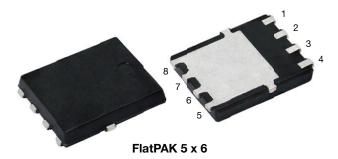
V30K45

Vishay General Semiconductor

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

Ultra Low $V_F = 0.30$ V at $I_F = 5$ A



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DESIGN SUPPORT TOOLS AVAILABLE



PRIMARY CHARACTERISTICS						
I _{F(AV)}	30 A					
V _{RRM}	45 V					
I _{FSM}	240 A					
V_F at I_F = 30 A (T_A = 125 °C)	0.46 V					
T _J max.	150 °C					
Package	FlatPAK 5 x 6					
Circuit configuration	Single					

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



AUTOMOTIVE GRADE

Available

- AEC-Q101 qualified available
 Automotive ordering code: base P/NHM3
- Material categorization: for definitions of compliance please see <u>www.vishay.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 - 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	V30K45	UNIT		
Device marking code		V3045			
Maximum repetitive peak reverse voltage	V _{RRM}	45	V		
Maximum DC forward current	I _{F(AV)} ⁽¹⁾	30			
Maximum DC forward current	I _{F(AV)} ⁽²⁾	5	А		
Peak forward surge current 8.3 ms single half sine-wave superimposed on rated load	I _{FSM}	I _{FSM} 240			
Operating junction temperature range	T _J ⁽³⁾	-40 to +150			
Storage temperature range	T _{STG}	-55 to +150			

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_{0JA}

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V30K45



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ELECTRICAL CHARACTE	RISTICS (T _A =	25 °C unless	otherwise not	ted)		
PARAMETER	TEST CO	TEST CONDITIONS		TYP.	MAX.	UNIT
Instantaneous forward voltage	I _F = 5 A		V _F (1)	0.42	-	V
	I _F = 15 A	T _A = 25 °C		0.48	-	
	I _F = 30 A			0.54	0.63	
	$I_{F} = 5.0 \text{ A}$	T _A = 125 °C		0.30	-	
	I _F = 15 A			0.38	-	
	I _F = 30 A			0.46	0.54	
Reverse current	V _B = 45 V	T _A = 25 °C	I _B ⁽²⁾	-	2	mA
neverse current	v _R = 45 v	T _A = 125 °C	ЧК ⁽⁻⁾	15	55	
Typical junction capacitance	4.0 V, 1 MHz		CJ	4000	-	pF

Notes

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

⁽²⁾ Pulse test: pulse width \leq 5 ms

THERMAL CHARACTERISTICS ($T_A = 25 \text{ °C}$ unless otherwise noted)					
PARAMETER	SYMBOL	TYP.	MAX.	UNIT	
	R _{0JA} ⁽¹⁾⁽²⁾	75	-	°C/W	
Typical thermal resistance	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_{$ext{BJA}$} - junction-to-ambient

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

ORDERING INFO	ORDERING INFORMATION (Example)					
PREFERRED P/N	UNIT WEIGHT (g)	PREFERRED PACKAGE CODE	BASE QUANTITY	DELIVERY MODE		
V30K45-M3/H	0.10	Н	1500	7" diameter plastic tape and reel		
V30K45-M3/I	0.10	I	6000	13" diameter plastic tape and reel		
V30K45HM3/H ⁽¹⁾	0.10	Н	1500	7" diameter plastic tape and reel		
V30K45HM3/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)

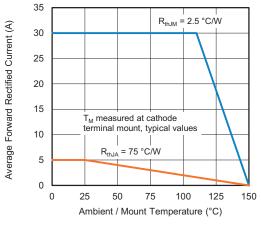


Fig. 1 - Maximum Forward Current Derating Curve

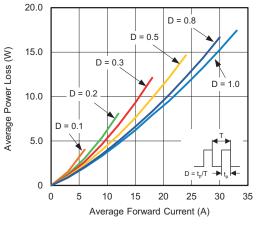


Fig. 2 - Forward Power Loss Characteristics

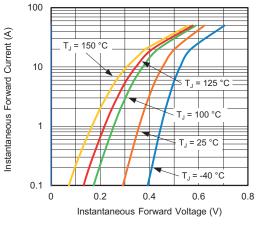


Fig. 3 - Typical Instantaneous Forward Characteristics

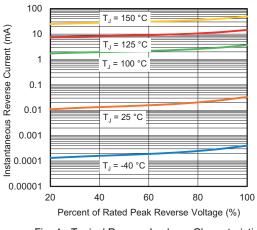


Fig. 4 - Typical Reverse Leakage Characteristics

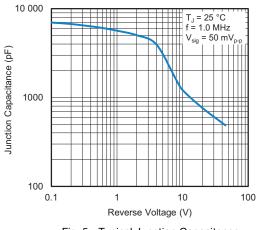
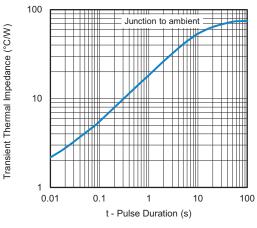
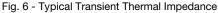


Fig. 5 - Typical Junction Capacitance





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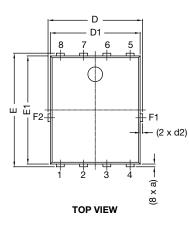
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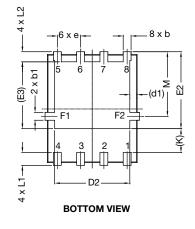


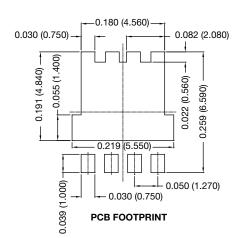
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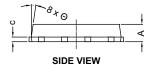
DIMENSIONS in inches (millimeters)

FlatPAK 5 x 6









DIM.		INCHES			MILLIMETERS	
MIN.	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
А	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	-
E	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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