## / Descriptions

VRW056 ṂṂ Ḫ QSQ ÆṀ ч s ‖ ㄱ Silicon NPN transistor in a SOT-23 Plastic Package.

## / Features

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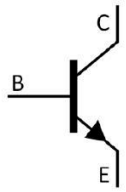
High DC current gain, excellent $h_{FE}$ linearity, low noise.

## / Applications

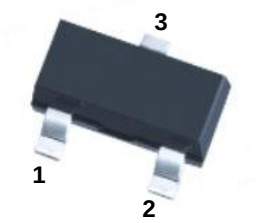
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General amplifier and switching application.

## / Equivalent Circuit




## / Pinning




PIN 1 χ Base PIN 2 χ Emitter PIN 3 χ Collector

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

| $h_{FE}$ Classifications Symbol | O | Y | GR | BL |
|---|---|---|---|---|
| $h_{FE}$ Range | 70 140 | 120 240 | 200 400 | 350 700 |
| Marking | HHFO | HHFY | HHFG | HHFB |

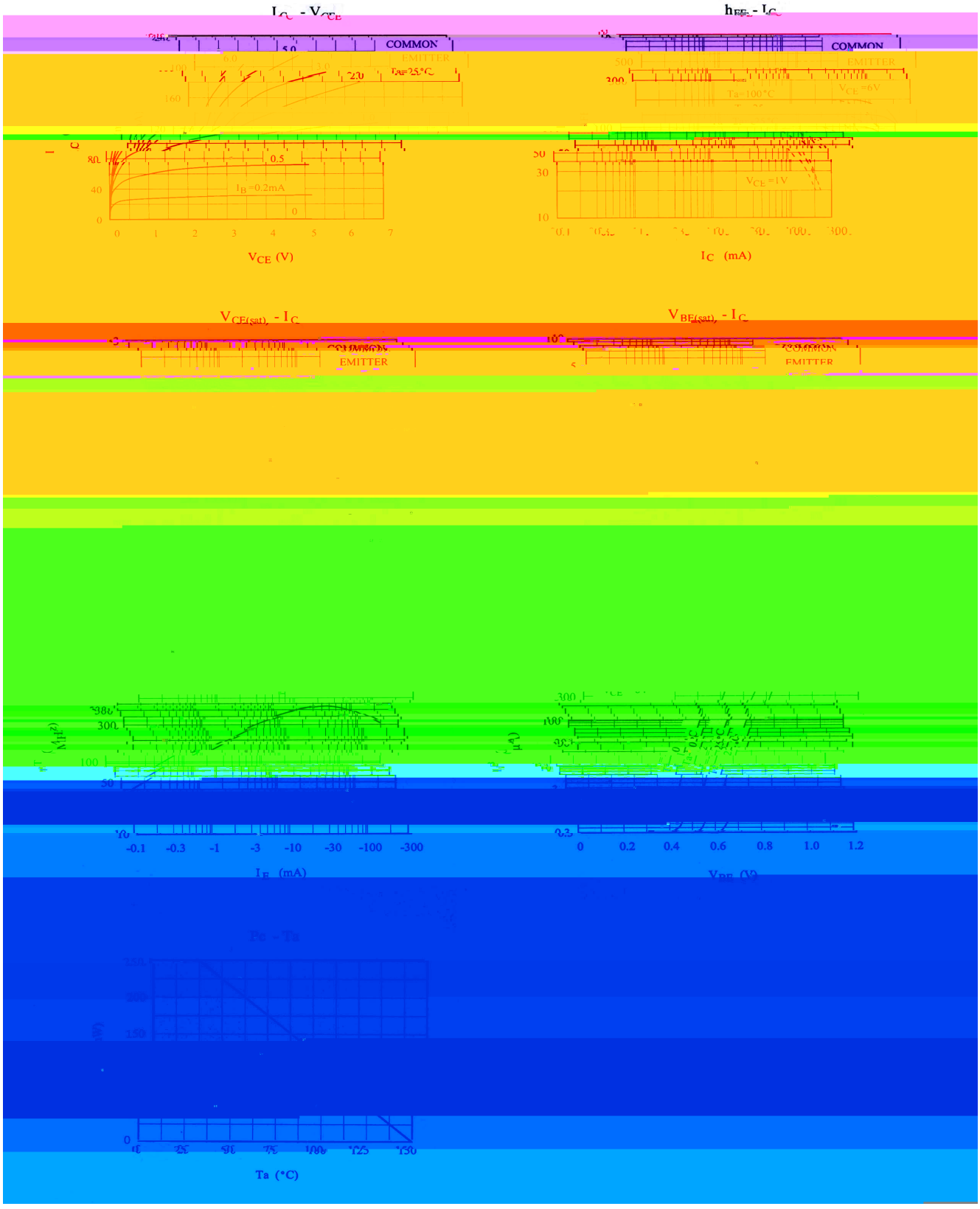
## / Absolute Maximum Ratings(Ta=25 )

| v Ѽ<br>Parameter | ٢ N<br>Symbol | Ѽ Ё<br>Rating | D Ч<br>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 | $I_C$ | 150 | mA |
| Emitter Current | $I_E$ | -150 | mA |
| Collector Power Dissipation | $P_C$ | 250 | mW |
| Junction Temperature | $T_j$ | 150 | |
| Storage Temperature Range | $T_{stg}$ | -55 150 | |

## / Electrical Characteristics(Ta=25 )

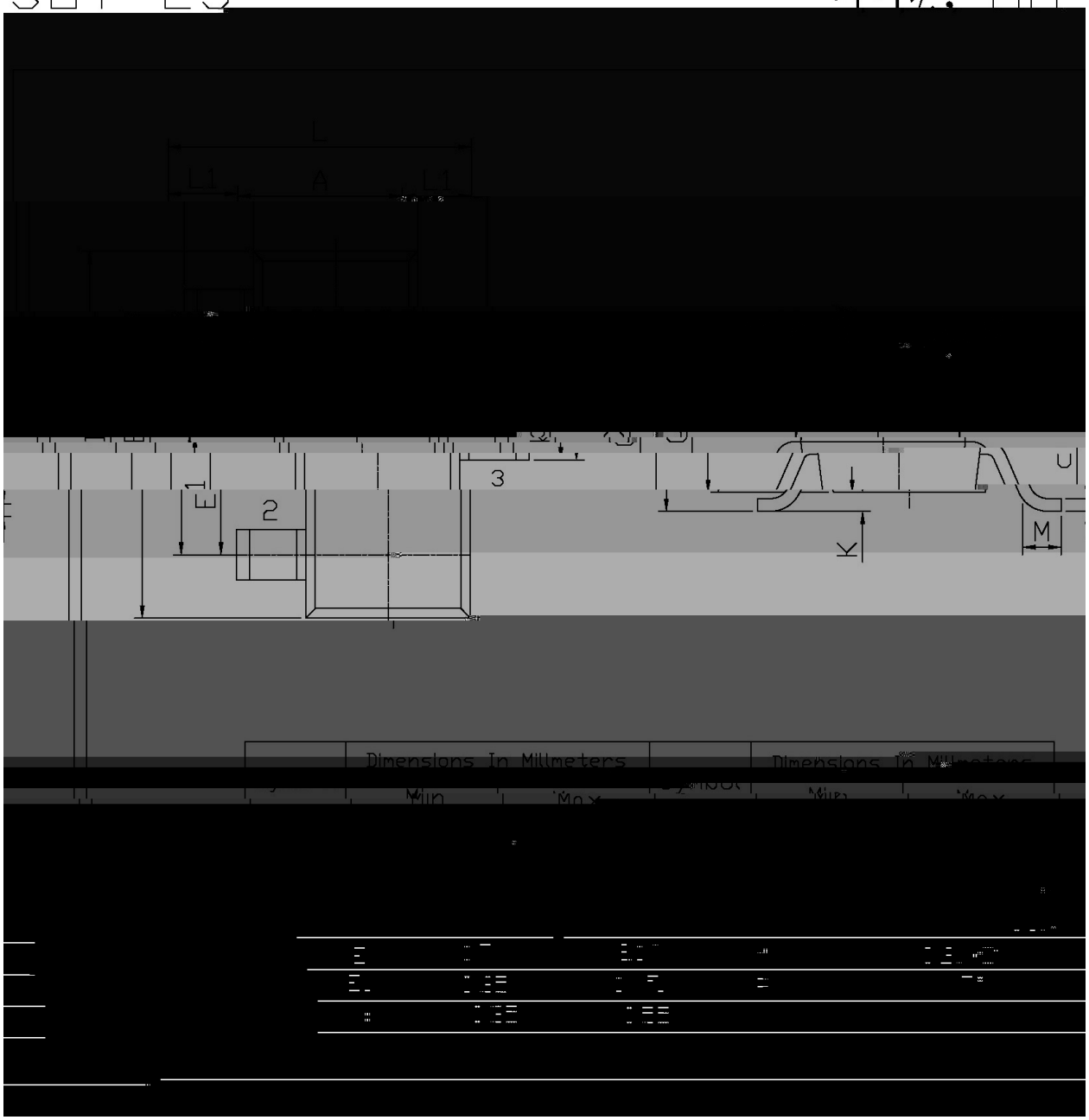
| v Ѽ<br>Parameter | ٢ N<br>Symbol | Ш : ׀ Ţ<br>Test Conditions | ѽ ņ Ё<br>Min | Ɛ ʒ Ё<br>Typ | ѽ ᶻ Ё<br>Max | D Ч<br>Unit |
|---|---|---|---|---|---|---|
| Collector Cut-Off Current | $I_{CBO}$ | $V_{CB}$=50V $I_E$=0 | | | 0.1 | A |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=5.0V $I_C$=0 | | | 0.1 | A |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=6.0V $I_C$=2.0mA | 70 | | 700 | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=100mA $I_B$=10mA | | 0.1 | 0.25 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=10V $I_C$=1.0mA | 80 | | | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$=10V $I_E$=0<br>f=1.0MHz | | 2.0 | 3.5 | pF |
| Noise Figure | NF | $V_{CE}$=6.0V $I_C$=0.1mA<br>f=1.0KHz $R_g$=10K | | 1.0 | 10 | dB |

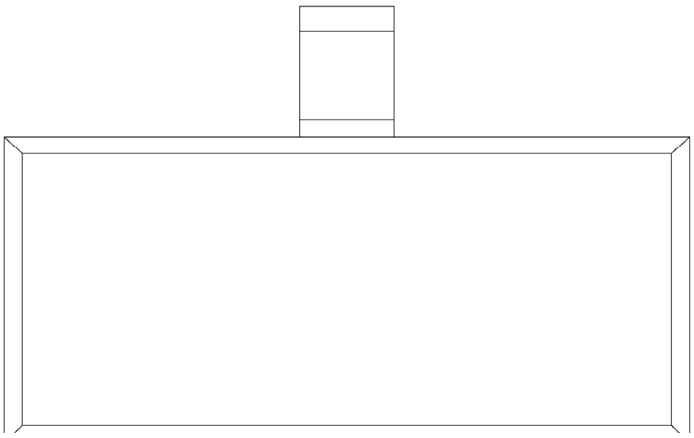
## / Electrical Characteristic Curve



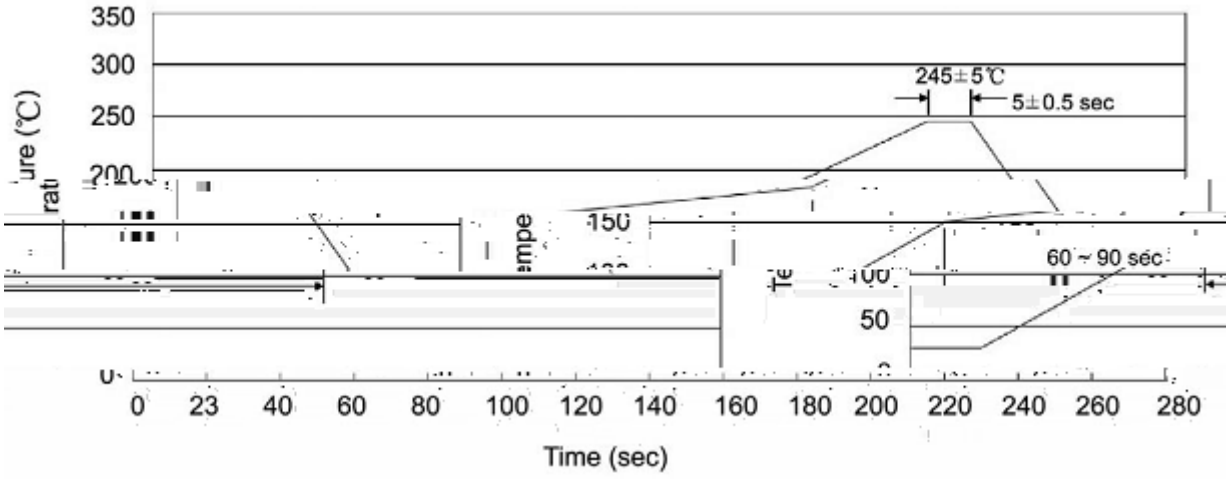
## / Package Dimensions

SOT-23 单位：mm





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




ب ˝ χ

1 Ĺ ♬ □ ỷ 25 Ḱ 150 ł ı `H ڑ 60 Ḱ 90sec;

2 Š Ë □ ỷ 245 ° 5 ł ı `H ڑ `Y ㅅ ㎛ 5 ° 0.5sec;

3 ì ˙ ٧ ˛ ɔ ෯ ỷ ㎛ 2 Ḱ 10 ł /sec.

Note:

1.Preheating:25~150 ł , Time:60~90sec.

2.Peak Temp.:245 ° 5 ł , Duration:5 ° 0.5sec.

3. Cooling Speed: 2~10 ł /sec.

## / Resistance to Soldering Heat Test Conditions

□ ỷ χ 260 ° 5 ł `H ڑ χ 10 ° 1 sec. Temp.:260 ° 5 ł Time:10 ° 1 sec

## / Packaging SPEC.

ɔ ` ɣ Ł / 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-23 | 3,000 | 10 | 30,000 | 6 | 180,000 | 7 ×8 | 180×120×180 | 390×385×205 |

## / Notices