# RN2405

Rev.F Apr.-2017

## / Descriptions

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

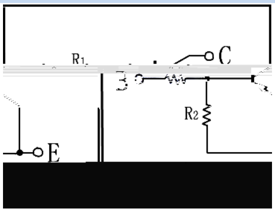
## / Features

With built-in bias resistors, simplify circuit design, reduce a quantity of parts and manufacturing process.

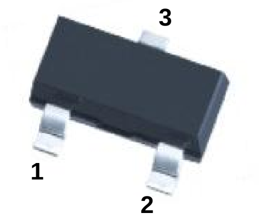
## / Applications

Switching, inverter circuit, interface circuit and driver circuit applications.

## / Equivalent Circuit



## / Pinning



PIN 1 Base PIN 2 Emitter PIN 3 Collector

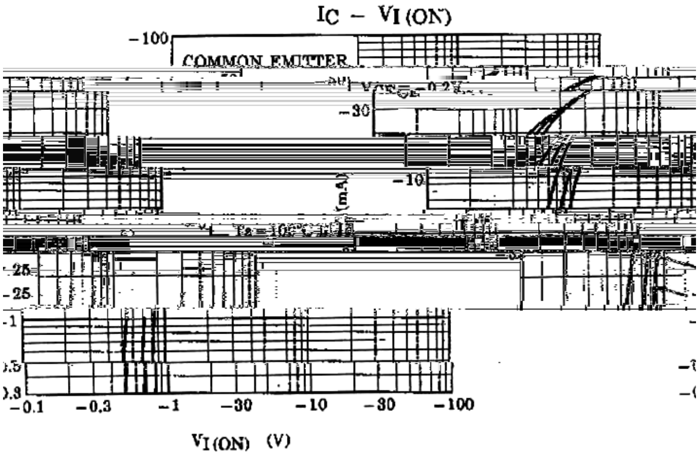
## / $h_{FE}$ Classifications & Marking

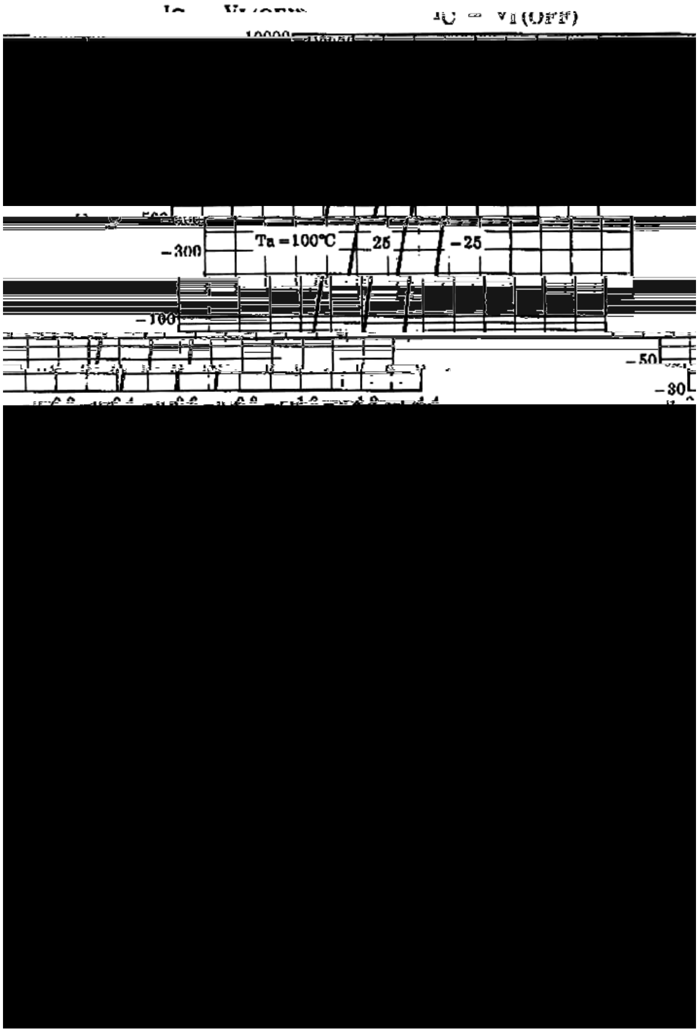
| | |
|---|---|
| $h_{FE}$ Range | >80 |
| Marking | HE32 |

| Parameter | Symbol | Rating | Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | -50 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | -50 | V |
| Emitter to Base Voltage | $V_{EBO}$ | -5.0 | V |
| Collector Current | $I_C$ | -100 | mA |
| Collector Power Dissipation | $P_C$ | 200 | mW |
| Junction Temperature | $T_j$ | 150 | |
| Storage Temperature Range | $T_{stg}$ | -55 150 | |

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Input Voltage | $V_{I(ON)}$ | $V_{CE}$=-0.2V $I_C$=-5.0mA | -0.6 | | -1.1 | V |
| Input Voltage | $V_{I(OFF)}$ | $V_{CE}$=-5.0V $I_C$=-0.1mA | -0.5 | | -0.8 | V |
| Collector Cut-Off Current | $I_{CBO}$ | $V_{CB}$=-50V $I_E$=0 | | | -0.1 | μA |
| Collector Cut-Off Current | $I_{CEO}$ | $V_{CE}$=-50V $I_B$=0 | | | -0.5 | μA |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=-5.0V $I_C$=0 | -0.078 | | -0.145 | mA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=-5.0V $I_C$=-10mA | 80 | | | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=-5.0mA<br>$I_B$=-0.25mA | | -0.1 | -0.3 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=-10V $I_C$=-5.0mA | | 200 | | MHz |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$=-10V $I_E$=0mA<br>f=1.0MHz | | 3.0 | 6.0 | pF |
| Input Resistor | $R_1$ | | 1.54 | 2.2 | 2.86 | KΩ |
| Resistor ratio | $R_2/R_1$ | | 19.4 | 21 | 23.7 | |

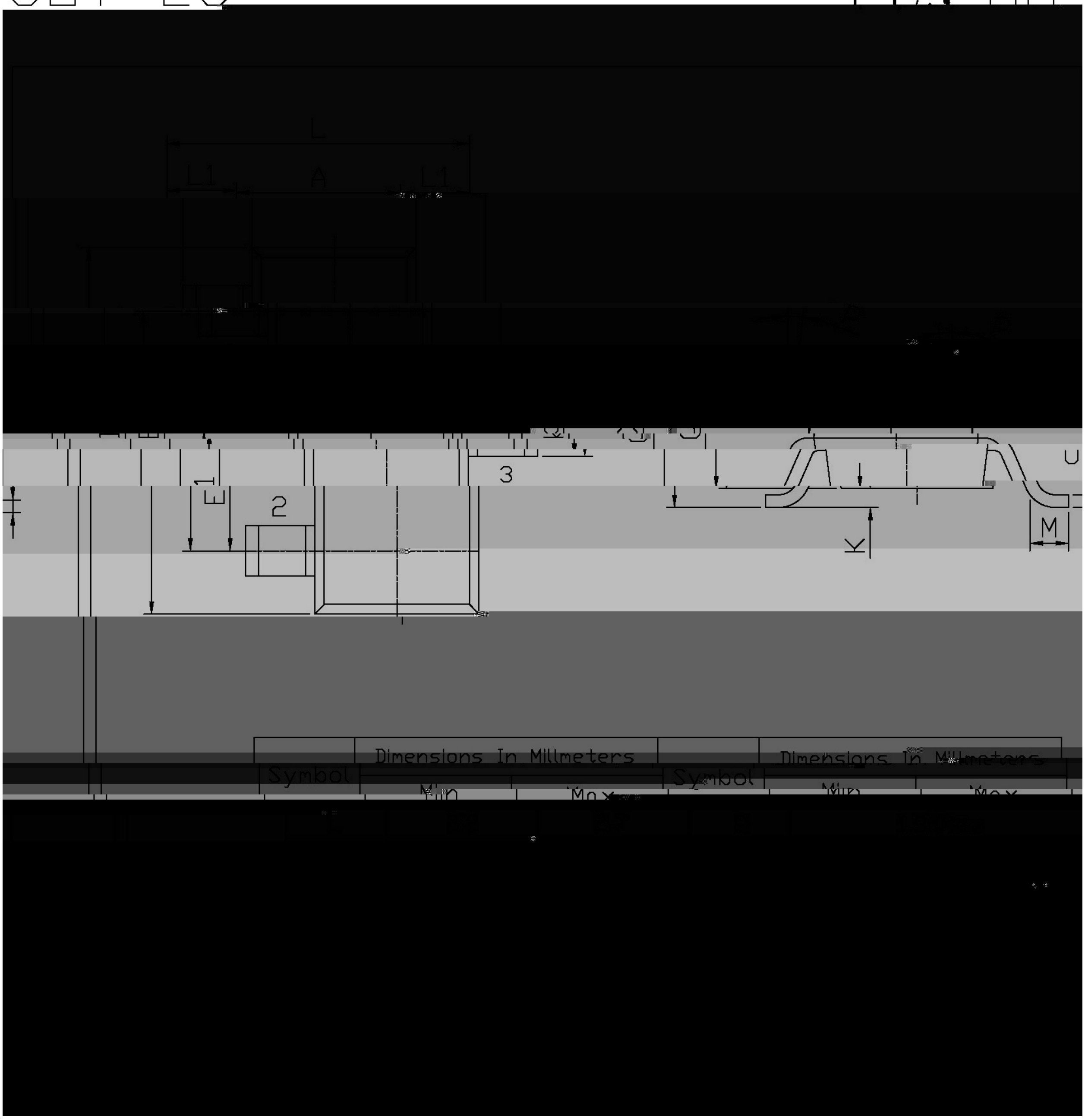
## / Electrical Characteristic Curve



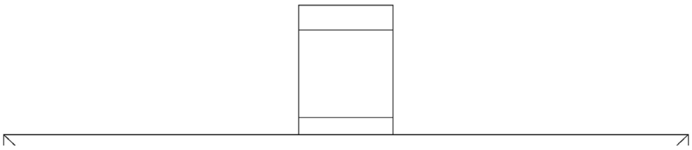


## / Package Dimensions

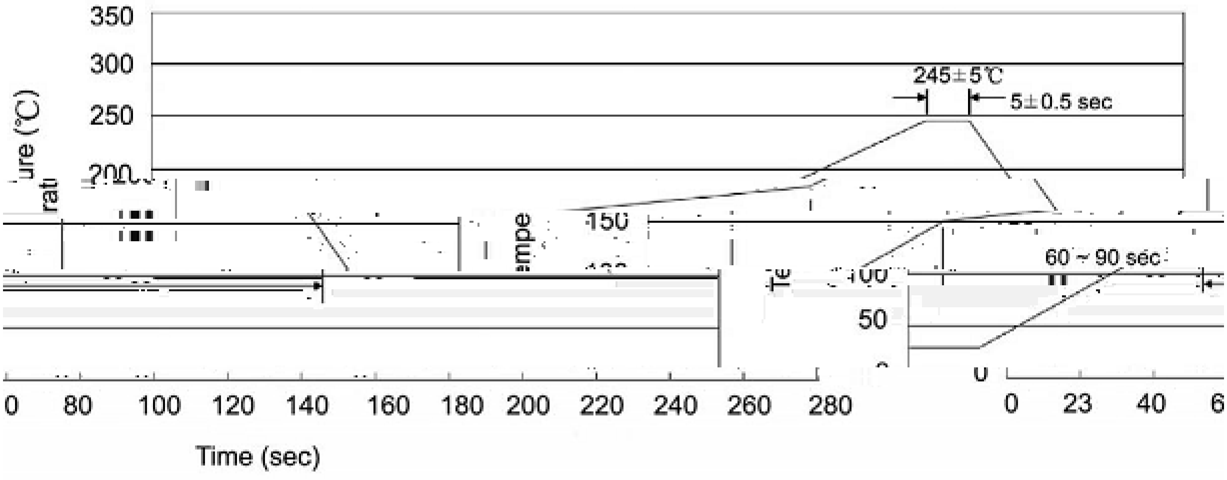
SOT-23　　单位：mm



| Symbol | Dimensions In Millimeters |  | Symbol | Dimensions In Millimeters |  |
|---|---|---|---|---|---|
|  | Min | Max |  | Min | Max |



## ( ) / Temperature Profile for IR Reflow Soldering(Pb-Free)



| | |
|---|---|
| | Note: |
| 1 25 150 60 90sec; | 1.Preheating:25~150 , Time:60~90sec. |
| 2 245±5 5±0.5sec; | 2.Peak Temp.:245±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 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 |