# 2SB1184

Rev.E May.-2016

DATA SHEET

## / Descriptions

WR0585 Ṃ Ṃ Ŀ SQS Æ Ṁ ɥ s ǁ ˀ Silicon PNP transistor in a TO-252 Plastic Package.

## / Features

ت ᵓ я ں ṇ /љ 5VG4 : 93 Ӣ ʹ

Low $V_{CE(sat)}$, complements the 2SD1760.

## / Applications

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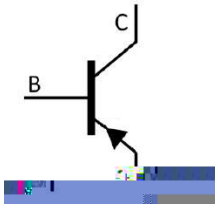
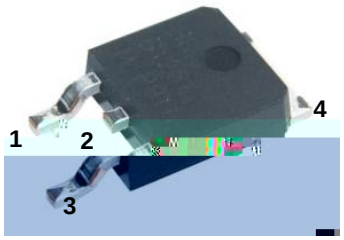
Power amplifier applications.

## / Equivalent Circuit




## / Pinning




PIN1 χ Base PIN 2,4 χ Collector PIN 3 χ Emitter

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

| $h_{FE}$ Classifications Symbol | P | Q | R |
|---|---|---|---|
| $h_{FE}$ Range | 82 180 | 120 270 | 180 390 |

## / Absolute Maximum Ratings(Ta=25 )

| v ̈Ω<br>Parameter | ϒ N<br>Symbol | ̈Ω Ö<br>Rating | D Ч<br>Unit |
|---|---|---|---|
| Collector to Base Voltage | $V_{CBO}$ | -60 | V |
| Collector to Emitter Voltage | $V_{CEO}$ | -50 | V |
| Emitter to Base Voltage | $V_{EBO}$ | -5.0 | V |
| Collector Current - Continuous | $I_C$ | -3.0 | A |
| Collector Power Dissipation | $P_C$ | 1.0 | W |
| Collector Power Dissipation | $P_C$(Tc=25 ) | 15 | W |
| Junction Temperature | $T_j$ | 150 | |
| Storage Temperature Range | $T_{stg}$ | -55 150 | |

## / Electrical Characteristics(Ta=25 )

| v ̈Ω<br>Parameter | ϒ N<br>Symbol | ╨ ː┆ ϯ<br>Test Conditions | ѡ ɳ Ö<br>Min | Ɛ ȝ Ö<br>Typ | ѡ ᶻ Ö<br>Max | D Ч<br>Unit |
|---|---|---|---|---|---|---|
| Collector to Base Breakdown Voltage | $V_{CBO}$ | $I_C$=-50μA $I_E$=0 | -60 | | | V |
| Collector to Emitter Breakdown Voltage | $V_{CEO}$ | $I_C$=-1.0mA $I_B$=0 | -50 | | | V |
| Emitter to Base Breakdown Voltage | $V_{EBO}$ | $I_E$=-50μA $I_C$=0 | -5.0 | | | V |
| Collector Cut-Off Current | $I_{CBO}$ | $V_{CB}$=-40V $I_E$=0 | | | -1.0 | μA |
| Emitter Cut-Off Current | $I_{EBO}$ | $V_{EB}$=-4.0V $I_C$=0 | | | -1.0 | μA |
| DC Current Gain | $h_{FE}$ | $V_{CE}$=-3.0V $I_C$=-0.5A | 82 | | 390 | |
| Collector to Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=-2.0A $I_B$=-0.2A | | | -1.0 | V |
| Base to Emitter Saturation Voltage | $V_{BE(sat)}$ | $I_C$=-1.5A $I_B$=-0.15A | | | -1.2 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=-5.0V $I_C$=-0.5A f=30MHz | | 70 | | MHz |
| Collector output capacitance | $C_{ob}$ | $V_{CB}$=-10V $I_E$=0 f=1.0MHz | | 50 | | pF |

## / Package Dimensions




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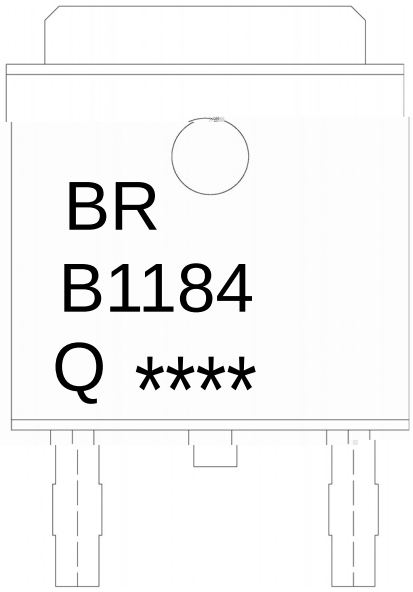
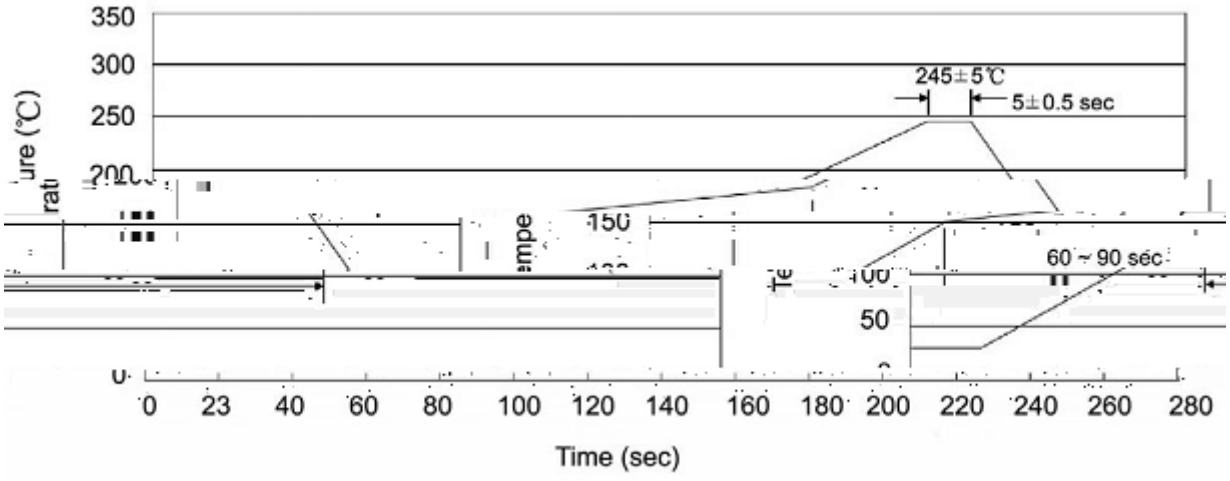
| | | | | | |
| | | | | | |

## / Marking Instructions




| | |
|---|---|
| ب ˝ χ | |
| BR χ | ⰼ ⰳ ⱈ Ⱓ |
| E44 ; 7 χ | ⰼ ⰴ ⱍ Ⱓ |
| T= | ⰼ $h_{FE}$ ˋ ⱏ Ⱓ |
| ---- χ | ⰼ ⰰ ⰼ ⱉ ⱍ Ⱓ ⰰ ⰼ ⰼ ⱉ ⱍ Ⱓ ⱋ ⱋ |
| Note: | |
| BR: | Company Code |
| B1184: | Product Type. |
| Q: | $h_{FE}$ Classifications Symbol |
| ****: | Lot No. Code, code change with Lot No. |

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




ب ˝ χ

1 ⺊ ♬ □ ỷ 25 Ḱ 150 ɫ ı `H ڑ 60 Ḱ 90sec;

2 Š Ö □ ỷ 245 ° 5 ɫ ı `H ڑ ˙Y ⺈ ⺮ 5 ° 0.5sec;

3 ì ˙ ⺋ ˛ ɔ ⺌ ỷ ⺮ 2 Ḱ 10 ɫ /sec.

Note:

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

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

3. Cooling Speed: 2~10 ɫ /sec.

## / Resistance to Soldering Heat Test Conditions

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

## / Packaging SPEC.

ɔ` γ ⊢ / REEL

| Package Type | Units | | | | | Dimension (unit mm$^3$) | | |
|---|---|---|---|---|---|---|---|---|
| | Units/Reel / | Reels/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Reel | Inner Box | Outer Box |
| TO-252 | 2,500 | 2 | 5,000 | 5 | 25,000 | 13 ×16 | 360×360×50 | 385×257×392 |

˘ ˥ γ ⊢ / TUBE

| Package Type | Units | | | | | Dimension (unit mm$^3$) | | |
|---|---|---|---|---|---|---|---|---|
| | Units/Tube / | Tubes/Inner Box / | Units/Inner Box / | Inner Boxes/Outer Box / | Units/Outer Box / | Tube | Inner Box | Outer Box |
| TO-251/252 | 75 | 48 | 3,600 | 5 | 18,000 | 526×20.5×5.25 | 555×164×50 | 575×290×180 |

## / Notices