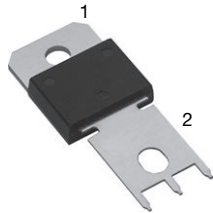




Fast Soft Recovery Rectifier Diode, 85 A



PowerTab®



FEATURES

- Glass passivated pellet chip junction
- 150 °C max. operating junction temperature
- Output rectification and freewheeling in inverters, choppers and converters
- Input rectifications where severe restrictions on conducted EMI should be met
- Screw mounting only
- Designed and qualified according to JEDEC®-JESD 47
- PowerTab® package
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS

$I_{F(AV)}$	85 A
V_R	1200 V
V_F at I_F	1.36 V
I_{FSM}	1250 A
t_{rr}	95 ns
T_J max.	150 °C
Snap factor	0.5
Package	PowerTab®
Circuit configuration	Single

DESCRIPTION

The VS-85EPF12 fast soft recovery rectifier series has been optimized for combined short reverse recovery time and low forward voltage drop.

The glass passivation ensures stable reliable operation in the most severe temperature and power cycling conditions. Available in the new PowerTab package, this new series is suitable for a large range of applications combining excellent die to footprint ratio and sturdiness connectivity for use in high current environments.

MECHANICAL DATA

Case: PowerTab®

Molding compound meets UL 94 V-0 flammability rating

Terminal: nickel plated, screwable

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rect. conduction 50 % duty cycle at $T_C = 85\text{ °C}$	85	A
$I_{F(RMS)}$		160	
V_{RRM}		1200	V
I_{FSM}		1250	A
V_F	100 A, $T_J = 25\text{ °C}$	1.4	V
t_{rr}	1 A, - 100 A/ μ s	95	ns
T_J	Range	-40 to +150	°C

VOLTAGE RATINGS

TYPE NUMBER	V_{RRM} , MAXIMUM PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} AT 150 °C mA
VS-85EPF12	1200	1300	15

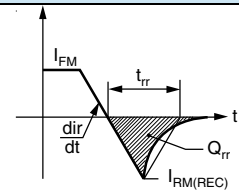
ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 85\text{ °C}$, 180° conduction half sine wave	85	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	1100	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, no voltage reapplied	1250	A ² s
		10 ms sine pulse, rated V_{RRM} applied	5000	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	10 ms sine pulse, no voltage reapplied	7000	A ² \sqrt{s}
		$t = 0.1\text{ ms to }10\text{ ms}$, no voltage reapplied	70 000	



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM}	85 A, $T_J = 25\text{ }^\circ\text{C}$		1.36	V
Forward slope resistance	r_t	$T_J = 150\text{ }^\circ\text{C}$		4.03	$\text{m}\Omega$
Threshold voltage	$V_{F(TO)}$			0.87	V
Maximum reverse leakage current	I_{RM}	$T_J = 25\text{ }^\circ\text{C}$	$V_R = \text{Rated } V_{RRM}$	0.1	mA
		$T_J = 150\text{ }^\circ\text{C}$		15	

RECOVERY CHARACTERISTICS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Reverse recovery time	t_{rr}	I_F at 85 A _{pk} 25 A/ μs 25 $^\circ\text{C}$	480	ns
Reverse recovery current	I_{rr}		7.1	A
Reverse recovery charge	Q_{rr}		2.1	μC
Snap factor	S		0.5	



THERMAL - MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-40 to +150	$^\circ\text{C}$
Maximum thermal resistance, junction to case	R_{thJC}	DC operation	0.35	$^\circ\text{C/W}$
Maximum thermal resistance, junction to ambient	R_{thJA}		40	
Typical thermal resistance, case to heatsink	R_{thCS}	Mounting surface, smooth and greased	0.2	
Approximate weight			6	g
			0.21	oz.
Mounting torque	minimum		6 (5)	$\text{kgf} \cdot \text{cm}$ $(\text{lbf} \cdot \text{in})$
	maximum		12 (10)	
Marking device		Case style PowerTab®	85EPF12	

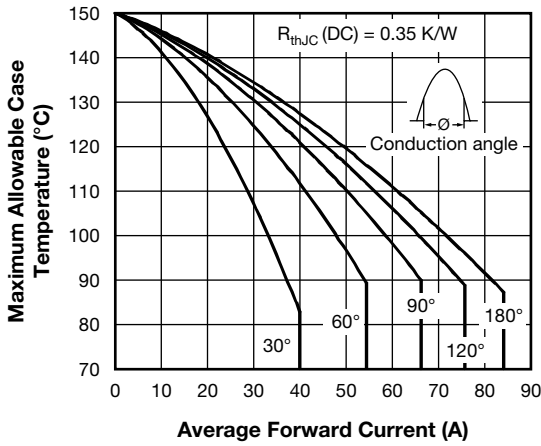


Fig. 1 - Current Rating Characteristics

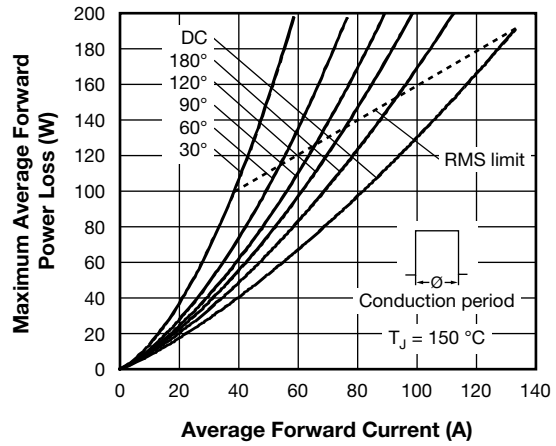


Fig. 4 - Forward Power Loss Characteristics

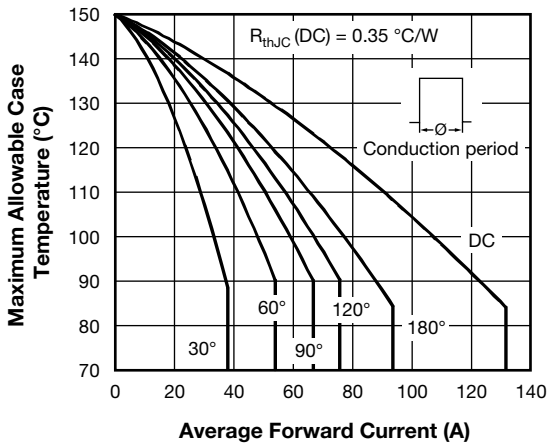


Fig. 2 - Current Rating Characteristics

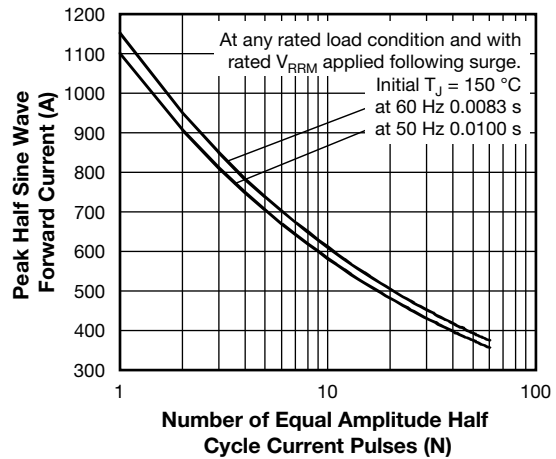


Fig. 5 - Maximum Non-Repetitive Surge Current

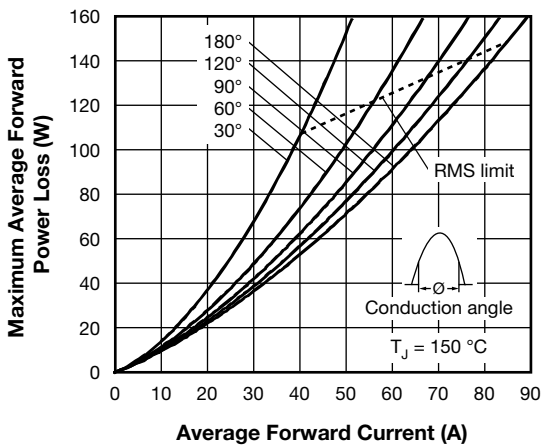


Fig. 3 - Forward Power Loss Characteristics

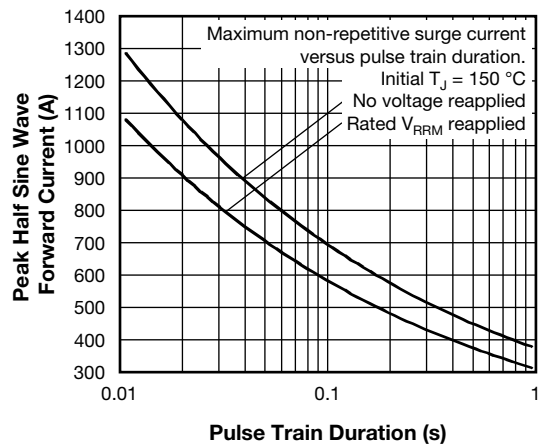


Fig. 6 - Maximum Non-Repetitive Surge Current

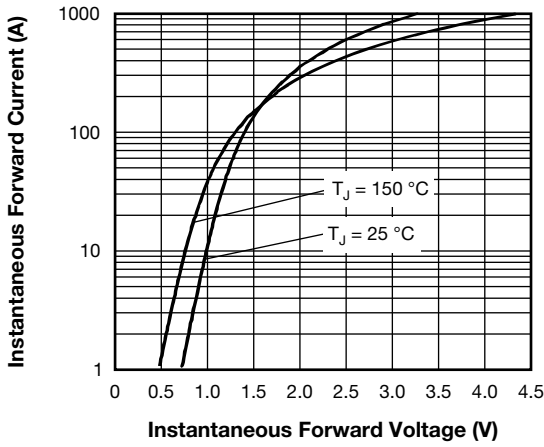


Fig. 7 - Forward Voltage Drop Characteristics

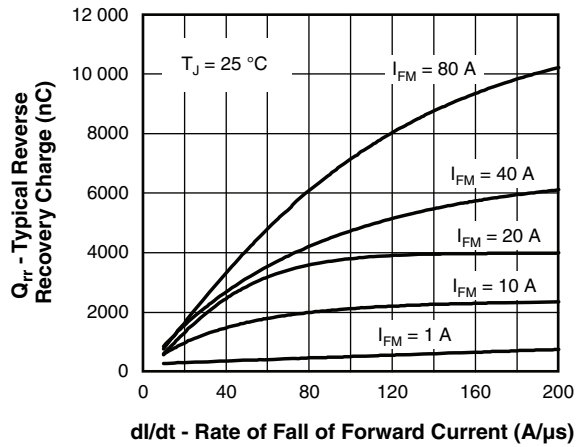


Fig. 10 - Recovery Charge Characteristics, $T_J = 25\text{ }^\circ\text{C}$

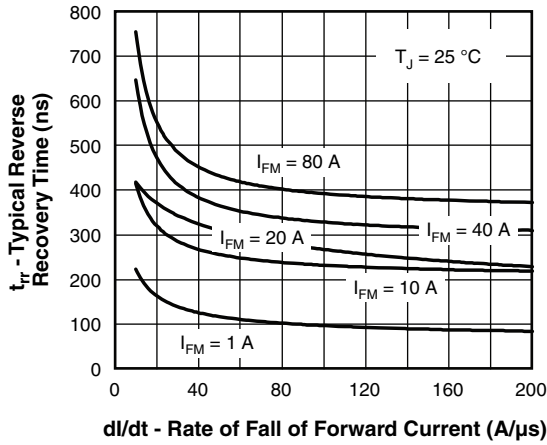


Fig. 8 - Recovery Time Characteristics, $T_J = 25\text{ }^\circ\text{C}$

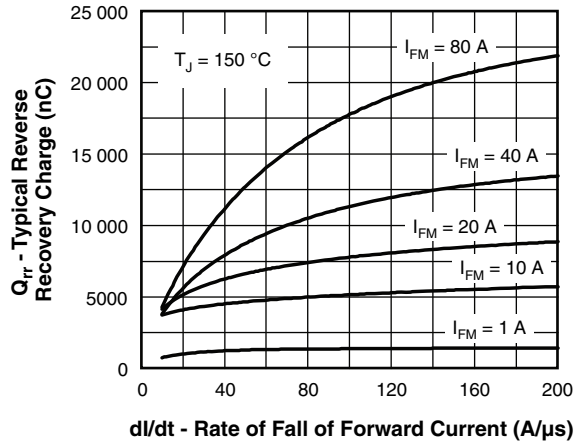


Fig. 11 - Recovery Charge Characteristics, $T_J = 150\text{ }^\circ\text{C}$

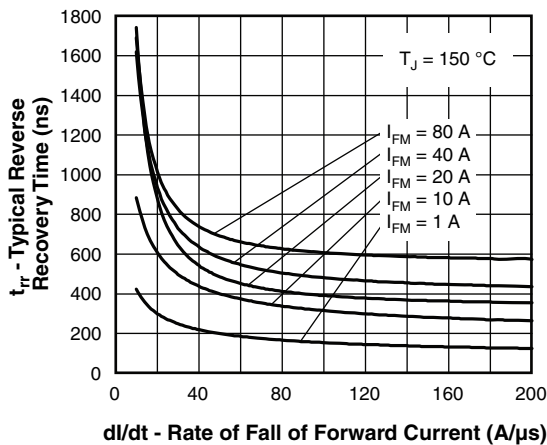


Fig. 9 - Recovery Time Characteristics, $T_J = 150\text{ }^\circ\text{C}$

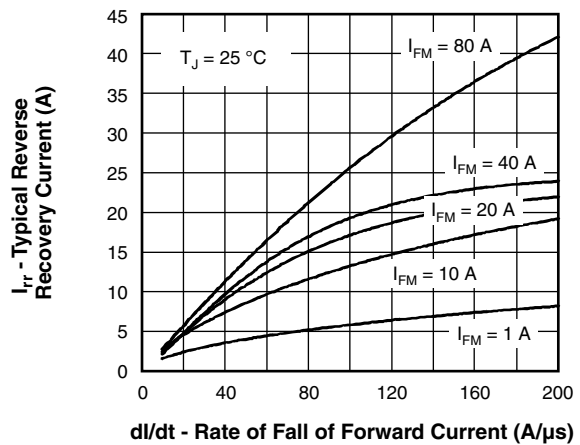


Fig. 12 - Recovery Current Characteristics, $T_J = 25\text{ }^\circ\text{C}$

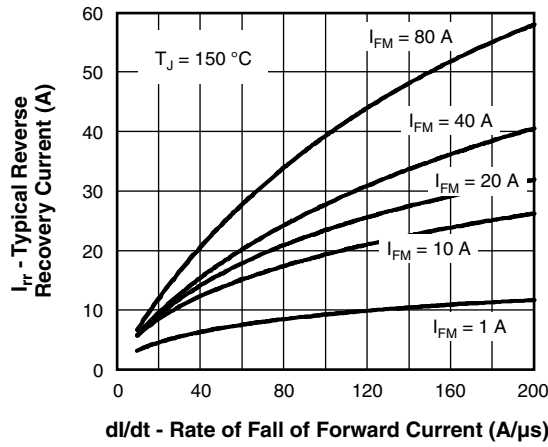


Fig. 13 - Recovery Current Characteristics, $T_J = 150\text{ }^\circ\text{C}$

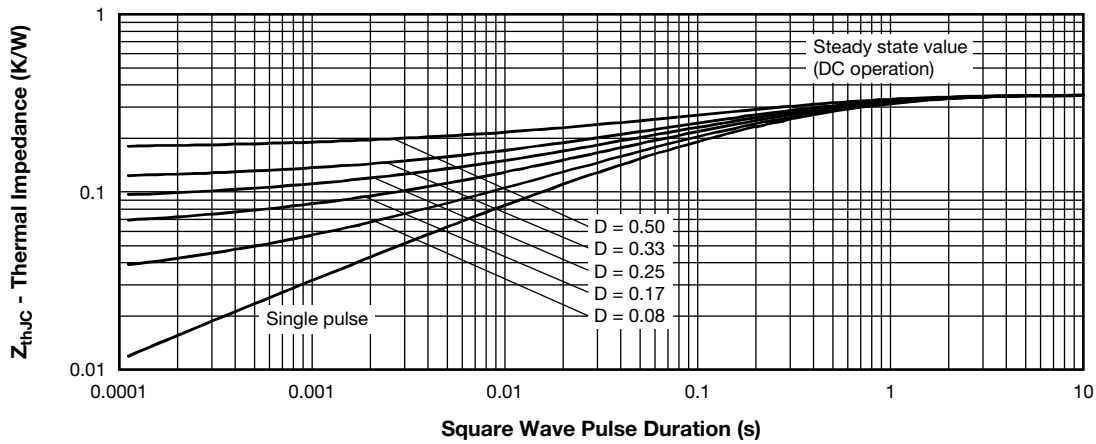
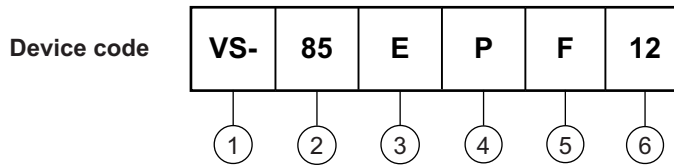


Fig. 14 - Thermal Impedance Z_{thJC} Characteristics



ORDERING INFORMATION TABLE



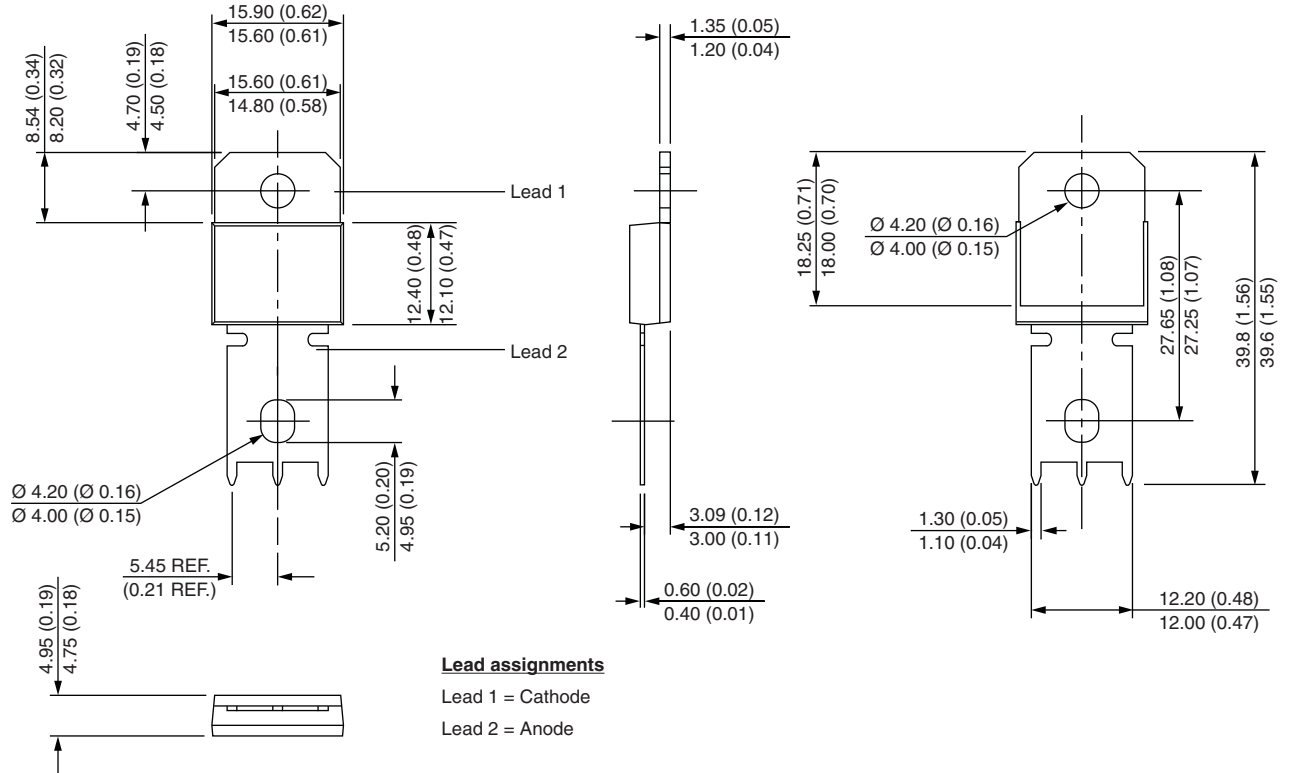
- 1** - Vishay Semiconductors product
- 2** - Current rating
- 3** - Circuit configuration:
E = Single diode
- 4** - Package:
P = TO-247AC
- 5** - Type of silicon:
F = Fast recovery
- 6** - Voltage code x 100 = V_{RRM} (12 = 1200 V)

LINKS TO RELATED DOCUMENTS	
Dimensions	www.vishay.com/doc?95240
Part marking information	www.vishay.com/doc?95370
Application note	www.vishay.com/doc?95179
SPICE model	www.vishay.com/doc?96894



PowerTab®

DIMENSIONS in millimeters (inches)





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