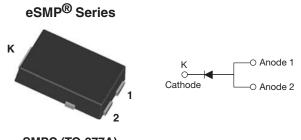


Hyperfast Rectifier, 8 A FRED Pt[®]



SMPC (TO-277A)

LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS						
I _{F(AV)} 8 A						
V _R	200 V					
V _F at I _F	0.78 V					
t _{rr (typ.)}	28 ns					
T _J max.	175 °C					
Package	SMPC (TO-277A)					
Circuit configuration	Single					

FEATURES

• Hyperfast recovery time, reduced Q_{rr}, and soft recovery RoHS



COMPLIANT

HALOGEN

FREE

- 175 °C maximum operating junction temperature
- Specified for output and snubber operation
- Low forward voltage drop
- Low leakage current
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Meets JESD 201 class 2 whisker test
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

DESCRIPTION / APPLICATIONS

State of the art hyperfast recovery rectifiers specifically designed with optimized performance of forward voltage drop and hyperfast recovery time.

The planar structure and the platinum doped life time control guarantee the best overall performance, ruggedness, and reliability characteristics.

These devices are intended for use in snubber, boost, lighting, as high frequency rectifiers and freewheeling diodes.

The extremely optimized stored charge and low recovery current minimize the switching losses and reduce power dissipation in the switching element.

MECHANICAL DATA

Case: SMPC (TO-277A)

Molding compound meets UL 94 V-0 flammability rating Halogen-free, RoHS compliant

Terminals: matte tin plated leads, solderable per J-STD-002

ABSOLUTE MAXIMUM RATINGS							
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS			
Peak repetitive reverse voltage	V _{RRM}		200	V			
Average rectified forward current	I _{F(AV)}	T _{Sp} = 153 °C	8	٨			
Non-repetitive peak surge current	I _{FSM}	T _J = 25 °C	150	A			
Operating junction and storage temperatures	T _J , T _{Stg}		-55 to +175	°C			

ELECTRICAL SPECIFICATIONS ($T_J = 25 \text{ °C}$ unless otherwise specified)							
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS	
Breakdown voltage, blocking voltage	V_{BR}, V_{R}	I _R = 100 μA	200	-	-		
Forward voltage	V _F	I _F = 8 A	-	0.91	0.98	V	
Forward voltage	٧F	I _F = 8 A, T _J = 125 °C	-	0.78	0.87		
		$V_{R} = V_{R}$ rated	-	-	2		
Reverse leakage current IF		$T_J = 125 \text{ °C}, V_R = V_R \text{ rated}$	-	3	15	μA	
Junction capacitance	CT	V _R = 200 V	-	33	-	pF	

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DYNAMIC RECOVERY CHARACTERISTICS (T _J = 25 $^{\circ}$ C unless otherwise specified)							
PARAMETER	SYMBOL	TEST CO	ONDITIONS	MIN.	TYP.	MAX.	UNITS
		$I_F = 1 \text{ A}, \text{ d}I_F/\text{d}t =$	= 50 A/µs, V _R = 30 V	-	28	-	
Boyeroo roooyon timo	+	$I_F = 0.5 \text{ A}, I_R = 1 \text{ A}, I_{rr} = 0.25 \text{ A}$		-	-	25	
Reverse recovery time	t _{rr}	T _J = 25 °C		-	23	-	- ns - A
		T _J = 125 °C		-	35	-	
Dook rooovon current	1	T _J = 25 °C	I _F = 8 A dI _F /dt = 200 A/μs V _B = 160 V	-	2.5	-	
Peak recovery current	I _{RRM}	T _J = 125 °C		-	5.0	-	
Reverse recovery charge	Q _{rr}	T _J = 25 °C		-	28	-	nC
		T _J = 125 °C		-	87	-	nC

THERMAL - MECHANICAL SPECIFICATIONS							
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 mount	R _{thJM}		-	2.2	3	°C/W	
Thermal resistance, junction to ambient	R _{thJA}		-	85	-	C/ W	
Approximate weight				0.1		g	
Marking device		Case style SMPC (TO-277A)	QEH2				

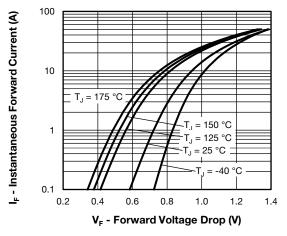


Fig. 1 - Typical Forward Voltage Drop Characteristics

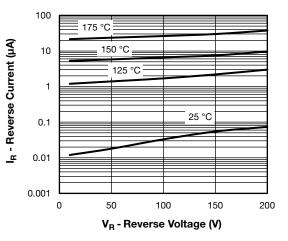


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage



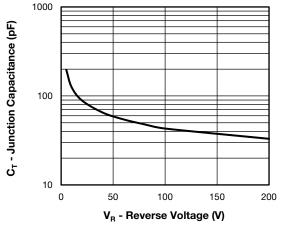
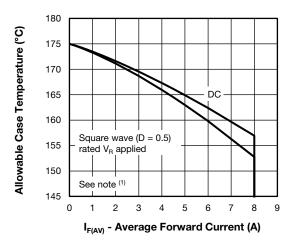
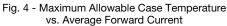
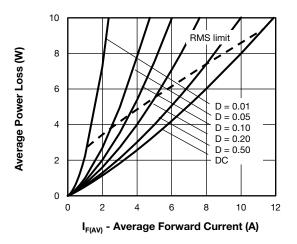
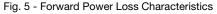


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage









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. 5); Pd_{REV} = inverse power loss = $V_{R1} \times I_R$ (1 - D); I_R at V_{R1} = rated V_R

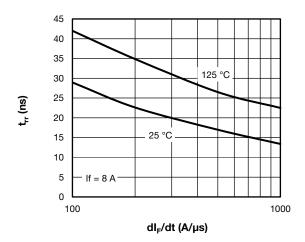


Fig. 6 - Typical Reverse Recovery Time vs. dl_F/dt

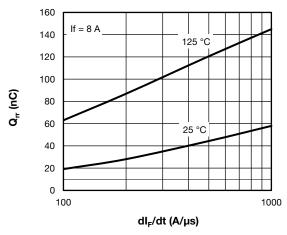


Fig. 7 - Typical Stored Charge vs. dl_F/dt

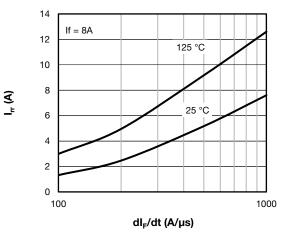


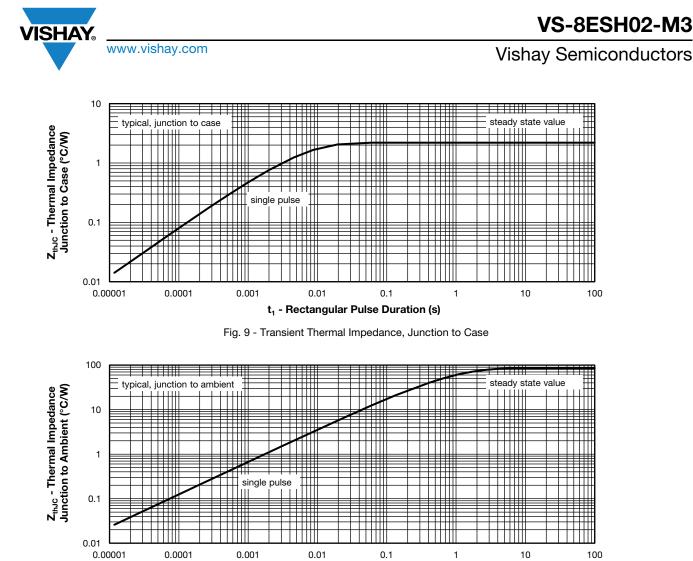
Fig. 8 - Typical Reverse Recovery Current vs. dl_F/dt

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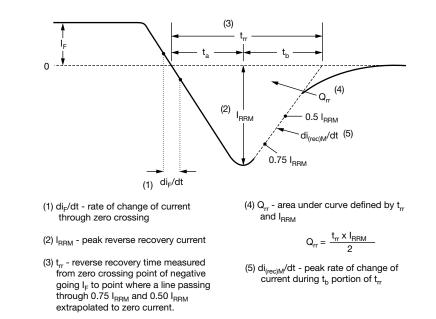
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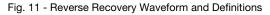
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VISHAY

ORDERING INFORMATION TABLE

Device code	VS-	8	Е	S	н	02	-M3
	1	2	3	4	5	6	7
	1	- Visl	nay Sen	niconduo	ctors pro	oduct	
	2	- Cur	rent rati	ng (8 =	8 A)		
	3	- Circ	cuit conf	iguratior	า:		
		E =	single c	liode			
	4	- S=	SMPC	package	9		
	5	- Pro	cess typ	e,			
		H =	hyperfa	ist recov	very		
	6	- Volt	age coo	le (02 =	200 V)		
	7	M3	s = halog	gen-free	, RoHS-	complia	ant, and

ORDERING INFORMATION (Example)							
PREFERRED P/N	QUANTITY PER REEL	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION				
VS-8ESH02-M3/H	1500	1500	7" diameter plastic tape and reel				
VS-8ESH02-M3/I	6500	6500	13" diameter plastic tape and reel				

LINKS TO RELATED DOCUMENTS					
Dimensions	www.vishay.com/doc?95570				
Part marking information	www.vishay.com/doc?95565				
Packaging information	www.vishay.com/doc?88869				
SPICE model	www.vishay.com/doc?97016				

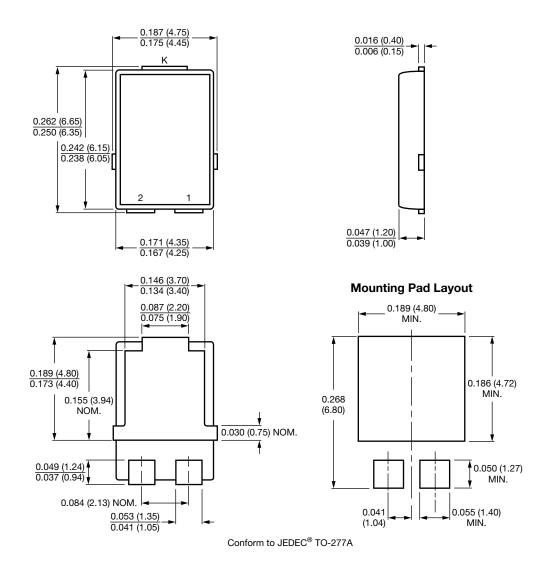
Outline Dimensions





SMPC (TO-277A)

DIMENSIONS in inches (millimeters)





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