

AAP Gen 7 (TO-240AA) Power Modules Schottky Rectifier, 220 A



AAP Gen 7 (TO-240AA	AAP	Gen 7	(TO-240A	A)
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PRIMARY CHARACTERISTICS				
I _{F(AV)}	220 A			
V_{R}	30 V			
Package	AAP Gen 7 (TO-240AA)			
Circuit configuration	Two diodes common cathode			

MECHANICAL DESCRIPTION

The AAP Gen 7, new generation of ADD-A-PAK module, combines the excellent thermal performances obtained by the usage of exposed direct bonded copper substrate, with advanced compact simple package solution and simplified internal structure with minimized number of interfaces.

FEATURES

- 150 °C T_J operation
- Low forward voltage drop
- High frequency operation
- · Low thermal resistance
- UL approved file E78996



 Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

BENEFITS

- Excellent thermal performances obtained by the usage of exposed direct bonded copper substrate
- · High surge capability
- · Easy mounting on heatsink

ELECTRICAL DESCRIPTION / APPLICATIONS

The VS-VSKCS220/030 Schottky rectifier common cathode has been optimized for low reverse leakage at high temperature. The proprietary barrier technology allows for reliable operation up to 150 °C junction temperature.

Typical applications are in high current switching power supplies, plating power supplies, UPS systems, converters, freewheeling diodes, welding, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS					
SYMBOL	CHARACTERISTICS	VALUES	UNITS		
I _{F(AV)}	Rectangular waveform	220	А		
V _{RRM}		30	V		
I _{FSM}	t _p = 5 μs sine	18 000	А		
V _F	110 A _{pk} , T _J = 125 °C	0.57	V		
T _J	Range	-55 to +150	°C		

VOLTAGE RATINGS						
PARAMETER	SYMBOL	VS-VSKCS220/030	UNITS			
Maximum DC reverse voltage	V_{R}	- 30	V			
Maximum working peak reverse voltage	V_{RWM}	30	V			



ABSOLUTE MAXIMUM RATINGS						
PARAMETER		SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average	per module		50 % duty cycle at T _C = 110 °C, rectangular waveform		220	220
forward current	per leg	I _{F(AV)}	(AV) 50 % duty cycle at $T_C = 110^{\circ}$ C, re	, rectangular wavelonn	110	
Maximum peak one cycle			5 μs sine or 3 μs rect. pulse	Following any rated load condition and with	18 000	Α
non-repetitive surge current		IFSM	10 ms sine or 6 ms rect. pulse	rated V _{RRM} applied	2000	
Non-repetitive avalanche energy		E _{AS}	T _J = 25 °C, I _{AS} = 15 A, L = 1 mH		99	mJ
Repetitive avalanche current		I _{AR}	Current decaying linearly to zero in 1 μ s Frequency limited by T _J maximum V _A = 1.5 x V _R typical		22	А

ELECTRICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
	V _{FM}	110 A	T _J = 25 °C	0.59	V
Maximum forward voltage drep		220 A		0.78	
Maximum forward voltage drop		110 A	T _J = 125 °C	0.57	
		220 A		0.82	
Maximum vayana laakana ayumant	I _{RM}	T _J = 25 °C	V _R = Rated V _R	10	mA
Maximum reverse leakage current		T _J = 125 °C		650	
Maximum junction capacitance	C _T	$V_R = 5 V_{DC}$ (test signal range 100 kHz to 1 MHz), 25 °C		7400	pF
Typical series inductance	L _S	Measured lead to lead 5 mm from package body		7.0	nH
Maximum voltage rate of change	dV/dt	Rated V _R		10 000	V/µs
Maximum RMS insulation voltage	V _{INS}	50 Hz		3000 (1 min) 3600 (1 s)	V

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER		SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum junction and storage temperature range	ge	T _J , T _{Stg}		-55 to +150	°C
Maximum thermal resistance junction to case per leg	,	R_{thJC}	DC operation	0.52	°C/W
Typical thermal resistance, case to heatsink per module		R _{thCS}		0.1	C/VV
Approximate weight				75	g
Approximate weight				2.7	oz.
Mounting torque ± 10 % -	to heatsink		A mounting compound is recommended and the torque should be rechecked after a period of 3 h to allow for the	4	Nm
	busbar		spread of the compound.	3	INIII
Case style			JEDEC®	TO-240AA co	mpatible

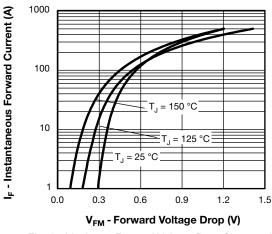


Fig. 1 - Maximum Forward Voltage Drop Characteristics

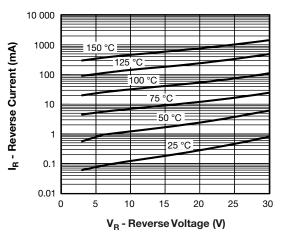


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage

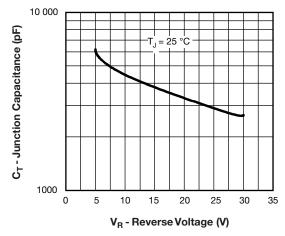


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage

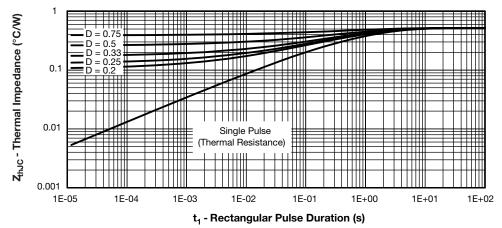


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics

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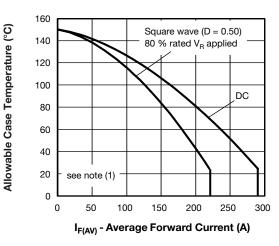


Fig. 5 - Maximum Allowable Case Temperature vs. Average Forward Current

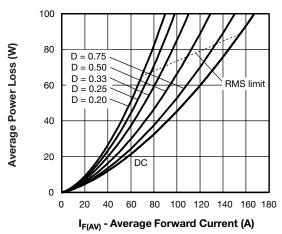
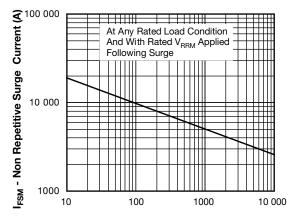


Fig. 6 - Forward Power Loss Characteristics



t_p - Square Wave Pulse Duration (μs)

Fig. 7 - Maximum Non-Repetitive Surge Current

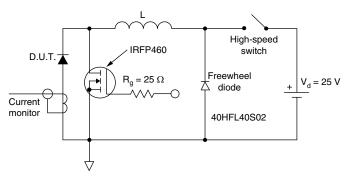


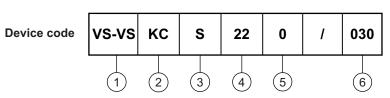
Fig. 8 - Unclamped Inductive Test Circuit

Note

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



ORDERING INFORMATION TABLE



- VS-VS = Vishay Semiconductors product

2 - Circuit configuration:

KC = ADD-A-PAK - 2 diodes common cathode

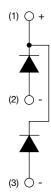
3 - S = Schottky diode

- Average rating (x 10)

5 - Product silicon identification

Voltage rating (030 = 30 V)

CIRCUIT CONFIGURATION

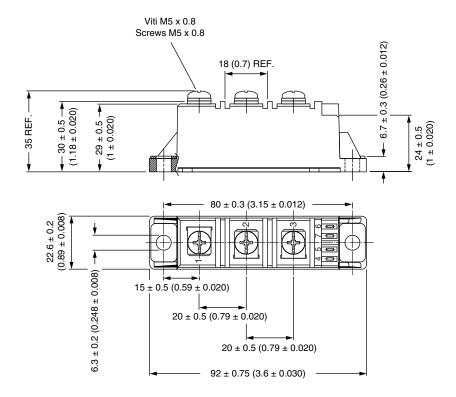


LINKS TO RELATED DOCUMENTS				
Dimensions	www.vishay.com/doc?95369			



ADD-A-PAK Generation VII - Diode

DIMENSIONS in millimeters (inches)





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