

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

FEATURES

- Glass passivated junction chip
- Ideal for automated placement
- Low reverse leakage
- Moisture sensitivity level: level 1, per J-STD-020
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	3	A
V_{RRM}	200-1000	V
I_{FSM}	80	A
T_{JMAX}	150	°C
Package	DO-214AA (SMB)	

APPLICATIONS

- Switch Mode Power Supply
- Inverters and Converters
- Free Wheeling diodes



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: 0.09 g (approximately)



DO-214AA (SMB)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ 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	
DC blocking voltage	V_{DC}	200	400	600	800	1000	V	
Forward current	I_F	3					A	
Surge peak forward current single half sine-wave superimposed on rated load per diode	8.3 ms at $T_A = 25^\circ\text{C}$	I_{FSM}					80	A
	1.0 ms at $T_A = 25^\circ\text{C}$						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 per diode	$R_{\theta JL}$	20	$^{\circ}C/W$
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	78	$^{\circ}C/W$
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	26	$^{\circ}C/W$

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

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted)						
PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	HS3DB-K	$I_F = 1.5A, T_J = 25^{\circ}C$	V_F	0.83	-	V
		$I_F = 3A, T_J = 25^{\circ}C$		0.90	1.0	V
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.67	-	V
		$I_F = 3A, T_J = 125^{\circ}C$		0.75	0.91	V
	HS3GB-K	$I_F = 1.5A, T_J = 25^{\circ}C$		0.93	-	V
		$I_F = 3A, T_J = 25^{\circ}C$		1.04	1.4	V
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.70	-	V
		$I_F = 3A, T_J = 125^{\circ}C$		0.84	1.17	V
	HS3JB-K to HS3MB-K	$I_F = 1.5A, T_J = 25^{\circ}C$		1.19	-	V
		$I_F = 3A, T_J = 25^{\circ}C$		1.34	1.7	V
		$I_F = 1.5A, T_J = 125^{\circ}C$		0.88	-	V
		$I_F = 3A, T_J = 125^{\circ}C$		1.11	1.47	V
Reverse current @ rated V_R per diode ⁽²⁾		$T_J = 25^{\circ}C$	I_R	-	5	μA
		$T_J = 125^{\circ}C$		-	200	μA
Reverse recovery time	HS3DB-K to HS3GB-K	$I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A$	t_{rr}	-	50	ns
	HS3JB-K to HS3MB-K			-	75	ns
Junction capacitance per diode	HS3DB-K to HS3GB-K	1 MHz, $V_R = 4.0V$	C_J	75	-	pF
	HS3JB-K to HS3MB-K			63	-	pF

Notes:

(1) Pulse test with $PW = 0.3$ ms

(2) Pulse test with $PW = 30$ ms

ORDERING INFORMATION		
ORDERING CODE	PACKAGE	PACKING
HS3XB-K R5G ⁽¹⁾	SMB	850 / 7" Plastic reel
HS3XB-K M4G ⁽¹⁾	SMB	3,000 / 13" Plastic reel
HS3XB-K R4G ⁽¹⁾	SMB	3,000 / 13" Paper reel

Notes:

(1) "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

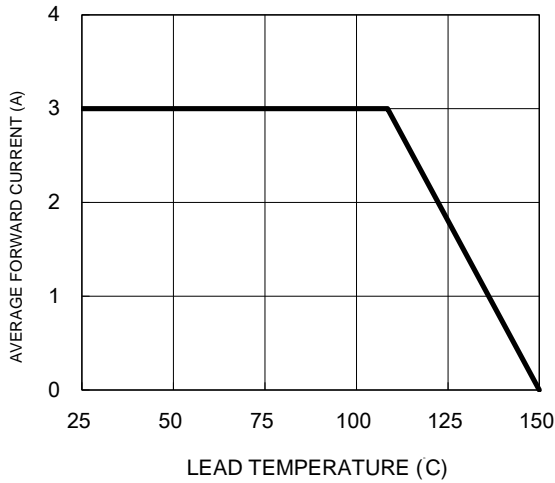


Fig.2 Typical Junction Capacitance

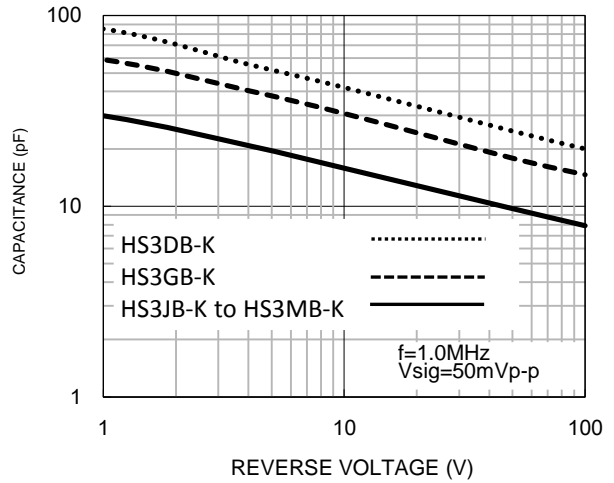


Fig.3 Typical Reverse Characteristics

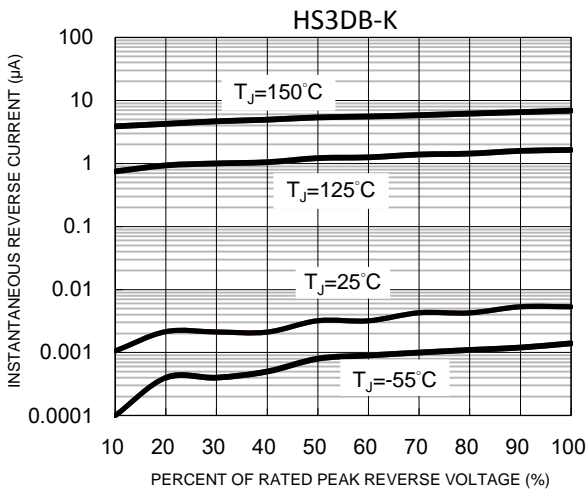


Fig.4 Typical Forward Characteristics

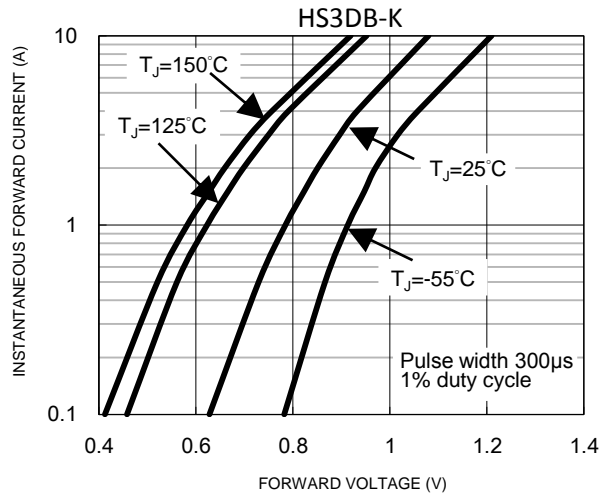


Fig.5 Typical Reverse Characteristics

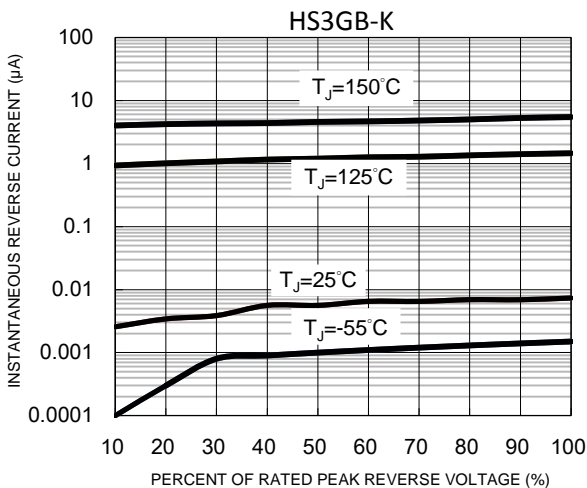


Fig.6 Typical Forward Characteristics

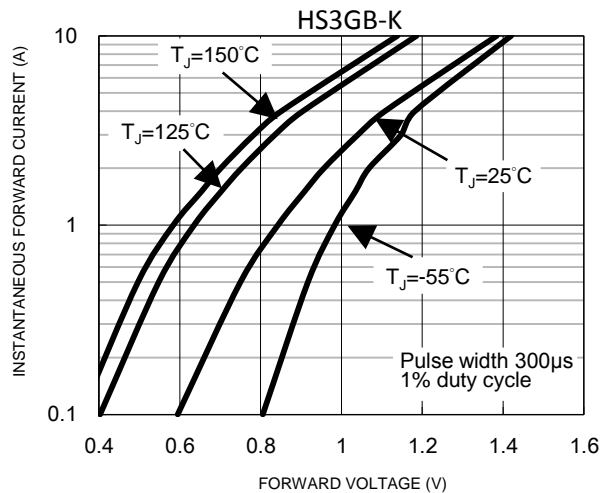


Fig.7 Typical Reverse Characteristics

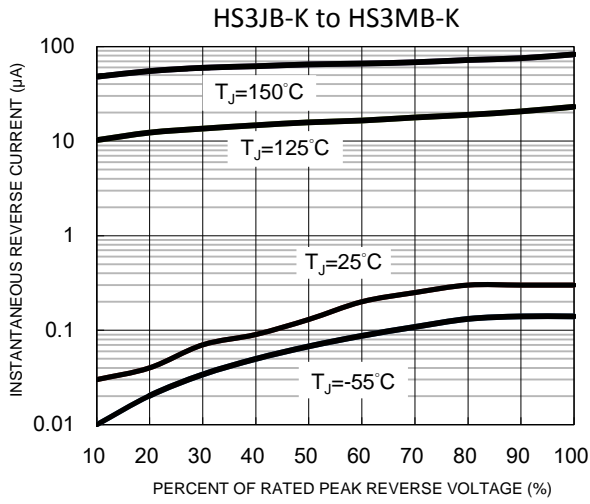


Fig.8 Typical Forward Characteristics

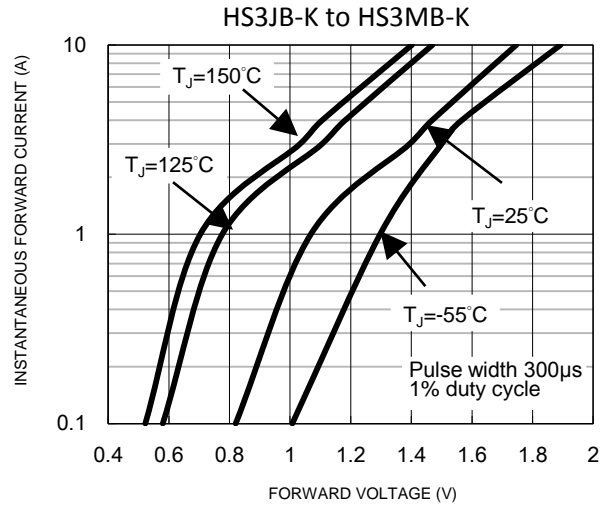
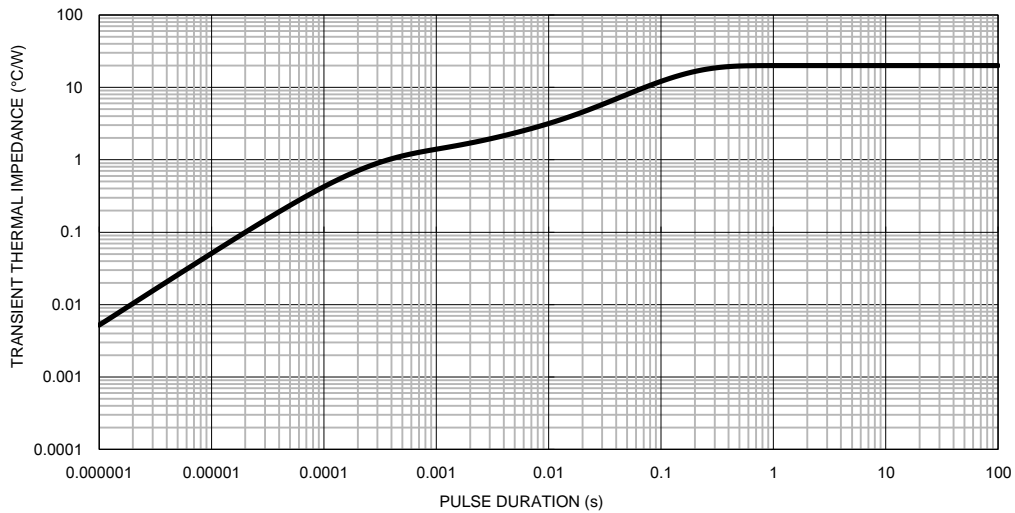
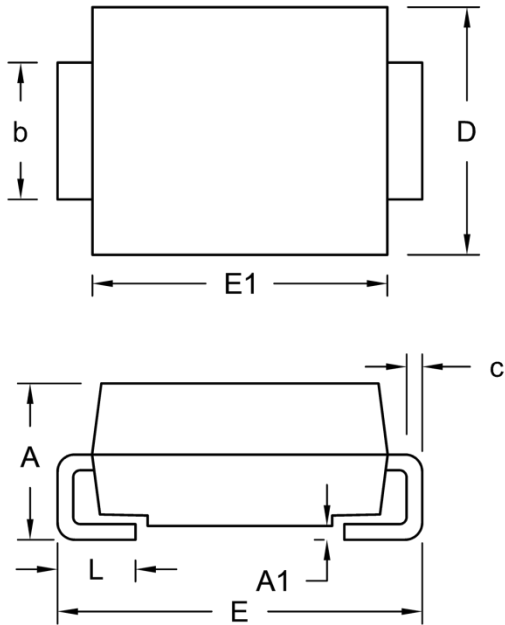


Fig.9 Typical Transient Thermal Impedance



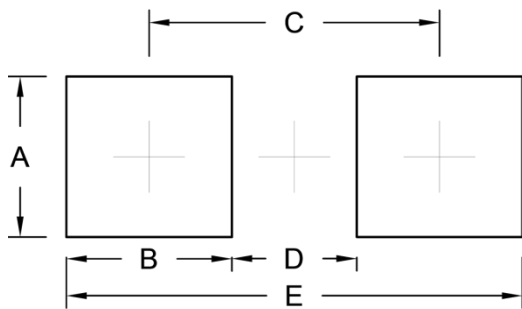
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	2.13	2.44	0.084	0.096
A1	-	0.203	-	0.008
b	1.80	2.20	0.071	0.087
c	0.152	0.305	0.006	0.012
D	3.30	3.94	0.130	0.155
E	5.08	5.59	0.200	0.220
E1	4.06	4.57	0.160	0.180
L	0.76	1.52	0.030	0.060

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.36	0.093
B	2.44	0.096
C	4.28	0.169
D	1.84	0.072
E	6.72	0.265

MARKING DIAGRAM



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

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