## / Descriptions

SOT-23 PNP Silicon PNP transistor in a SOT-23 Plastic Package.

## / Features

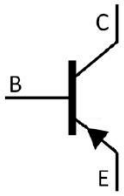
$h_{FE}$ $V_{CE(sat)}$ AEC-Q101

High DC Current Gain, Low Collector to Emitter Saturation Voltage, Qualified to AEC-Q101 Standards for High Reliability, HF Product.

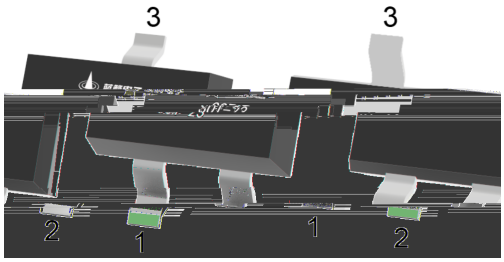
## / Applications

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

## / Equivalent Circuit




## / Pinning




PIN 1 Base PIN 2 Emitter PIN 3 Collector

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

| | |
|---|---|
| $h_{FE}$ Range | 100～300 |
| Marking | • Q2A |

## / Absolute Maximum Ratings(Ta=25 )

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | -40 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | -40 | V |
| Emitter to Base Voltage | $V_{EBO}$ | -5.0 | V |
| Collector Current | $I_C$ | -200 | mA |
| Collector Power Dissipation | $P_C$ | 300 | mW |
| Junction Temperature | $T_j$ | 150 | |
| Storage Temperature Range | $T_{stg}$ | -55～150 | |

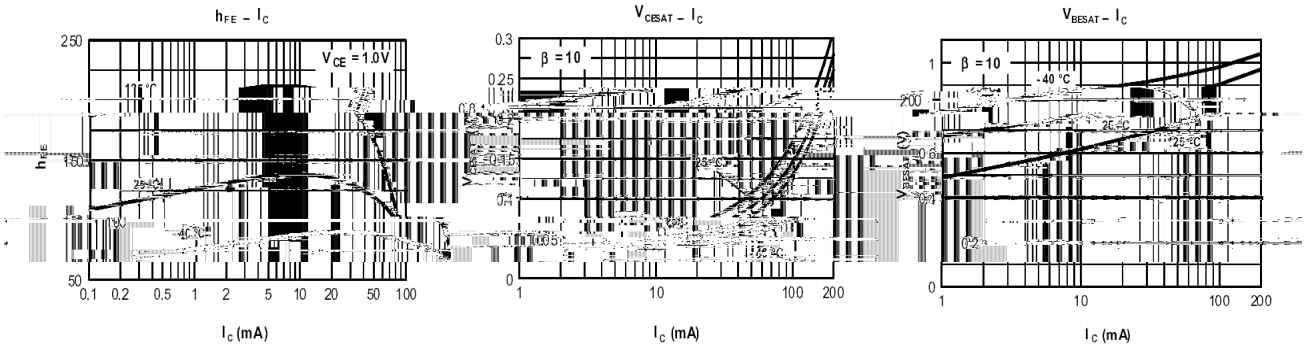
## / Electrical Characteristics(Ta=25 )

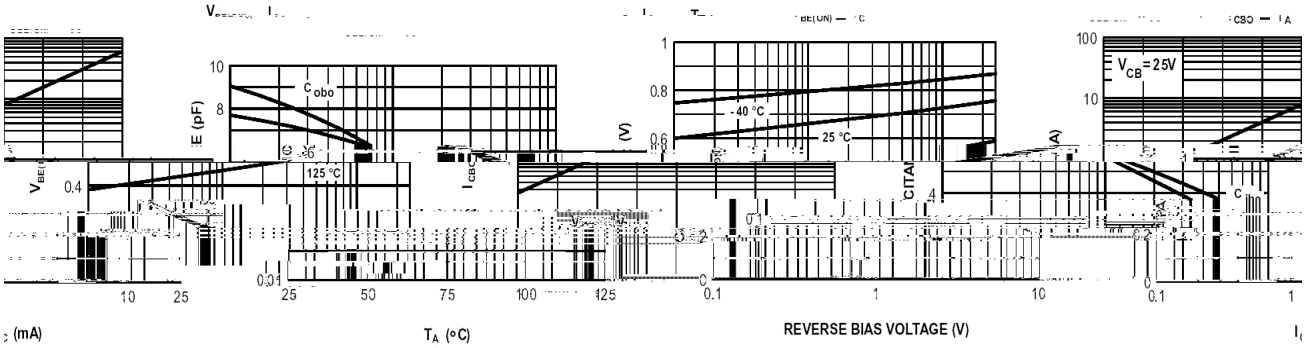
| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Collector to Base Breakdown Voltage | $V_{CBO}$ | $I_C$=-10μA $I_E$=0 | -40 | | | V |
| Collector to Emitter Breakdown Voltage | $V_{CEO}$ | $I_C$=-1.0mA $I_B$=0 | -40 | | | V |
| Emitter to Base Breakdown Voltage | $V_{EBO}$ | $I_E$=-10μA $I_C$=0 | -5.0 | | | V |
| Collector Cut-Off Current | $I_{CBO}$ | $V_{CB}$=-30V $I_E$=0 | | | -0.05 | μA |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=-3.0V $I_C$=0 | | | -0.05 | μA |
| DC Current Gain | $h_{FE(1)}$ | $V_{CE}$=-1.0V $I_C$=-10mA | 100 | | 300 | |
| | $h_{FE(2)}$ | $V_{CE}$=-1.0V $I_C$=-100mA | 30 | | | |
| | $h_{FE(3)}$ | $V_{CE}$=-1.0V $I_C$=-50mA | 60 | | | |
| | $h_{FE(4)}$ | $V_{CE}$=-1.0V $I_C$=-1.0mA | 80 | | | |
| | $h_{FE(5)}$ | $V_{CE}$=-1.0V $I_C$=-0.1mA | 60 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)\ (1)}$ | $I_C$=-10mA $I_B$=-1.0mA | | | -0.25 | V |
| | $V_{CE(sat)\ (2)}$ | $I_C$=-50mA $I_B$=-5.0mA | | | -0.4 | V |
| Base-Emitter Saturation Voltage | $V_{BE(sat)\ (1)}$ | $I_C$=-10mA $I_B$=-1.0mA | -0.65 | | -0.85 | V |
| | $V_{BE(sat)\ (2)}$ | $I_C$=-50mA $I_B$=-5.0mA | | | -0.95 | V |

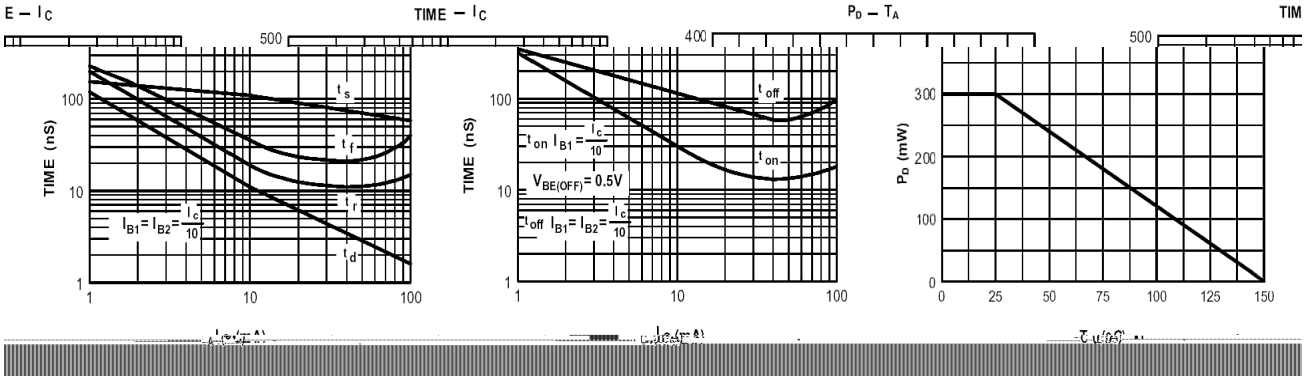
## / Electrical Characteristics(Ta=25 )

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Transition Frequency | $f_T$ | $V_{CE}$=-20V $I_C$=-10mA f=100MHz | 250 | | | MHz |
| Output Capacitance | $C_{ob}$ | $V_{CB}$=-5.0V f=1.0MHz | | | 4.5 | pF |
| Storage Time | $t_{stg}$ | $V_{CC}$=-3.0V $I_C$=-10mA $I_{B1}$=-$I_{B2}$=-1.0mA | | | 225 | ns |
| Fall Time | $t_f$ | $V_{CC}$=-3.0V $I_C$=-10mA $I_{B1}$=-$I_{B2}$=-1.0mA | | | 75 | ns |
| Delay Time | $t_d$ | $V_{CC}$=-3.0V $V_{BE}$=-0.5V $I_C$=-10mA $I_{B1}$=-1.0mA | | | 35 | ns |
| Rise Time | $t_r$ | $V_{CC}$=-3.0V $V_{BE}$=-0.5V $I_C$=-10mA $I_{B1}$=-1.0mA | | | 35 | ns |
| Input Capacitance | $C_{ib}$ | $V_{EB}$=-0.5V f=1.0MHz | | | 10 | pF |

## / Electrical Characteristic Curve



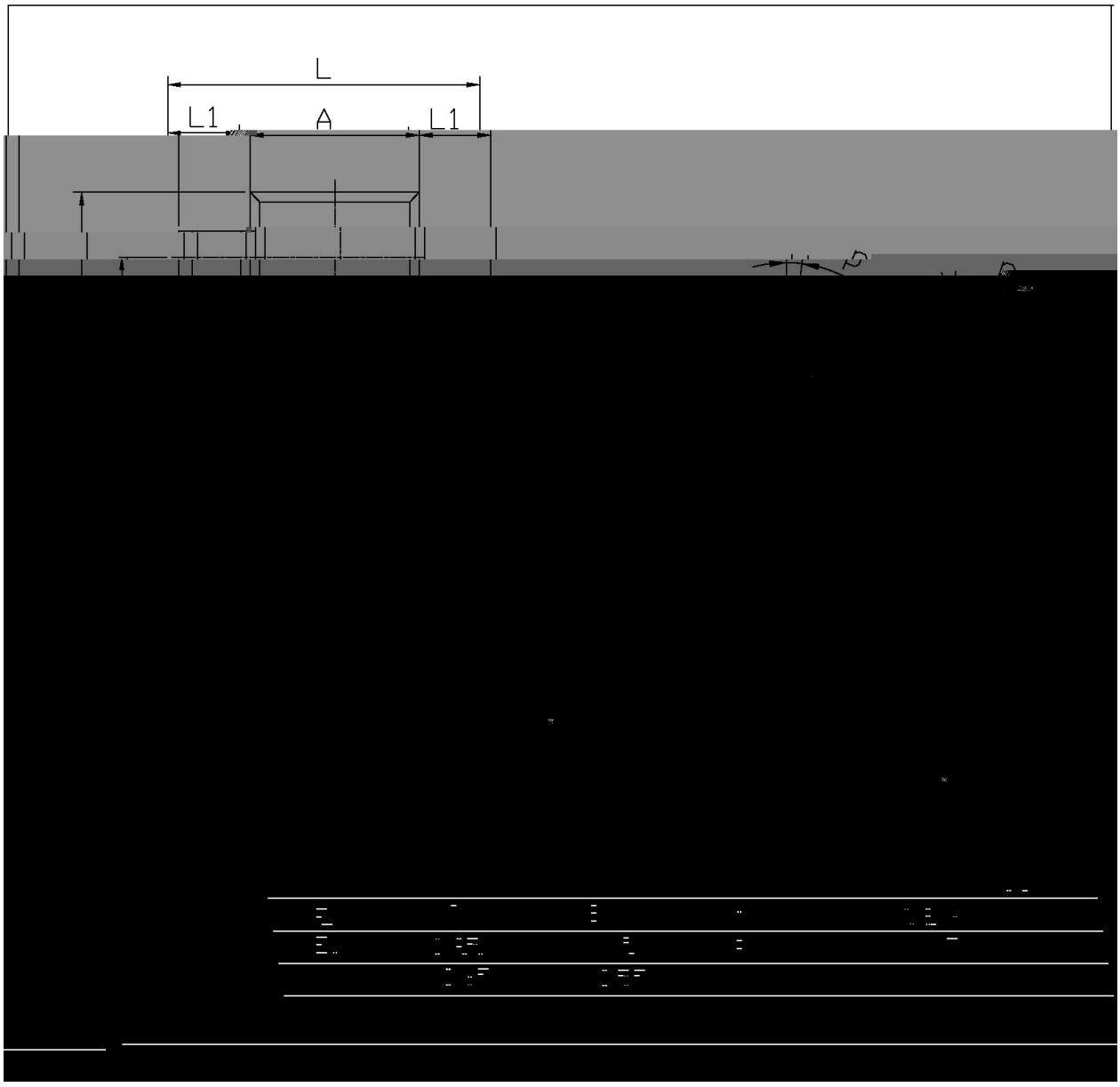



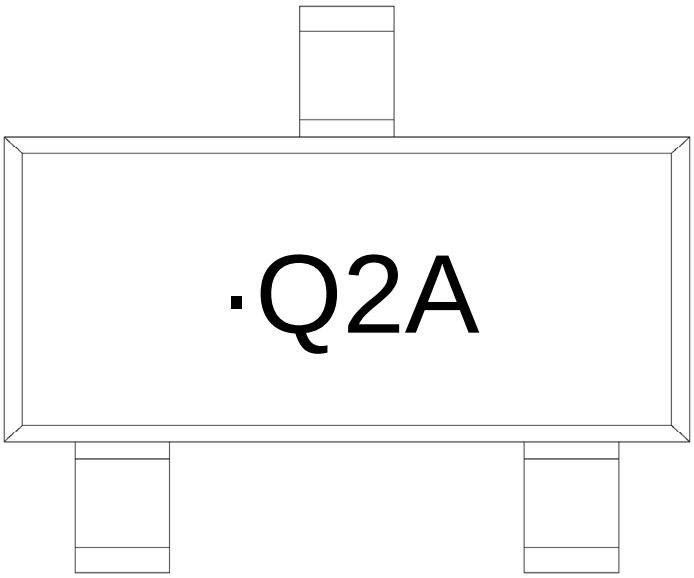
## / Package Dimensions

SOT-23

单位：mm



## / Marking Instructions

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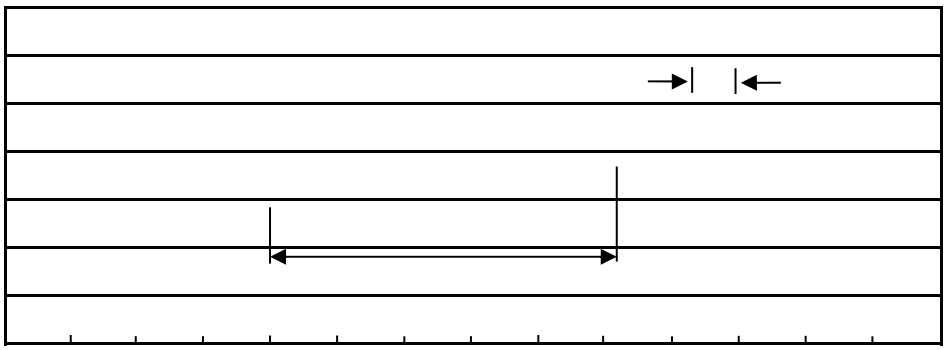
Q

2A

Note:

| | |
|---|---|
| · | Identify |
| Q: | Automobile halogen-free product Code |
| 2A | Product Type Code |

## ( ) /



Note:

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

## / Resistance to Soldering Heat Test Conditions

260±5 10±1 sec. Temp.:260±5 Time:10±1 sec

## / Packaging SPEC.

/ REEL

| Package Type | Units | | | | | Dimension | | (unit mm³) |
|---|---|---|---|---|---|---|---|---|
| | Units/Reel / | Reels/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Reel | Inner Box | Outer Box |
| SOT-23 | 3,000 | 10 | 30,000 | 6 | 180,000 | 7 ×8 | 180×120×180 | 390×385×205 |

## / Notices