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Fast Soft Recovery Rectifier Diode, 30 A



PRIMARY CHARACTERISTICS				
I _{F(AV)}	30 A			
V _R	1000 V, 1200 V			
V _F at I _F	1.41 V			
I _{FSM}	350 A			
t _{rr}	95 ns			
T _J max.	150 °C			
Package	TO-247AC 2L, TO-247AC 3L			
Circuit configuration	Single			
Snap factor	0.6			

FEATURES

- Glass passivated pellet chip junction
- 150 °C max. operating junction temperature
- Low forward voltage drop and short reverse recovery time
- Designed and qualified according to JEDEC[®]-JESD 47
- Material categorization: for definitions of compliance please see <u>www.vishay.com/doc?99912</u>

APPLICATIONS

These devices are intended for use in output rectification and freewheeling in inverters, choppers and converters as well as in input rectification where severe restrictions on conducted EMI should be met.

DESCRIPTION

The VS-35EPF12LHM3 and VS-35APF12LHM3 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.

MAJOR RATINGS AND CHARACTERISTICS				
SYMBOL	CHARACTERISTICS	VALUES	UNITS	
I _{F(AV)}	Sinusoidal waveform	30	A	
V _{RRM}		1000 to 1200	V	
I _{FSM}		350	A	
V _F	30 A, T _J = 25 °C	1.41	V	
t _{rr}	1 A, 100 A/µs	95	ns	
TJ		-40 to +150	°C	

VOLTAGE RATINGS					
PART NUMBER	V _{RBM} , MAXIMUM PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} AT 150 °C mA		
VS-30EPF10-M3, VS-30APF10-M3	1000	1100	6		
VS-30EPF12-M3, VS-30APF12-M3	1200	1300	0		

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HALOGEN

FREE

VS-30.PF1.-M3 Series



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ABSOLUTE MAXIMUM RATINGS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	
Maximum average forward current	I _{F(AV)}	T_{C} = 95 °C, 180° conduction half sine wave	30		
Maximum peak one cycle non-repetitive surge current	I _{FSM}	10 ms sine pulse, rated V_{RRM} applied	300	А	
		10 ms sine pulse, no voltage reapplied	350		
Maximum I ² t for fusing	l ² t	10 ms sine pulse, rated V _{RRM} applied	450	A ² s	
	1-1	10 ms sine pulse, no voltage reapplied	636	A-S	
Maximum I ² \sqrt{t} for fusing	l²√t	t = 0.1 ms to 10 ms, no voltage reapplied	6360	A²√s	

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V _{FM}	30 A, T _J = 25 °C		1.41	V
Forward slope resistance	r _t	T _J = 150 °C		10.09	mΩ
Threshold voltage	V _{F(TO)}			0.992	V
Maximum reverse leakage current	I	T _J = 25 °C	V - Poted V	0.1	mA
waximum reverse leakage current	IRM	T _J = 150 °C	$V_R = Rated V_{RRM}$	6	ША

RECOVERY CHARACTERISTICS					
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS	· •
Reverse recovery time	t _{rr}	In at 30 Anic	450	ns	I _{FM} t
Reverse recovery current	I _{rr}	l _F at 30 A _{pk} 25 A/µs	6.1	А	$t_a \mid t_b$
Reverse recovery charge	Q _{rr}	25 °C	2.16	μC	
Snap factor	S	Typical	0.6		at I _{RM(REC)}

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	SYMBOL TEST CONDITIONS		UNITS
Maximum junction and s temperature range	storage	T _J , T _{Stg}		-40 to +150	°C
Maximum thermal resist junction to case	ance,	R _{thJC}	DC operation	0.8	
Maximum thermal resist junction to ambient	ance,	R _{thJA}		40	°C/W
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.2	
Approvimate weight				6	g
Approximate weight	Approximate weight			0.21	oz.
Mounting torque	minimum			6 (5)	kgf ⋅ cm
Mounting torque	Mounting torque maximum			12 (10)	(lb̃f ⋅ in)
Marking device				30EPF10	
			Case style TO-247AC 2L	30EPF12	
				30APF10	
			Case style TO-247AC 3L	30APF12	

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Fig. 1 - Current Rating Characteristics



Fig. 2 - Current Rating Characteristics



Fig. 3 - Forward Power Loss Characteristics

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Fig. 4 - Forward Power Loss Characteristics



Fig. 5 - Maximum Non-Repetitive Surge Current



Fig. 6 - Maximum Non-Repetitive Surge Current

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Fig. 7 - Forward Voltage Drop Characteristics



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



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









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Fig. 12 - Recovery Current Characteristics, T_J = 25 °C



Fig. 13 - Recovery Current Characteristics, T_J = 150 °C



Fig. 14 - Thermal Impedance Z_{thJC} Characteristics

VS-30.PF1.-M3 Series

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ORDERING INFORMATION TABLE



ORDERING INFORMATION (Example)						
PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION			
VS-30EPF10-M3	25	500	Antistatic plastic tubes			
VS-30APF10-M3	25	500	Antistatic plastic tubes			
VS-30EPF12-M3	25	500	Antistatic plastic tubes			
VS-30APF12-M3	25	500	Antistatic plastic tubes			

LINKS TO RELATED DOCUMENTS			
Dimensions TO-24		www.vishay.com/doc?96144	
Dimensions	TO-247AC 3L	www.vishay.com/doc?96138	
Dort moreling information	TO-247AC 2L	www.vishay.com/doc?95648	
Part marking information	TO-247AC 3L	www.vishay.com/doc?95007	
SPICE model		www.vishay.com/doc?95184	



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