

3A, 200V - 1000V High Efficient Surface Mount Rectifier

FEATURES

- Glass passivated chip junction
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- DC to DC converter
- Switching mode converters and inverters
- Freewheeling application

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.090g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	3	A
V_{RRM}	200 - 1000	V
I_{FSM}	80	A
$T_{J\ MAX}$	150	°C
Package	DO-214AA (SMB)	
Configuration	Single die	



DO-214AA (SMB)



ABSOLUTE MAXIMUM RATINGS (T _A = 25°C unless otherwise noted)								
PARAMETER		SYMBOL	HS3DB-K	HS3GB-K	HS3JB-K	HS3KB-K	HS3MB-K	UNIT
Marking code on the device			HS3DB	HS3GB	HS3JB	HS3KB	HS3MB	
Repetitive peak reverse voltage		V _{RRM}	200	400	600	800	1000	V
Reverse voltage, total rms value		V _{R(RMS)}	140	280	420	560	700	V
Forward current		I _F	3					A
Surge peak forward current single half sine-wave superimposed on rated load	t = 8.3ms	I _{FSM}	80					A
	t = 1.0ms		224					A
Junction temperature		T _J	-55 to +150					°C
Storage temperature		T _{STG}	-55 to +150					°C

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	20	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	78	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	26	°C/W

Thermal Performance Note: Units mounted on PCB (10mm x 10mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT		
Forward voltage ⁽¹⁾	HS3DB-K	I _F = 1.5A, T _J = 25°C	V _F	0.83	-	V		
		I _F = 3.0A, T _J = 25°C		0.90	1.00	V		
		I _F = 1.5A, T _J = 125°C		0.67	-	V		
		I _F = 3.0A, T _J = 125°C		0.75	0.91	V		
	HS3GB-K	I _F = 1.5A, T _J = 25°C		0.93	-	V		
		I _F = 3.0A, T _J = 25°C		1.04	1.40	V		
		I _F = 1.5A, T _J = 125°C		0.70	-	V		
		I _F = 3.0A, T _J = 125°C		0.84	1.17	V		
	HS3JB-K HS3KB-K HS3MB-K	I _F = 1.5A, T _J = 25°C		1.19	-	V		
		I _F = 3.0A, T _J = 25°C		1.34	1.70	V		
		I _F = 1.5A, T _J = 125°C		0.88	-	V		
		I _F = 3.0A, T _J = 125°C		1.11	1.47	V		
	Reverse current @ rated V _R ⁽²⁾			T _J = 25°C	I _R	-	5	μA
				T _J = 125°C		-	200	μA
Reverse recovery time	HS3DB-K HS3GB-K	I _F = 0.5A, I _R = 1.0A I _{rr} = 0.25A	t _{rr}	-	50	ns		
	HS3JB-K HS3KB-K HS3MB-K			-	75	ns		
Junction capacitance	HS3DB-K	1MHz, V _R = 4.0V	C _J	56	-	pF		
	HS3GB-K			40	-	pF		
	HS3JB-K HS3KB-K HS3MB-K			21	-	pF		

Notes:

- Pulse test with $PW = 0.3\text{ms}$
- Pulse test with $PW = 30\text{ms}$

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
HS3xB-K	DO-214AA (SMB)	3,000 / Tape & Reel

Notes:

- "x" defines voltage from 200V(HS3DB-K) to 1000V(HS3MB-K)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

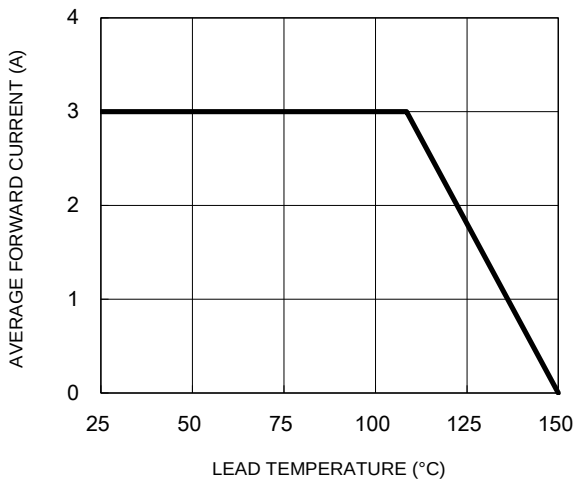


Fig.2 Typical Junction Capacitance

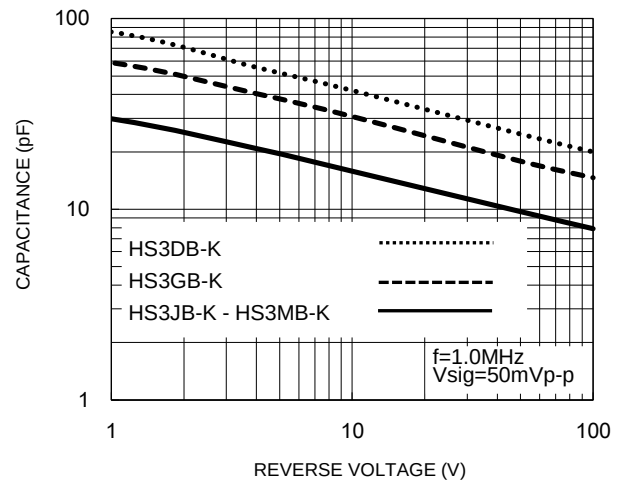


Fig.3 Typical Reverse Characteristics

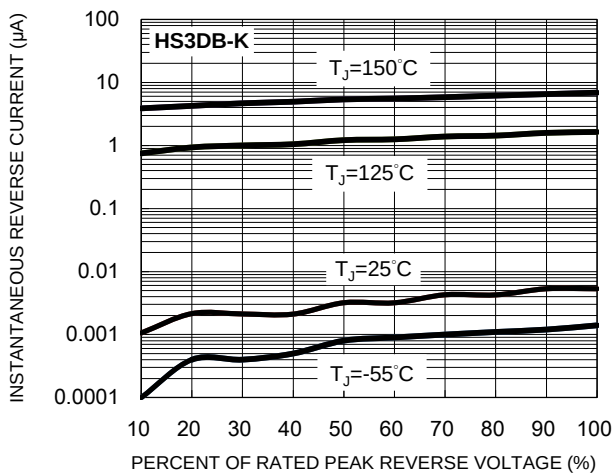


Fig.4 Typical Forward Characteristics

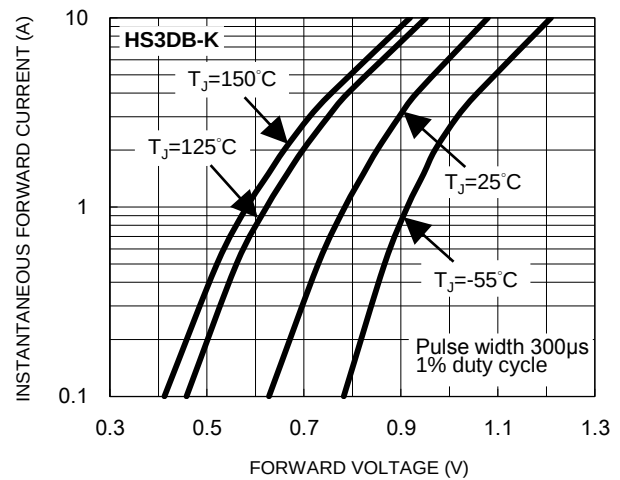


Fig.5 Typical Reverse Characteristics

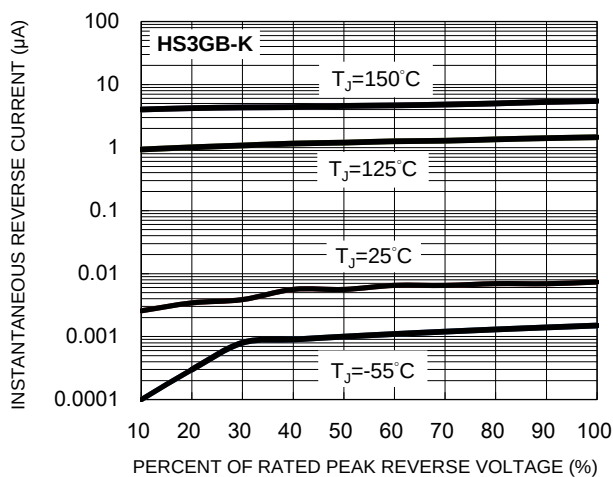
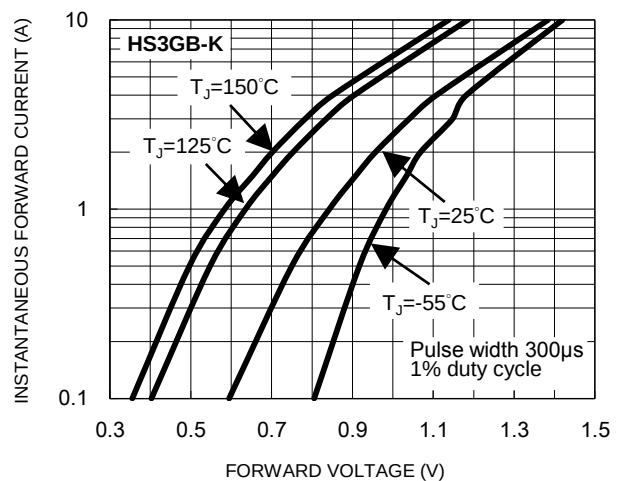


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 Typical Reverse Characteristics

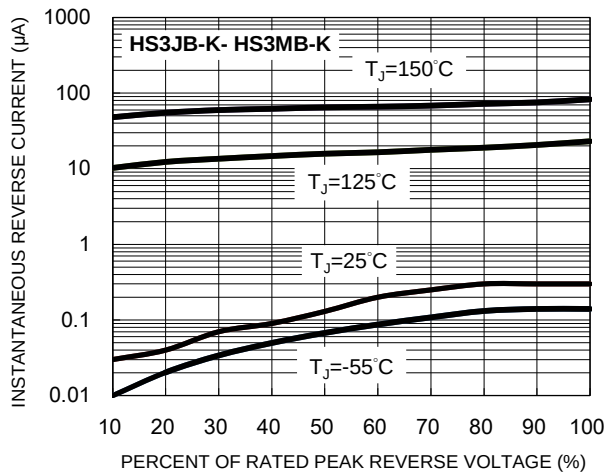


Fig.8 Typical Forward Characteristics

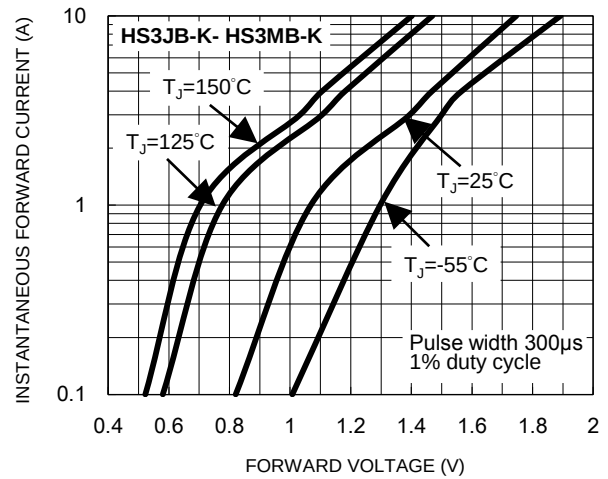
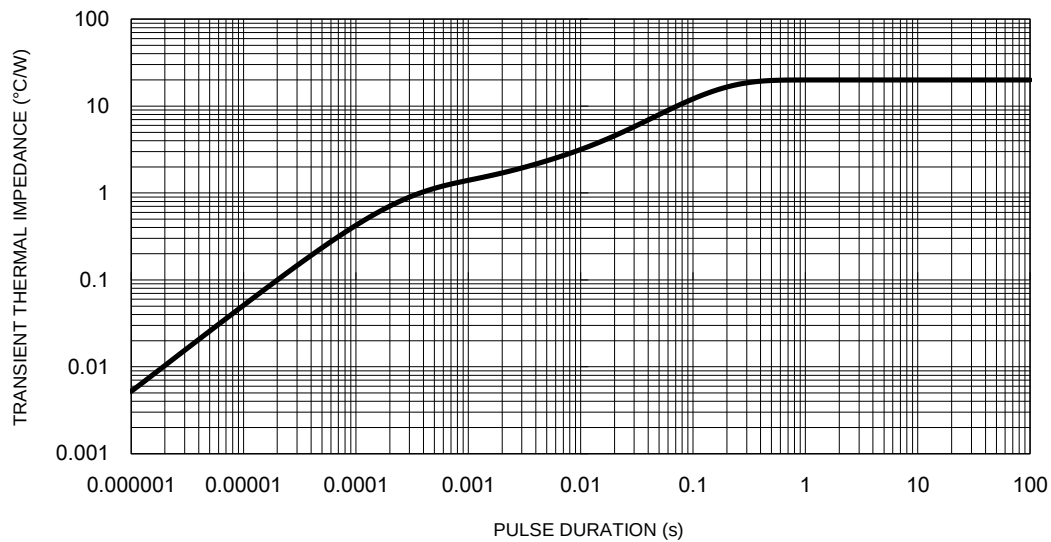
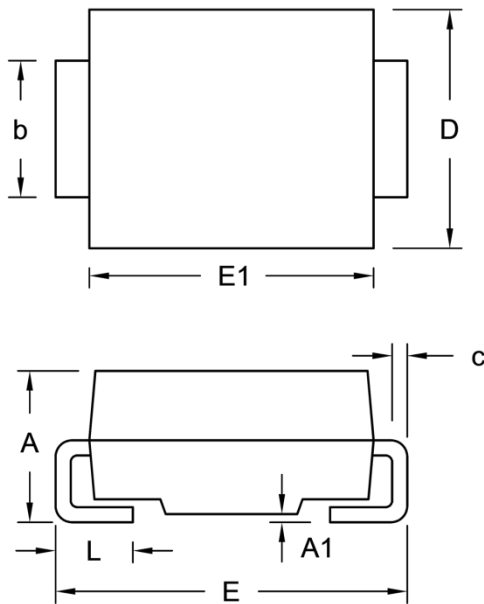


Fig.9 Typical Transient Thermal Impedance



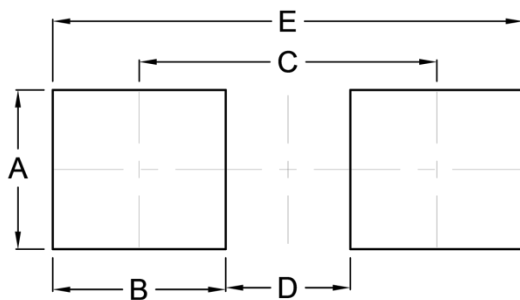
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



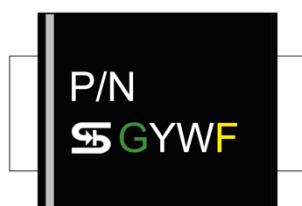
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.95	2.65	0.077	0.104
A1	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.31	0.006	0.012
D	3.30	3.95	0.130	0.156
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
L	0.75	1.60	0.030	0.063

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.30	0.091
B	2.50	0.098
C	4.30	0.169
D	1.80	0.071
E	6.80	0.268

MARKING DIAGRAM



P/N = Marking Code
G = Green Compound
YW = Date Code
F = Factory Code

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