Schottky Rectifier, 200 A

ADD-A-PAK

FEATURES

- 150 °C T_J operation
- Low forward voltage drop
- High frequency operation
- Guard ring for e nhanced ru ggedness an d lo ng term reliability
- UL pending
- Totally lead (Pb)-free, RoHS compliant
- Designed and qualified for industrial level

RoHS COMPLIANT

PRODUCT SUMMARY	
$I_{F(AV)}$	200 A

MECHANICAL DESCRIPTION

The Gene ration 5 of ADD-A-PAK modul e combi ne the excellent th ermal performance obtai ned by the usage of direct bond ed co pper substrate with supe rior mechanical ruggedness, than ks to th e insertion of a soli d coppe r baseplate at the bottom side of the device.
The Cu ba seplate allow an easier mounting on the majority of heatsin k with in creased tole rance of su rface rou ghness and improved thermal spread.
The Generation 5 of ADD-A-PAK mo dule is manufactured without hard mold, eliminating in this way any possible direct stress on the leads.
The ele ctrical terminals are secured against axi al pul l-out: they are fixed to the module housing via a click-stop feature already tested and proved as reliable on other Vi shay HPP modules.

DESCRIPTION

The VSKCS208 .. Schottky rectifier common cathode h as been optimized for low reverse leakage at high temperature. The proprie tary barrie r te chnology allows for reliable operation up to 150 °C junction temperature.
Typical app lications are in high curren t switching pow er supplies, plating power supplies, UPS systems, converters, freewheeling d iodes, we lding, and re verse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS VAL	UES	UNITS
$I_{F(AV)}$	Rectangular waveform	200	A
V_{RRM}		60	V
I_{FSM}	t_p = 5 µs sine	15 000	A
V_F	100 Apk, T_J = 125 °C	0.64	V
T_J	Range	- 55 to 150	°C

VOLTAGE RATINGS

PARAMETER SY	MBOL	VSKCS208/060P	UNITS
Maximum DC reverse voltage	V_R	60	V
Maximum working peak reverse voltage	V_{RWM}		

ABSOLUTE MAXIMUM RATINGS						
PARAMETER SYMBOL			TEST CONDITIONS		VALUES	UNITS
Maximum average forward current	per module	$I_{F(AV)}$	50 % duty cycle at T_C = 87 °C, rectangular waveform		200	A
	per leg				100	
Maximum peak one cycle non-repetitive surge current		I_{FSM}	5 µs sine or 3 µs rect. pulse	Following any rated load condition and with rated V_{RRM} applied	15 000	
			10 ms sine or6 ms rect. pulse		1900	
Non-repetitive avalanche energy		E_{AS}	T_J = 25 °C, I_{AS} = 5.5 A, L = 1 mH		15	mJ
Repetitive avalanche current		I_{AR}	Current decaying linearly to zero in 1 µs Frequency limited by T_J maximum V_A = 1.5 x V_R typical		1A	

ELECTRICAL SPECIFICATIONS					
PARAMETER SYMBOL		TEST CONDITIONS		VALUES	UNITS
Maximum forward voltage drop	V_{FM} (1)	100 A	T_J = 25 °C	0.69	V
		200 A		0.97	
		100 A	T_J = 125 °C	0.64	
		200 A		0.89	
Maximum reverse leakage curent	I_{RM} (1)	T_J = 25 °C	V_R = Rated V_R	1.1	mA
		T_J = 125 °C		300	
Maximum junction capacitance	C_T	V_R = 5 V_{DC} (test signal range 100 kHz to 1 MHz) 25 °C		6000	pF
Typical series inductance	L_S	From top of terminal hole to mounting plane		5.0	nH
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	V/µs
RMS insulation voltage	V_{INS}	50 Hz, circuit to base, all terminals shorted (1 s)		3500	V

Note

(1) Pulse width < 500 µs

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER SYMBOL			TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range		T_J, T_{Stg}		- 55 to 150	°C
Maximum thermal resistance, junction to case per leg		R_{thJC}	DC operation	0.6	°C/W
Maximum thermal resistance, case to heatsink		R_{thCS}	Mounting surface, smooth and greased	0.1	
Approximate weight				110	g
				4o	z.
Mounting torque ± 10 %	to heatsink			5	Nm
	busbar			4	
Case style			JEDEC	TO-240AA	

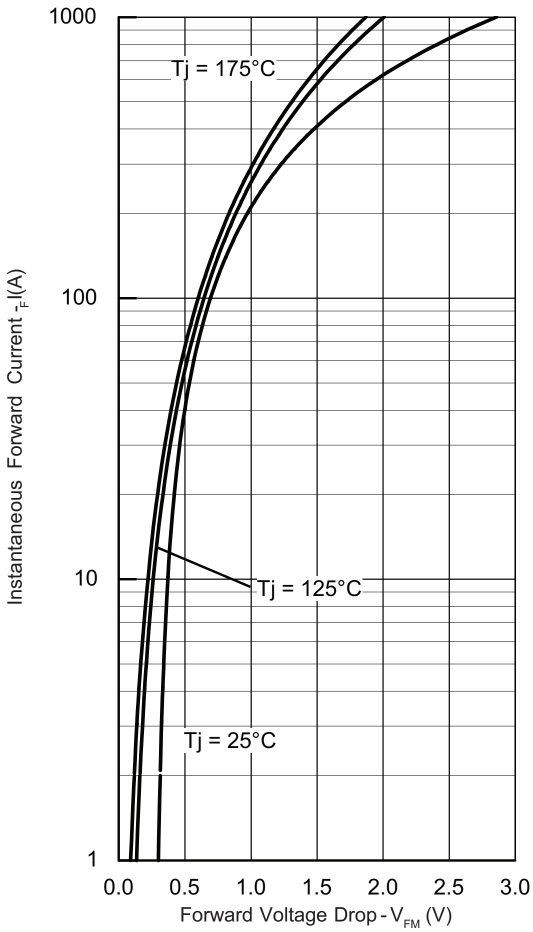


Fig. 1 - Maximum Forward Voltage Drop Characteristics

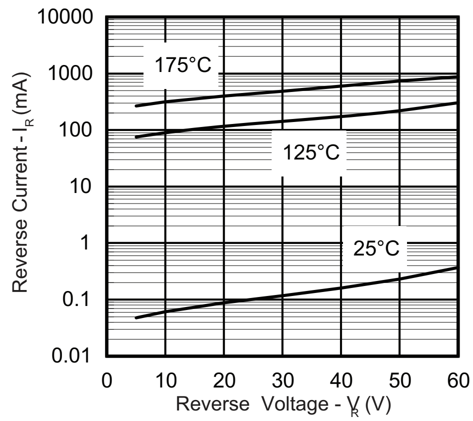


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

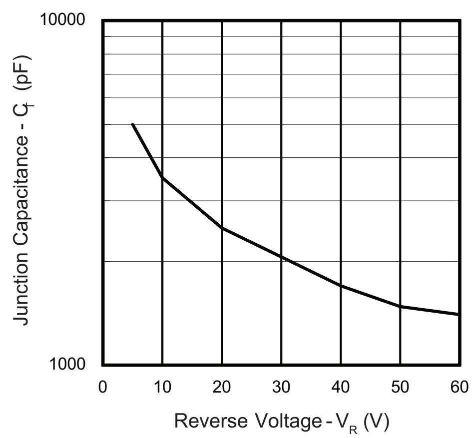


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

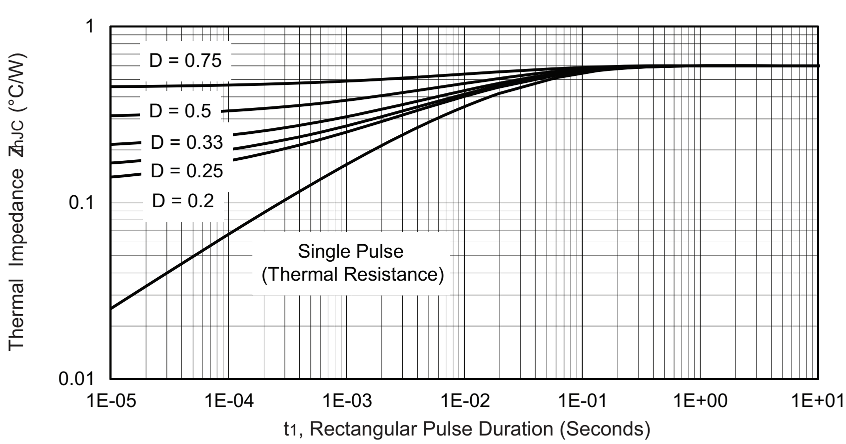


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

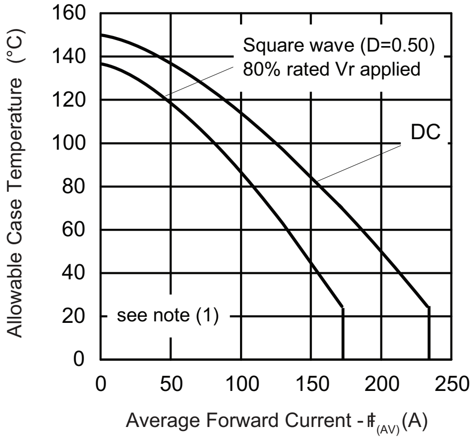


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

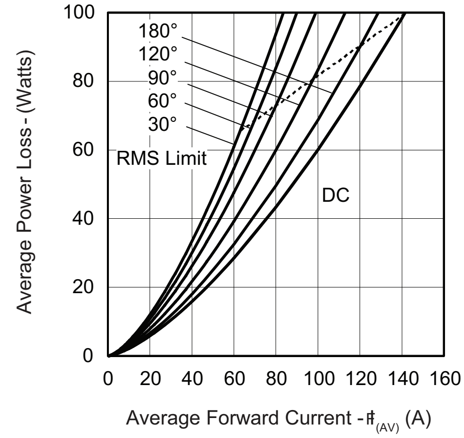


Fig. 6 - Forward Power Loss Characteristics

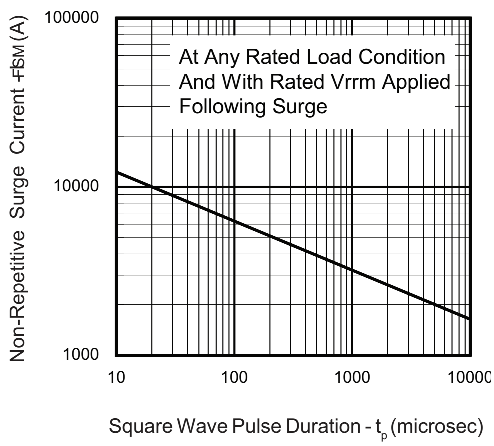


Fig. 7 - Maximum Non-Repetitive Surge Current

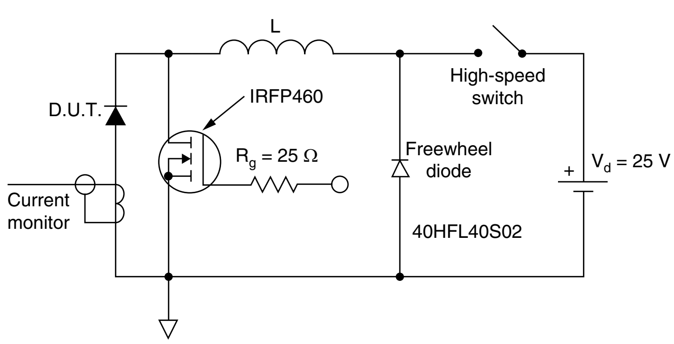


Fig. 8 - Unclamped Inductive Test Circuit

Note

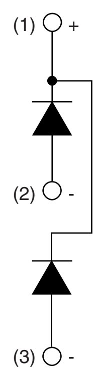
(1) Formula used: $T_C = T_J - (Pd + Pd_{REV}) \times R_{thJC}$;
Pd = Forward power loss = $I_{F(AV)} \times V_{FM}$ at $(I_{F(AV)}/D)$ (see fig. 6);
Pd_{REV} = Inverse power loss = $V_{R1} \times I_R (1 - D)$; I_R at V_{R1} = 80 % rated V_R

ORDERING INFORMATION TABLE

Device code	VS	KC	S	20	8	/	060	P
	1	2	3	4	5		6	7

- 1 - Vishay HPP
- 2 - Circuit configuration:
  KC = ADD-A-PAK - 2 diodes/common cathode
- 3 - S = Schottky diode
- 4 - Average rating (x 10)
- 5 - Product silicon identification
- 6 - Voltage rating (060 = 60 V)
- 7 - Lead (Pb)-free

CIRCUIT CONFIGURATION



LINKS TO RELATED DOCUMENTS	
Dimensions	http://www.vishay.com/doc?95174

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