

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

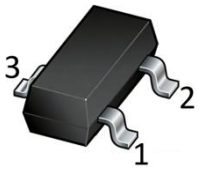
Feature 特性	Description 描述
Reverse Voltage 反向电压	$V_R \leq 30V$
Low Forward Voltage 低正向电压	$V_F \leq 0.4V @ I_F = 10mA$
Applications 应用	• Ultra high-speed switching 超高速开关 • Low current rectification 低电流整流 • Voltage clamping 电压箝位
Environmental Compliance 环保合规	Totally Lead-Free & Fully RoHS Compliant. 完全无铅和符合 RoHS 标准[1] Halogen and Antimony Free, "Green" Device. 无卤素和无锑，“绿色”器件[2]
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.
无卤素和无锑的“绿色”产品指溴含量<900ppm，氯含量<900ppm（溴+氯总含量<1500ppm）和锑化合物含量<1000ppm。

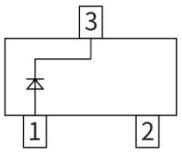
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3. Mechanical Data 封装数据

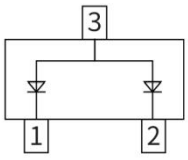
Feature 特性	Description 描述
Package 封装	SOT-23
Moisture Sensitivity Level 湿敏感度等级	J-STD-020 MSL1
Material 材料	Molded Plastic, “Green” Molding Compound; UL Flammability Classification Rating 94V-0. 模塑塑料封装，“绿色”成型复合材料；UL 可燃性等级 94V-0。
Dimensions 尺寸	$1.9mm$ pitch; $2.9mm \times 1.3mm \times 1.0mm$ body 相邻引脚中心距为 $1.9mm$，封装本体（不含引脚）尺寸为 $2.9mm \times 1.3mm \times 1.0mm$
Terminals Compliance 引脚合规	3 terminals, Tin Plated Leads, Solderable per MILSTD-202, Method 208 e3 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



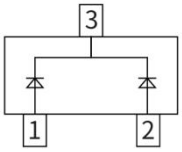
SOT-23 Top View



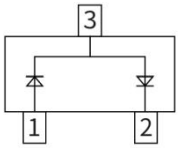
BAT54Q



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

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5. Marking Information 丝印信息

Part Number	Marking Code
BAT54Q	KL1
BAT54AQ	KL2
BAT54CQ	KL3
BAT54SQ	KL4

6. Absolute Maximum Ratings(T_a =+ 25℃) 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℃) 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	℃/W
Junction Temperature 结温	T_J	-55 ~ +125	℃
Storage Temperature 储藏温度	T_{stg}	-55 ~ +150	℃

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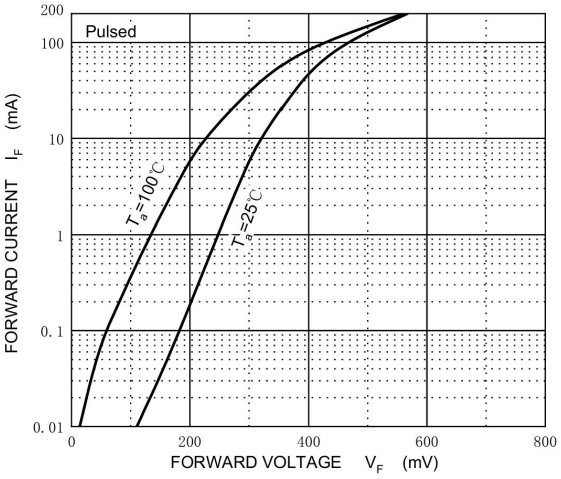
8. Electrical Characteristics(T_a =+ 25℃) 电特性

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	μA	$V_R = 25V$
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	-

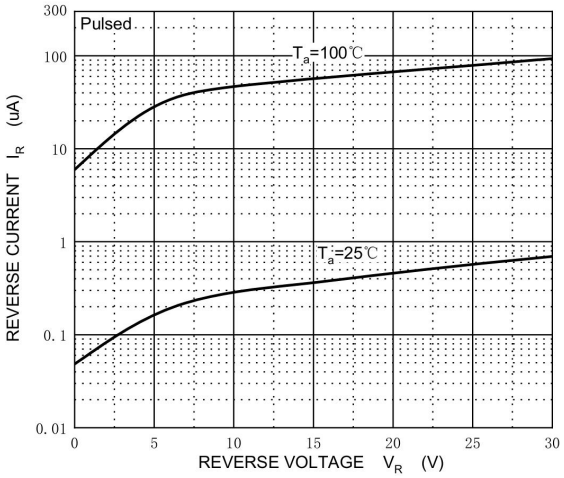
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9. Typical Electrical Characteristics Curve 典型电特性曲线

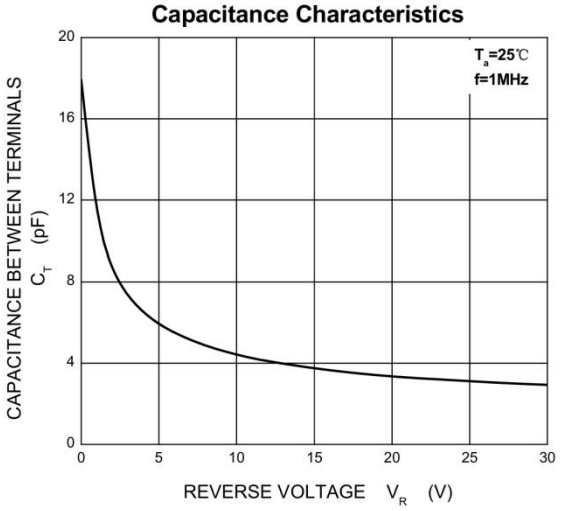
Forward Characteristics



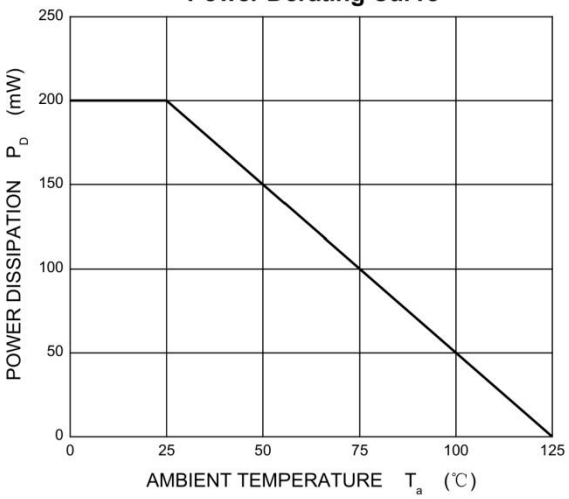
Reverse Characteristics



Capacitance Characteristics



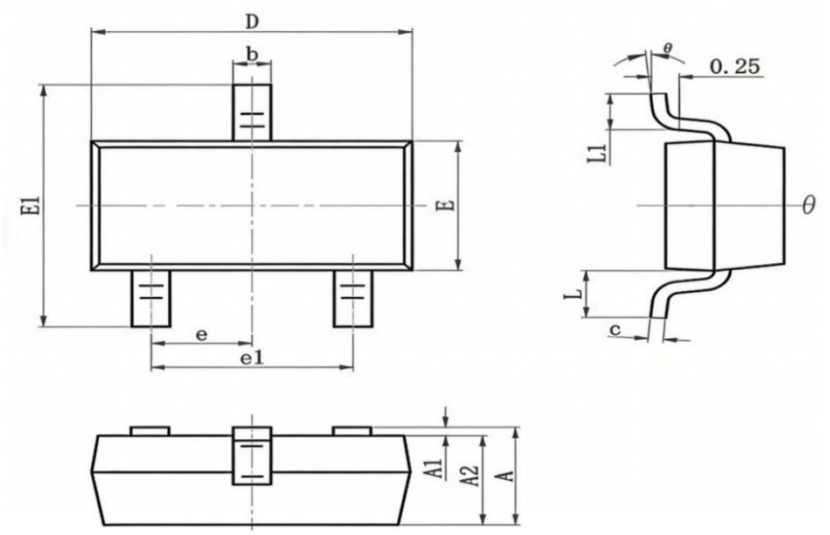
Power Derating Curve



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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
θ	0°	8°

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11. Suggested Pad Layout 推荐焊盘布局

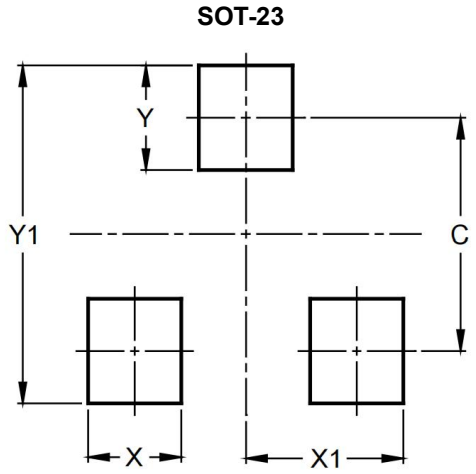


Fig. Soldering footprint for SOT-23

图 SOT-23 的引脚焊接

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

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