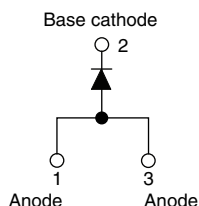




Input Rectifier Diode, 20 A



D²PAK



DESCRIPTION/FEATURES

The 20ETS...S rectifier High Voltage Series has been optimized for very low forward voltage drop, with moderate leakage. The glass passivation technology used has reliable operation up to 150 °C junction temperature.

Typical applications are in input rectification and these products are designed to be used with Vishay HPP switches and output rectifiers which are available in identical package outlines.

This product series has been designed and qualified for industrial level.

PRODUCT SUMMARY

V_F at 10 A	1 V
I_{FSM}	300 A
V_{RRM}	800/1200 V

OUTPUT CURRENT IN TYPICAL APPLICATIONS

APPLICATIONS	SINGLE-PHASE BRIDGE	THREE-PHASE BRIDGE	UNITS
Capacitive input filter $T_A = 55\text{ °C}$, $T_J = 125\text{ °C}$ common heatsink of 1 °C/W	16.3	21	A

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Sinusoidal waveform	20	A
V_{RRM}		800/1200	V
I_{FSM}		300	A
V_F	20 A, $T_J = 25\text{ °C}$	1.1	V
T_J		- 40 to 150	°C

VOLTAGE RATINGS

PART NUMBER	V_{RRM} , MAXIMUM PEAK REVERSE VOLTAGE V	V_{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I_{RRM} AT 150 °C mA
20ETS08S	800	900	1
20ETS12S	1200	1300	

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current	$I_{F(AV)}$	$T_C = 105\text{ °C}$, 180° conduction half sine wave	20	A
Maximum peak one cycle non-repetitive surge current	I_{FSM}	10 ms sine pulse, rated V_{RRM} applied	250	
		10 ms sine pulse, no voltage reapplied	300	
Maximum I^2t for fusing	I^2t	10 ms sine pulse, rated V_{RRM} applied	316	A ² s
		10 ms sine pulse, no voltage reapplied	442	
Maximum $I^2\sqrt{t}$ for fusing	$I^2\sqrt{t}$	$t = 0.1$ to 10 ms, no voltage reapplied	4420	A ² √s

20ETS...S High Voltage Series

Vishay High Power Products Input Rectifier Diode, 20 A



ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V _{FM}	20 A, T _J = 25 °C		1.1	V
Forward slope resistance	r _t	T _J = 150 °C		10.4	mΩ
Threshold voltage	V _{F(TO)}			0.85	V
Maximum reverse leakage current	I _{RM}	T _J = 25 °C	V _R = Rated V _{RRM}	0.1	mA
		T _J = 150 °C		1.0	

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T _J , T _{Stg}		- 40 to 150	°C
Maximum thermal resistance, junction to case		R _{thJC}	DC operation	1.3	°C/W
Maximum thermal resistance, junction to ambient		R _{thJA} ⁽¹⁾	For D ² PAK version	62	
Typical thermal resistance, case to heatsink		R _{thCS}	Mounting surface, smooth and greased	0.5	
Approximate weight				2	g
				0.07	oz.
Mounting torque	minimum			6.0 (5.0)	kgf · cm (lbf · in)
	maximum			12 (10)	
Marking device			Case style D ² PAK (SMD-220)	20ETS08S	
				20ETS12S	

Note

⁽¹⁾ When mounted on 1" square (650 mm²) PCB of FR-4 or G-10 material 4 oz. (140 μm) copper 40 $^{\circ}\text{C/W}$
For recommended footprint and soldering techniques refer to application note #AN-994



20ETS...S High Voltage Series

Input Rectifier Diode, 20 A Vishay High Power Products

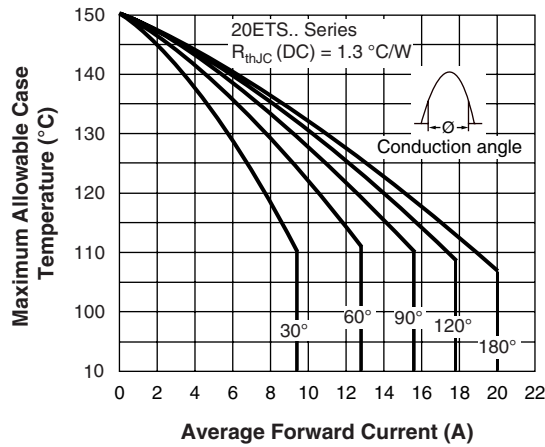


Fig. 1 - Current Rating Characteristics

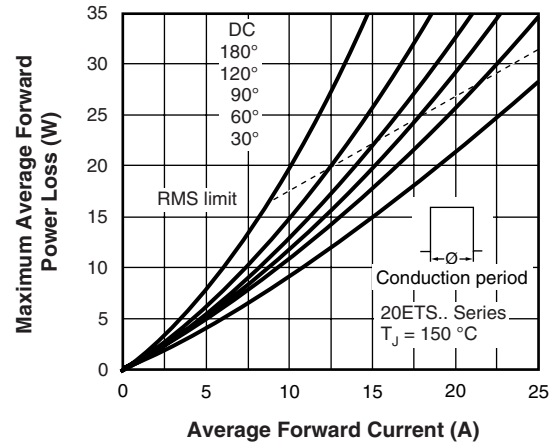


Fig. 4 - Forward Power Loss Characteristics

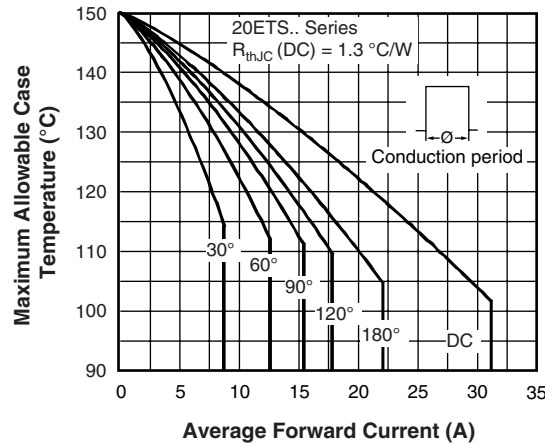


Fig. 2 - Current Rating Characteristics

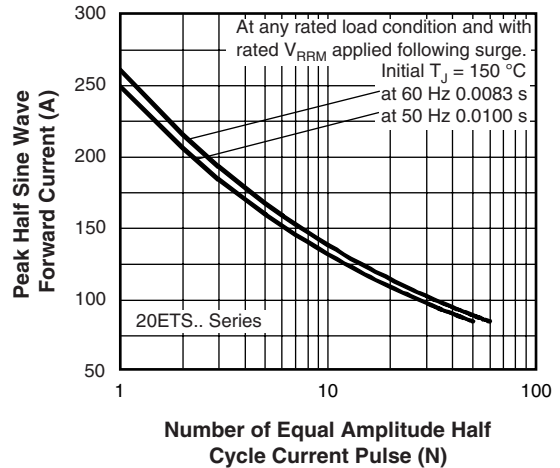


Fig. 5 - Maximum Non-Repetitive Surge Current

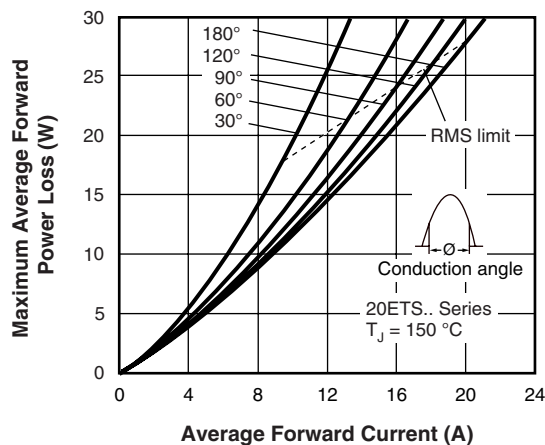


Fig. 3 - Forward Power Loss Characteristics

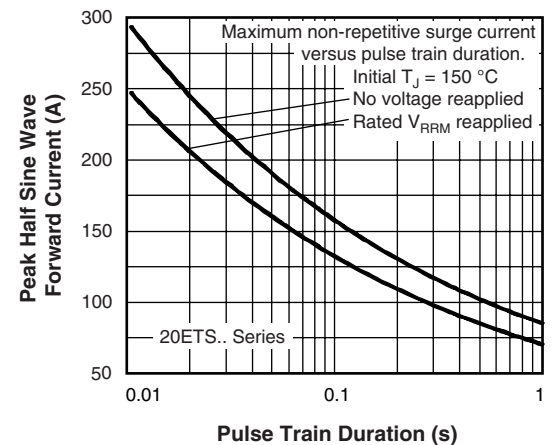


Fig. 6 - Maximum Non-Repetitive Surge Current

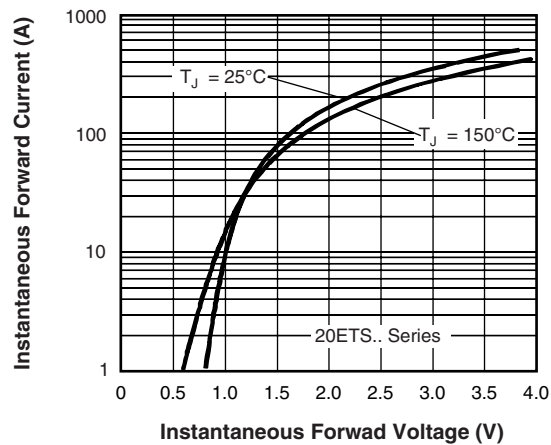


Fig. 7 - Forward Voltage Drop Characteristics

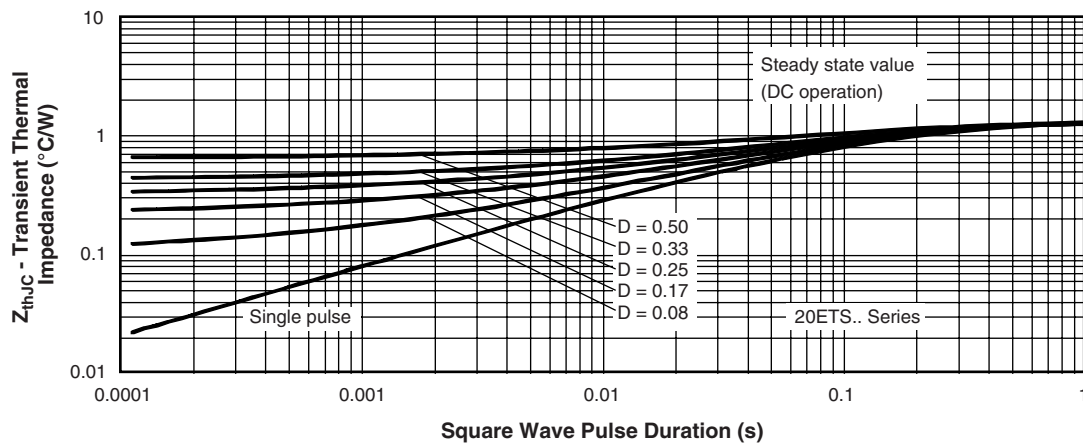


Fig. 8 - Thermal Impedance Z_{thJC} Characteristics



20ETS...S High Voltage Series

Input Rectifier Diode, 20 A Vishay High Power Products

ORDERING INFORMATION TABLE

Device code	20	E	T	S	12	S	TRL	-
	1	2	3	4	5	6	7	8
	1	-	Current rating (20 = 20 A)					
	2	-	Circuit configuration					
			E = Single diode					
	3	-	Package:					
			T = TO-220AC					
	4	-	Type of silicon:					
			S = Standard recovery rectifier					
	5	-	Voltage code x 100 = V_{RRM}					
								08 = 800 V 12 = 1200 V
	6	-	S = TO-220 D ² PAK (SMD-220) version					
	7	-	• None = Tube					
			• TRL = Tape and reel (left oriented)					
			• TRR = Tape and reel (right oriented)					
	8	-	• None = Standard production					
			• PbF = Lead (Pb)-free					

LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95046
Part marking information	http://www.vishay.com/doc?95054
Packaging information	http://www.vishay.com/doc?95032



Disclaimer

All product specifications and data are subject to change without notice.

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 herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

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.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.