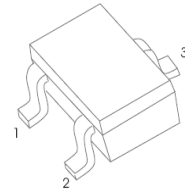


PNP Plastic-Encapsulate Transistors

FEATURES

- Epitaxial Planar Die Construction
- Complementary NPN Type Available
- Also Available in Lead Free Version

MARKING:2A



SOT-523

1. BASE 2. EMITTER 3. COLLECTOR

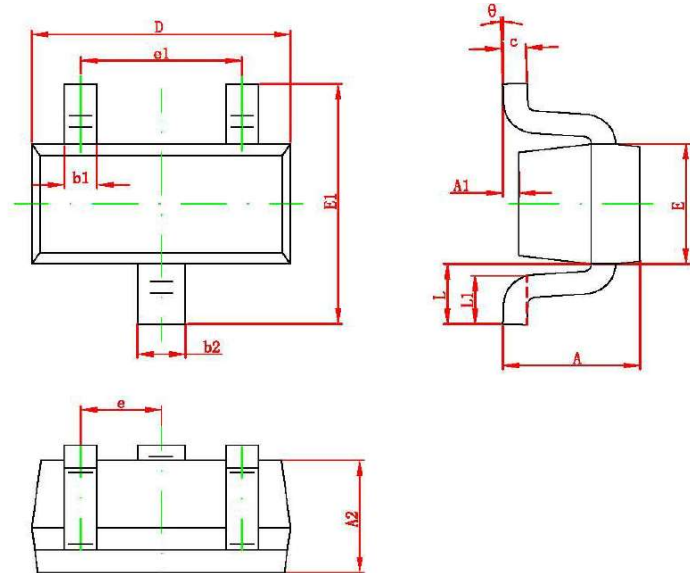
MAXIMUM RATINGS ($T_a=25^\circ\text{C}$ unless otherwise noted)

| Symbol | Parameter | Value | Units |
|-----------------|---|---------|---------------------------|
| V_{CB0} | Collector-Base Voltage | -40 | V |
| V_{CEO} | Collector-Emitter Voltage | -40 | V |
| V_{EBO} | Emitter-Base Voltage | -5.0 | V |
| I_C | Collector Current -Continuous | -200 | mA |
| P_C | Collector Power Dissipation | 150 | mW |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 833 | $^\circ\text{C}/\text{W}$ |
| T_J | Operating Temperature | 150 | $^\circ\text{C}$ |
| T_{stg} | Storage Temperature | -55-150 | $^\circ\text{C}$ |

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless otherwise specified)

| Parameter | Symbol | Test conditions | Min | Typ | Max | Unit |
|--------------------------------------|----------------|---|-------|-----|-------|---------------|
| Collector-base breakdown voltage | $V_{(BR)CBO}$ | $I_C=-10\mu\text{A}, I_E=0$ | -40 | | | V |
| Collector-emitter breakdown voltage | $V_{(BR)CEO}$ | $I_C=-1\text{mA}, I_B=0$ | -40 | | | V |
| Emitter-base breakdown voltage | $V_{(BR)EBO}$ | $I_E=-10\mu\text{A}, I_C=0$ | -5 | | | V |
| Collector cut-off current | I_{CBO} | $V_{CB}=-30\text{V}, I_E=0$ | | | -0.1 | μA |
| Emitter cut-off current | I_{EBO} | $V_{EB}=-5\text{V}, I_C=0$ | | | -0.1 | μA |
| Collector cut-off current | I_{CEX} | $V_{CB}=-30\text{V}, V_{BE(off)}=-3\text{V}$ | | | -0.05 | μA |
| DC current gain | $h_{FE(1)}$ | $V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$ | 60 | | | |
| | $h_{FE(2)}$ | $V_{CE}=-1\text{V}, I_C=-1\text{mA}$ | 80 | | | |
| | $h_{FE(3)}$ | $V_{CE}=-1\text{V}, I_C=-10\text{mA}$ | 100 | | 300 | |
| | $h_{FE(4)}$ | $V_{CE}=-1\text{V}, I_C=-50\text{mA}$ | 60 | | | |
| | $h_{FE(5)}$ | $V_{CE}=-1\text{V}, I_C=-100\text{mA}$ | 30 | | | |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$ | | | -0.25 | V |
| | $V_{CE(sat)2}$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$ | | | -0.4 | V |
| Base-emitter saturation voltage | $V_{BE(sat)1}$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$ | -0.65 | | -0.85 | V |
| | $V_{BE(sat)2}$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$ | | | -0.95 | V |
| Transition frequency | f_T | $V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$ | 250 | | | MHz |
| Collector output capacitance | C_{obo} | $V_{CB}=-5\text{V}, I_E=0, f=1\text{MHz}$ | | | 4.5 | pF |
| Input capacitance | C_{iob} | $V_{EB}=-0.5\text{V}, I_E=0, f=1\text{MHz}$ | | | 10 | pF |
| Noise figure | NF | $V_{CE}=-5\text{V}, I_C=0.1\text{mA}$, | | | 4 | dB |
| Delay time | t_d | f $V_{CC}=-3\text{V}, V_{BE(OFF)}=-0.5\text{V}$ | | | 35 | ns |
| Rise time | t_r | $I_C=-10\text{mA}, I_{B1}=-1\text{mA}$ | | | 35 | ns |
| Storage time | t_s | $V_{CC}=-3\text{V}, I_C=-10\text{mA}$ | | | 225 | ns |
| Fall time | t_f | $I_{B1}=I_{B2}=-1\text{mA}$ | | | 75 | ns |

SOT-523 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions in Millimeters | | Dimensions in Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.700 | 0.900 | 0.028 | 0.035 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.700 | 0.800 | 0.028 | 0.031 |
| b1 | 0.150 | 0.250 | 0.006 | 0.010 |
| b2 | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 0.700 | 0.900 | 0.028 | 0.035 |
| E1 | 1.450 | 1.750 | 0.057 | 0.069 |
| e | 0.500 TYP. | | 0.020 TYP. | |
| e1 | 0.900 | 1.100 | 0.035 | 0.043 |
| L | 0.400 REF. | | 0.016 REF. | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| theta | 0° | | 8° | |

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