AUTOMOTIVE GRADE

COMPLIANT

HALOGEN

FREE



Vishay General Semiconductor

High Current Density Surface-Mount TMBS® (Trench MOS Barrier Schottky) Rectifier

Ultra Low $V_F = 0.62 \text{ V}$ at $I_F = 5 \text{ A}$



LINKS TO ADDITIONAL RESOURCES



PRIMARY CHARACTERISTICS					
I _{F(AV)}	2 x 7.5 A				
V _{RRM}	200 V				
I _{FSM}	130 A				
V_F at $I_F = 7.5$ A $(T_J = 125 ^{\circ}C)$	= 125 °C) 0.66 V				
T _J max.	150 °C				
Package	FlatPAK 5 x 6				
Circuit configuration	Common 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 <u>www.vishav.com/doc?99912</u>

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_X - halogen-free, RoHS-compliant, and

AEC-Q101 qualified

("_X" denotes revision code e.g. A, B,.....)

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	V15K202C	UNIT		
Device marking code		V1522C			
Maximum repetitive peak reverse voltage	V _{RRM}	200	V		
Maximum DC forward ourrent per device	I _{F(AV)} (1)	15	А		
Maximum DC forward current per device	I _{F(AV)} (2)	3	А		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load per diode	I _{FSM}	130	А		
Operating junction temperature range	T _J (3)	-40 to +150	°C		
Storage temperature range	T _{STG}	-55 to +150	°C		

Notes

- (1) With infinite heatsink
- (2) Free air, mounted on recommended pad area
- $^{(3)}$ The heat generated must be less than the thermal conductivity from junction-to-ambient: $dP_D/dT_J < 1/R_{\theta JA}$



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ELECTRICAL CHARACTERIST	TCS (T _J = 25	°C unless oth	erwise noted)		
PARAMETER	TEST CONDITIONS		SYMBOL	TYP.	MAX. UNI	UNIT
	I _F = 5 A	——— T₁= 25 °C	V _F ⁽¹⁾	0.77	-	V
Instantaneous forward voltage per diode	I _F = 7.5 A			0.81	0.9	
instantaneous forward voltage per diode	I _F = 5 A	T _J = 125 °C		0.62	-	
	I _F = 7.5 A			0.66	0.75	
	V _P = 160 V	T _J = 25 °C	I _R (2)	0.0007	-	mA
Reverse current per diode		T _J = 125 °C		0.7	-	
neverse current per diode	V _R = 200 V	T _J = 25 °C		-	0.05	
		T _J = 125 °C		1.5	7	
Typical junction capacitance per diode	4.0 V, 1 MHz		CJ	460	-	pF

Notes

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

(2) Pulse test: pulse width ≤ 5 ms

THERMAL CHARACTERISTICS (T _A = 25 °C unless otherwise noted)					
PARAMETER	SYMBOL	TYP.	MAX.	UNIT	
Thermal resistance per device	R ₀ JA (1)(2)	75	-	- °C/W	
mermai resistance per device	R _{0JM} (3)	2.5	3.5		

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		
V15K202C-M3/H	0.10	Н	1500	7" diameter plastic tape and reel		
V15K202C-M3/I	0.10	I	6000	13" diameter plastic tape and reel		
V15K202CHM3_A/H (1)	0.10	Н	1500	7" diameter plastic tape and reel		
V15K202CHM3_A/I (1)	0.10	I	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)

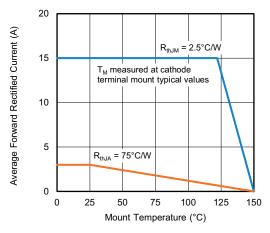


Fig. 1 - Maximum Forward Current Derating Curve

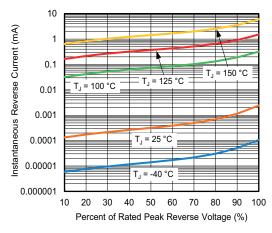


Fig. 4 - Typical Reverse Leakage Characteristics

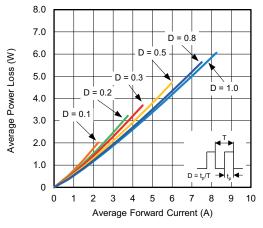


Fig. 2 - Forward Power Loss Characteristics

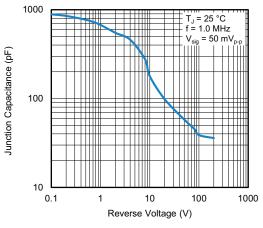


Fig. 5 - Typical Junction Capacitance

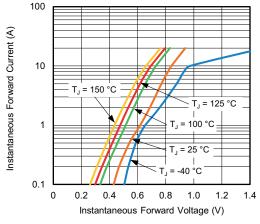


Fig. 3 - Typical Instantaneous Forward Characteristics

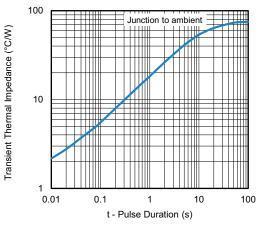


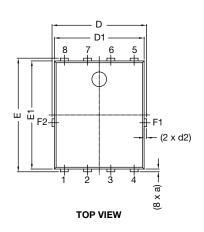
Fig. 6 - Typical Transient Thermal Impedance

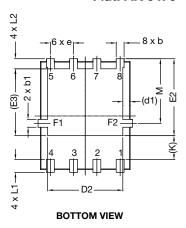


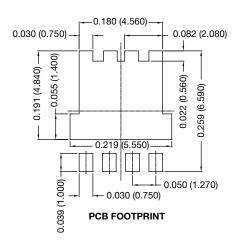
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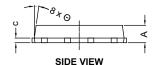
PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

FlatPAK 5 x 6









DIM		INCHES			MILLIMETERS		
DIM.	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	
(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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