

5A, 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-214AB (SMC)
- 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: 0.250g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
I_F	5	A
V_{RRM}	200 - 1000	V
I_{FSM}	164	A
$T_{J\ MAX}$	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	



DO-214AB (SMC)



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)							
PARAMETER	SYMBOL	HS5D-A	HS5G-A	HS5J-K	HS5K-K	HS5M-K	UNIT
Marking code on the device		HS5D	HS5G	HS5J	HS5K	HS5M	
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	5					A
Surge peak forward current single half sine-wave superimposed on rated load	$t = 8.3\text{ms}$	I_{FSM}					A
	$t = 1.0\text{ms}$						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	$R_{\theta JL}$	25	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	54	°C/W
Junction-to-case thermal resistance	$R_{\theta JC}$	18	°C/W

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

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

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage ⁽¹⁾	HS5D-A	I _F = 2.5A, T _J = 25°C	V _F	0.84	-	V
		I _F = 5.0A, T _J = 25°C		0.93	1.00	V
		I _F = 2.5A, T _J = 125°C		0.67	-	V
		I _F = 5.0A, T _J = 125°C		0.76	0.90	V
	HS5G-A	I _F = 2.5A, T _J = 25°C		0.96	-	V
		I _F = 5.0A, T _J = 25°C		1.08	1.30	V
		I _F = 2.5A, T _J = 125°C		0.77	-	V
		I _F = 5.0A, T _J = 125°C		0.89	1.07	V
	HS5J-K HS5K-K HS5M-K	I _F = 2.5A, T _J = 25°C		1.28	-	V
		I _F = 5.0A, T _J = 25°C		1.51	1.70	V
		I _F = 2.5A, T _J = 125°C		0.91	-	V
		I _F = 5.0A, T _J = 125°C		1.06	1.28	V
Reverse current @ rated V _R ⁽²⁾		T _J = 25°C	I _R	-	10	μA
		T _J = 125°C		-	200	μA
Reverse recovery time	HS5D-A HS5G-A	I _F = 0.5A, I _R = 1.0A, I _{rr} = 0.25A	t _{rr}	-	50	ns
	HS5J-K HS5K-K HS5M-K			-	75	ns
Junction capacitance	HS5D-A	1MHz, V _R = 4.0V	C _J	167	-	pF
	HS5G-A			124	-	pF
	HS5J-K HS5K-K HS5M-K			63	-	pF

Notes:

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

ORDERING INFORMATION

ORDERING CODE ⁽¹⁾	PACKAGE	PACKING
HS5x-A	DO-214AB (SMC)	3,000 / Tape & Reel
HS5y-K	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:

- “x” defines voltage from 200V(HS5D-A) to 400V(HS5G-A)
“y” defines voltage from 600V(HS5J-K) to 1000V(HS5M-K)

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

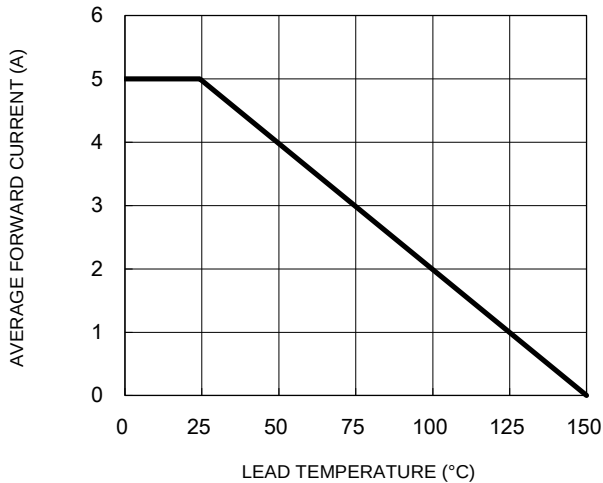


Fig.2 Typical Junction Capacitance

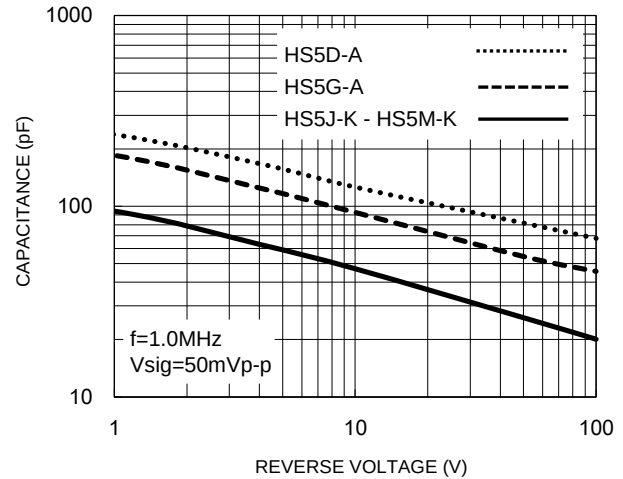


Fig.3 Typical Reverse Characteristics

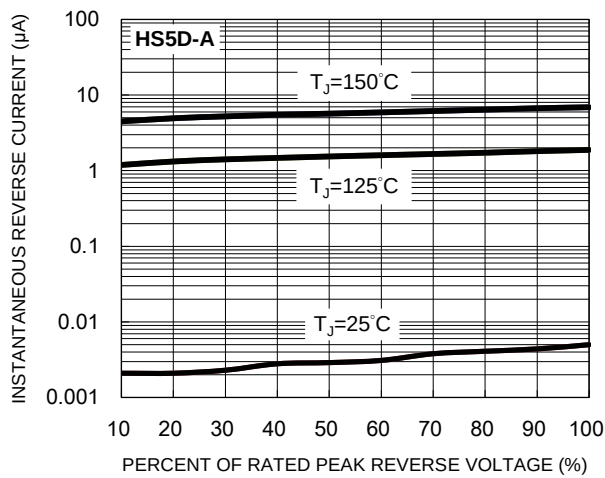


Fig.4 Typical Forward Characteristics

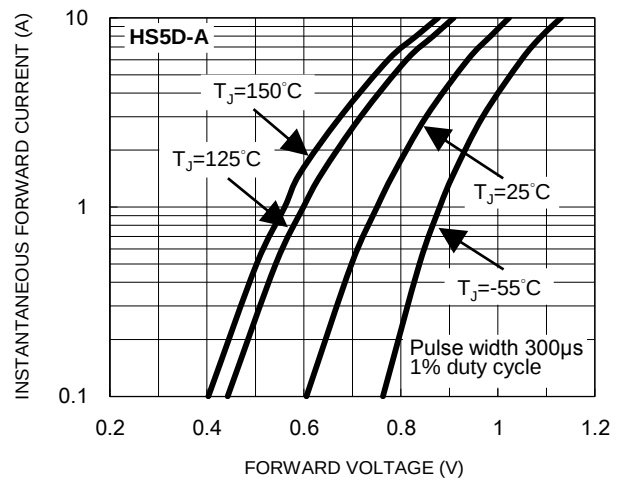


Fig.5 Typical Reverse Characteristics

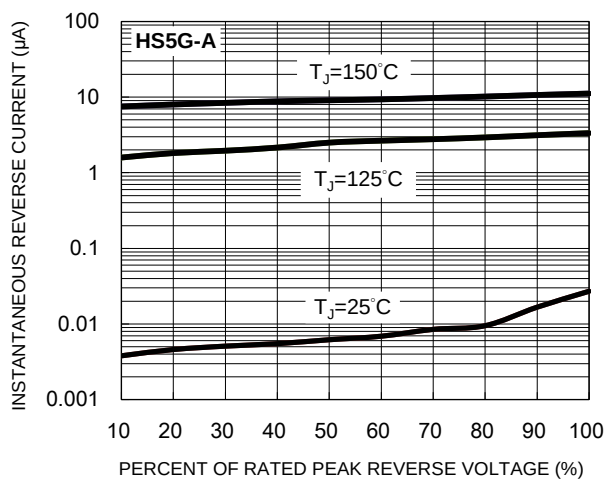
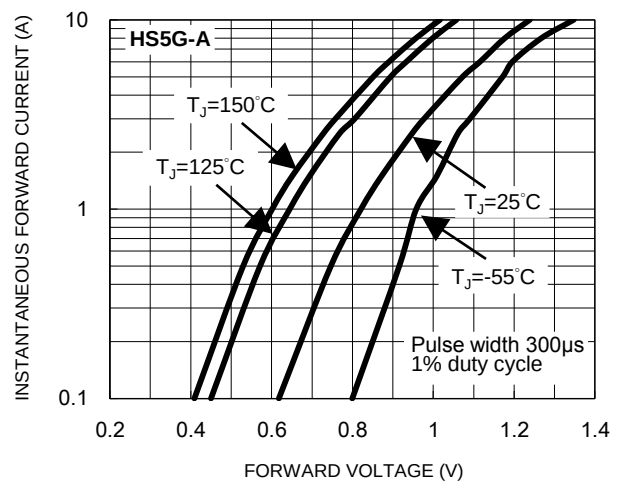


Fig.6 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.7 Typical Reverse Characteristics

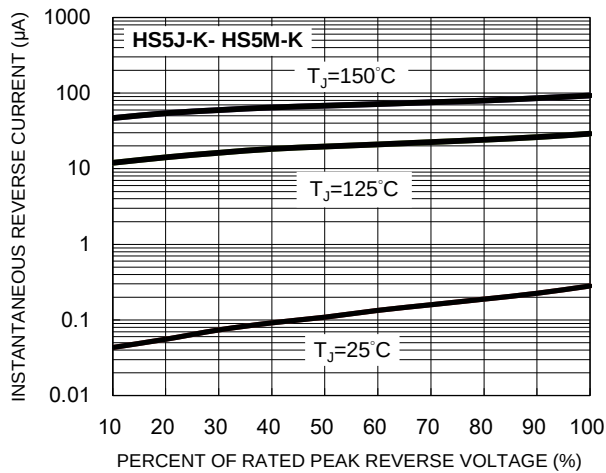


Fig.8 Typical Forward Characteristics

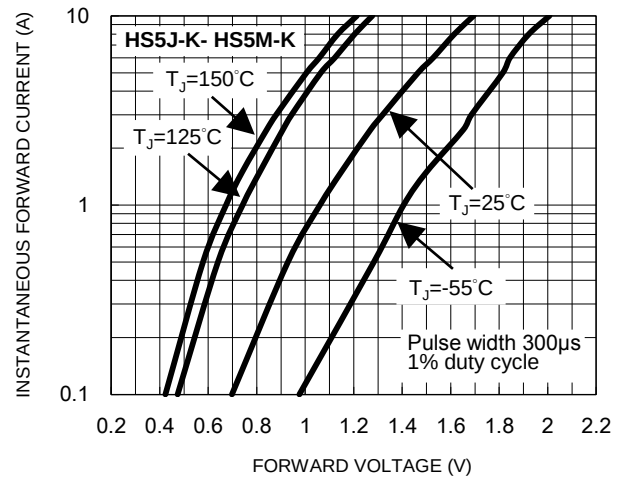
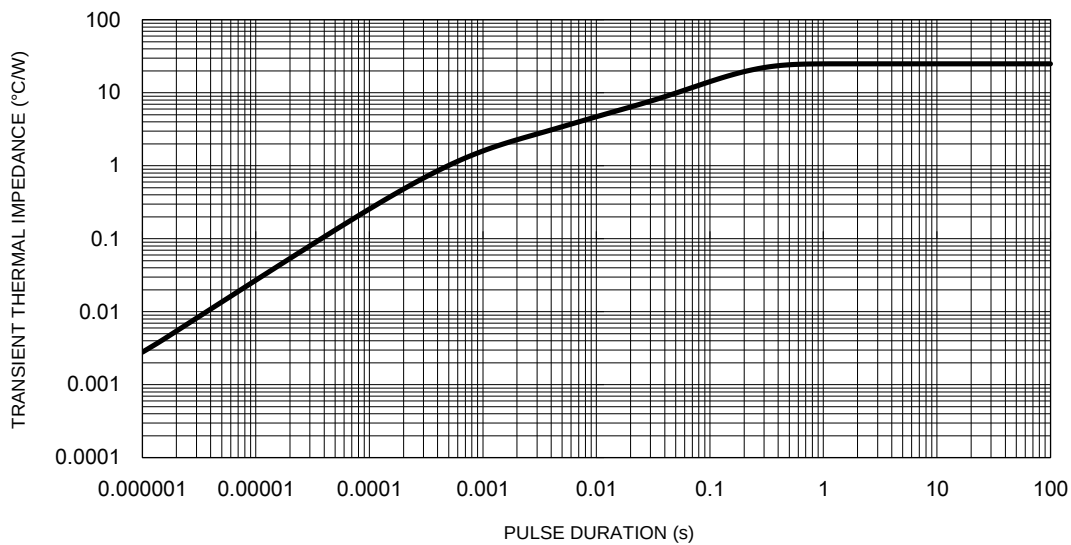
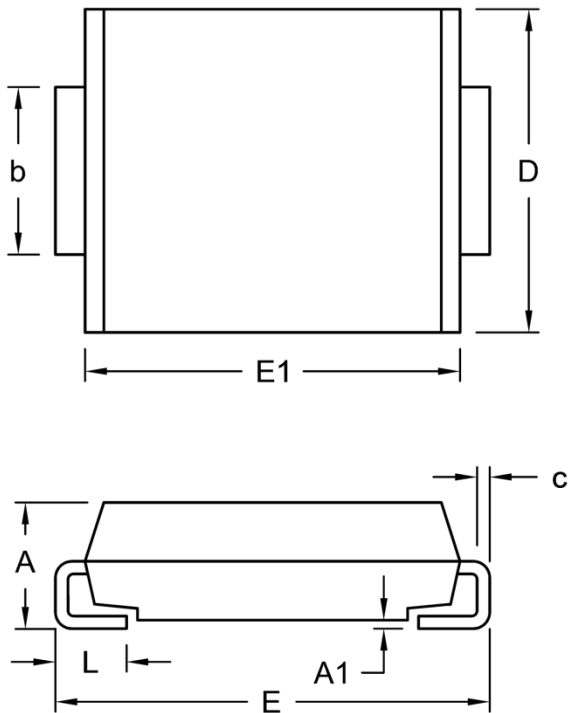


Fig.9 Typical Transient Thermal Impedance



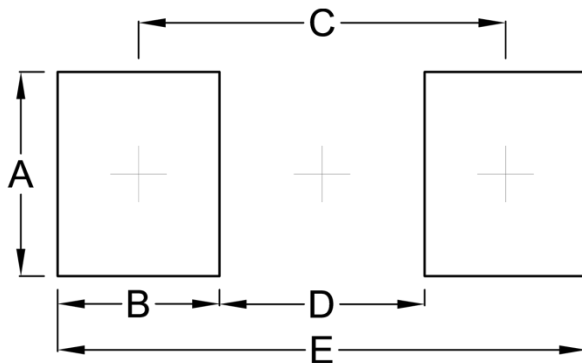
PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	1.99	2.61	0.078	0.103
A1	0.10	0.20	0.004	0.008
b	2.85	3.27	0.112	0.129
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	0.76	1.52	0.030	0.060

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	3.82	0.150
B	3.03	0.119
C	6.87	0.270
D	3.84	0.151
E	9.90	0.390

MARKING DIAGRAM



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

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