



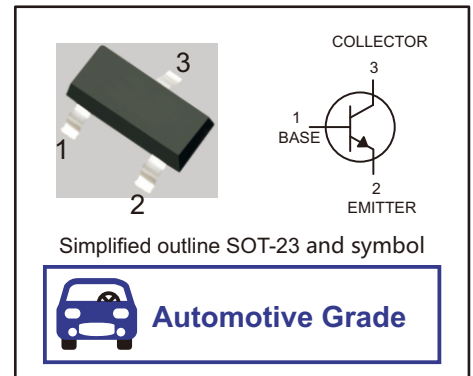
NPN Silicon General Purpose Transistor

FEATURES

- High Collector Current.
- Complementary to S9012.
- Excellent hFE Linearity.
- Qualified to AEC-Q101 Standards for High Reliability

PINNING

| PIN | DESCRIPTION |
|-----|-------------|
| 1 | BASE |
| 2 | EMITTER |
| 3 | COLLECTOR |



CLASSIFICATION OF hFE

| Rank | L | H | J |
|-------|---------|---------|---------|
| Range | 120-200 | 200-350 | 300-400 |

MAXIMUM RATINGS (Ta = 25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|--|-----------|-----------|------|
| Collector– Base Voltage | VCBO | 40 | V |
| Collector– Emitter Voltage | VCEO | 25 | V |
| Emitter– Base Voltage | VEBO | 5 | V |
| Collector Current — Continuous | IC | 500 | mA |
| Collector Power Dissipation | PC | 300 | mW |
| Operation Junction and Storage Temperature Range | TJ , Tstg | -55~ +150 | °C |

ELECTRICAL CHARACTERISTICS (TA = 25°C unless otherwise noted.)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------|--------------------------------|-----|-----|-----|------|
| Collector-base breakdown voltage | V(BR)CBO | IC = 100uA , IE = 0 | 40 | | | V |
| Collector-emitter breakdown voltage | V(BR)CEO | IC = 1mA , IB = 0 | 25 | | | V |
| Emitter-base breakdown voltage | V(BR)EBO | IE = 100uA , IC = 0 | 5 | | | V |
| Collector cut-off current | ICBO | VCB = 40V , IE = 0 | | | 0.1 | uA |
| Collector cut-off current | ICEO | VCE = 20V , IB = 0 | | | 0.1 | uA |
| Emitter cut-off current | IEBO | VEB = 5V , IC = 0 | | | 0.1 | uA |
| DC current gain | hFE | VCE = 1V , IC = 50mA | 120 | | 400 | |
| | | VCE = 1V , IC = 500mA | 40 | | | |
| Collector-emitter saturation voltage | VCE(sat) | IC = 500mA , IB = 50mA | | | 0.6 | V |
| Base-emitter saturation voltage | VBE(sat) | IC = 500mA , IB = 50mA | | | 1.2 | V |
| Base-emitter voltage | VBE(ON) | VCE = 1V , IC = 10A | | | 0.7 | V |
| Transition frequency | fT | VCE = 6V , IC = 20mA , f=30MHz | 150 | | | MHZ |
| Collector output capacitance | Cob | VCB = 6V , IE = 0, f = 1MHZ | | | 8 | pF |



TYPICAL CHARACTERISTICS

Fig.1 Power Derating Curve

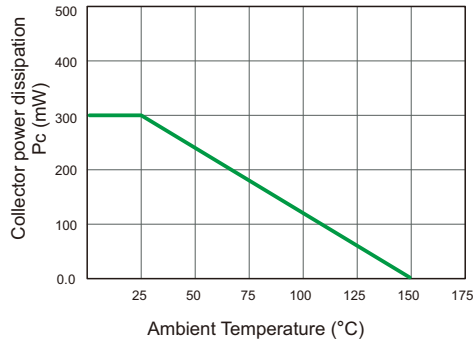


Fig.2 Static characteristics

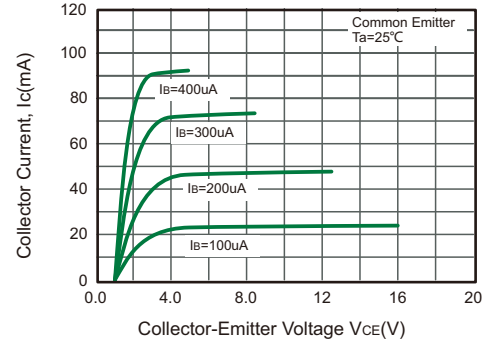


Fig.3 $h_{FE}-I_c$

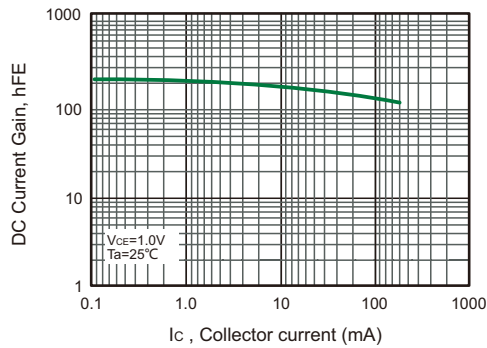


Fig.4 I_c-V_{BE}

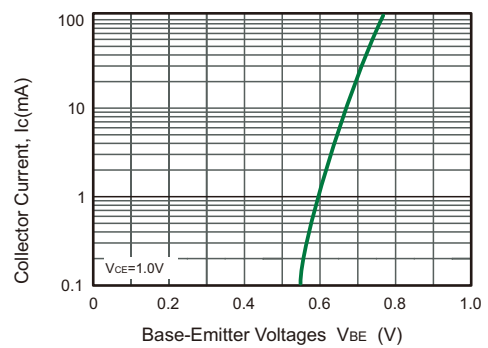


Fig.5 $V_{BEsat}-I_c$

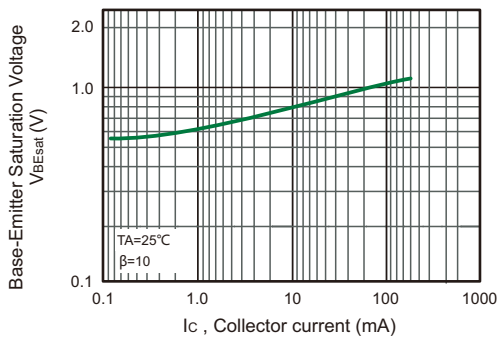


Fig.6 $V_{CEsat}-I_c$

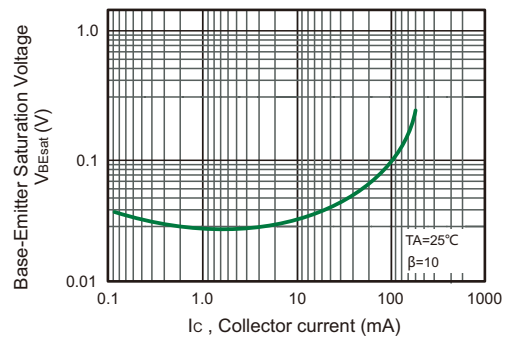


Fig.7 f_t-I_c

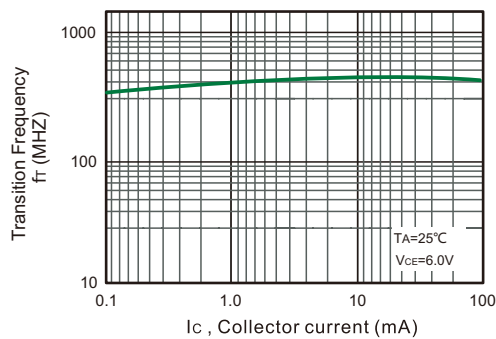
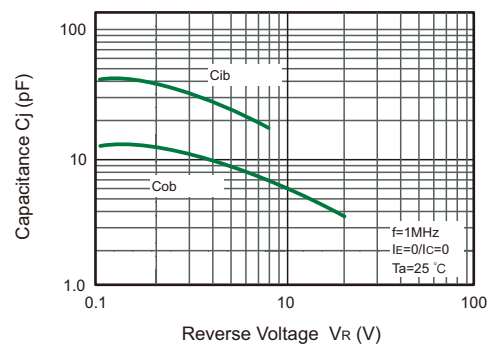
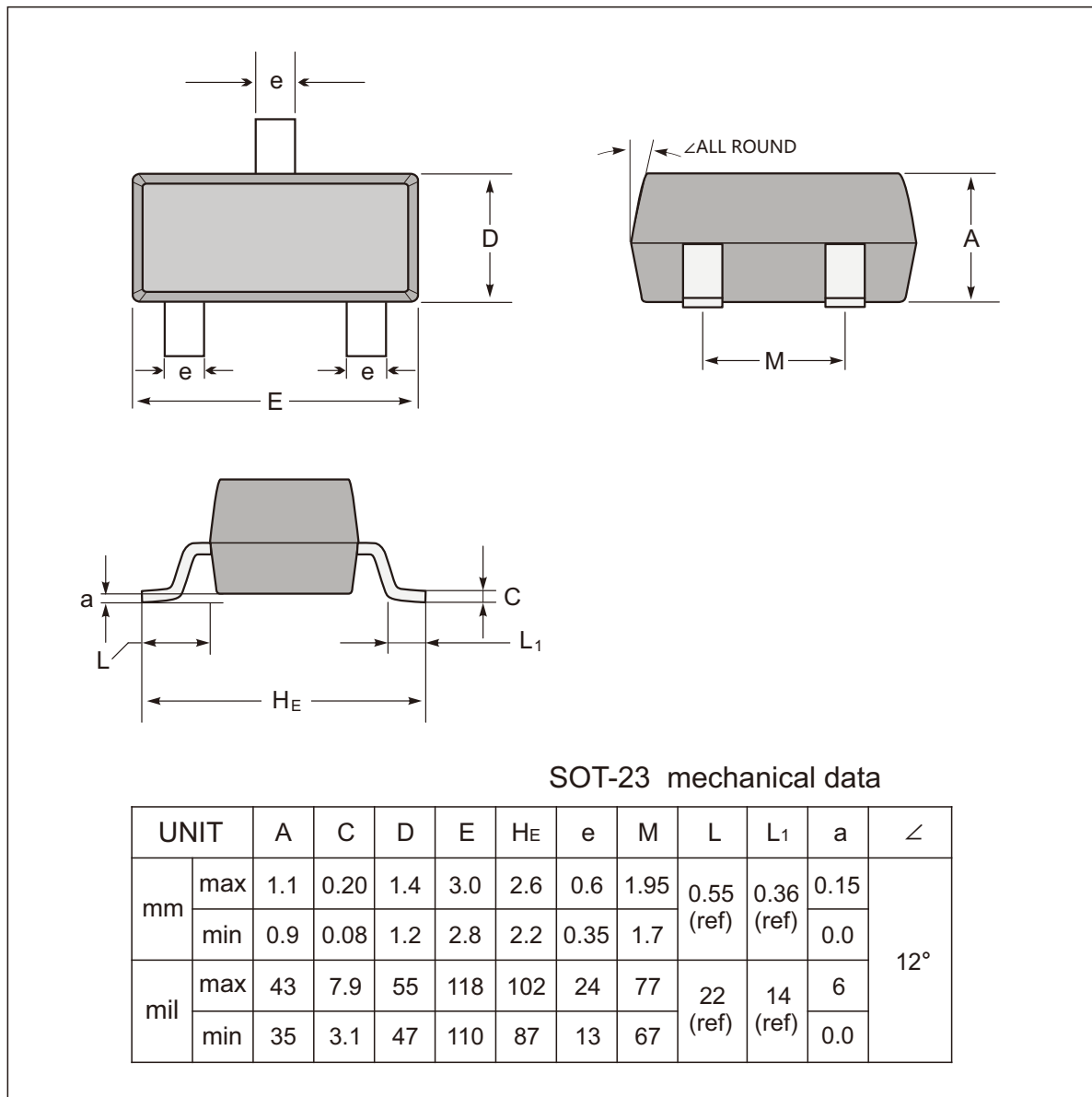


Fig.8 $C_{ob}/C_{ib}-V_{CB}/V_{EB}$

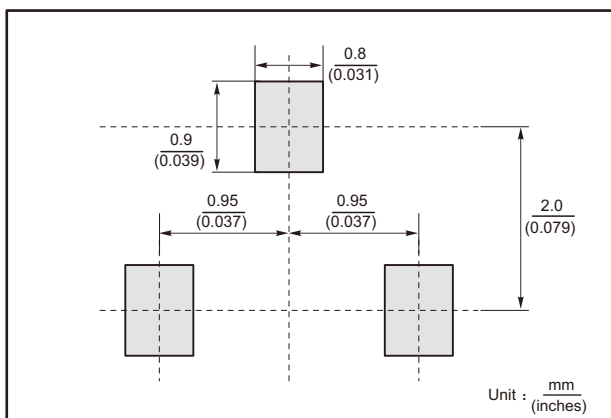




SOT-23 Package Outline Dimensions



The recommended mounting pad size



Marking

| Type number | Marking code |
|-------------|--------------|
| S9013WD | J3 |



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