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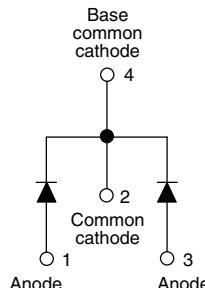
[Vishay Semiconductor/Diodes Division](#)
[VS-6CWQ06FNHM3](#)

For any questions, you can email us directly:

sales@integrated-circuit.com



D-PAK (TO-252AA)



PRODUCT SUMMARY	
Package	D-PAK (TO-252AA)
$I_{F(AV)}$	2 x 3.5 A
V_R	60 V
V_F at I_F	See Electrical table
I_{RM}	30 mA at 125 °C
T_J max.	150 °C
Diode variation	Common cathode
E_{AS}	6 mJ

FEATURES

- Low forward voltage drop
- Guard ring for enhanced ruggedness and long term reliability
- Popular D-PAK outline
- Center tap configuration
- Small foot print, surface mountable
- High frequency operation
- AEC-Q101 qualified
- Meets JESD 201 class 2 whisker test
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

DESCRIPTION

The VS-6CWQ06FNHM3 surface mount, center tap, Schottky rectifier series has been designed for applications requiring low forward drop and small foot prints on PC board. Typical applications are in disk drives, switching power supplies, converters, freewheeling diodes, battery charging, and reverse battery protection.

MAJOR RATINGS AND CHARACTERISTICS

SYMBOL	CHARACTERISTICS	VALUES	UNITS
$I_{F(AV)}$	Rectangular waveform	7	A
V_{RRM}		60	V
I_{FSM}	$t_p = 5 \mu s$ sine	490	A
V_F	3 A _{pk} , $T_J = 25$ °C (per leg)	0.61	V
T_J	Range	- 40 to 150	°C

VOLTAGE RATINGS

PARAMETER	SYMBOL	VS-6CWQ06FNHM3	UNITS
Maximum DC reverse voltage	V_R		
Maximum working peak reverse voltage	V_{RWM}	60	V

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	TEST CONDITIONS	VALUES	UNITS
Maximum average forward current per leg See fig. 5	$I_{F(AV)}$	50 % duty cycle at $T_C = 133$ °C, rectangular waveform	3.5	A
per device			7	
Maximum peak one cycle non-repetitive surge current See fig. 7	I_{FSM}	5 μs sine or 3 μs rect. pulse	490	
		10 ms sine or 6 ms rect. pulse		
Non-repetitive avalanche energy per leg	E_{AS}	$T_J = 25$ °C, $I_{AS} = 1$ A, $L = 12$ mH	6	mJ
Repetitive avalanche current per leg	I_{AR}	Current decaying linearly to zero in 1 μs Frequency limited by T_J maximum $V_A = 1.5 \times V_R$ typical	1	A



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VS-6CWQ06FNHM3

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ELECTRICAL SPECIFICATIONS						
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS	
Maximum forward voltage drop per leg See fig. 1	$V_{FM}^{(1)}$	3 A	$T_J = 25 \text{ }^\circ\text{C}$	0.61	V	
		6 A		0.76		
		3 A	$T_J = 125 \text{ }^\circ\text{C}$	0.53		
		6 A		0.65		
Maximum reverse leakage current per leg See fig. 2	$I_{RM}^{(1)}$	$T_J = 25 \text{ }^\circ\text{C}$	$V_R = \text{Rated } V_R$	2	mA	
		$T_J = 125 \text{ }^\circ\text{C}$		30		
Threshold voltage	$V_{F(TO)}$	$T_J = T_J \text{ maximum}$		0.38	V	
Forward slope resistance	r_t			34.31	$\text{m}\Omega$	
Typical junction capacitance per leg	C_T	$V_R = 5 \text{ V}_{\text{DC}}$, (test signal range 100 kHz to 1 MHz), $25 \text{ }^\circ\text{C}$		145	pF	
Typical series inductance per leg	L_S	Measured lead to lead 5 mm from package body		5.0	nH	
Maximum voltage rate of change	dV/dt	Rated V_R		10 000	$\text{V}/\mu\text{s}$	

Note

(1) Pulse width < 300 μs , duty cycle < 2 %

THERMAL - MECHANICAL SPECIFICATIONS					
PARAMETER	SYMBOL	TEST CONDITIONS		VALUES	UNITS
Maximum junction and storage temperature range	$T_J^{(1)}, T_{Stg}$			- 40 to 150	$^\circ\text{C}$
Maximum thermal resistance, per leg junction to case	R_{thJC}	DC operation See fig. 4		4.70	$^\circ\text{C}/\text{W}$
				2.35	
Approximate weight				0.3	g
				0.01	oz.
Marking device		Case style D-PAK		6CWQ06FNH	

Note

(1) $\frac{dP_{\text{tot}}}{dT_J} < \frac{1}{R_{thJA}}$ thermal runaway condition for a diode on its own heatsink



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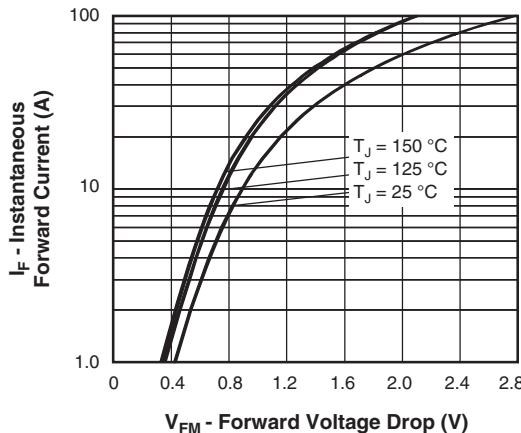


Fig. 1 - Maximum Forward Voltage Drop Characteristics (Per Leg)

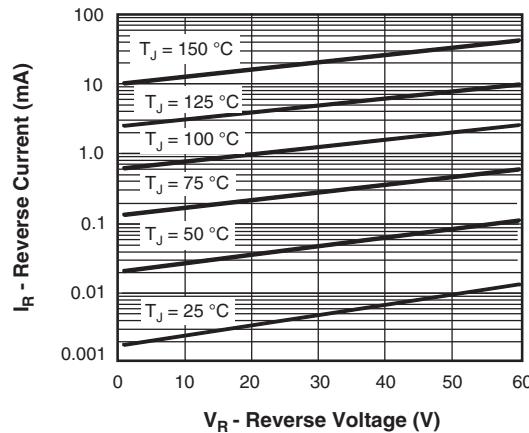


Fig. 2 - Typical Values of Reverse Current vs. Reverse Voltage (Per Leg)

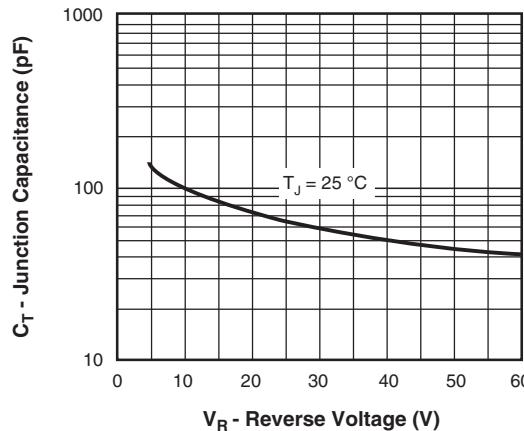


Fig. 3 - Typical Junction Capacitance vs. Reverse Voltage (Per Leg)

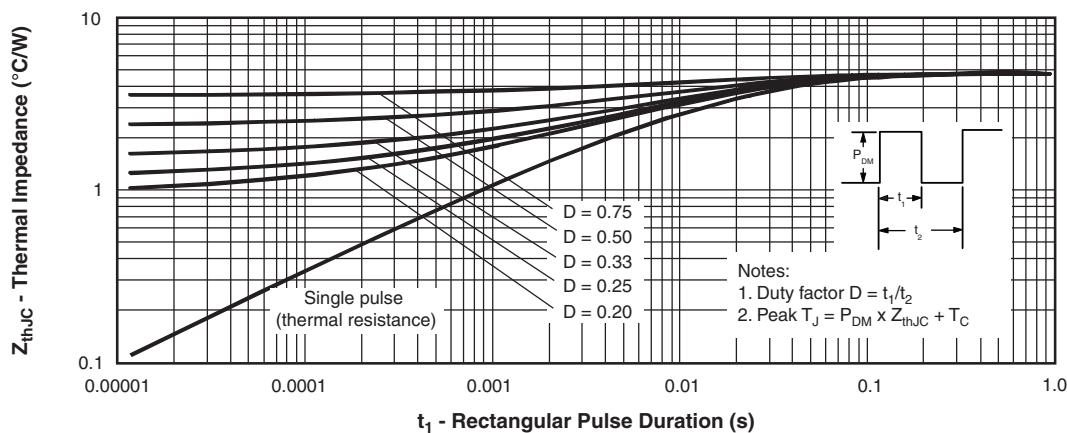


Fig. 4 - Maximum Thermal Impedance Z_{thJC} Characteristics (Per Leg)

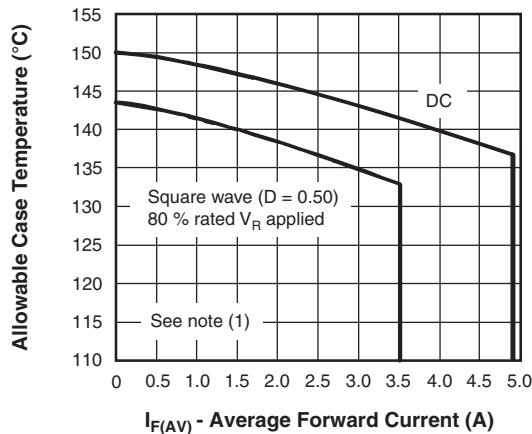


Fig. 5 - Maximum Allowable Case Temperature vs.
 Average Forward Current (Per Leg)

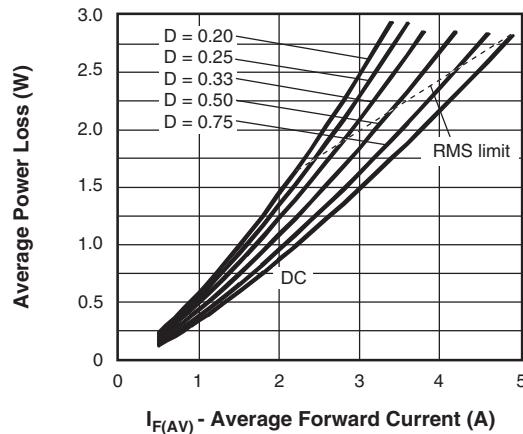


Fig. 6 - Forward Power Loss Characteristics (Per Leg)

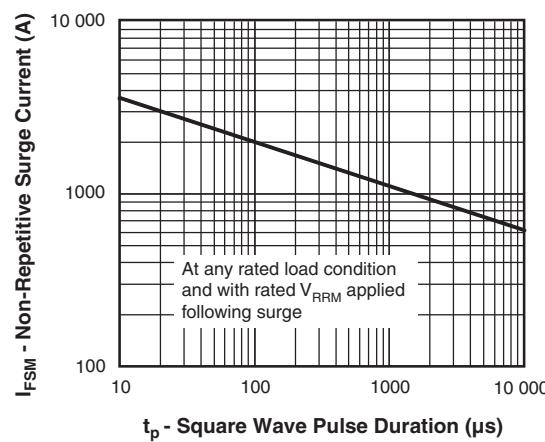


Fig. 7 - Maximum Non-Repetitive Surge Current (Per Leg)

Note

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



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ORDERING INFORMATION TABLE

Device code	VS-	6	C	W	Q	06	FN	TRL	H	M3
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

- 1** - Vishay Semiconductors product
- 2** - Current rating (7 A)
- 3** - Center tap configuration
- 4** - Package identifier:
W = D-PAK
- 5** - Schottky "Q" series
- 6** - Voltage rating (06 = 60 V)
- 7** - FN = TO-252AA
- 8** - • None = Tube
• TR = Tape and reel
• TRL = Tape and reel (left oriented)
• TRR = Tape and reel (right oriented)
- 9** - H = AEC-Q101 qualified
- 10** - Environmental digit:
M3 = Halogen-free, RoHS-compliant, and terminations lead (Pb)-free

ORDERING INFORMATION (Example)

PREFERRED P/N	QUANTITY PER T/R	MINIMUM ORDER QUANTITY	PACKAGING DESCRIPTION
VS-6CWQ06FNHM3	75	3000	Antistatic plastic tube
VS-6CWQ06FNTRHM3	2000	2000	13" diameter reel
VS-6CWQ06FNTRRHM3	3000	3000	13" diameter reel
VS-6CWQ06FNTRLHM3	3000	3000	13" diameter reel

LINKS TO RELATED DOCUMENTS

Dimensions	www.vishay.com/doc?95519
Part marking information	www.vishay.com/doc?95518
Packaging information	www.vishay.com/doc?95033



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