

## 肖特基二极管 SBR ( Schottky Barrier Rectifiers )

肖特基二极管是利用金属-半导体接触面上形成的势垒具有整流特性而制成的金属-半导体器件。作为低压，高频整流器或者整流桥，极性保护二极管，适用于紧凑型，小型的系统。典型应用于AC-DC和DC-DC转换器，电池极性保护，多种电压“ORing”和其他小尺寸系统的应用。



A Schottky Barrier Rectifier is a metal-semiconductor device fabricated by utilizing a rectifying property of a barrier formed on a metal semiconductor contact surface. This device is suitable for compact and small size systems. Typical for AC-DC and DC-DC converters, battery-polarity protection, multiple voltage ‘ORING’ and other small size systems.

## 特点 Features

- ▲ 极低正向压降，VF Very low forward voltage-drop, VF
- ▲ 因极低正向电压实现高效率 High efficiency due to extremely low forward voltage
- ▲ 高连续电流功能，IF High continuous current capability, IF
- ▲ 可节省空间的小型 and 超小型表面贴装封装 Small and ultra small, low profile surface mount package for economic use of space
- ▲ 高峰值电流功能，IFSM High peak current capability, IFSM
- ▲ 卓越的尺寸/性能比，以及更长的电池使用时间 Excellent size / performance ratio together with extended battery life
- ▲ 低功耗和低发热 Low power dissipation and low heat generation
- ▲ 结合低反向电流的高速开关 High-speed switching combined with low reverse current
- ▲ 耐用的设计和较长的产品使用寿命 Robust designs and long product lifetime

## 应用 Application

- ▲ 中小功率整流 Low and medium power rectification
- ▲ 电源管理电路，尤其是DC转DC转换 Power management circuits, especially DC-to-DC conversion
- ▲ 反向极性保护 Reverse polarity protection
- ▲ 低功耗应用 Low power application
- ▲ 用于继电器和电机的电感负载的续流二极管 Free wheeling diode for inductive loads in motors and relays

## Definitions and Terms

$V_{RRM}$	Maximum Recurrent Peak Reverse Voltage
$V_{RMS}$	Maximum RMS Voltage
$V_{DC}$	Maximum DC Blocking Voltage
$I_{F(AV)}$	Maximum Average Forward Current at $T_L=75^\circ\text{C}$
$I_{FSM}$	Peak Forward Surge Current :8.3ms single half sine-wave superimposed on rated load (JEDEC method)
$V_F$	Maximum Forward Voltage at 1.0A
$I_R$	Maximum DC Reverse Current at Rated DC Blocking Voltage
$R_{\theta JL}$	Typical Thermal Resistance — Junction-to-Lead
$R_{\theta JA}$	Typical Thermal Resistance — Junction-to-Ambient
$T_J, T_{STR}$	Operating Junction and Storage Temperature Range

## Electrical Characteristics - SMA ( 1A ) Series



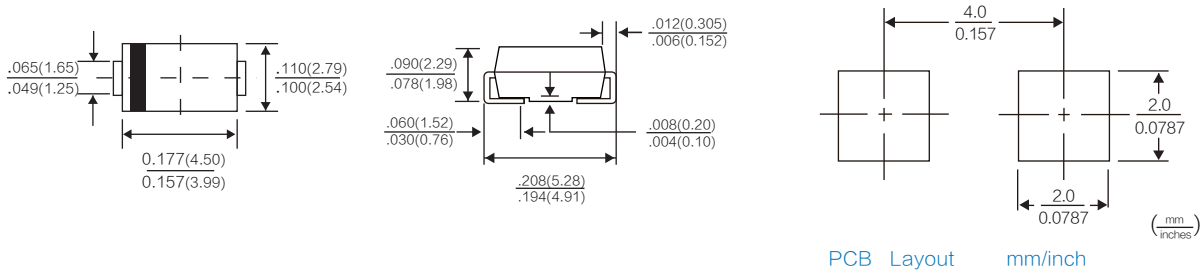
Parameter	$V_{RRM}$	$V_{RRS}$	$V_{DC}$	$I_{F(AV)}$	$I_{FSM}$	$V_F^*$	$I_R(\text{MA})$		$R_{\theta JL}^*$	$R_{\theta JA}$	$T_J, T_{STR}$
	V	V	V	A	A	V	25°C	100°C	°C/W	°C/W	°C
SS12	20	14	20	1.0	30	0.5	0.2	50	28	88	-55to+125
SS13	30	21	30	1.0	30	0.5	0.2	50	28	88	-55to+125
SS14	40	28	40	1.0	30	0.7	0.05	10	30	88	-55to+125
SS15	50	35	50	1.0	30	0.74	0.05	10	30	88	-65to+125
SS16	60	42	60	1.0	30	0.74	0.05	10	30	88	-65to+125
SS18	80	56	80	1.0	30	0.80	0.05	5	30	88	-65to+125
SS19	90	63	90	1.0	30	0.80	0.05	5	30	88	-65to+125
SS110	100	70	100	1.0	30	0.80	0.05	5	30	88	-65to+125
SS115	150	105	150	1.0	30	0.90	0.02	2	30	88	-65to+125
SS120	200	140	200	1.0	30	0.90	0.02	2	30	88	-65to+125

## NOTES:

\*.Pulse Test with PW = 300 usec , 1% Duty Cycle

\* .Mounted on P.C. Board with 5.0mm<sup>2</sup> copper pad areas .

## SMA 产品尺寸 (Dimension Unit: mm ) Dimensions in inches and (millimeters)



## Electrical Characteristics - SMA/SMB ( 2A ) Series

SS26

Parameter	V <sub>RRM</sub>	V <sub>RRS</sub>	V <sub>DC</sub>	I <sub>F(AV)</sub>	I <sub>FSM</sub>	V <sub>F</sub> *	I <sub>R</sub> (MA)		R <sub>θJL</sub> *	R <sub>θJA</sub>	T <sub>J</sub> ,T <sub>STR</sub>
	V	V	V	A	A	V	25°C	100°C	°C/W	°C/W	°C
SS22	20	14	20	2.0	50	0.5	0.2	20	20	75	-55to+125
SS23	30	21	30	2.0	50	0.5	0.2	20	20	75	-55to+125
SS24	40	28	40	2.0	50	0.7	0.05	20	20	75	-55to+150
SS25	50	35	50	2.0	50	0.7	0.05	20	20	75	-65to+150
SS26	60	42	60	2.0	50	0.7	0.05	20	20	75	-65to+175
SS28	80	56	80	2.0	50	0.80	0.05	20	20	75	-65to+175
SS29	90	63	90	2.0	50	0.80	0.05	20	20	75	-65to+175
SS210	100	70	100	2.0	50	0.80	0.05	20	20	75	-65to+175
SS215	150	105	150	2.0	50	0.90	0.05	20	20	75	-65to+175
SS220	200	140	200	2.0	50	0.90	0.05	20	20	75	-65to+175

## NOTES:

\*.Pulse Test with PW = 300 usec ,1% Duty Cycle

\*.Mounted on P.C. Board with8.0mm2 copper pad areas .

## Electrical Characteristics - SMA/SMB ( 3A ) Series

SS34

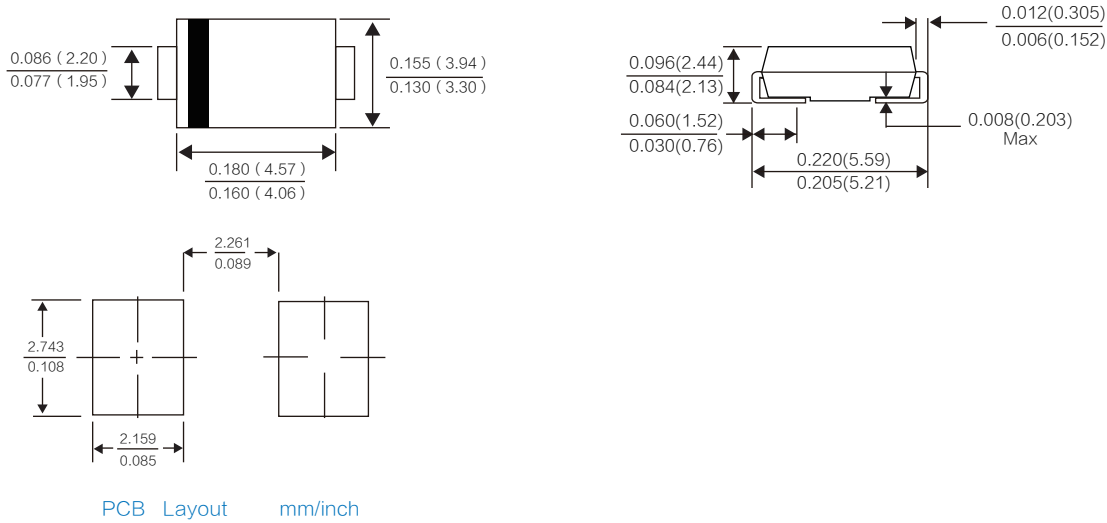
Parameter	V <sub>RRM</sub>	V <sub>RRS</sub>	V <sub>DC</sub>	I <sub>F(AV)</sub>	I <sub>FSM</sub>	V <sub>F</sub> *	I <sub>R</sub> (MA)		R <sub>θJL</sub> *	R <sub>θJA</sub>	T <sub>J</sub> ,T <sub>STR</sub>
	V	V	V	A	A	V	25°C	100°C	°C/W	°C/W	°C
SS32	20	14	20	3.0	80	0.5	0.2	20	20	75	-55to+125
SS33	30	21	30	3.0	80	0.5	0.2	20	20	75	-55to+125
SS34	40	28	40	3.0	80	0.7	0.05	20	20	75	-55to+150
SS35	50	35	50	3.0	80	0.74	0.05	20	20	75	-65to+175
SS36	60	42	60	3.0	80	0.74	0.05	20	20	75	-65to+175
SS38	80	56	80	3.0	80	0.80	0.05	20	20	75	-65to+175
SS39	90	63	90	3.0	80	0.80	0.05	20	20	75	-65to+175
SS310	100	70	100	3.0	80	0.80	0.05	20	20	75	-65to+175
SS315	150	105	150	3.0	80	0.90	0.05	20	20	75	-65to+175
SS320	200	140	200	3.0	80	0.90	0.05	20	20	75	-65to+175

## NOTES:

\*.Pulse Test with PW = 300 usec ,1% Duty Cycle

\*.Mounted on P.C. Board with8.0mm2 copper pad areas .

## SMB 产品尺寸 (Dimension Unit: inch / mm )



## Electrical Characteristics - SMC ( 3A ) Series



Parameter	V <sub>RRM</sub> V	V <sub>RRS</sub> V	V <sub>DC</sub> V	I <sub>F(AV)</sub> A	I <sub>FSM</sub> A	V <sub>F</sub> <sup>*</sup> V	I <sub>R</sub> (MA)		R <sub>θJL</sub> <sup>*</sup> °C/W	R <sub>θJA</sub> °C/W	T <sub>J</sub> , T <sub>STR</sub> °C
							25°C	100°C			
SK32	20	14	20	3.0	100	0.5	0.2	20	20	75	-55to+125
SK33	30	21	30	3.0	100	0.5	0.2	20	20	75	-55to+125
SK34	40	28	40	3.0	100	0.7	0.05	20	20	75	-55to+150
SK35	50	35	50	3.0	100	0.74	0.05	20	20	75	-65to+175
SK36	60	42	60	3.0	100	0.74	0.05	20	20	75	-65to+175
SK38	80	56	80	3.0	100	0.80	0.05	20	20	75	-65to+175
SK39	90	63	90	3.0	100	0.80	0.05	20	20	75	-65to+175
SK310	100	70	100	3.0	100	0.80	0.05	20	20	75	-65to+175
SK315	150	105	150	3.0	100	0.90	0.05	20	20	75	-65to+175
SK320	200	140	200	3.0	100	0.90	0.05	20	20	75	-65to+175

## NOTES:

\* .Pulse Test with PW = 300 usec , 1% Duty Cycle

\* .Mounted on P.C. Board with 8.0mm<sup>2</sup> copper pad areas .

## Electrical Characteristics - SMC ( 5A ) Series



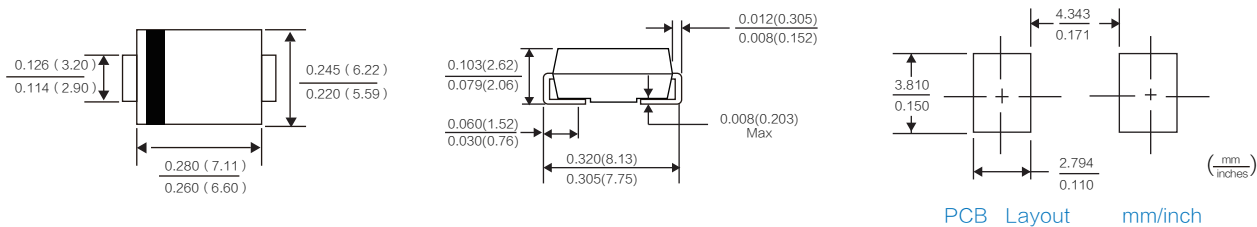
Parameter	V <sub>RRM</sub>	V <sub>RRS</sub>	V <sub>bc</sub>	I <sub>F(AV)</sub>	I <sub>FSM</sub>	V <sub>F</sub> *	I <sub>R</sub> (MA)		R <sub>θJL</sub> *	R <sub>θJA</sub>	T <sub>J</sub> , T <sub>STR</sub>
	V	V	V	A	A	V	25°C	100°C	°C/W	°C/W	°C
SK52	20	14	20	5.0	100	0.55	0.2	20	17	55	-55to+125
SK53	30	21	30	5.0	100	0.55	0.2	20	17	55	-55to+125
SK54	40	28	40	5.0	100	0.7	0.05	10	17	55	-55to+150
SK55	50	35	50	5.0	100	0.74	0.05	10	17	55	-65to+175
SK56	60	42	60	5.0	100	0.74	0.05	10	17	55	-65to+175
SK58	80	56	80	5.0	100	0.80	0.05	10	17	55	-65to+175
SK59	90	63	90	5.0	100	0.80	0.05	10	17	55	-65to+175
SK510	100	70	100	5.0	100	0.80	0.05	10	17	55	-65to+175
SK515	150	105	150	5.0	100	0.90	0.05	10	17	55	-65to+175
SK520	200	140	200	5.0	100	0.90	0.05	10	17	55	-65to+175

## NOTES:

\*.Pulse Test with PW = 300 usec ,1% Duty Cycle

 \*.Mounted on P.C. Board with 8.0mm<sup>2</sup> copper pad areas

## SMC/Do-214AB 产品尺寸 (Dimension Unit: mm) Dimensions in inches and (millimeters)

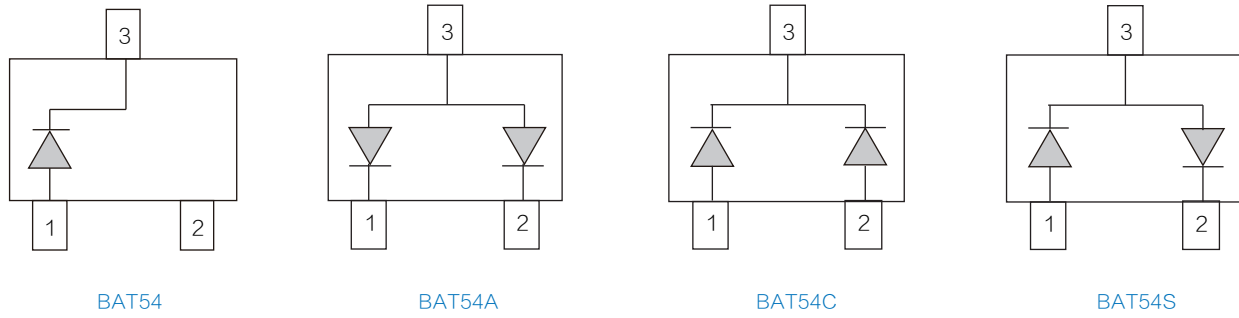


## Electrical Characteristics - SOT23 Series



PARAMETER	SYMBOL	BAT54	BAT54A	BAT54C	BAT54S	UNITS
Forward Power Dissipation@T <sub>A</sub> =25°C	P <sub>D</sub>			225		mW
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>			30		V
Maximum Average Forward Current at T <sub>L</sub> =75 °C	I <sub>F(AV)</sub>			0.2		A
Repetitive Peak Forward Current (T <sub>P</sub> =8.3ms .50% Duty Cycle)	I <sub>FRM</sub>			300		mA
Peak Forward Surge Current 1.0s (JEDEC method)	I <sub>FSM</sub>			0.6		A
Maximum Instantaneous Forward Voltage @I <sub>F</sub> =1mA , @I <sub>F</sub> =100mA	V <sub>F</sub>			0.32 0.8		V
Maximum DC Reverse Current at Rated DC Blocking Voltage@V <sub>R</sub> =25V	I <sub>R</sub>			2.0		uA
Thermal Resistance , Junction to Ambient	R <sub>θJA</sub>			500		°C/W
Junction Capacitance @ V <sub>R</sub> =1V	C <sub>J</sub>			10		PF
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STR</sub>			-55 to +125		°C

Circuit



Rating & Characteristic Curves

Figure 1- Forward Current Derating Curve

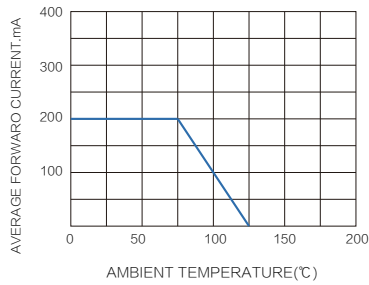


Figure 2- Typical Junction capacitance

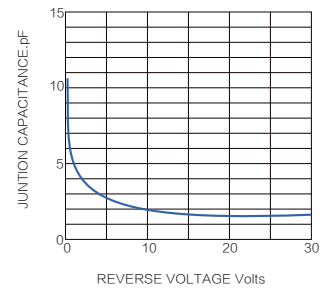


Figure 3- Typical Reverse Characteristics

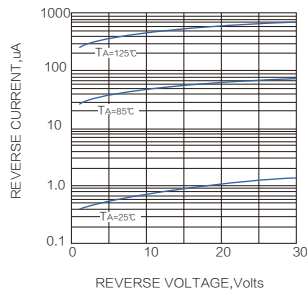


Figure 4 - Instantaneous Forward Characteristics

