

BR2SD2010TAQ

Rev.A Dec.-2023

描述 / Descriptions

SOT-89 塑封封装 NPN 半导体三极管。

Silicon NPN transistor in a SOT-89 Plastic Package.

特征 / Features

与 BR2SB2012TAQ 互补，符合 AEC-Q101 标准高可靠性要求，无卤产品。

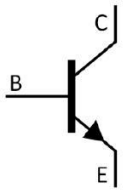
Complementary pair with BR2SB2012TAQ, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

用途 / Applications

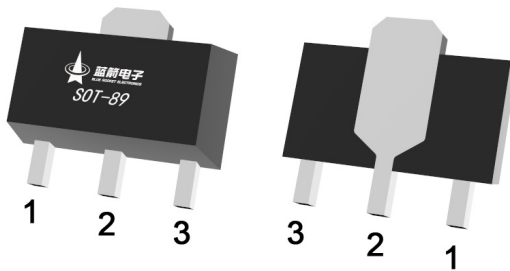
应急照明电路、电机驱动（包括直流风扇）、背光逆变器、电源开关、栅极驱动 MOSFETs 和 IGBTs，满足汽车应用的严格要求。

Emergency Lighting Circuits, Motor Driving (Including DC Fans), Backlight Inverters, Power Switches, Gate Driving MOSFETs and IGBTs, Meet the stringent requirements of automotive applications.

内部等效电路 / Equivalent Circuit



引脚排列 / Pinning



PIN1 : Base

PIN 2 : Collector

PIN 3 : Emitter

放大及印章代码 / hFE Classifications & Marking

见印章说明。

See Marking Instructions.

极限参数 / Absolute Maximum Ratings(Ta=25°C)

参数 Parameter	符号 Symbol	数值 Rating	单位 Unit
Collector to Base Voltage	V _{CBO}	150	V
Collector to Emitter Voltage	V _{CEO}	60	V
Emitter to Base Voltage	V _{EBO}	7	V
Collector Current	I _C	5	A
Base Current	I _B	2	A
Peak Collector Current	I _{CM}	20	A
Collector Dissipation	P _C	1.5	W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{stg}	-55~150	°C
Junction to Ambient	θ _{JA}	83	°C/W
Junction to Case	θ _{JC}	60	°C/W

Notes:

1.Absolute maximum ratings are those values beyond which the device could be permanently damaged.Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2.Single pulse, PW=10ms.

3.Device mounted on FR-4 PCB with minimum recommended pad layout. (25×25×1.6mm)

电性能参数 / Electrical Characteristics(Ta=25°C)

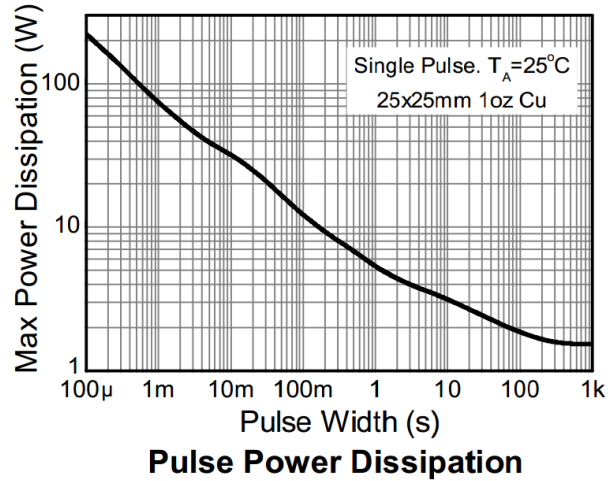
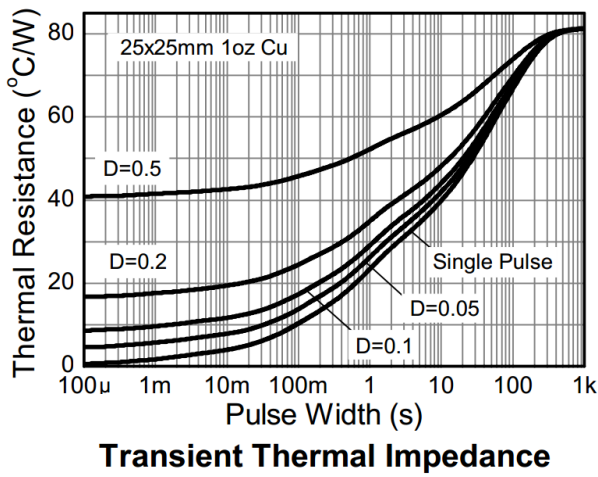
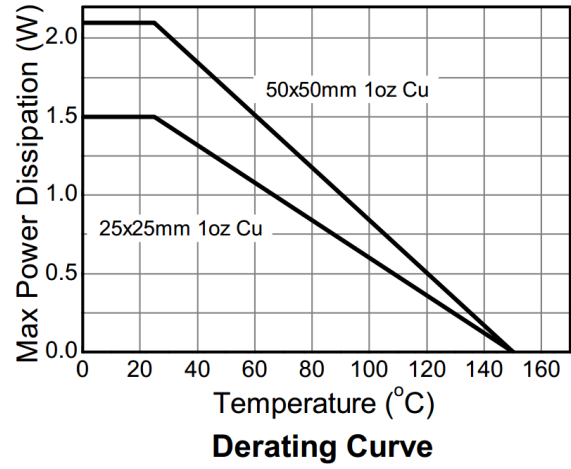
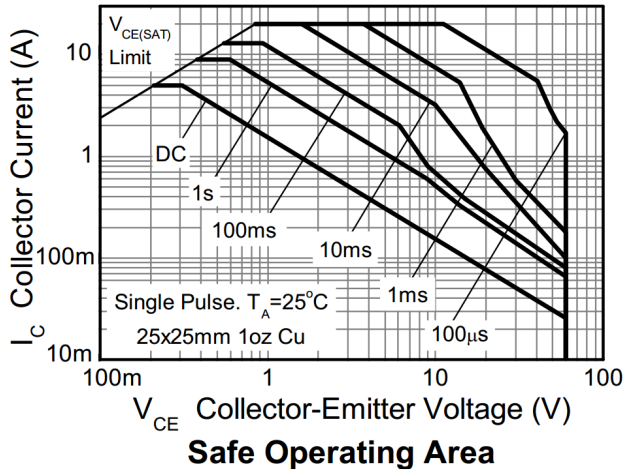
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
Collector-Base Breakdown Voltage	V _{CBO}	I _C =100μA I _E =0	150			V
Collector-Emitter Breakdown Voltage	V _{CEO}	I _C =10mA I _B =0	60			V
Emitter-Base Breakdown Voltage	V _{EBO}	I _E =100μA I _C =0	7.0			V
Collector Cutoff Current	I _{CBO}	V _{CB} =120V I _E =0			20	nA
Emitter Cutoff Current	I _{EBO}	V _{EB} =6.0V I _C =0			10	nA
Base Emitter On Voltage (Note)	V _{BE(ON)}	V _{CE} =1.0V I _C =6A			1050	mV
Base-Emitter Saturation Voltage (Note)	V _{BE(sat)}	I _C =6A I _B =300mA(Note)			1100	mV
Collector-Emitter Saturation Voltage (Note)	V _{CE(sat)}	I _C =100mA I _B =5mA			30	mV
		I _C =1A I _B =100mA			55	mV
		I _C =1A I _B =50mA			65	mV
		I _C =2A I _B =50mA			125	mV
		I _C =6A I _B =300mA			230	mV

电性能参数 / Electrical Characteristics(Ta=25°C)

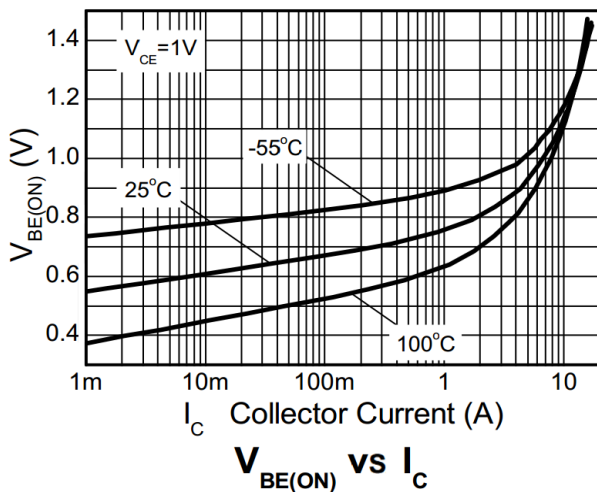
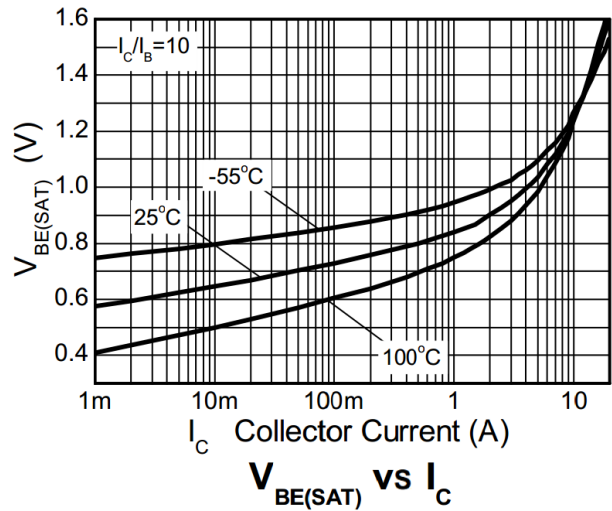
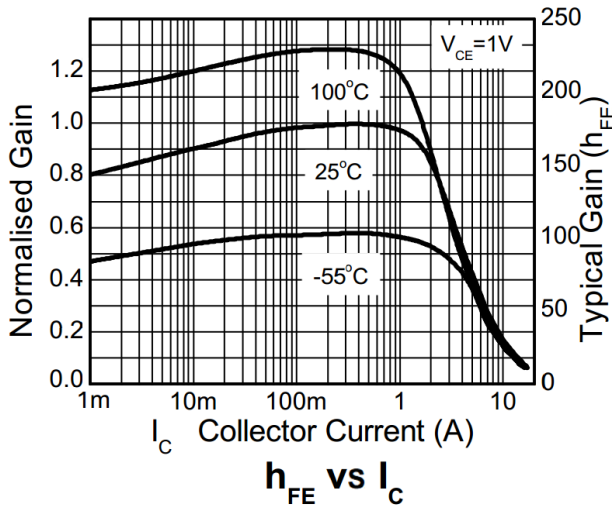
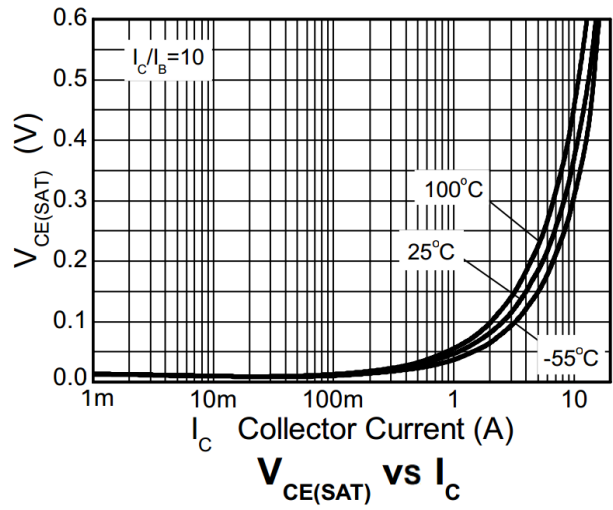
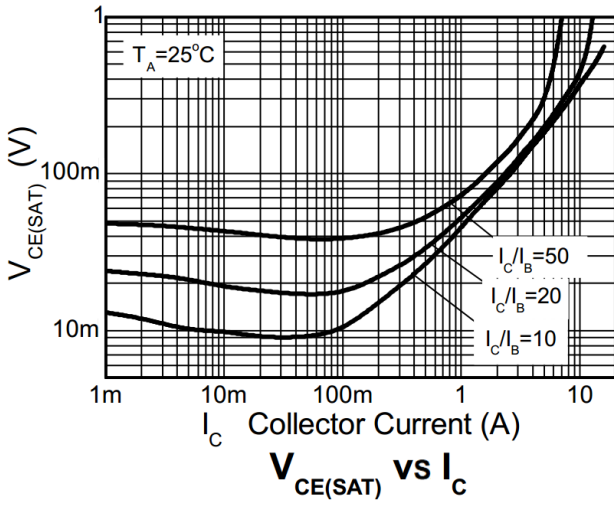
参数 Parameter	符号 Symbol	测试条件 Test Conditions	最小值 Min	典型值 Typ	最大值 Max	单位 Unit
DC Current Transfer Ratio (Note)	h _{FE}	V _{CE} =1.0V I _C =10mA	100			
		V _{CE} =1.0V I _C =2A	100		300	
		V _{CE} =1.0V I _C =5A	55			
		V _{CE} =1.0V I _C =10A	20			
Turn-ON Delay Time (Note 1)	t _{D(ON)}	I _C =1A, V _{CC} =10V, I _{B1} =I _{B2} =100mA		42		ns
Turn-OFF Delay Time	t _{D(OFF)}			760		ns
Transition Frequency (Note)	f _T	V _{CE} =10V I _C =100mA		130		MHz
Collector Capacitance	C _{ob}	V _{CB} =10V f=1.0MHz		31		pF

Note : Measured under pulsed conditions. Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%

热特性和降额信息 / Thermal Characteristics and Derating Information



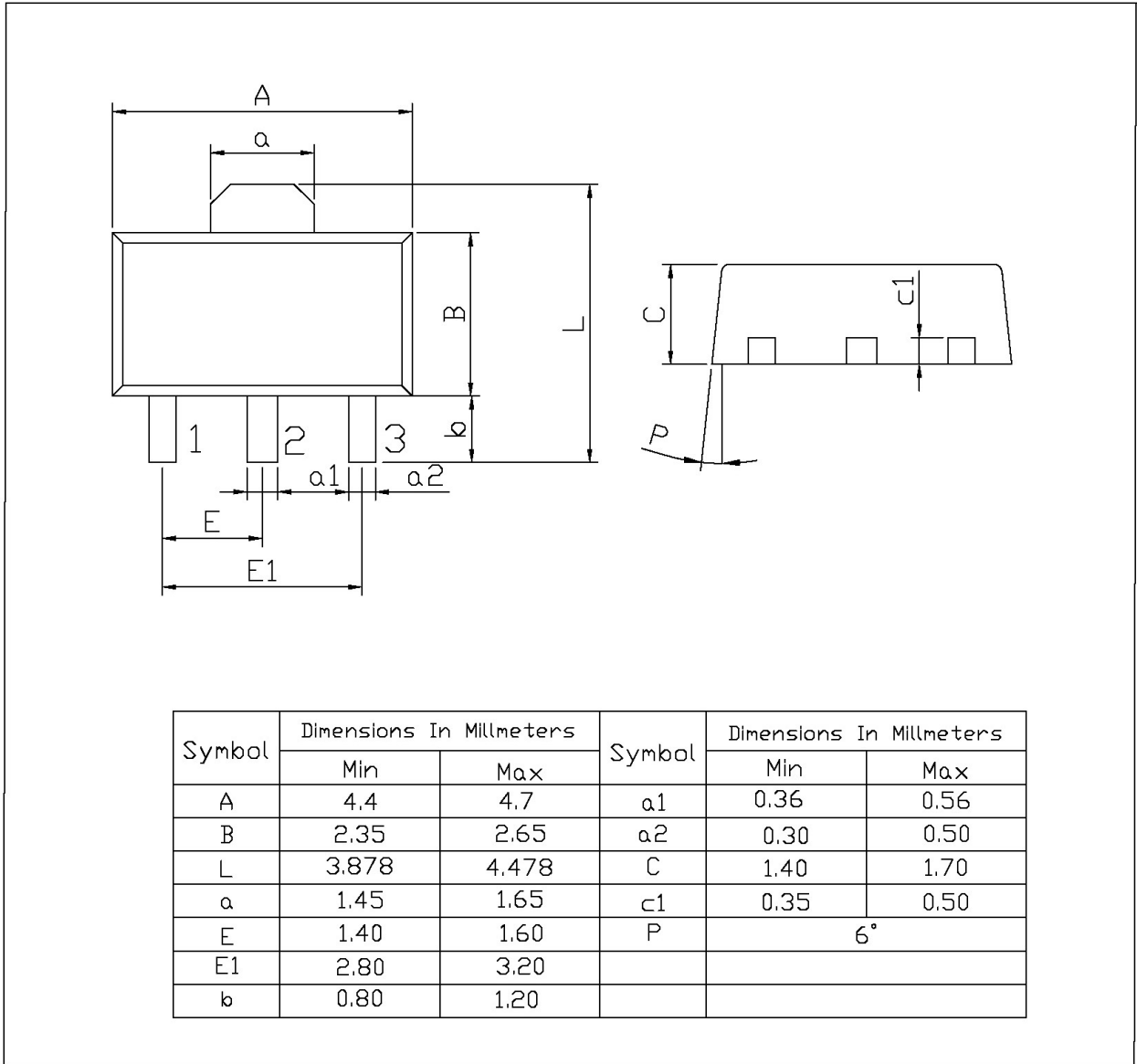
电参数曲线图 / Electrical Characteristic Curve



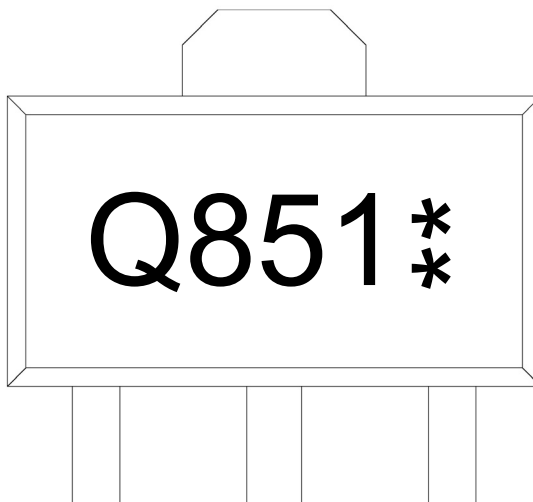
外形尺寸图 / Package Dimensions

SOT-89

单位: mm



印章说明 / Marking Instructions



说明：

Q： 为汽车无卤产品标识

851： 为型号代码

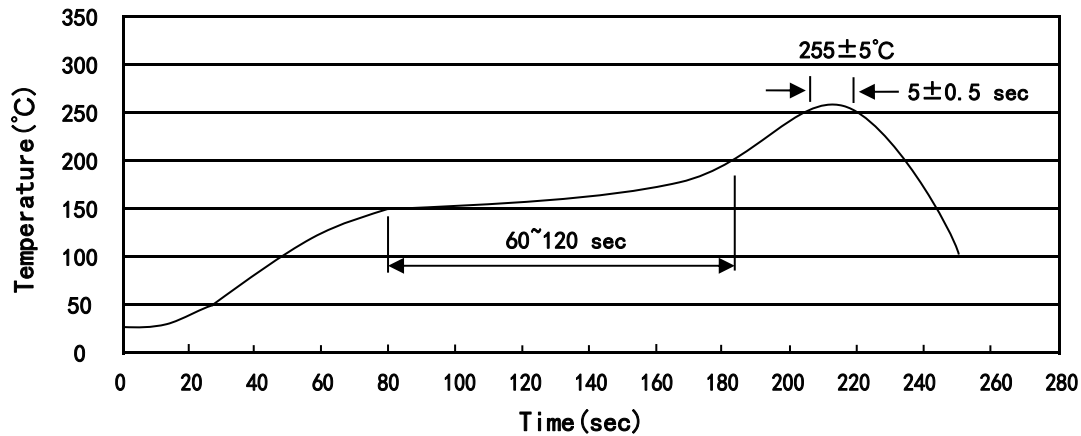
**： 为生产批号代码，随生产批号变化

Note:

Q: Automobile halogen-free product Code

851: Product Type Code

** : Lot No. Code, code change with Lot No

回流焊温度曲线图(无铅) / Temperature Profile for IR Reflow Soldering(Pb-Free)


说明：

- 1、预热温度 150~200°C，时间 60~120sec;
- 2、峰值温度 255±5°C，时间持续为 5±0.5sec;
- 3、焊接制程冷却速度为 2~10°C/sec.

Note:

- 1.Preheating:150~200°C, Time:60~120sec.
- 2.Peak Temp.:255±5°C, Duration:5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

耐焊接热试验条件 / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

包装规格 / Packaging SPEC.

卷盘包装 / REEL

Package Type 封装形式	Units 包装数量					Dimension 包装尺寸 (unit: mm ³)		
	Units/Reel 只/卷盘	Reels/Inner Box 卷盘/盒	Units/Inner Box 只/盒	Inner Boxes/Outer Box 盒/箱	Units/Outer Box 只/箱	Reel	Inner Box 盒	Outer Box 箱
SOT-89	1,000	7	7,000	6	42,000	7" ×12	180×120×180	390×385×205

使用说明 / Notices