

**SOT-23**

**Pin Definition:**

1. Base
2. Emitter
3. Collector

**PRODUCT SUMMARY**

|                            |                                                          |
|----------------------------|----------------------------------------------------------|
| <b>BV<sub>CBO</sub></b>    | -60V                                                     |
| <b>BV<sub>CEO</sub></b>    | -60V                                                     |
| <b>I<sub>C</sub></b>       | -0.6A                                                    |
| <b>V<sub>CE(SAT)</sub></b> | -0.4V @ I <sub>C</sub> / I <sub>B</sub> = -150mA / -15mA |

**Features**

- Low V<sub>CE(SAT)</sub> -0.4 @ I<sub>C</sub> / I<sub>B</sub> = -150mA / -15mA
- Complementary part with TSC2411

**Structure**

- Epitaxial Planar Type
- PNP Silicon Transistor

**Ordering Information**

| Part No.     | Package | Packing         |
|--------------|---------|-----------------|
| TSA1036CX RF | SOT-23  | 3Kpcs / 7" Reel |

**Absolute Maximum Rating** (Ta = 25°C unless otherwise noted)

| Parameter                                        | Symbol           | Limit        | Unit |
|--------------------------------------------------|------------------|--------------|------|
| Collector-Base Voltage                           | V <sub>CBO</sub> | -60          | V    |
| Collector-Emitter Voltage                        | V <sub>CEO</sub> | -60          | V    |
| Emitter-Base Voltage                             | V <sub>EBO</sub> | -5           | V    |
| Collector Current                                | I <sub>C</sub>   | -0.6         | A    |
| Collector Power Dissipation                      | P <sub>D</sub>   | 225          | mW   |
| Thermal Resistance, Junction to Ambient          | R <sub>θJA</sub> | 556          | °C/W |
| Operating Junction Temperature                   | T <sub>J</sub>   | +150         | °C   |
| Operating Junction and Storage Temperature Range | T <sub>STG</sub> | - 55 to +150 | °C   |

Note: Single pulse, Pw≤350us, Duty≤2%

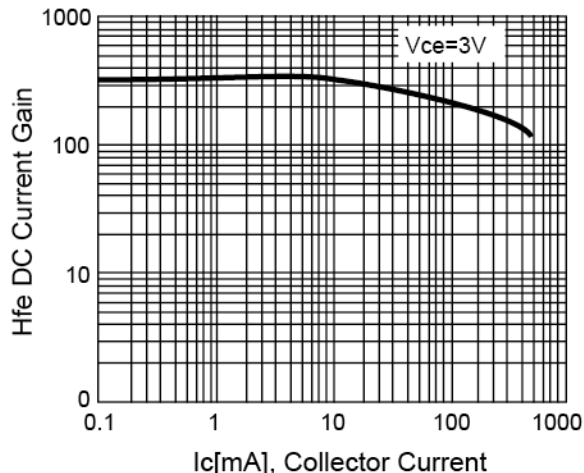
**Electrical Specifications** (Ta = 25°C unless otherwise noted)

| Parameter                            | Conditions                                              | Symbol                | Min | Typ | Max  | Unit |
|--------------------------------------|---------------------------------------------------------|-----------------------|-----|-----|------|------|
| Collector-Base Breakdown Voltage     | I <sub>C</sub> = -10uA, I <sub>E</sub> = 0              | BV <sub>CBO</sub>     | -60 | --  | --   | V    |
| Collector-Emitter Breakdown Voltage  | I <sub>C</sub> = -10mA, I <sub>B</sub> = 0              | BV <sub>CEO</sub>     | -60 | --  | --   | V    |
| Emitter-Base Breakdown Voltage       | I <sub>E</sub> = -10uA, I <sub>C</sub> = 0              | BV <sub>EBO</sub>     | -5  | --  | --   | V    |
| Collector Cutoff Current             | V <sub>CB</sub> = -50V, I <sub>E</sub> = 0              | I <sub>CBO</sub>      | --  | --  | -10  | nA   |
| Emitter Cutoff Current               | V <sub>EB</sub> = -0.5V, I <sub>C</sub> = 0             | I <sub>EBO</sub>      | --  | --  | -50  | nA   |
| Collector-Emitter Saturation Voltage | I <sub>C</sub> / I <sub>B</sub> = -150mA / -15mA        | *V <sub>CE(SAT)</sub> | --  | --  | -0.4 | V    |
| Base-Emitter Saturation Voltage      | I <sub>C</sub> / I <sub>B</sub> = -500mA / -50mA        | *V <sub>BE(SAT)</sub> | --  | --  | -1.3 | V    |
| DC Current Transfer Ratio            | V <sub>CE</sub> = -10V, I <sub>C</sub> = -0.1A          | *h <sub>FE1</sub>     | 75  | --  | --   |      |
|                                      | V <sub>CE</sub> = -10V, I <sub>C</sub> = -150mA         | *h <sub>FE2</sub>     | 100 | --  | 300  |      |
| Transition Frequency                 | V <sub>CE</sub> = -5V, I <sub>C</sub> = -50mA, f=100MHz | f <sub>T</sub>        | 200 | --  | --   | MHz  |
| Output Capacitance                   | V <sub>CB</sub> = -10V, f=1MHz                          | Cob                   | --  | --  | 8    | pF   |

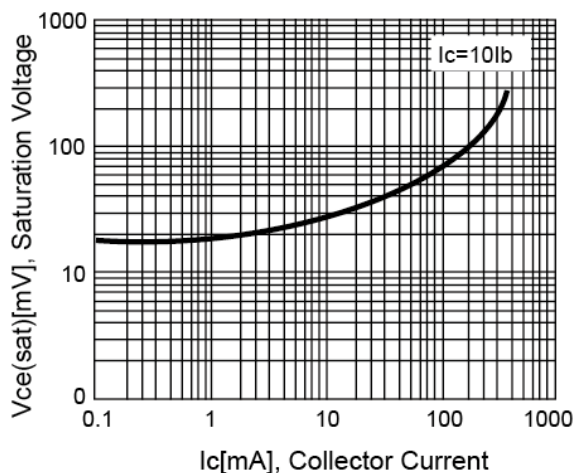
\* Pulse Test: Pulse Width ≤380uS, Duty Cycle≤2%

**Electrical Characteristics Curve** ( $T_a = 25^\circ\text{C}$ , unless otherwise noted)

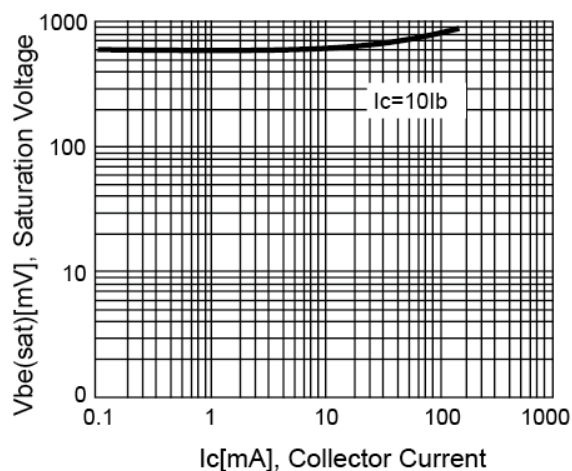
**Figure 1. DC Current Gain**



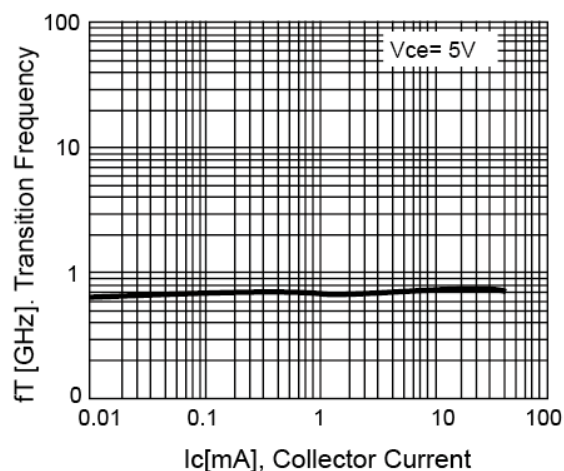
**Figure 2.  $V_{CE(SAT)}$  v.s.  $I_c$**



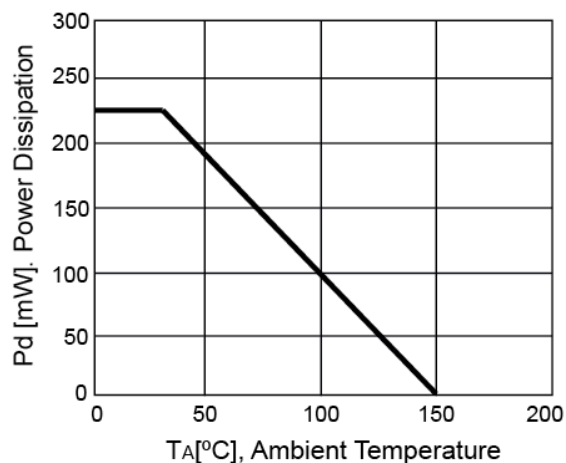
**Figure 3.  $V_{BE(SAT)}$  v.s.  $I_c$**



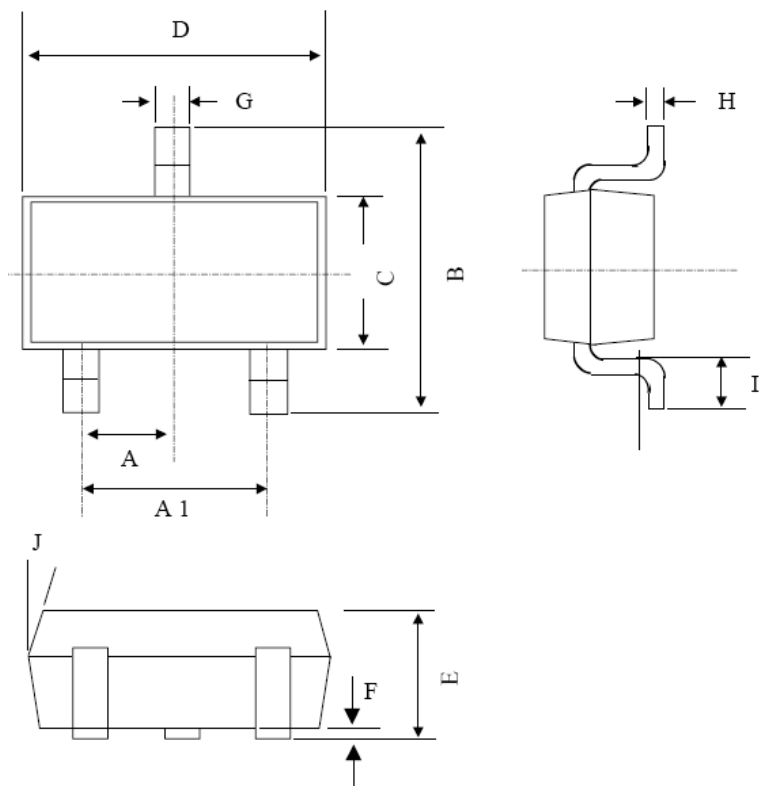
**Figure 4. Cutoff Frequency vs.  $I_c$**



**Figure 5. Power Derating Curve**



### SOT-23 Mechanical Drawing



| DIM | SOT-23 DIMENSION |      |           |       |
|-----|------------------|------|-----------|-------|
|     | MILLIMETERS      |      | INCHES    |       |
|     | MIN              | MAX  | MIN       | MAX.  |
| A   | 0.95 BSC         |      | 0.037 BSC |       |
| A1  | 1.9 BSC          |      | 0.074 BSC |       |
| B   | 2.60             | 3.00 | 0.102     | 0.118 |
| C   | 1.40             | 1.70 | 0.055     | 0.067 |
| D   | 2.80             | 3.10 | 0.110     | 0.122 |
| E   | 1.00             | 1.30 | 0.039     | 0.051 |
| F   | 0.00             | 0.10 | 0.000     | 0.004 |
| G   | 0.35             | 0.50 | 0.014     | 0.020 |
| H   | 0.10             | 0.20 | 0.004     | 0.008 |
| I   | 0.30             | 0.60 | 0.012     | 0.024 |
| J   | 5°               | 10°  | 5°        | 10°   |

# TSA1036

## General Purpose PNP Transistor

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