

5A, 20V - 150V Surface Mount Schottky Barrier Rectifier

FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for over-voltage protection
- High surge current capability
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Packing code with suffix "G" means green compound (halogen-free)
- Part no. with suffix "H" means AEC-Q101 qualified
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.1 g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
$I_{F(AV)}$	5	A
V_{RRM}	20 - 150	V
I_{FSM}	120	A
Package	DO-214AA (SMB)	
Configuration	Single Die	



DO-214AA (SMB)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
PARAMETER	SYMBOL	SK 52B	SK 53B	SK 54B	SK 55B	SK 56B	SK 59B	SK 510B	SK 515B	UNIT
Marking code on the device		SK 52B	SK 53B	SK 54B	SK 55B	SK 56B	SK 59B	SK 510B	SK 515B	
Repetitive peak reverse voltage	V_{RRM}	20	30	40	50	60	90	100	150	V
Reverse voltage, total rms value	$V_{R(RMS)}$	14	21	28	35	42	63	70	105	V
Maximum DC blocking voltage	V_{DC}	20	30	40	50	60	90	100	150	V
Forward current	$I_{F(AV)}$	5								A
Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode	I_{FSM}	120								A
Critical rate of rise of off-state voltage	dV/dt	10000								V/ μs
Junction temperature	T_J	- 55 to +150								$^\circ\text{C}$
Storage temperature	T_{STG}	- 55 to +150								$^\circ\text{C}$

THERMAL PERFORMANCE

PARAMETER	SYMBOL	LIMIT	UNIT
Junction-to-lead thermal resistance	$R_{\theta JL}$	19	°C/W
Junction-to-ambient thermal resistance	$R_{\theta JA}$	60	°C/W

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

PARAMETER		CONDITIONS	SYMBOL	TYP	MAX	UNIT
Forward voltage per diode ⁽¹⁾	SK52B	$I_F = 5\text{A}, T_J = 25^\circ\text{C}$	V_F	-	0.55	V
	SK53B					V
	SK54B					V
	SK55B			-	0.75	V
	SK56B					V
	SK59B			-	0.85	V
	SK510B			-	0.95	V
	SK515B					V
Reverse current @ rated V_R per diode ⁽²⁾	SK52B	$T_J = 25^\circ\text{C}$	I_R	-	0.5	mA
	SK53B					mA
	SK54B					mA
	SK55B					mA
	SK56B					mA
	SK59B			-	0.1	mA
	SK510B					mA
	SK515B					mA
Reverse current @ rated V_R per diode ⁽²⁾	SK52B	$T_J = 100^\circ\text{C}$	I_R	-	20	mA
	SK53B					mA
	SK54B					mA
	SK55B			-	10	mA
	SK56B					mA
	SK59B			-	-	mA
	SK510B					mA
	SK515B					mA
Reverse current @ rated V_R per diode ⁽²⁾	SK52B	$T_J = 125^\circ\text{C}$	I_R	-	-	mA
	SK53B					mA
	SK54B					mA
	SK55B			-	-	mA
	SK56B					mA
	SK59B			-	2	mA
	SK510B					mA
	SK515B					mA

Notes:

1. Pulse test with $PW=0.3\text{ ms}$
2. Pulse test with $PW=30\text{ ms}$

ORDERING INFORMATION

PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX(*)	PACKAGE	PACKING
SK5xxB (Note 1)	H	R5	G	SMB	850 / 7" Plastic reel
		R4		SMB	3,000 / 13" Paper reel
		M4		SMB	3,000 / 13" Plastic reel

Note:

1. "x" defines voltage from 20V (SK52B) to 150V (SK515B)

*: Optional available

EXAMPLE P/N

EXAMPLE P/N	PART NO.	PART NO. SUFFIX	PACKING CODE	PACKING CODE SUFFIX	DESCRIPTION
SK56BHR5G	SK56B	H	R5	G	AEC-Q101 qualified Green compound

CHARACTERISTICS CURVES

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

Fig.1 Forward Current Derating Curve

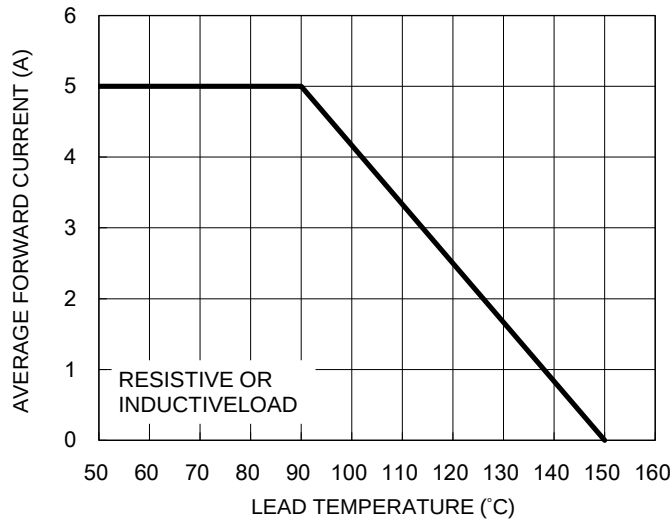


Fig.2 Typical Junction Capacitance

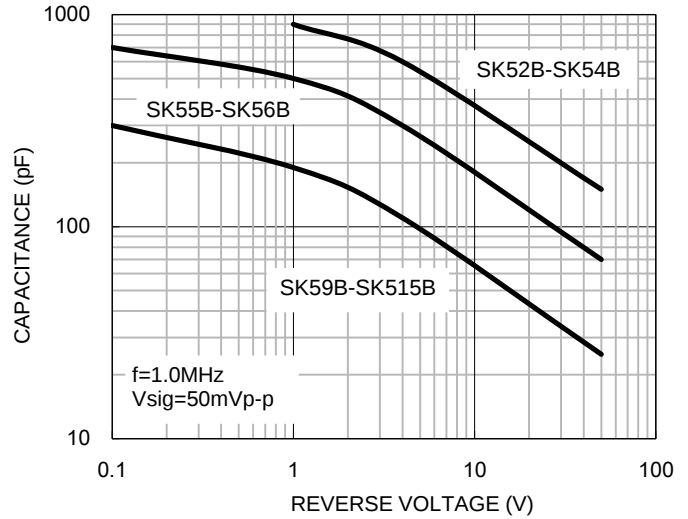


Fig.3 Typical Reverse Characteristics

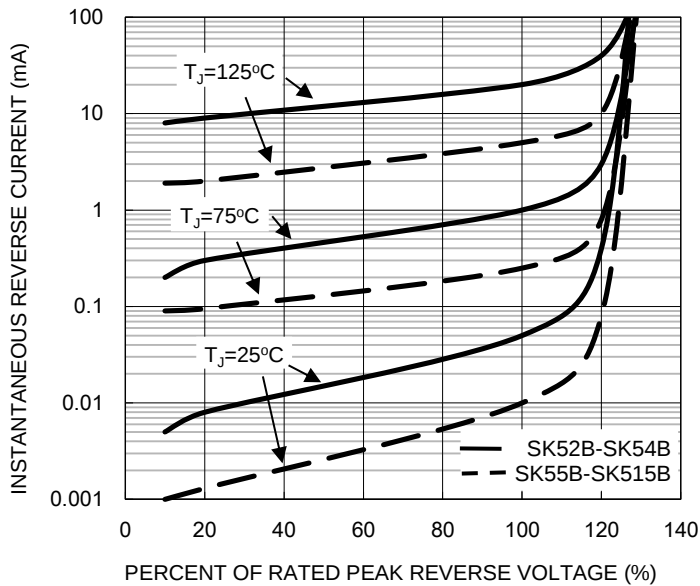
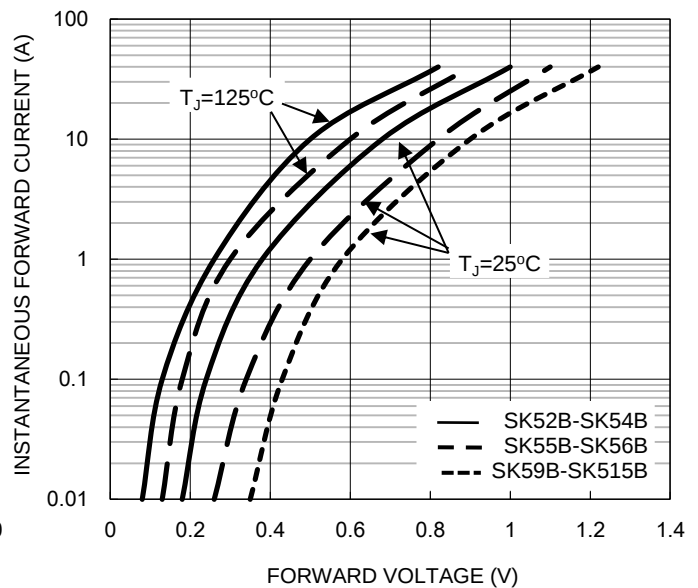


Fig.4 Typical Forward Characteristics



CHARACTERISTICS CURVES

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

Fig.5 Maximum Non-repetitive Forward Surge Current

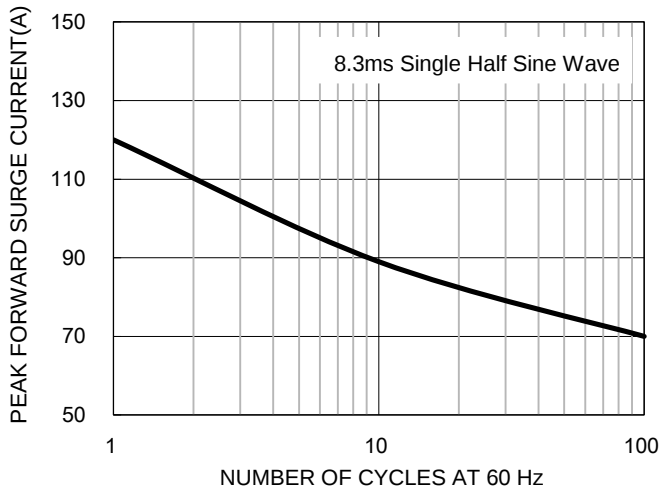
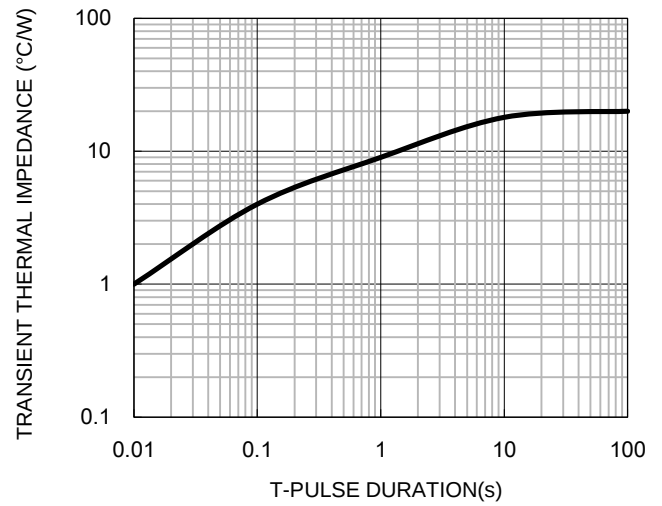
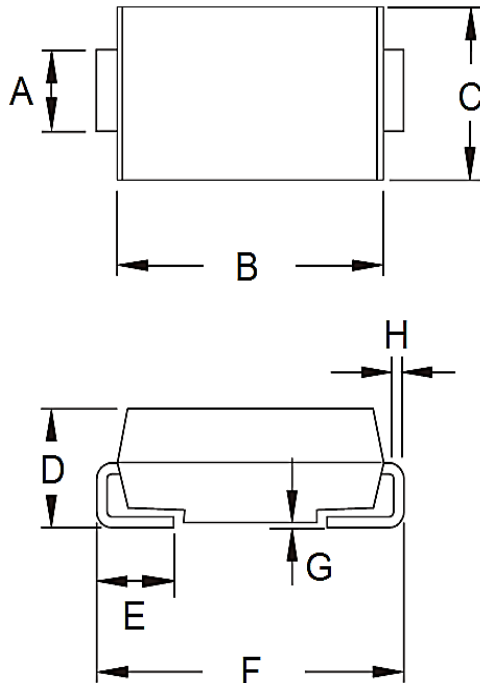


Fig.6 Typical Transient Thermal Characteristics



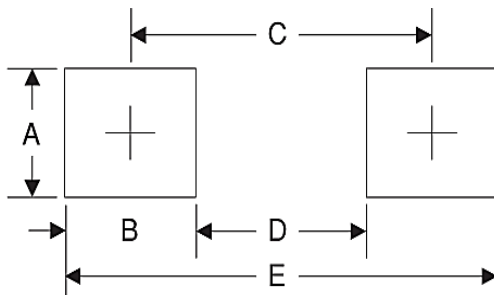
PACKAGE OUTLINE DIMENSIONS

DO-214AA (SMB)



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

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	2.3	0.091
B	2.5	0.098
C	4.3	0.169
D	1.8	0.071
E	6.8	0.268

MARKING DIAGRAM



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

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