

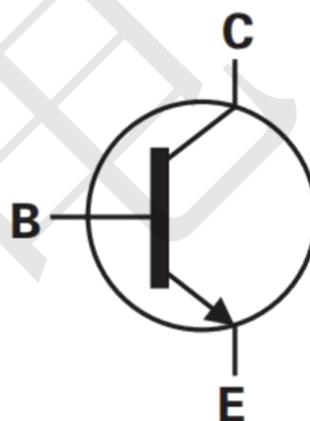
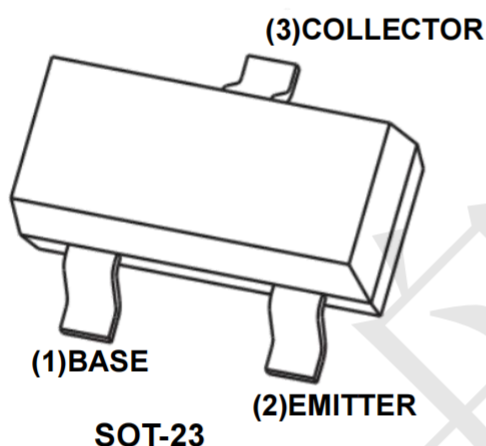
### Product Summary

- $BVCBO \geq 40V (I_C=0.1mA)$
- $BVCEO \geq 40V (I_C=1mA)$
- $I_C = 2A$

### Features

- Supply line switching circuits
- DC/DC converter applications
- Battery management applications

### Circuit diagram and pin information



### Absolute Maximum Ratings

( $T_A=25^\circ C$  unless otherwise specified)

| PARAMETER                                           | SYMBOL    | LIMIT       | UNIT       |
|-----------------------------------------------------|-----------|-------------|------------|
| Collector-Base Voltage                              | $V_{CBO}$ | 40          | V          |
| Collector-Emitter Voltage                           | $V_{CEO}$ | 40          | V          |
| Emitter-Base Voltage                                | $V_{EBO}$ | 6           | V          |
| Collector Current (DC)                              | $I_C$     | 2           | A          |
| Power Total Dissipation @ $T_A=25^\circ C$ (Note 1) | $P_D$     | 300         | mW         |
| Maximum Operating Junction Temperature              | $T_J$     | +150        | $^\circ C$ |
| Storage Temperature Range                           | $T_{STG}$ | -55 to +150 | $^\circ C$ |

Note:1.For a device surface mounted on 10mm x 10mm x 0.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in steady state condition

### Electrical Characteristics

(TA=25°C unless otherwise specified)

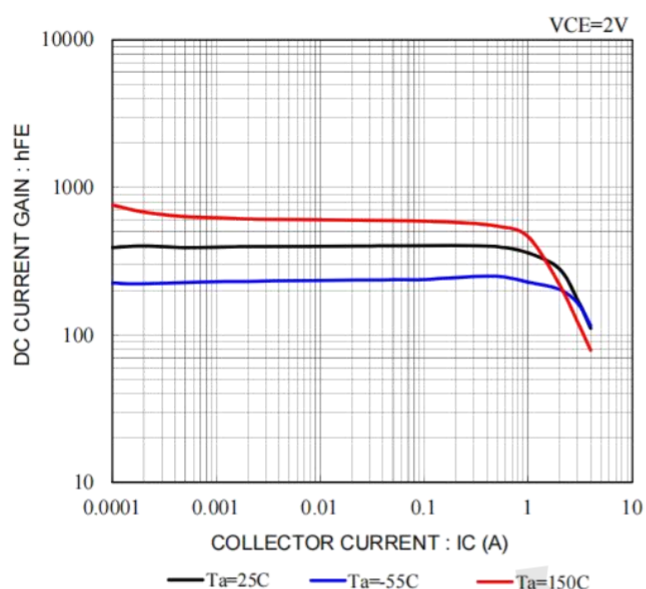
| PARAMETER                            | CONDITIONS                                                | SYMBOL         | MIN | TYP | MAX  | UNIT |
|--------------------------------------|-----------------------------------------------------------|----------------|-----|-----|------|------|
| <b>Static (Note 1)</b>               |                                                           |                |     |     |      |      |
| Collector-Base Breakdown Voltage     | $I_C = 0.1\text{mA}, I_E = 0$                             | $BV_{CBO}$     | 40  | --  | --   | V    |
| Collector-Emitter Breakdown Voltage  | $I_C = 1\text{mA}, I_B = 0$                               | $BV_{CEO}$     | 40  | --  | --   | V    |
| Emitter-Base Breakdown Voltage       | $I_E = 0.1\text{mA}, I_C = 0$                             | $BV_{EBO}$     | 6   | --  | --   | V    |
| Collector Cutoff Current             | $V_{CB} = 40\text{V}, I_E = 0$                            | $I_{CBO}$      | --  | --  | 100  | nA   |
| Emitter Cutoff Current               | $V_{EB} = 4\text{V}, I_C = 0$                             | $I_{EBO}$      | --  | --  | 100  | nA   |
| Collector-Emitter Saturation Voltage | $I_C = 100\text{mA}, I_B = 1\text{mA}$                    | $V_{CE(SAT)1}$ | --  | --  | 0.07 | V    |
|                                      | $I_C = 500\text{mA}, I_B = 50\text{mA}$                   | $V_{CE(SAT)2}$ | --  | --  | 0.1  | V    |
|                                      | $I_C = 1\text{A}, I_B = 50\text{mA}$                      | $V_{CE(SAT)3}$ | --  | --  | 0.18 | V    |
|                                      | $I_C = 2\text{A}, I_B = 200\text{mA}$                     | $V_{CE(SAT)4}$ | --  | --  | 0.32 | V    |
| Base-Emitter Saturation Voltage      | $I_C = 2\text{A}, I_B = 200\text{mA}$                     | $V_{BE(SAT)}$  | --  | --  | 1.1  | V    |
| DC Current Transfer Ratio            | $V_{CE} = 2\text{V}, I_C = 100\text{mA}$                  | $h_{FE1}$      | 350 | --  | --   |      |
|                                      | $V_{CE} = 2\text{V}, I_C = 500\text{mA}$                  | $h_{FE2}$      | 300 | --  | --   |      |
|                                      | $V_{CE} = 2\text{V}, I_C = 1\text{A}$                     | $h_{FE3}$      | 300 | --  | --   |      |
|                                      | $V_{CE} = 2\text{V}, I_C = 2\text{A}$                     | $h_{FE4}$      | 150 | --  | --   |      |
| <b>Dynamic (Note 2)</b>              |                                                           |                |     |     |      |      |
| Transition Frequency                 | $V_{CE} = 5\text{V}, I_C = 10\text{mA}, f = 30\text{MHz}$ | $f_T$          | 150 | --  | --   | MHz  |
| Collector Output Capacitance         | $V_{CB} = 6\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$    | $C_{ob}$       | --  | 3   | --   | pF   |

Note:

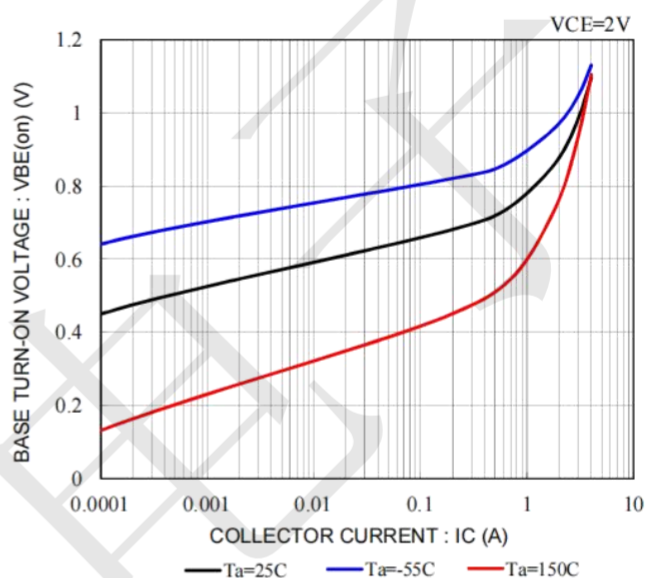
1. Pulse test:  $\leq 380\mu\text{s}$ , duty cycle  $\leq 2\%$

2. For DESIGN AID ONLY, not subject to production testing

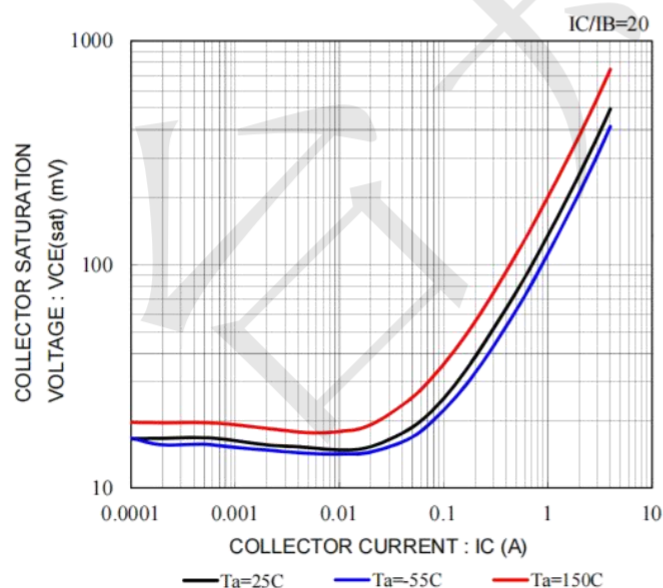
**Typical Performance Characteristics (TA=25°C)**



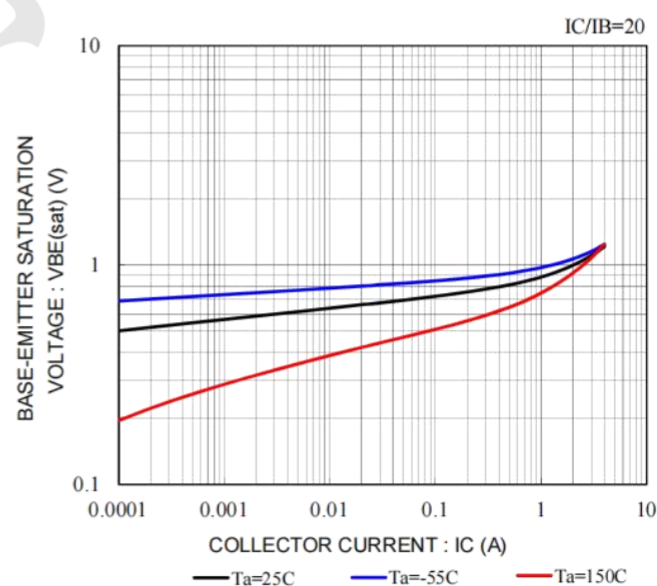
**Fig.1 DC CURRENT GAIN VS.COLLECTOR CURRENT**



**Fig.2 BASE-EMITTER TURN-ON VOLTAGE VS.COLLECTOR CURRENT**



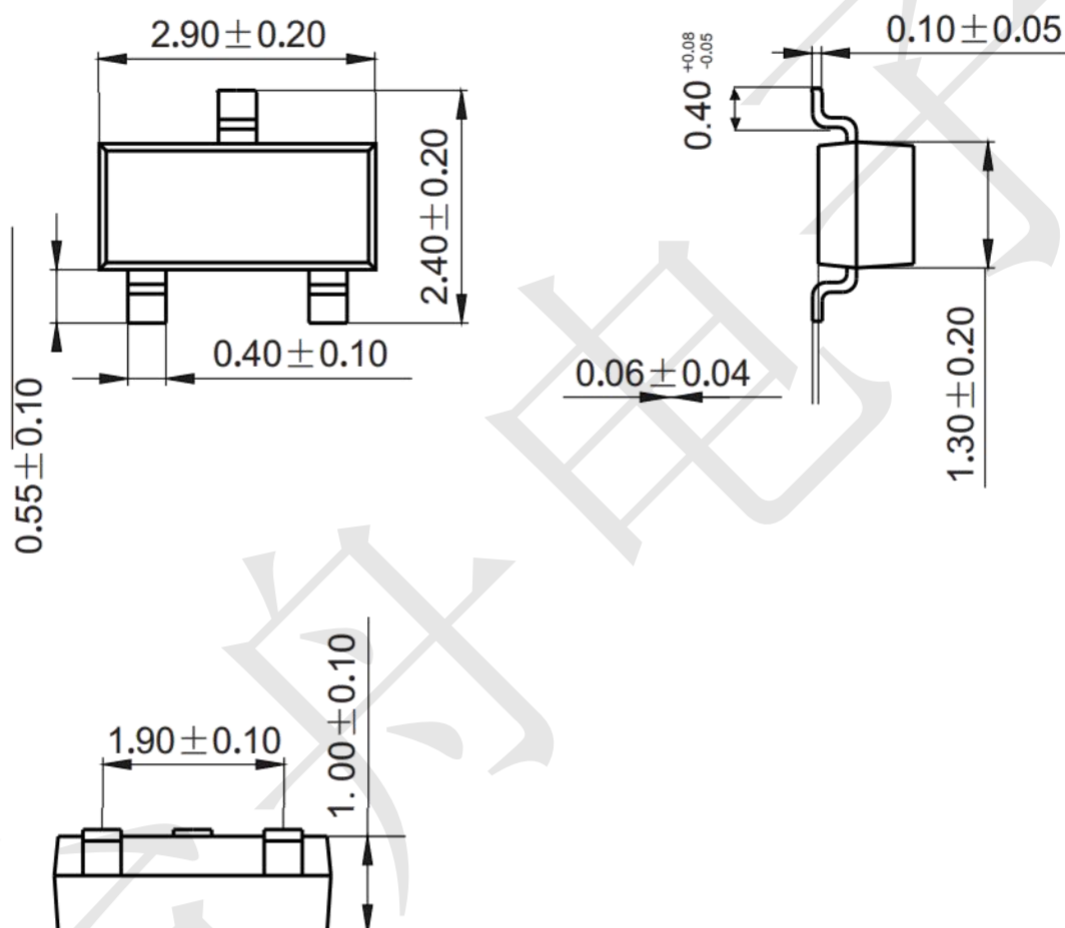
**Fig.3 COLLECTOR-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT**



**Fig.4 BASE-EMITTER SATURATION VOLTAGE VS.COLLECTOR CURRENT**

**Package Outline Dimensions (unit: mm)**

SOT-23



**Mounting Pad Layout (unit: mm)**

