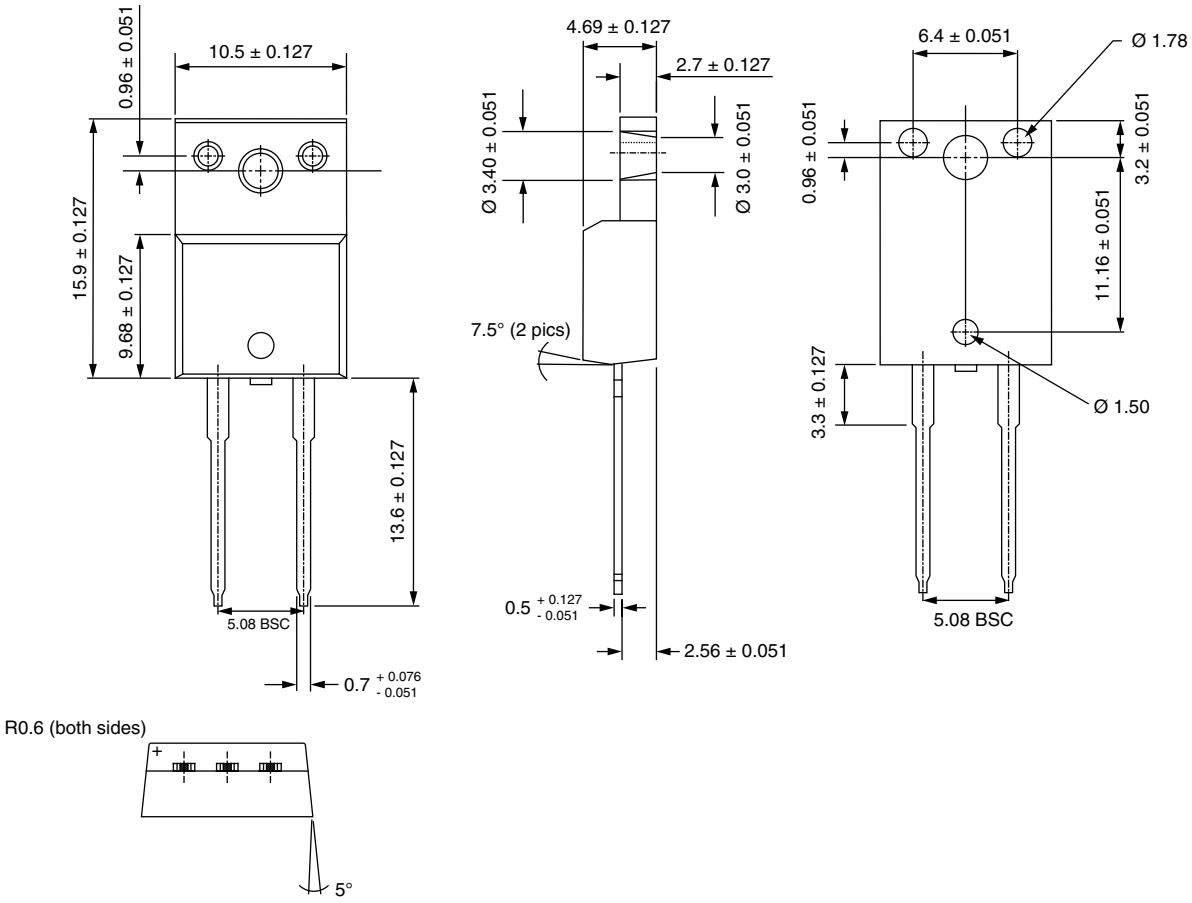


1	-	Vishay Semiconductors product suffix
2	-	Current rating (15 = 15 A)
3	-	S2 = Doubler true 2 pin
4	-	T = TO-220
5	-	H = Hyperfast recovery
6	-	Voltage rating (06 = 600 V)
7	-	FP = TO-220 FULL-PAK

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95263
Part marking information	www.vishay.com/doc?95265

TO-220 (2 PIN) FULL-PAK Tandem

DIMENSIONS in millimeters



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