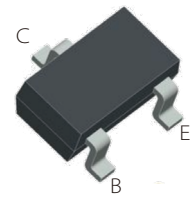


FEATURES

| Reduces Board Space

| High hFE

| Low $V_{CE(sat)}$



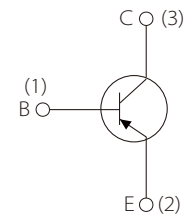
SOT-523

MECHANICAL DATA

| SOT-523 small outline plastic package

| Epoxy UL: 94V-0

| Mounting position: Any



Schematic Symbol

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

| Parameter | Symbol | Value | Unit |
|-----------------------------|-----------|----------|--------------------|
| Collector-Base Voltage | V_{CBO} | -60 | V |
| Collector-Emitter Voltage | V_{CEO} | -50 | |
| Emitter-Base Voltage | V_{EBO} | -6 | |
| Collector Current | I_C | -150 | mA |
| Collector Power Dissipation | P_C | 150 | mW |
| Junction Temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55~+150 | $^{\circ}\text{C}$ |

ELECTRICAL CHARACTERISTICS (T_A=25°C)

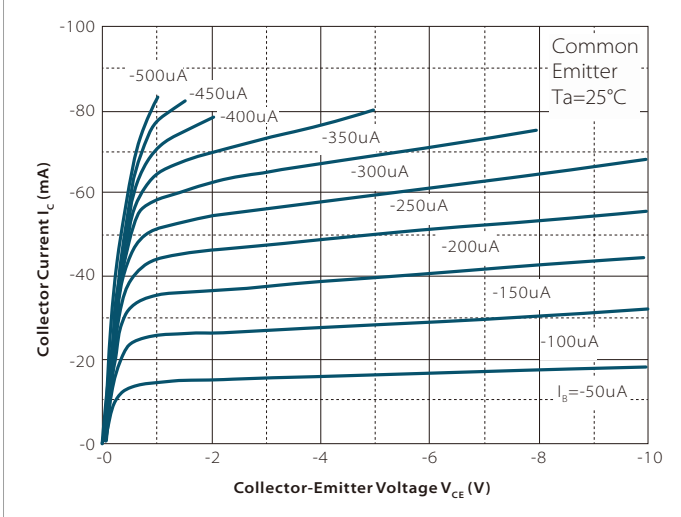
| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|----------------------|--|------|------|------|------|
| Collector- base breakdown voltage | V _{CBO} | I _C =-50μA, I _E =0 | -60 | | | V |
| Collector- emitter breakdown voltage | V _{CEO} | I _C =-1mA, I _B =0 | -50 | | | |
| Emitter - base breakdown voltage | V _{EBO} | I _E =-50μA, I _C =0 | -6 | | | |
| Collector-base cut-off current | I _{CBO} | V _{CB} = -60V, I _E =0 | | | -100 | nA |
| Emitter cut-off current | I _{EBO} | V _{EB} =-6V, I _C =0 | | | -100 | |
| Collector-emitter saturation voltage | V _{CE(sat)} | I _C =-50mA, I _B =-5mA | | | -0.5 | V |
| Base - emitter saturation voltage | V _{BE(sat)} | I _C =-50mA, I _B =-5mA | | | -1.2 | |
| DC current gain | h _{FE} | V _{CE} =-6V, I _C =-1mA | 120 | | 560 | |
| Collector output capacitance | C _{ob} | V _{CB} =-12V, I _E =0, f=1MHz | | 3.5 | 5 | pF |
| Transition frequency | f _T | V _{CE} =-12V, I _C =-2mA, f=30MHz | | 140 | | MHz |

CLASSIFICATION OF H_{FE(1)}

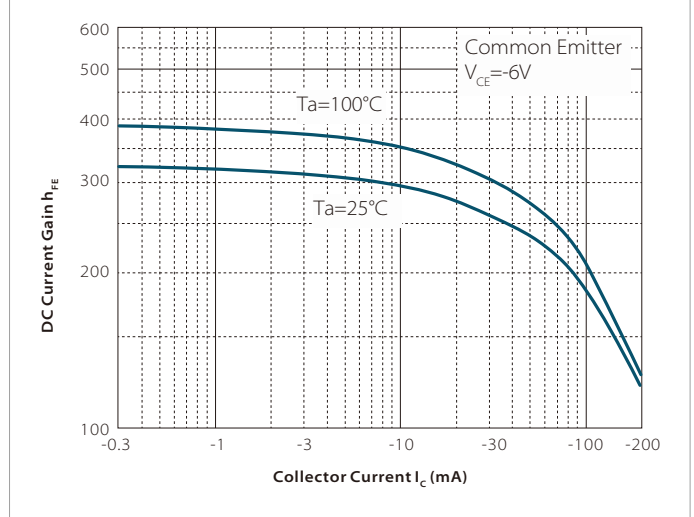
| Rank | P | Q | R | S |
|---------|---------|---------|---------|---------|
| Range | 120-200 | 120-270 | 180-390 | 270-560 |
| Marking | FP | FQ | FR | FS |

TYPICAL CHARACTERISTICS

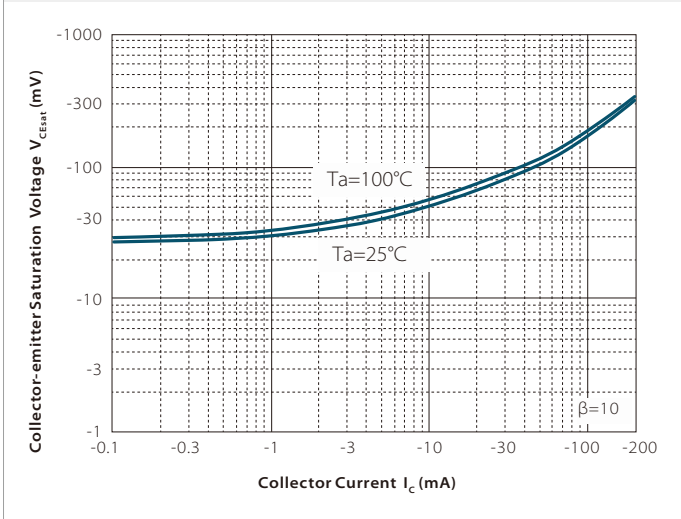
Static Characteristic



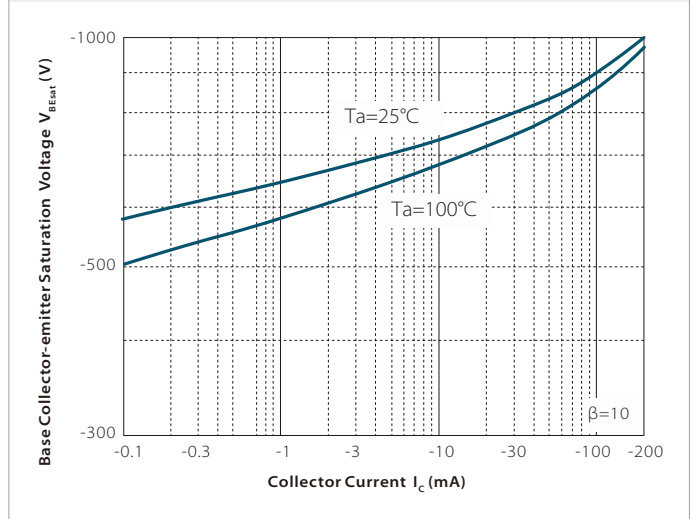
h_{FE} ——— I_C

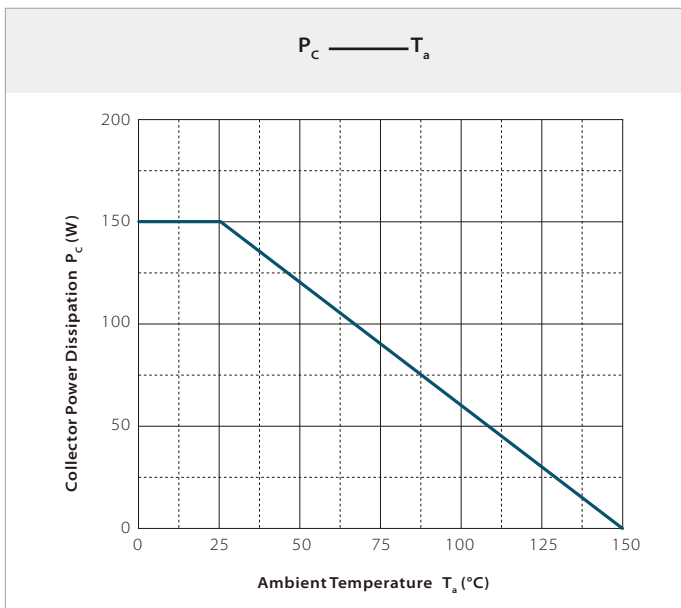
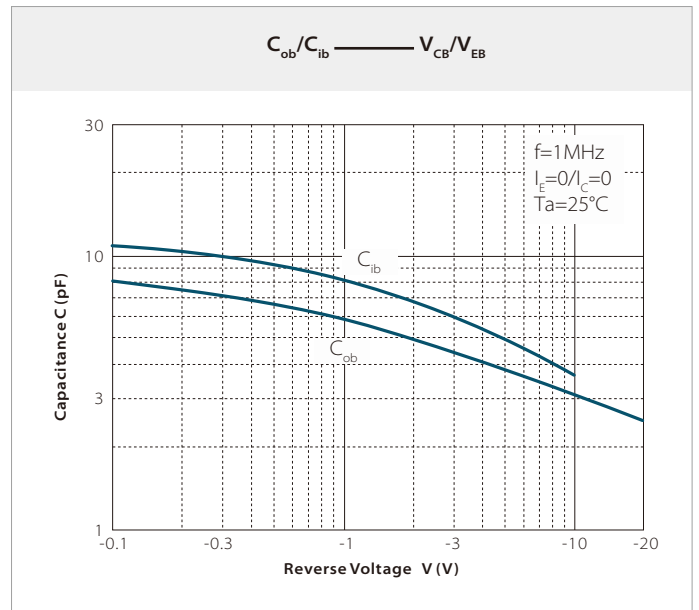
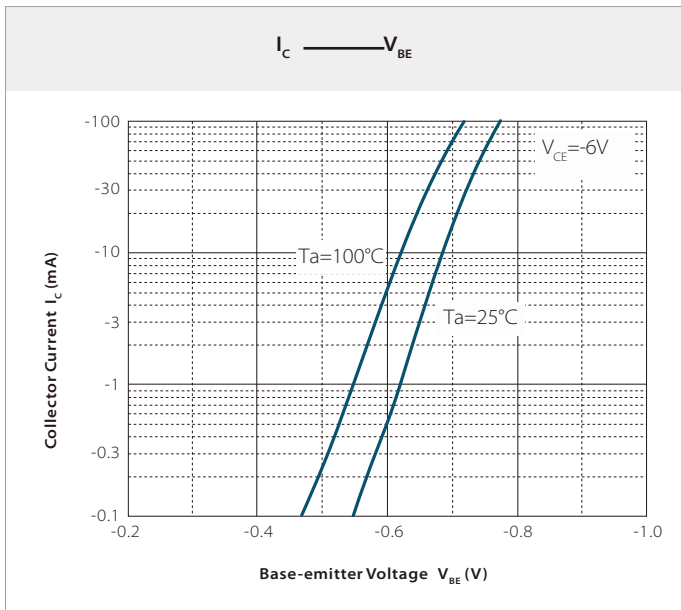


$V_{CE sat}$ ——— I_C



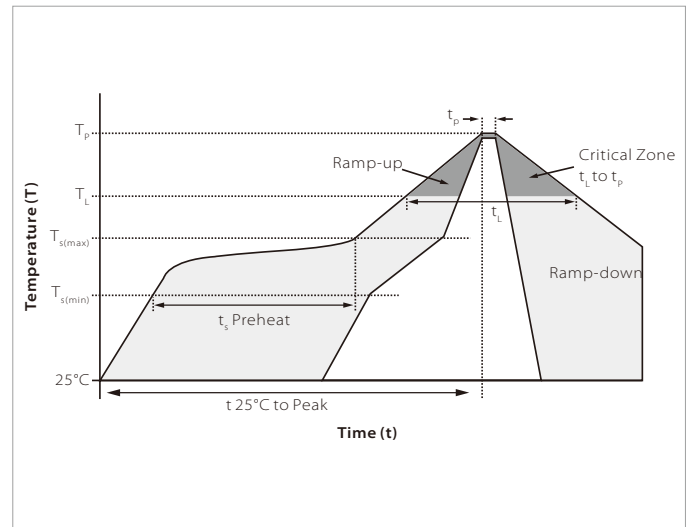
$V_{BE sat}$ ——— I_C



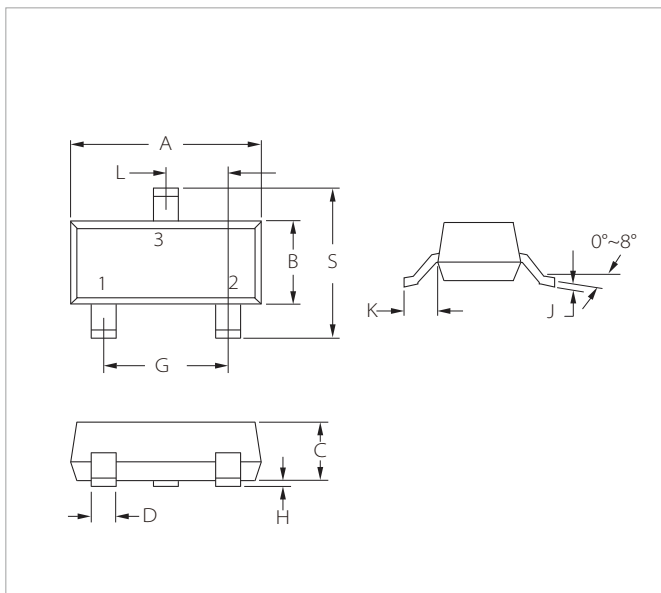


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_L) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |

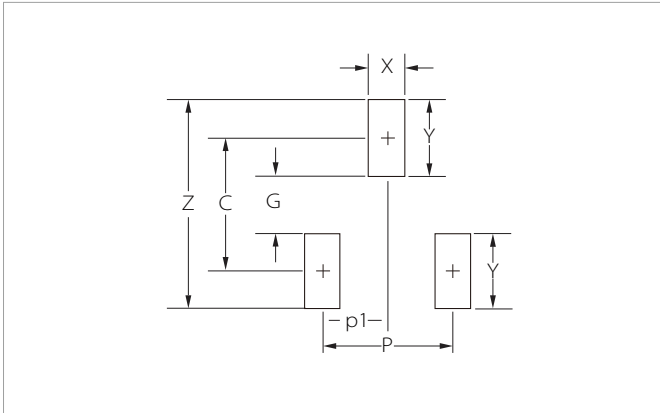


SOT-523 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|------|----------|-------|
| | Min. | Max. | Min. | Max. |
| A | 1.50 | 1.70 | 0.059 | 0.067 |
| B | 0.75 | 0.85 | 0.029 | 0.033 |
| C | 0.60 | 0.80 | 0.023 | 0.031 |
| D | 0.15 | 0.30 | 0.005 | 0.012 |
| G | 1.00BSC | | 0.039BSC | |
| H | 0.00 | 0.10 | 0.000 | 0.004 |
| J | 0.10 | 0.20 | 0.004 | 0.008 |
| K | (0.22) | | (0.009) | |
| L | 0.50BSC | | 0.020BSC | |
| S | 1.45 | 1.75 | 0.057 | 0.069 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches |
|------|-------------|---------|
| C | (1.40) | (0.055) |
| P | 1.00 | 0.039 |
| p1 | 0.50 | 0.020 |
| G | 0.60 | 0.024 |
| X | 0.40 | 0.016 |
| Y | 0.80 | 0.031 |
| Z | 2.20 | 0.087 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| 2SA1774T | SOT-523 | 3000PCS | 7" |

To find your local partner within Semiwell's website : www.semiwell.com.cn

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