

### SOT-23



### Pin Definition:

1. Base
2. Emitter
3. Collector

### PRODUCT SUMMARY

|               |                                 |
|---------------|---------------------------------|
| $BV_{CEO}$    | 400V                            |
| $BV_{CBO}$    | 400V                            |
| $I_C$         | 300mA                           |
| $V_{CE(SAT)}$ | 0.1V @ $I_C / I_B = 10mA / 1mA$ |

### Features

- Low  $V_{CE(SAT)}$  0.15V @  $I_C / I_B = 10mA / 10mA$  (Typ.)
- Complementary part with TSA1759

### Structure

- Epitaxial Planar Type
- NPN Silicon Transistor

### Ordering Information

| Part No.      | Package | Packing         |
|---------------|---------|-----------------|
| TSC4505CX RF  | SOT-23  | 3Kpcs / 7" Reel |
| TSC4505CX RFG | SOT-23  | 3Kpcs / 7" Reel |

**Note:** "G" denotes Halogen Free Product.

### Absolute Maximum Rating ( $T_A = 25^\circ C$ unless otherwise noted)

| Parameter                                        | Symbol    | Limit        | Unit       |
|--------------------------------------------------|-----------|--------------|------------|
| Collector-Base Voltage                           | $V_{CBO}$ | 400          | V          |
| Collector-Emitter Voltage                        | $V_{CEO}$ | 400          | V          |
| Emitter-Base Voltage                             | $V_{EBO}$ | 6            | V          |
| Collector Current                                | $I_C$     | 300          | mA         |
| Collector Power Dissipation                      | $P_D$     | 0.225        | W          |
| Operating Junction Temperature                   | $T_J$     | +150         | $^\circ C$ |
| Operating Junction and Storage Temperature Range | $T_{STG}$ | - 55 to +150 | $^\circ C$ |

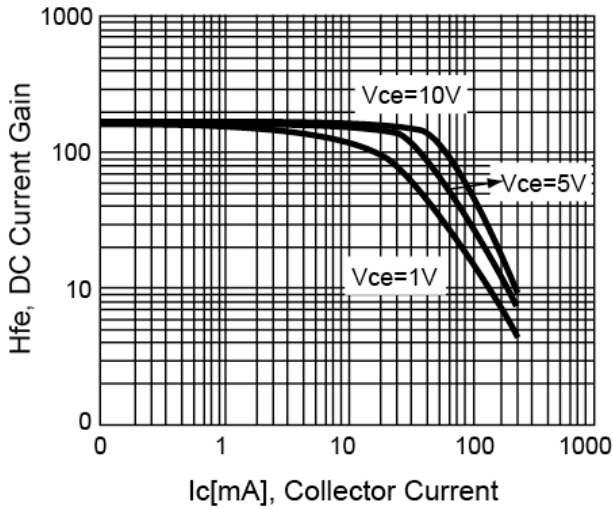
**Note:** Single pulse,  $P_w=20ms$ ,  $Duty \leq 50\%$

### Electrical Specifications ( $T_A = 25^\circ C$ unless otherwise noted)

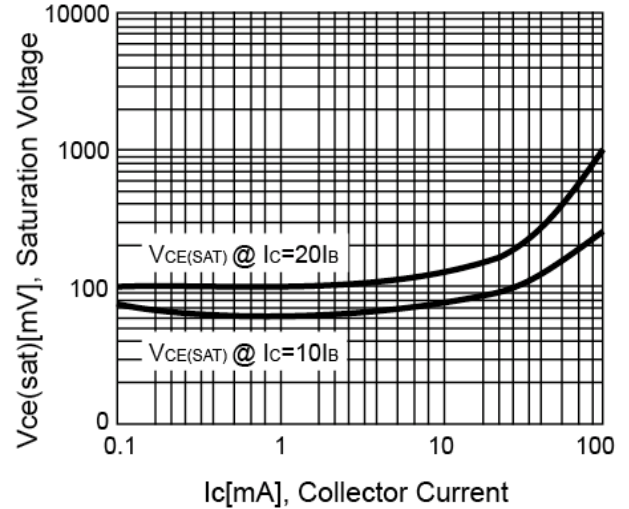
| Parameter                            | Conditions                                  | Symbol        | Min | Typ | Max | Unit    |
|--------------------------------------|---------------------------------------------|---------------|-----|-----|-----|---------|
| Collector-Base Breakdown Voltage     | $I_C = 50\mu A$ , $I_E = 0$                 | $BV_{CBO}$    | 400 | --  | --  | V       |
| Collector-Emitter Breakdown Voltage  | $I_C = 1mA$ , $I_B = 0$                     | $BV_{CEO}$    | 400 | --  | --  | V       |
| Emitter-Base Breakdown Voltage       | $I_E = 50\mu A$ , $I_C = 0$                 | $BV_{EBO}$    | 6   | --  | --  | V       |
| Collector Cutoff Current             | $V_{CB} = 400V$ , $I_E = 0$                 | $I_{CBO}$     | --  | --  | 10  | $\mu A$ |
| Collector-Emitter Reverse Current    | $V_{CE} = 300V$ , $R_{EB} = 4k\Omega$       | $I_{CER}$     | --  | --  | 20  | nA      |
| Emitter Cutoff Current               | $V_{EB} = 6V$ , $I_C = 0$                   | $I_{EBO}$     | --  | --  | 10  | $\mu A$ |
| Collector-Emitter Saturation Voltage | $I_C / I_B = 10mA / 1mA$                    | $V_{CE(SAT)}$ | --  | 0.1 | 0.5 | V       |
| Base-Emitter Saturation Voltage      | $I_C / I_B = 10mA / 1mA$                    | $V_{BE(SAT)}$ | --  | --  | 1.5 | V       |
| DC Current Transfer Ratio            | $V_{CE} = 10V$ , $I_C = 10mA$               | $h_{FE}$      | 100 | --  | 270 |         |
| Transition Frequency                 | $V_{CE} = 10V$ , $I_C = 10mA$ , $f = 10MHz$ | $f_T$         | --  | 20  | --  | MHz     |
| Output Capacitance                   | $V_{CB} = 10V$ , $I_E = 0$ , $f = 1MHz$     | $C_{ob}$      | --  | 7   | --  | pF      |

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

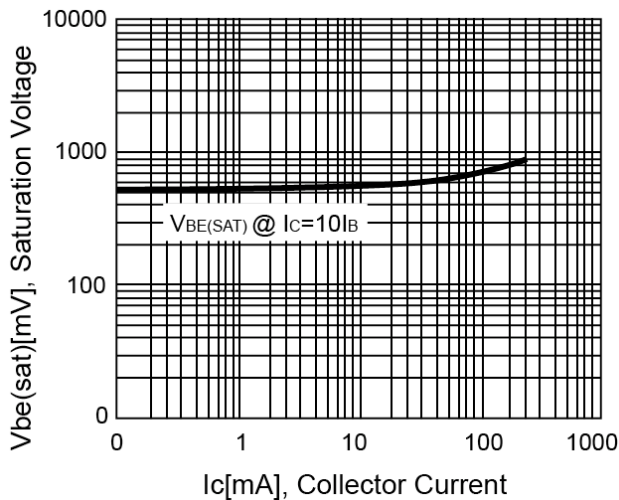
**Figure 1. DC Current Gain**



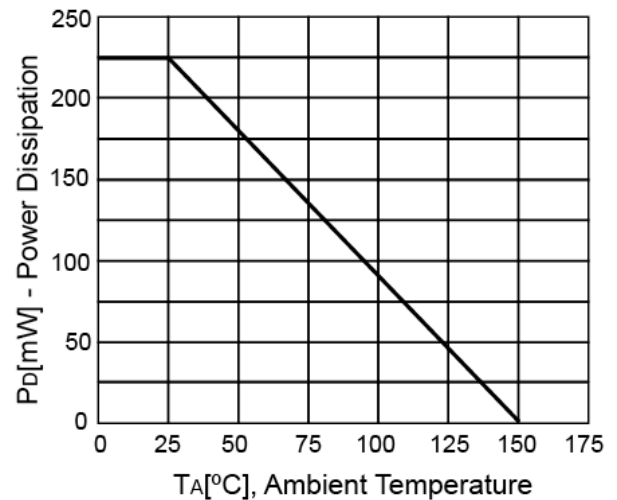
**Figure 2.  $V_{CE(SAT)}$  v.s.  $I_c$**



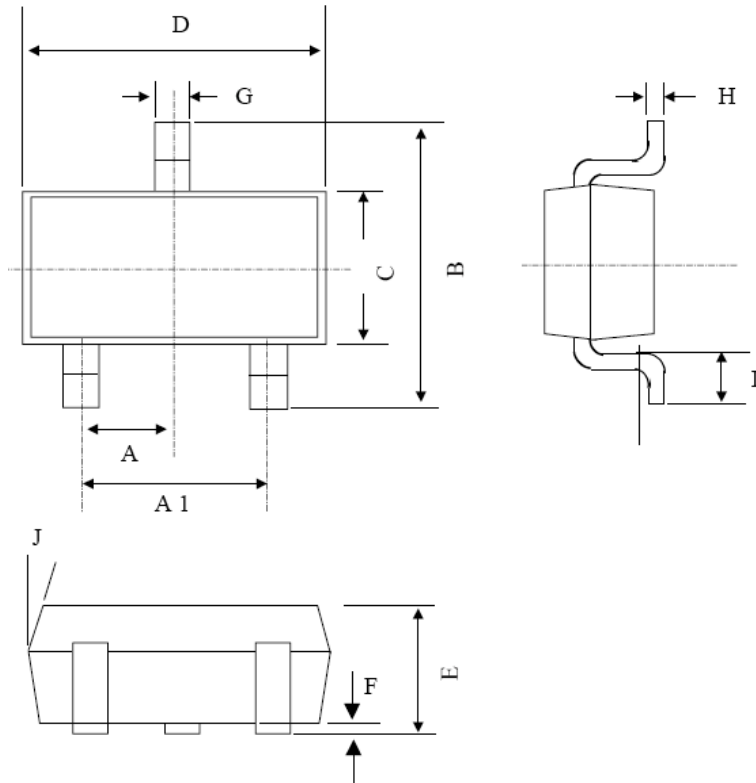
**Figure 3.  $V_{BE(SAT)}$  v.s.  $I_c$**



**Figure 4. Power Derating Curve**



## SOT-23 Mechanical Drawing



| DIM | MILLIMETERS |      | INCHES    |       |
|-----|-------------|------|-----------|-------|
|     | MIN         | MAX  | MIN       | MAX.  |
| A   | 1.00 BSC    |      | 0.039 BSC |       |
| A1  | 2.00 BSC    |      | 0.079 BSC |       |
| B   | 2.10        | 2.75 | 0.083     | 0.108 |
| C   | 1.20        | 1.60 | 0.047     | 0.063 |
| D   | 2.80        | 3.04 | 0.110     | 0.120 |
| E   | 0.89        | 1.30 | 0.035     | 0.051 |
| F   | 0.01        | 0.10 | 0.000     | 0.004 |
| G   | 0.30        | 0.50 | 0.012     | 0.020 |
| H   | 0.08        | 0.18 | 0.003     | 0.007 |
| I   | 0.30        | 0.60 | 0.012     | 0.024 |

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