

Ultrafast Rectifier, 3 A FRED Pt®



Cathode  Anode

FEATURES

- Ultrafast recovery time, reduced Q_{rr} , and soft recovery
- 175 °C maximum operating junction temperature
- Low forward voltage drop
- Low leakage current
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified, meets JESD 201 class 2 whisker test
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

DESIGN SUPPORT TOOLS

[click logo to get started](#)



DESCRIPTION / APPLICATIONS

State of the art ultrafast recovery rectifiers designed with optimized performance of forward voltage drop and ultrafast recovery time, and fast recovery.

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, output operation, inverters or as freewheeling diodes.

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

PRIMARY CHARACTERISTICS	
$I_{F(AV)}$	3 A
V_R	600 V
V_F at I_F	0.99 V
t_{rr}	50 ns
T_J max.	175 °C
Package	SlimSMA (DO-221AC)
Circuit configuration	Single

ABSOLUTE MAXIMUM RATINGS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Peak repetitive reverse voltage	V_{RRM}		600	V
Average rectified forward current	$I_{F(AV)}$	$T_C = 117\text{ °C}^{(1)}$	3	A
Non-repetitive peak surge current	I_{FSM}	$T_J = 25\text{ °C}$	43	
Operating junction and storage temperatures	T_J, T_{Stg}		-55 to +175	°C

Note

⁽¹⁾ Device on PCB with 8 mm x 16 mm soldering lands

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	$I_R = 100\text{ }\mu\text{A}$	600	-	-	V
Forward voltage	V_F	$I_F = 3\text{ A}$	-	1.15	1.35	
		$I_F = 3\text{ A}, T_J = 150\text{ °C}$	-	0.99	1.2	
Reverse leakage current	I_R	$V_R = V_R$ rated	-	-	3	μA
		$T_J = 150\text{ °C}, V_R = V_R$ rated	-	-	100	
Junction capacitance	C_T	$V_R = 600\text{ V}$	-	6.2	-	pF

DYNAMIC RECOVERY CHARACTERISTICS ($T_J = 25\text{ }^{\circ}\text{C}$ unless otherwise specified)						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Reverse recovery time	t_{rr}	$I_F = 1.0\text{ A}$, $dI_F/dt = 50\text{ A}/\mu\text{s}$, $V_R = 30\text{ V}$	-	45	-	ns
		$I_F = 0.5\text{ A}$, $I_R = 1\text{ A}$, $I_{rr} = 0.25\text{ A}$	-	-	50	
		$T_J = 25\text{ }^{\circ}\text{C}$	-	52	-	
		$T_J = 125\text{ }^{\circ}\text{C}$	-	82	-	
Peak recovery current	I_{RRM}	$T_J = 25\text{ }^{\circ}\text{C}$	-	7.3	-	A
		$T_J = 125\text{ }^{\circ}\text{C}$	-	10	-	
Reverse recovery charge	Q_{rr}	$T_J = 25\text{ }^{\circ}\text{C}$	-	210	-	nC
		$T_J = 125\text{ }^{\circ}\text{C}$	-	400	-	

THERMAL - MECHANICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNITS
Maximum junction and storage temperature range	T_J, T_{Stg}		-55	-	175	$^{\circ}\text{C}$
Thermal resistance, junction to lead	R_{thJL}	Device mounted on PCB with 8 mm x 16 mm soldering lands	-	16	-	$^{\circ}\text{C}/\text{W}$
Thermal resistance, junction to ambient	R_{thJA}	Device mounted on PCB with 3 mm x 3 mm soldering lands	-	115	-	
Approximate Weight			0.032			g
			0.0011			oz.
Marking device		Case style SlimSMA (DO-221AC)	3U6			

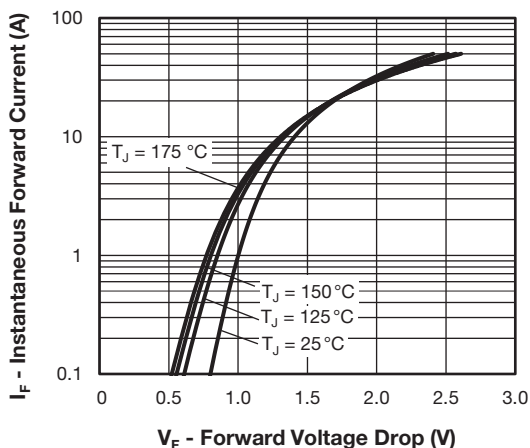


Fig. 1 - Typical Forward Voltage Drop Characteristics

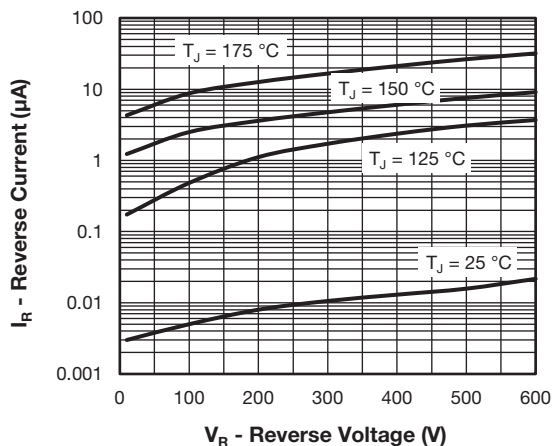


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

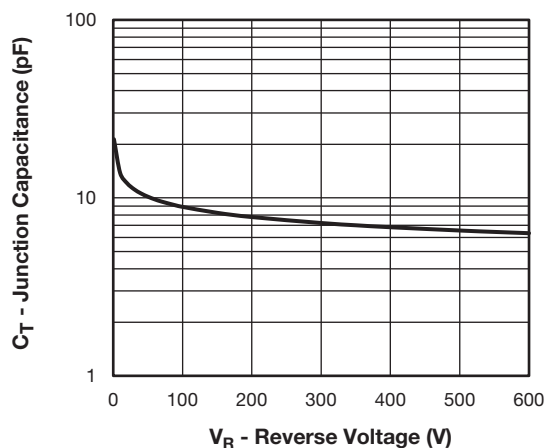


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

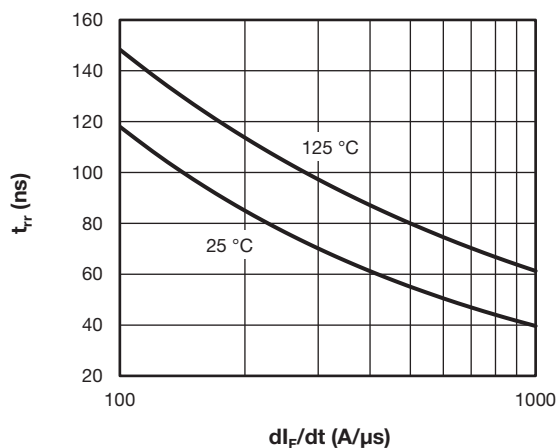
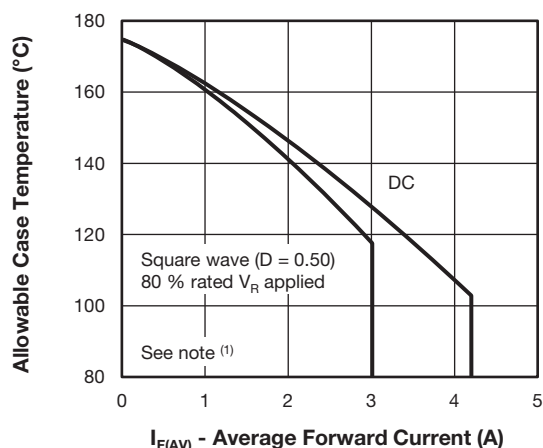

Fig. 6 - Typical Reverse Recovery vs. dI_F/dt


Fig. 4 - Maximum Allowable Case Temperature vs. Average Forward Current

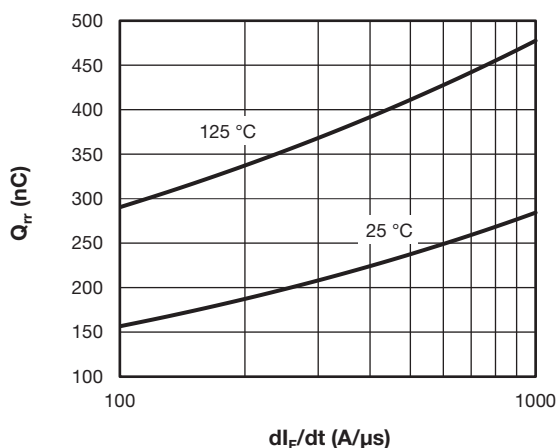
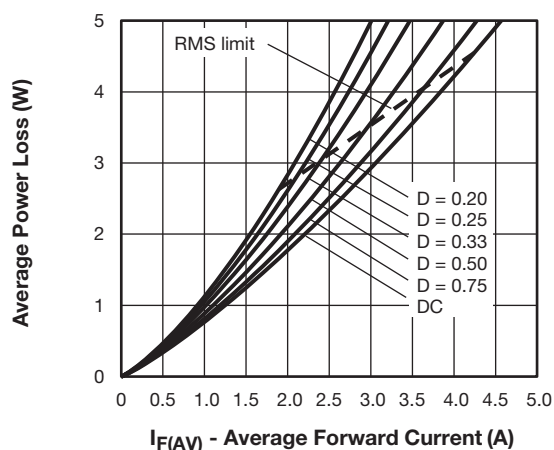

Fig. 7 - Typical Stored Charge vs. dI_F/dt


Fig. 5 - Forward Power Loss Characteristics

Note

- (1) Formula used: $T_C = T_J - (P_d + P_{dREV}) \times R_{thJC}$;
 P_d = forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see Fig. 6);
 P_{dREV} = inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = rated V_R

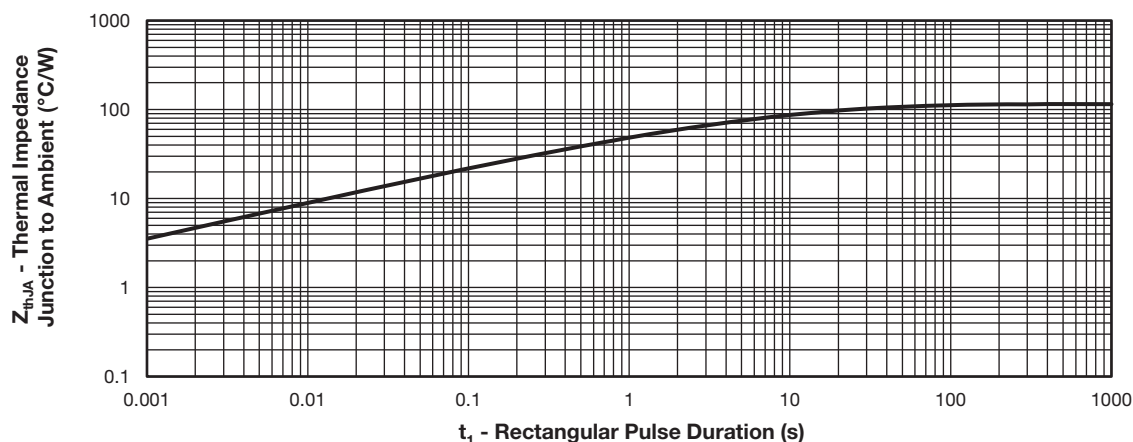
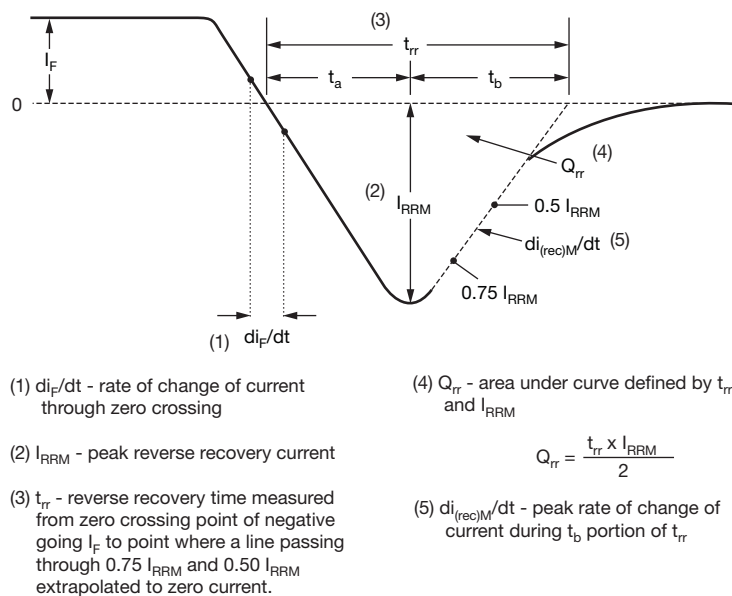

Fig. 8 - Thermal Impedance Z_{thJA}


Fig. 9 - Reverse Recovery Waveform and Definitions

**ORDERING INFORMATION TABLE**

Device code	VS-	3	E	J	U	06	H	M3
	1	2	3	4	5	6	7	8
	1	-	Vishay Semiconductors product					
	2	-	Current rating (3 = 3 A)					
	3	-	Circuit configuration: E = single diode					
	4	-	J = SlimSMA package					
	5	-	Process type, U = ultrafast recovery					
	6	-	Voltage code (06 = 600 V)					
	7	-	H = AEC-Q101 qualified					
	8	-	M3 = halogen-free, RoHS-compliant, and terminations lead (Pb)-free					

ORDERING INFORMATION (Example)

PREFERRED P/N	QUANTITY PER REEL	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-3EJU06HM3/6A	3500	3500	7" diameter plastic tape and reel
VS-3EJU06HM3/6B	14 000	14 000	13" diameter plastic tape and reel

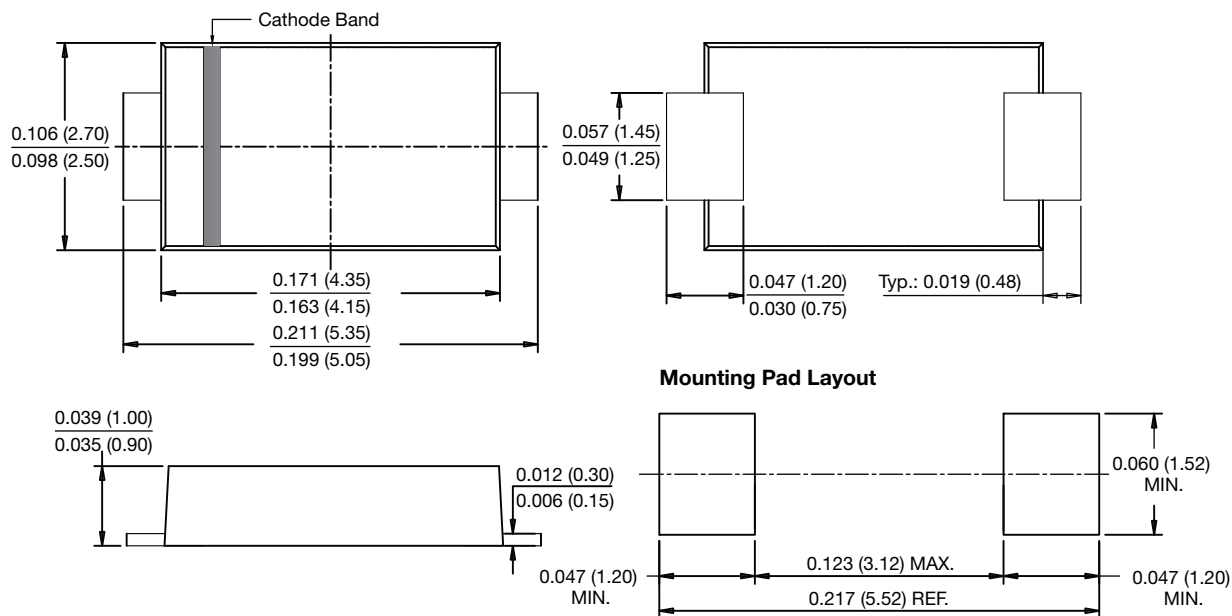
LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95571
Part marking information	www.vishay.com/doc?95562
Packaging information	www.vishay.com/doc?88869
SPICE model	www.vishay.com/doc?96589



DO-221AC (SlimSMA)

DIMENSIONS in inches (millimeters)





Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9