

VS-VSKC56/04 Datasheet

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DiGi Electronics Part Number	VS-VSKC56/04-DG
Manufacturer	Vishay General Semiconductor - Diodes Division
Manufacturer Product Number	VS-VSKC56/04
Description	DIODE MODULE GP 400V 30A ADDAPAK
Detailed Description	Diode Array 1 Pair Common Cathode 400 V 30A Chassis Mount ADD-A-PAK (3)

This model VS-VSKC56/04 is available at DiGi Electronics.

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Manufacturer Product Number:

VS-VSKC56/04

Series:

-

Diode Configuration:

1 Pair Common Cathode

Voltage - DC Reverse (Vr) (Max):

400 V

Speed:

Standard Recovery >500ns, > 200mA (Io)

Operating Temperature - Junction:

-40°C ~ 150°C

Package / Case:

ADD-A-PAK (3)

Base Product Number:

VSKC56

Manufacturer:

Vishay General Semiconductor - Diodes Division

Product Status:

Active

Technology:

Standard

Current - Average Rectified (Io) (per Diode):

30A

Current - Reverse Leakage @ Vr:

10 mA @ 400 V

Mounting Type:

Chassis Mount

Supplier Device Package:

ADD-A-PAK®

Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Unaffected

HTSUS:

8541.10.0080

Moisture Sensitivity Level (MSL):

1 (Unlimited)

ECCN:

EAR99



AAP Gen 7 (TO-240AA) Power Modules Standard Diodes, 60 A



ADD-A-PAK


RoHS
COMPLIANT

FEATURES

- High voltage
- Industrial standard package
- Low thermal resistance
- UL approved file E78996 
- Designed and qualified for industrial level
- 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
- Up to 1600 V
- High surge capability
- Easy mounting on heat sink

ELECTRICAL DESCRIPTION

These modules are intended for general purpose high voltage applications such as high voltage regulated power supplies, lighting circuits, temperature and motor speed control circuits, UPS and battery charger.

PRIMARY CHARACTERISTICS

$I_{F(AV)}$	60 A
Type	Modules - diode, high voltage
Package	AAP Gen 7 (TO-240AA)
Circuit configuration	Two diodes doubler circuit, two diodes common cathode, two diodes common anode, single diode

MECHANICAL DESCRIPTION

The AAP Gen 7 (TO-240AA), new generation of AAP 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.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$		60	A
	T_C	114	°C
$I_{F(RMS)}$		94	A
I_{FSM}	50 Hz	1300	
	60 Hz	1360	
I^2t	50 Hz	8.44	kA ² s
	60 Hz	7.68	
$I^2\sqrt{t}$		84.5	kA ² √s
V_{RRM}	Range	400 to 1600	V
T_{Stg}		-40 to +150	°C
T_J		-40 to +150	°C


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ELECTRICAL SPECIFICATIONS

VOLTAGE RATINGS				
TYPE NUMBER	VOLTAGE CODE	V _{RRM} , MAXIMUM REPETITIVE PEAK REVERSE VOLTAGE V	V _{RSM} , MAXIMUM NON-REPETITIVE PEAK REVERSE VOLTAGE V	I _{RRM} MAXIMUM AT T _J = 150 °C mA
VS-VSK.56	04	400	500	10
	06	600	700	
	08	800	900	
	10	1000	1100	
	12	1200	1300	
	14	1400	1500	
	16	1600	1700	

FORWARD CONDUCTION					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum average forward current at case temperature	I _{F(AV)}	180° conduction, half sine wave		60	A
				114	°C
Maximum RMS forward current	I _{F(RMS)}			94	A
Maximum peak, one-cycle forward, non-repetitive surge current	I _{FSM}	t = 10 ms	No voltage reapplied	1300	
		t = 8.3 ms	No voltage reapplied	1360	
		t = 10 ms	100 % V _{RRM} reapplied	1090	
		t = 8.3 ms	100 % V _{RRM} reapplied	1140	
Maximum I ² t for fusing	I ² t	t = 10 ms	No voltage reapplied	8.44	kA ² s
		t = 8.3 ms	No voltage reapplied	7.68	
		t = 10 ms	100 % V _{RRM} reapplied	5.97	
		t = 8.3 ms	100 % V _{RRM} reapplied	5.43	
Maximum I ² √t for fusing	I ² √t	t = 0.1 ms to 10 ms, no voltage reapplied		84.5	kA ² √s
Low level value of threshold voltage	V _{F(TO)1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum		0.74	V
High level value of threshold voltage	V _{F(TO)2}	(I > π × I _{F(AV)}), T _J = T _J maximum		0.86	
Low level value of forward slope resistance	r _{f1}	(16.7 % × π × I _{F(AV)} < I < π × I _{F(AV)}), T _J = T _J maximum		3.94	mΩ
High level value of forward slope resistance	r _{f2}	(I > π × I _{F(AV)}), T _J = T _J maximum		3.43	
Maximum forward voltage drop	V _{FM}	I _{FM} = π × I _{F(AV)} , T _J = 25 °C, t _p = 400 μs square wave		1.6	V

BLOCKING					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum peak reverse leakage current	I _{RRM}	T _J = 150 °C		10	mA
Maximum RMS insulation voltage	V _{INS}	50 Hz		3000 (1 min) 3600 (1 s)	V


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THERMAL AND MECHANICAL SPECIFICATIONS				
PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Junction and storage temperature range	T_J, T_{Stg}		-40 to +150	°C
Maximum internal thermal resistance, junction to case per leg	R_{thJC}	DC operation	0.33	°C/W
Typical thermal resistance, case to heat sink per module	R_{thCS}	Mounting surface flat, smooth and greased	0.1	
Mounting torque $\pm 10\%$	to heatsink	A mounting compound is recommended and the torque should be rechecked after a period of 3 hours to allow for the spread of the compound.	4	Nm
	busbar		3	
Approximate weight			75	g
			2.7	oz.
Case style		JEDEC®	AAP Gen 7 (TO-240AA)	

ΔR CONDUCTION PER JUNCTION											
DEVICES	SINE HALF WAVE CONDUCTION					RECTANGULAR WAVE CONDUCTION					UNITS
	180°	120°	90°	60°	30°	180°	120°	90°	60°	30°	
VSK.56	0.115	0.136	0.173	0.236	0.346	0.09	0.145	0.185	0.243	0.349	°C/W

Note

- Table shows the increment of thermal resistance R_{thJC} when devices operate at different conduction angles than DC



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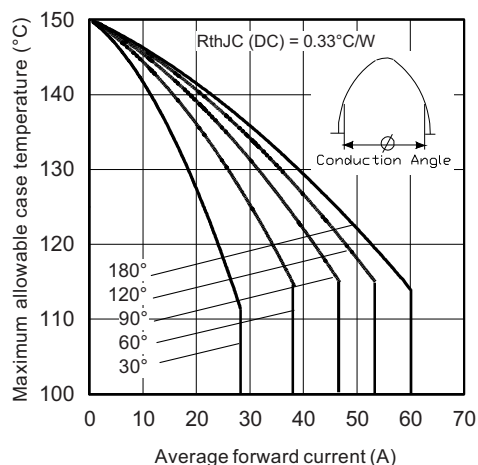


Fig. 1 - Current Ratings Characteristics

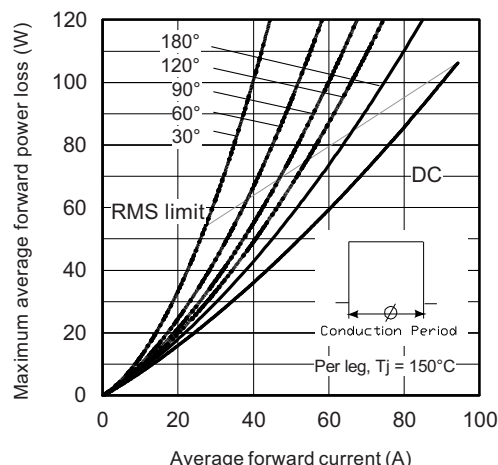


Fig. 4 - Forward Power Loss Characteristics

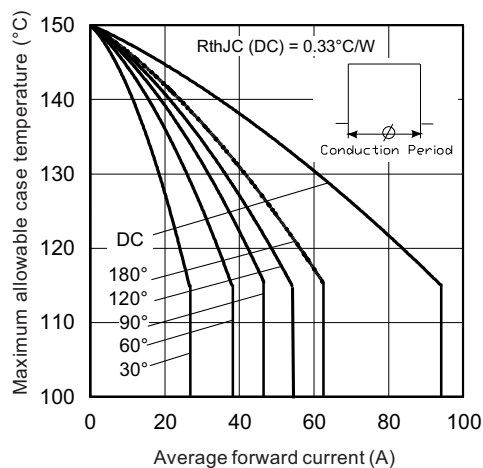


Fig. 2 - Current Ratings Characteristics

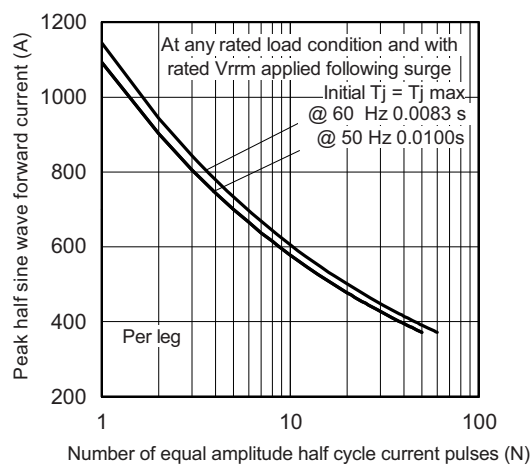


Fig. 5 - Maximum Non-Repetitive Surge Current

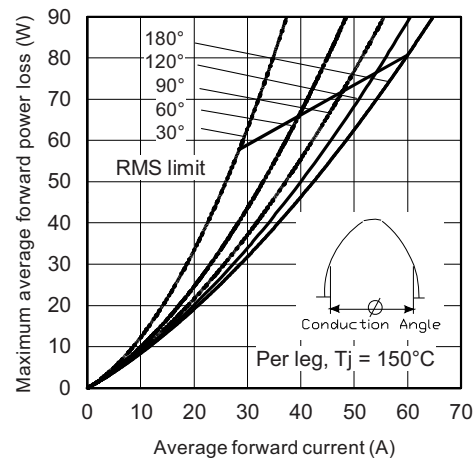


Fig. 3 - Forward Power Loss Characteristics

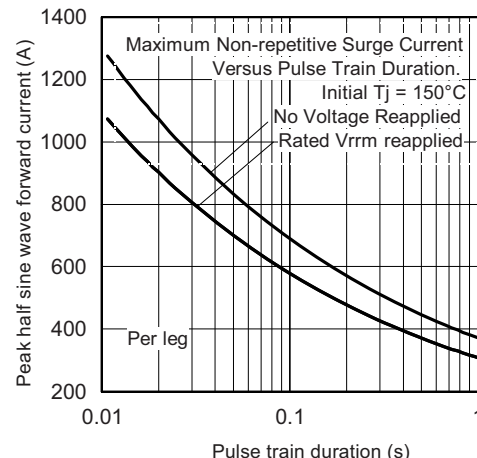


Fig. 6 - Maximum Non-Repetitive Surge Current



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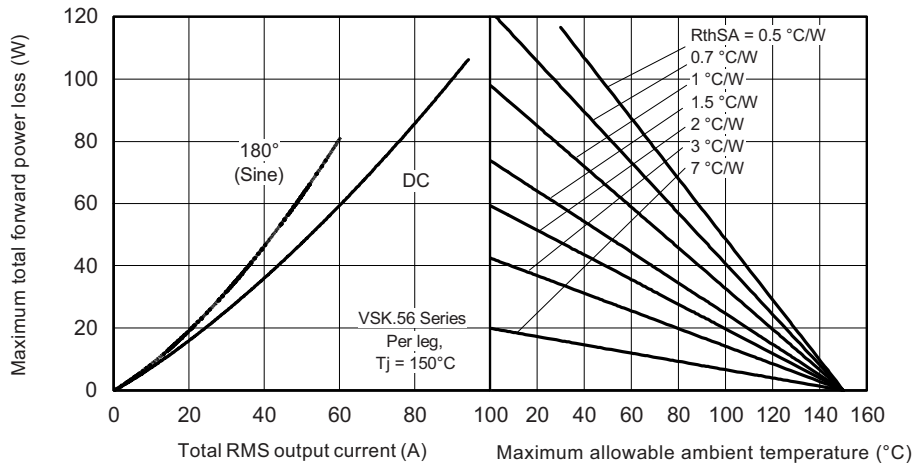


Fig. 7 - Forward Power Loss Characteristics

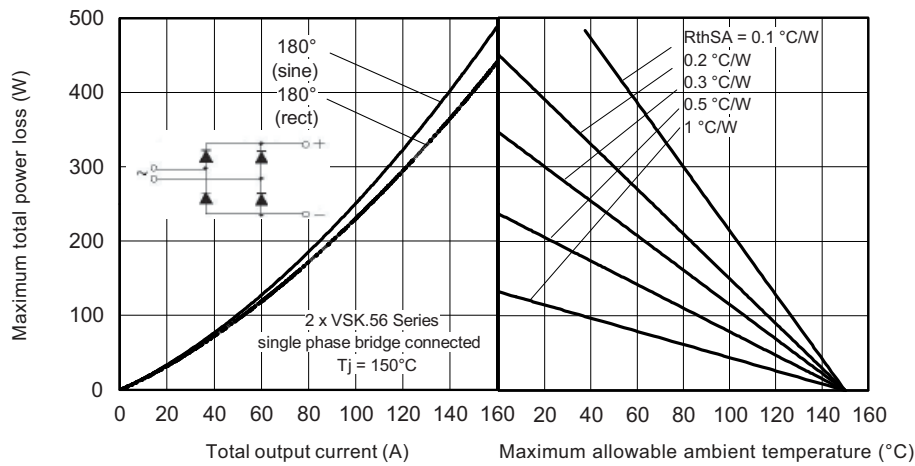


Fig. 8 - Forward Power Loss Characteristics

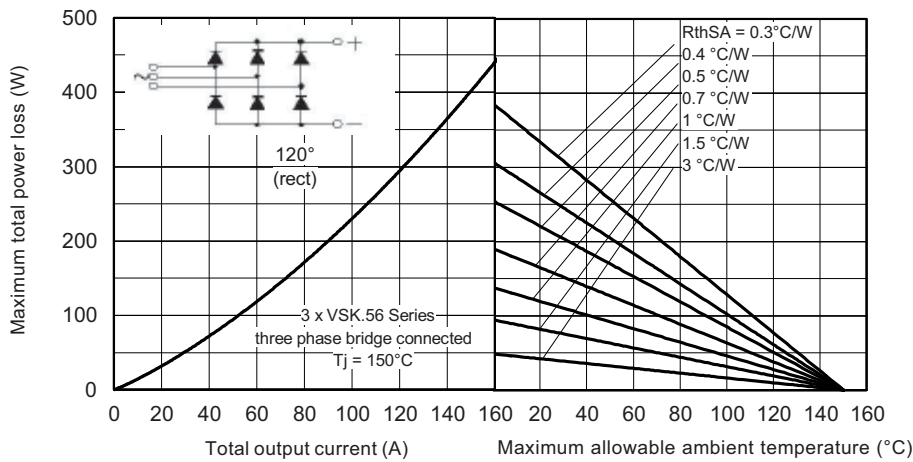


Fig. 9 - Forward Power Loss Characteristics



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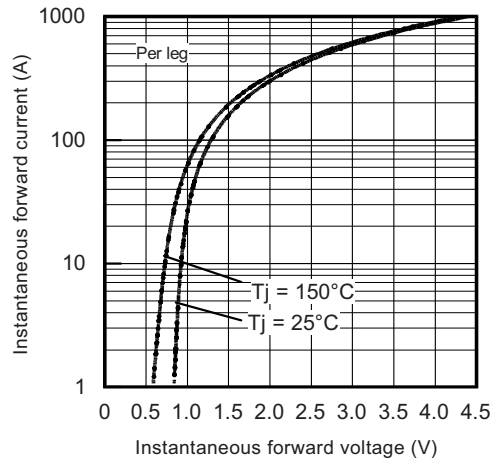


Fig. 10 - Forward Voltage Characteristics

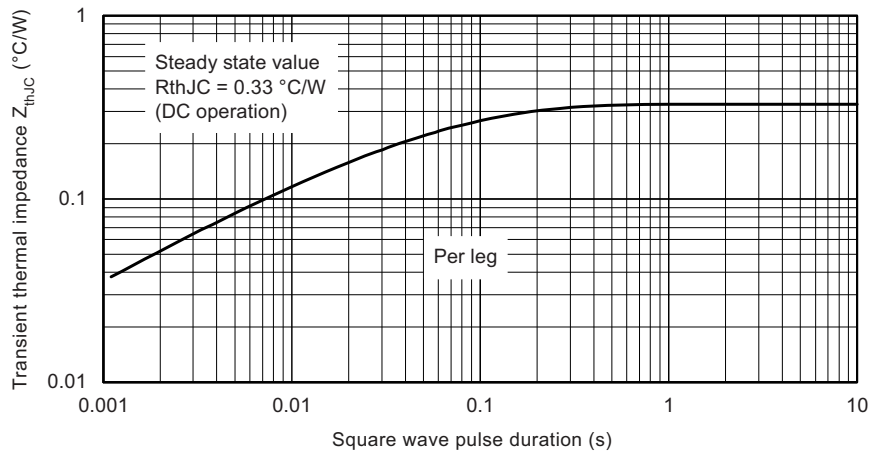


Fig. 11 - Thermal Impedance Z_{thJC} Characteristics

ORDERING INFORMATION TABLE

Device code	VS-VS	K	D	56	/	16
	①	②	③	④		⑤

- 1** - Vishay Semiconductors product
- 2** - Module type
- 3** - Circuit configuration (see Circuit Configuration table)
- 4** - Current code (60 A)
- 5** - Voltage code (see Voltage Ratings table)

Note

- To order the optional hardware go to www.vishay.com/doc?95172


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CIRCUIT CONFIGURATION		
CIRCUIT DESCRIPTION	CIRCUIT CONFIGURATION CODE	CIRCUIT DRAWING
Two diodes doubler circuit	D	<p>VSKD...</p>
Two diodes common cathode	C	<p>VSKC...</p>
Two diodes common anode	J	<p>VSKJ...</p>
Single diode	E	<p>VSKE...</p>

LINKS TO RELATED DOCUMENTS

Dimensions

www.vishay.com/doc?95369

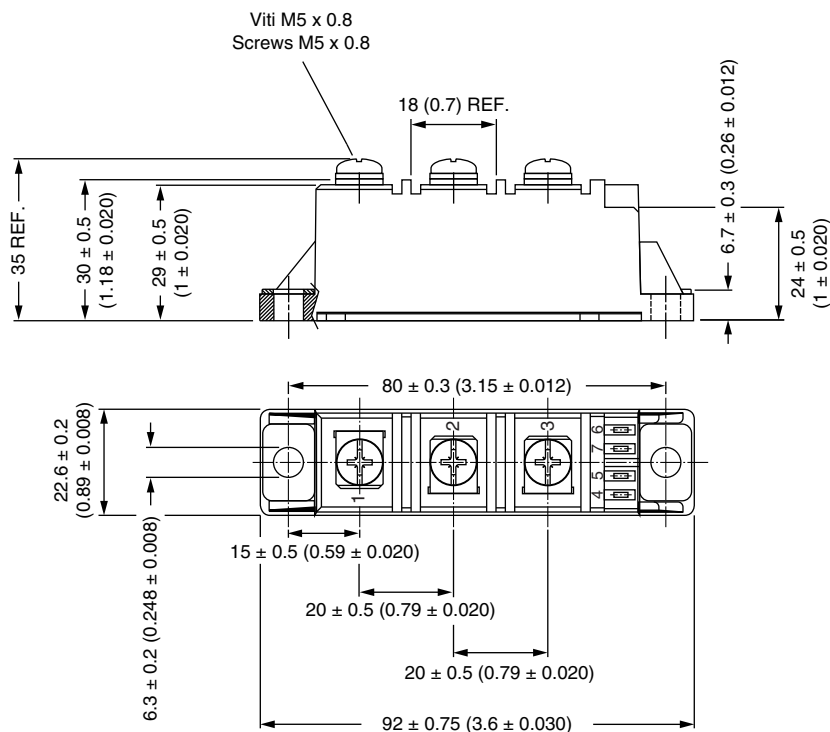


Outline Dimensions

Vishay Semiconductors

ADD-A-PAK Generation VII - Diode

DIMENSIONS in millimeters (inches)





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