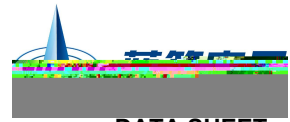


**BRBC846Q**

Rev.A Apr.-2022



**DATA SHEET**

|  |  |  |  |  |  |
|--|--|--|--|--|--|
|  |  |  |  |  |  |
|--|--|--|--|--|--|

F 2017

### / Descriptions

SOT-23                  NPN

Silicon NPN transistor in a SOT-23 Plastic Package.

### / Features

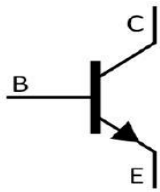
AEC-Q101

Low current, Low voltage, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

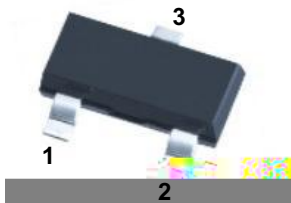
### / Applications

General power amplifier and switching application, Meet the stringent requirements of automotive applications.

### / Equivalent Circuit



### / Pinning



PIN1    Base                  PIN 2    Emitter                  PIN 3    Collector

### / $h_{FE}$ Classifications & Marking

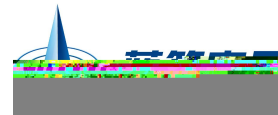
| $h_{FE}$ Classifications<br>Symbol | A       | B       |
|------------------------------------|---------|---------|
| $h_{FE}$ Range                     | 110~220 | 200~450 |
| Marking                            | 1AQ     | Q1B     |

/ Absolute Maximum Ratings( $T_a=25$  )

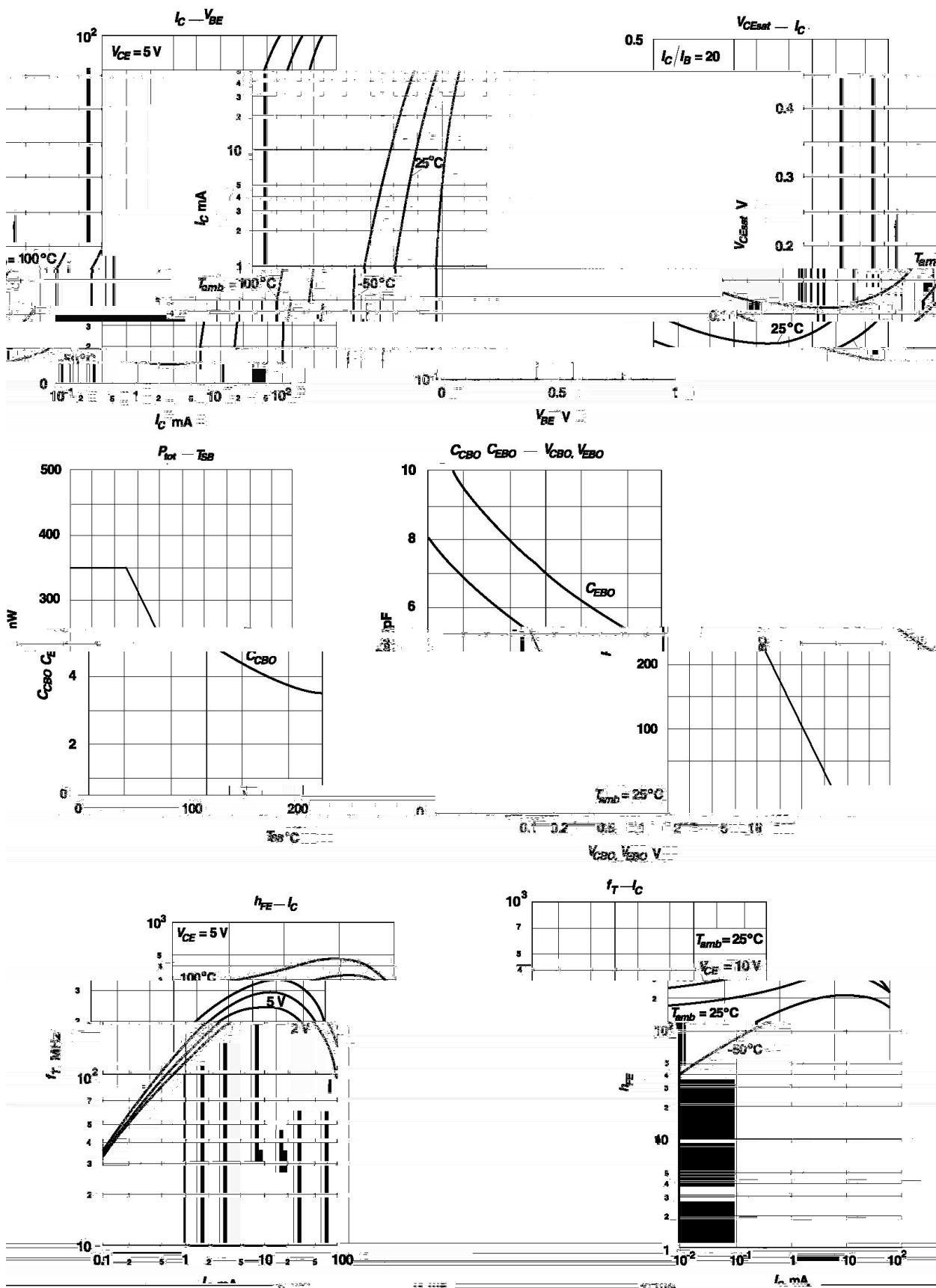
| Parameter                      | Symbol    | Rating  | Unit               |
|--------------------------------|-----------|---------|--------------------|
| Collector to Base Voltage      | $V_{CBO}$ | 80      | V                  |
| Collector to Emitter Voltage   | $V_{CEO}$ | 65      | V                  |
| Emitter to Base Voltage        | $V_{EBO}$ | 6.0     | V                  |
| Collector Current - Continuous | $I_C$     | 100     | mA                 |
| Collector Power Dissipation    | $P_C$     | 350     | mW                 |
| Junction Temperature           | $T_j$     | 150     | $^{\circ}\text{C}$ |
| Storage Temperature Range      | $T_{stg}$ | -55 150 | $^{\circ}\text{C}$ |

/ Electrical Characteristics( $T_a=25$  )

| Parameter                               | Symbol           | Test Conditions                                                                  | Min  | Typ  | Max   | Unit          |
|-----------------------------------------|------------------|----------------------------------------------------------------------------------|------|------|-------|---------------|
| Collector Cut-Off Current               | $I_{CBO}$        | $V_{CB}=30\text{V}$ $I_E=0$                                                      |      |      | 0.015 | $\mu\text{A}$ |
| DC Current Gain                         | $h_{FE}$         | $V_{CE}=5.0\text{V}$ $I_C=2.0\text{mA}$                                          | 110  |      | 450   |               |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)(1)}$ | $I_C=10\text{mA}$ $I_B=0.5\text{mA}$                                             |      | 0.09 | 0.25  | V             |
|                                         | $V_{CE(sat)(2)}$ | $I_C=100\text{mA}$ $I_B=5.0\text{mA}$                                            |      | 0.2  | 0.6   | V             |
| Base to Emitter Saturation Voltage      | $V_{BE(sat)(1)}$ | $I_C=10\text{mA}$ $I_B=0.5\text{mA}$                                             |      | 0.7  |       | V             |
|                                         | $V_{BE(sat)(2)}$ | $I_C=100\text{mA}$ $I_B=5.0\text{mA}$                                            |      | 0.9  |       | V             |
| Base to Emitter Voltage                 | $V_{BE(1)}$      | $V_{CE}=5.0\text{V}$ $I_C=2.0\text{mA}$                                          | 0.58 |      | 0.7   | V             |
|                                         | $V_{BE(2)}$      | $V_{CE}=5.0\text{V}$ $I_C=10\text{mA}$                                           |      |      | 0.75  | V             |
| Transition Frequency                    | $f_T$            | $V_{CE}=5.0\text{V}$ $f=100\text{MHz}$ $I_C=10\text{mA}$                         |      | 300  |       | MHz           |
| Collector Output Capacitance            | $C_{ob}$         | $V_{CB}=10\text{V}$ $f=1.0\text{MHz}$ $I_E=0$                                    |      | 2.5  | 4.5   | pF            |
| Noise Figure                            | NF               | $V_{CE}=6.0\text{V}$ $I_C=0.1\text{mA}$ $R_g=10\text{K}\Omega$ $f=1.0\text{KHz}$ |      | 1.0  | 10    | dB            |

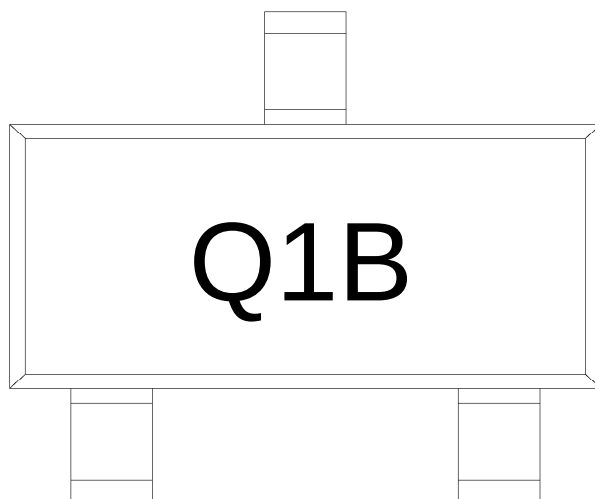


## / Electrical Characteristic Curve





**/ Marking Instructions**



Q

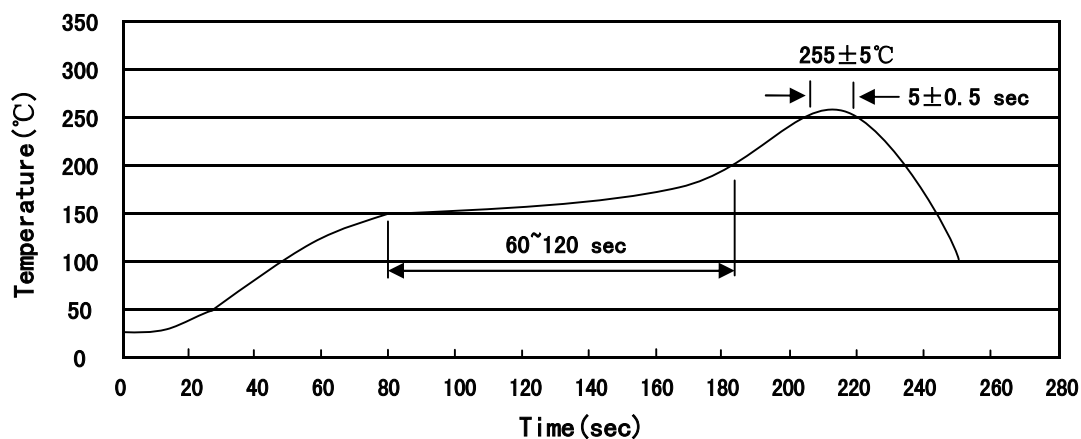
1B

Note:

Q: Automobile halogen-free product Code

1B: Product Type Code

## ( ) / 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.

## / Resistance to Soldering Heat Test Conditions

温度：260±5°C

时间：10±1 sec.

Temp.:260±5°C

Time:10±1 sec

## / Packaging SPEC.

卷盘包装 / REEL

| Package Type<br>封装形式 | Units 包装数量         |                         |                        |                              |                        | Dimension 包装尺寸 (unit: mm <sup>3</sup> ) |             |             |
|----------------------|--------------------|-------------------------|------------------------|------------------------------|------------------------|-----------------------------------------|-------------|-------------|
|                      | Units/Reel<br>只/卷盘 | Reels/Inner Box<br>卷盘/盒 | Units/Inner Box<br>只/盒 | Inner Boxes/Outer Box<br>盒/箱 | Units/Outer Box<br>只/箱 | Reel                                    | Inner Box 盒 | Outer Box 箱 |
| SOT-23               | 3,000              | 10                      | 30,000                 | 6                            | 180,000                | 7" x8                                   | 180×120×180 | 390×385×205 |

## / Notices