AUTOMOTIVE GRADE

COMPLIANT

HALOGEN

FREE

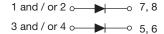


Vishay General Semiconductor

High Current Density Surface-Mount Trench MOS Barrier Schottky Rectifier

Ultra Low $V_F = 0.38 \text{ V}$ at $I_F = 1.5 \text{ A}$





DESIGN SUPPORT TOOLS

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PRIMARY CHARACTERISTICS						
I _{F(AV)}	2 x 3 A					
V _{RRM}	45 V					
I _{FSM}	80 A					
V _F at I _F = 3 A (T _A = 125 °C)	0.44 V					
T _J max.	175 °C					
Package	FlatPAK 5 x 6					
Circuit configuration	Separated cathode					

FEATURES

- Trench MOS Schottky technology
- · Low forward voltage drop, low power losses
- · High efficiency operation
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified available
 - Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see www.vishav.com/doc?99912

TYPICAL APPLICATIONS

For use in low voltage high frequency DC/DC converters, freewheeling diodes, and polarity protection applications.

MECHANICAL DATA

Case: FlatPAK 5 x 6

Molding compound meets UL 94 V-0 flammability rating

Base P/N-M3 - halogen-free, RoHS-compliant

Base P/NHM3 - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

Terminals: matte tin plated leads, solderable per

J-STD-002 and JESD 22-B102

M3 and HM3 suffix meets JESD 201 class 2 whisker test

MAXIMUM RATINGS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	V6KM45DU	UNIT			
Device marking code		V6M45D				
Maximum repetitive peak reverse voltage	V_{RRM}	45	V			
Maximum DC forward current per diode	I _{F(AV)} (1)	3	А			
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I _{FSM}	80	А			
Operating junction temperature range	T _J ⁽²⁾	-40 to +175	°C			
Storage temperature range	T _{STG}	-55 to +175	°C			

Notes

- (1) Free air, mounted on recommended pad area
- (2) The heat generated must be less than the thermal conductivity from junction-to-ambient: dP_D/dT_J < 1/R_{0,JA}



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ELECTRICAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)							
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX.	UNIT	
Instantaneous forward voltage per diode	I _F = 1.5 A	T _A = 25 °C	V _F ⁽¹⁾	0.49	-	V	
	I _F = 3 A			0.53	0.61		
	I _F = 1.5 A	T _A = 125 °C		0.38	-		
	I _F = 3 A			0.44	0.52		
Reverse current per diode	V _R = 45 V	T _A = 25 °C	I _R ⁽²⁾	-	0.15	- mA	
	vR = 40 v	T _A = 125 °C		1	3		
Typical junction capacitance per diode	4.0 V, 1 MHz		CJ	540	i	pF	

Notes

(1) Pulse test: 300 µs pulse width, 1 % duty cycle

(2) Pulse test: pulse width $\leq 5 \text{ ms}$

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)						
PARAMETER	SYMBOL	TYP.	MAX.	UNIT		
Thermal resistance per diode	R _{θJA} (1)(2)	100	-	°C/W		
	R _{0JM} (3)	3.5	4.5	C/VV		

Notes

 $^{(1)}$ The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$

 $^{(2)}$ Free air, mounted on recommended copper pad area; thermal resistance $R_{\theta JA}$ - junction-to-ambient

 $^{(3)}$ Mounted on infinite heat sink; thermal resistance $R_{\theta JM}$ - junction-to-mount

ORDERING INFORMATION (Example)							
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE			
V6KM45DU-M3/H	0.10	Н	1500	7" diameter plastic tape and reel			
V6KM45DU-M3/I	0.10	I	6000	13" diameter plastic tape and reel			
V6KM45DUHM3/H (1)	0.10	Н	1500	7" diameter plastic tape and reel			
V6KM45DUHM3/I (1)	0.10		6000	13" diameter plastic tape and reel			

Note

(1) AEC-Q101 qualified

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RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

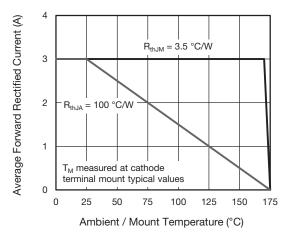


Fig. 1 - Maximum Forward Current Derating Curve

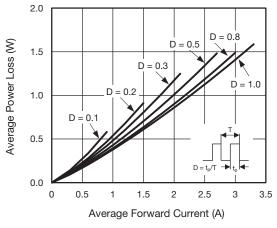


Fig. 2 - Forward Power Loss Characteristics

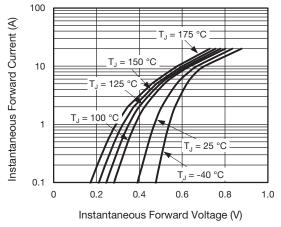


Fig. 3 - Typical Instantaneous Forward Characteristics

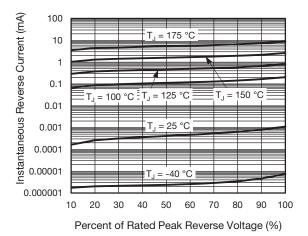


Fig. 4 - Typical Reverse Leakage Characteristics

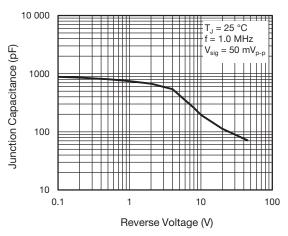


Fig. 5 - Typical Junction Capacitance

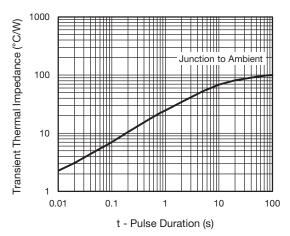


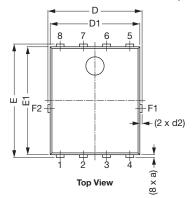
Fig. 6 - Typical Transient Thermal Impedance

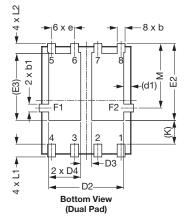


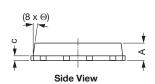
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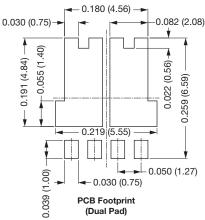
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PACKAGE OUTLINE DIMENSIONS in inches (millimeters)









DIM.	INCHES			MILLIMETERS			
DIIVI.	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.	
Α	0.035	0.039	0.043	0.89	0.99	1.09	
(a)	-	0.006	-	-	0.15	-	
b	0.013	0.017	0.020	0.32	0.43	0.52	
b1	0.013	0.017	0.020	0.32	0.43	0.52	
С	0.008	-	0.014	0.20	-	0.35	
D	0.197	0.203	0.209	5.00	5.15	5.30	
D1	0.189	0.193	0.197	4.80	4.90	5.00	
D2	0.154	0.161	0.169	3.90	4.10	4.30	
D3	0.020	0.024	0.031	0.50	0.60	0.80	
D4	0.063	0.069	0.075	1.60	1.75	1.90	
(d1)	-	0.016	-	-	0.40	-	
(d2)	-	0.005	-	-	0.125	-	
Е	0.238	0.244	0.250	6.05	6.20	6.35	
E1	0.228	0.232	0.236	5.80	5.90	6.00	
E2	0.157	0.165	0.173	4.00	4.20	4.40	
(E3)	-	0.144	-	-	3.65	-	
е		0.050 BSC			1.27 BSC		
(K)	0.039	-	-	1.00	-	-	
L1	0.019	-	0.043	0.48	-	1.10	
L2	0.012	-	0.031	0.30	-	0.80	
М	0.128	0.138	0.148	3.25	3.50	3.75	
Θ	0°	-	10°	0°	-	10°	

Notes

- Dimensioning and tolerancing per ASME Y14.5-2009
- Dimensions D1 and E1 do not include mold flash or gate burrs
- Dimension (XX) means reference only



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