



# BAT54Q/AQ/CQ/SQ

SOT-23 Schottky Barrier Diode

SOT-23 肖特基二极管

## 1. Description 描述

200mA surface-mount Schottky barrier diode in SOT-23 package, offers low turn-on voltage and fast switching capability, designed with PN junction guard ring for transient and ESD protection.

200mA 表面贴装肖特基势垒二极管, 采用 SOT-23 封装, 具备极低导通电压与快速开关特性, 采用 PN 结保护环设计, 可实现瞬态与静电放电 (ESD) 防护。

## 2. Features 特性

Feature 特性	Description 描述
Reverse Voltage 反向电压	$V_R \leq 30V$
Low Forward Voltage 低正向电压	$V_F \leq 0.4V @ I_F = 10mA$
Applications 应用	<ul style="list-style-type: none"><li>• Ultra high-speed switching 超高速开关</li><li>• Low current rectification 低电流整流</li><li>• Voltage clamping 电压箝位</li></ul>
Environmental Compliance 环保合规	Totally Lead-Free & Fully RoHS Compliant. 完全无铅和符合 RoHS 标准 <sup>[1]</sup> Halogen and Antimony Free, "Green" Device. 无卤素和无镉, “绿色”器件 <sup>[2]</sup>
Automotive Compliance 汽车合规	Qualified according to AEC-Q101 and recommended for use in automotive applications. 通过了 AEC-Q101 认证, 推荐用于汽车电子应用场景。

[1] No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.

无铅, 完全符合欧盟标准 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) 和 2015/863/EU (RoHS 3)。

[2] Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

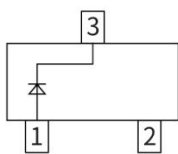
无卤素和无镉的“绿色”产品指溴含量<900ppm, 氯含量<900ppm (溴+氯总含量<1500ppm) 和镉化合物含量<1000ppm。

### 3. Mechanical Data 封装数据

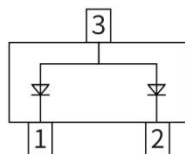
Feature 特性	Description 描述
Package 封装	SOT-23
Moisture Sensitivity Level 湿敏感度等级	J-STD-020 MSL1
Material 材料	Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0. 模塑塑料封装, "绿色" 成型复合材料; UL 可燃性等级 94V-0。
Dimensions 尺寸	1.9mm pitch; 2.9mm × 1.3mm × 1.0mm body 相邻引脚中心距为 1.9mm, 封装本体 (不含引脚) 尺寸为 2.9mm × 1.3mm × 1.0mm
Terminals Compliance 引脚合规	3 terminals, Tin Plated Leads, Solderable per MILSTD-202, Method 208 <sup>③</sup> 3 个镀锡引脚, 可焊性符合 MIL-STD-202 标准中 208 方法 e3 条款的要求
Weight 重量	0.008 grams (Approximate) 约 0.008 克
Polarity 极性	See Diagrams Below 极性见下图



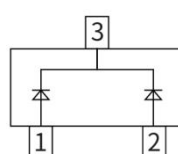
SOT-23 Top View



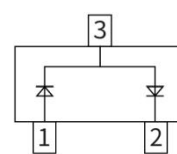
BAT54Q



BAT54AQ



BAT54CQ



BAT54SQ

### 4. Ordering Information 订购信息

Part Number	Compliance	Package	Reel Size (inches)	Tape Width (mm)	Quantity Per Reel
BAT54Q	Automotive	SOT-23	7	8	3000
BAT54AQ	Automotive	SOT-23	7	8	3000
BAT54CQ	Automotive	SOT-23	7	8	3000
BAT54SQ	Automotive	SOT-23	7	8	3000



## 5. Marking Information 丝印信息

Part Number	Marking Code
BAT54Q	KL1
BAT54AQ	KL2
BAT54BQ	KL3
BAT54SQ	KL4

## 6. Absolute Maximum Ratings( $T_a = +25^{\circ}\text{C}$ ) 绝对最大额定值

Characteristic 特性	Symbol 符号	Value 值	Unit 单位
Repetitive Peak Reverse Voltage 重复峰值反向电压	$V_{RRM}$	30	V
Reverse Work Voltage 反向工作电压	$V_{RWM}$	30	V
DC Reverse Voltage 直流反向电压	$V_R$	30	V
Forward Work Current 正向工作电流	$I_F(I_O)$	200	mA
Peak Forward Current 正向峰值电流	$I_{FSM}$	600	mA

## 7. Thermal Characteristics( $T_a = +25^{\circ}\text{C}$ ) 热特性

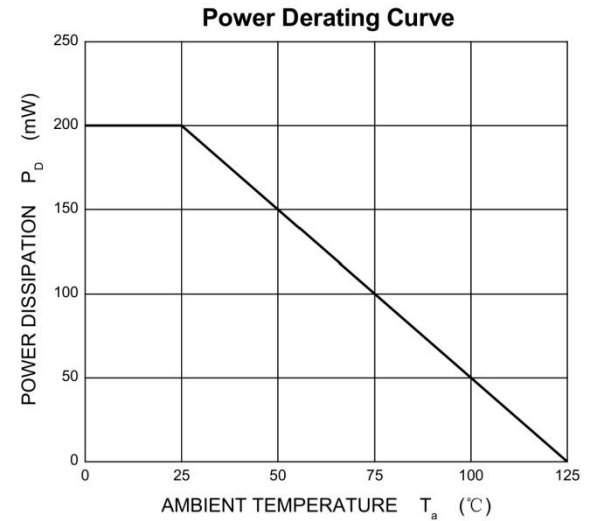
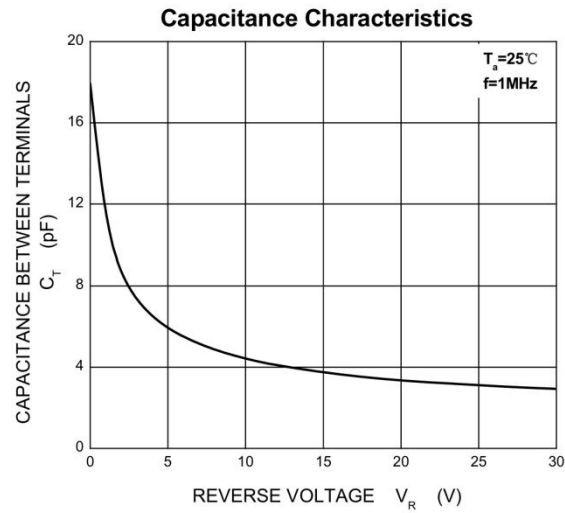
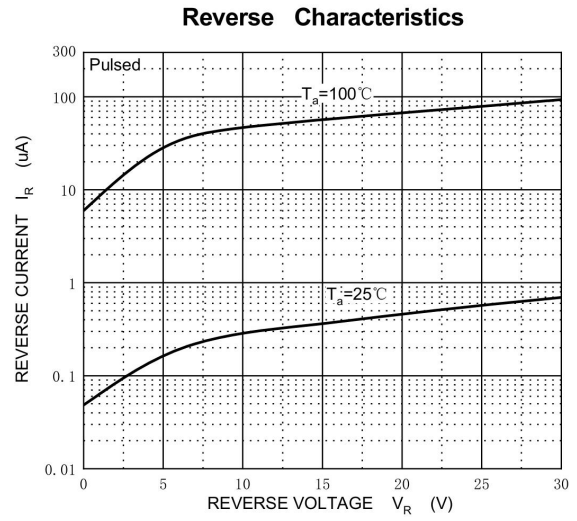
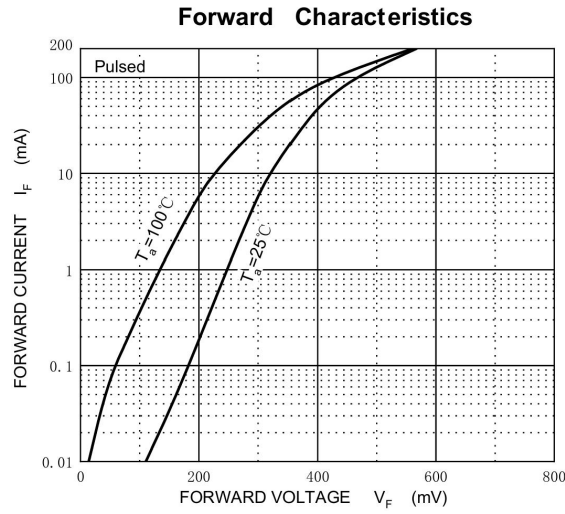
Characteristic 特性	Symbol 符号	Value 值	Unit 单位
Power Dissipation 耗散功率	$P_D$	200	mW
Thermal Resistance From Junction To Ambient 结到环境的热阻	$R_{\theta JA}$	500	$^{\circ}\text{C}/\text{W}$
Junction Temperature 结温	$T_J$	-55 ~ +125	$^{\circ}\text{C}$
Storage Temperature 储藏温度	$T_{stg}$	-55 ~ +150	$^{\circ}\text{C}$

8. Electrical Characteristics( $T_a = +25^\circ\text{C}$ ) 电特性

Characteristic 特性	Symbol 符号	Min. 最小值	Typ. 典型值	Max. 最大值	Unit 单位	Conditions 条件
Reverse Breakdown Voltage 反向击穿电压	$V_{(BR)}$	30	-	-	V	$I_R = 100\mu A$
Reverse Leakage Current 反向漏电流	$I_R$	-	-	2	$\mu A$	$V_R = 25V$
Forward Voltage 正向电压	$V_F$	-	-	0.24	V	$I_F = 0.1mA$
		-	-	0.32	V	$I_F = 1mA$
		-	-	0.4	V	$I_F = 10mA$
		-	-	0.5	V	$I_F = 30mA$
		-	-	0.8	V	$I_F = 100mA$
Diode Capacitance 二极管电容	$C_D$	-	-	10	pF	$V_R = 1V,$ $f = 1MHz$
Reverse Recovery Time 反向恢复时间	$t_{rr}$	-	-	5	ns	-

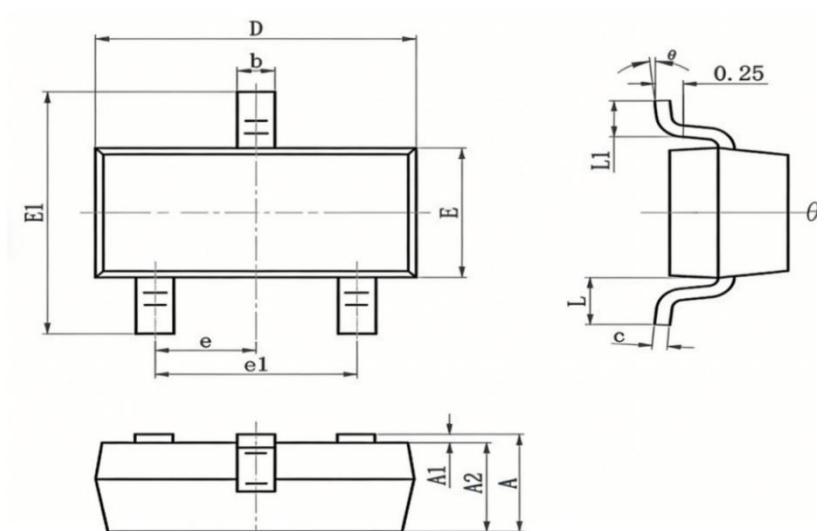


### 9. Typical Electrical Characteristics Curve 典型电特性曲线



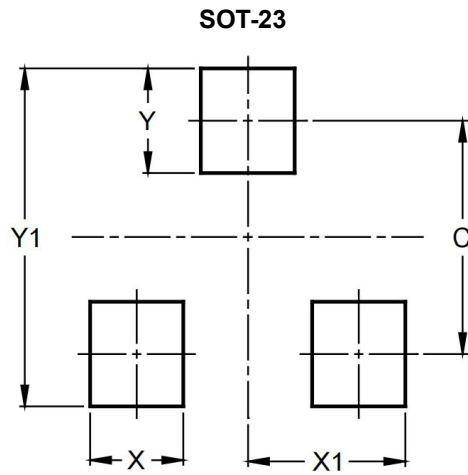
## 10. Package Outline Dimensions 封装外形尺寸

### SOT-23



Symbol 符号	Millimeters 毫米	
	Min.最小值	Max.最大值
A	0.900	1.150
A1	0	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.900	1.000
e1	1.800	2.000
L	0.500	0.600
L1	0.300	0.500
$\theta$	0°	8°

## 11. Suggested Pad Layout 推荐焊盘布局



Dimensions 尺寸	Millimeters 毫米
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

Fig. Soldering footprint for SOT-23

图 SOT-23 的引脚焊接



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