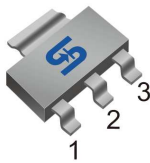




SOT-223



Pin Definition:

1. Base
2. Collector
3. Emitter

### PRODUCT SUMMARY

|               |                                     |
|---------------|-------------------------------------|
| $BV_{CBO}$    | -600V                               |
| $BV_{CEO}$    | -560V                               |
| $I_C$         | -150mA                              |
| $V_{CE(SAT)}$ | -0.5V @ $I_C / I_B = -50mA / -10mA$ |

### Features

- Low Saturation Voltages
- High Breakdown Voltage

### Structure

- Epitaxial Planar Type
- PNP Silicon Transistor

### Ordering Information

| Part No.     | Package | Packing            |
|--------------|---------|--------------------|
| TSA1765CW RP | SOT-223 | 2.5Kpcs / 13" Reel |

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

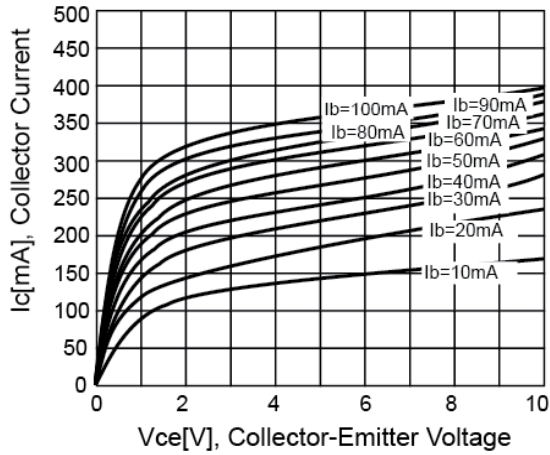
| Parameter  | Symbol    | Limit        | Unit |
|--|-----------|--------------|------|
| Collector-Base Voltage                           | $V_{CBO}$ | -600         | V    |
| Collector-Emitter Voltage                        | $V_{CEO}$ | -560         | V    |
| Emitter-Base Voltage                             | $V_{EBO}$ | -7           | V    |
| Collector Current                                | $I_C$     | -150         | mA   |
| Collector Current(Pulse)                         | $I_{CP}$  | -500         |      |
| Base Current                                     | $I_B$     | -50          |      |
| Total Power Dissipation @ $T_C=25^\circ\text{C}$ | $P_{tot}$ | 2            | W    |
| Operating Junction Temperature                   | $T_J$     | +150         | °C   |
| Operating Junction and Storage Temperature Range | $T_{STG}$ | - 55 to +150 | °C   |

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

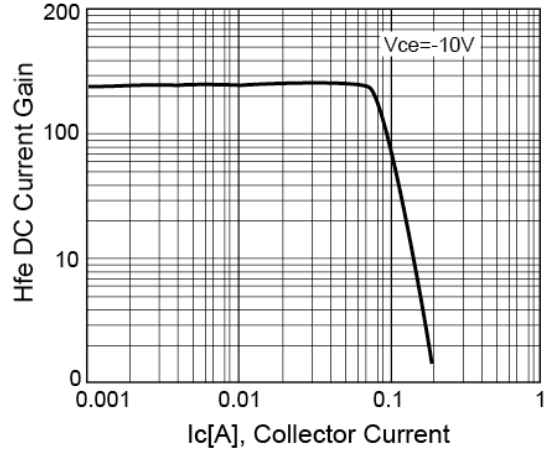
| Parameter                            | Conditions                    | Symbol          | Min  | Typ  | Max  | Unit |
|--------------------------------------|-------------------------------|-----------------|------|------|------|------|
| Collector-Base Breakdown Voltage     | $I_C = -1mA, I_E = 0$         | $BV_{CBO}$      | -600 | --   | --   | V    |
| Collector-Emitter Breakdown Voltage  | $I_C = -1mA, I_B = 0$         | $BV_{CEO}$      | -560 | --   | --   | V    |
| Emitter-Base Breakdown Voltage       | $I_E = -10\mu A, I_C = 0$     | $BV_{EBO}$      | -7   | --   | --   | V    |
| Collector Cutoff Current             | $V_{CB} = -600V, I_E = 0$     | $I_{CBO}$       | --   | --   | -100 | nA   |
| Emitter Cutoff Current               | $V_{EB} = -7V, I_C = 0$       | $I_{EBO}$       | --   | --   | -100 | nA   |
| Collector-Emitter Saturation Voltage | $I_C = -20mA, I_B = -2mA$     | $V_{CE(SAT) 1}$ | --   | --   | -0.2 | V    |
|                                      | $I_C = -50mA, I_B = -10mA$    | $V_{CE(SAT) 2}$ | --   | --   | -0.5 |      |
| Base-Emitter Saturation Voltage      | $I_C = -50mA, I_B = -10mA$    | $V_{BE(SAT) 1}$ | --   | --   | -1.0 | V    |
| Base-Emitter on Voltage              | $V_{CE} = -10V, I_C = -50mA$  | $V_{BE(ON)}$    | --   | --   | -1.0 | V    |
| DC Current Transfer Ratio            | $V_{CE} = -10V, I_C = -1mA$   | $h_{FE 1}$      | 150  | --   | --   |      |
|                                      | $V_{CE} = -10V, I_C = -50mA$  | $h_{FE 2}$      | 80   | --   | 300  |      |
|                                      | $V_{CE} = -10V, I_C = -100mA$ | $h_{FE 3}$      | --   | 15-- | --   |      |
| Transition Frequency                 | $V_{CE} = -20V, I_E = -10mA$  | $f_T$           | 50   | --   | --   | MHz  |
| Output Capacitance                   | $V_{CB} = -20V, f = 1MHz$     | $C_{ob}$        | --   | --   | 8    | pF   |

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

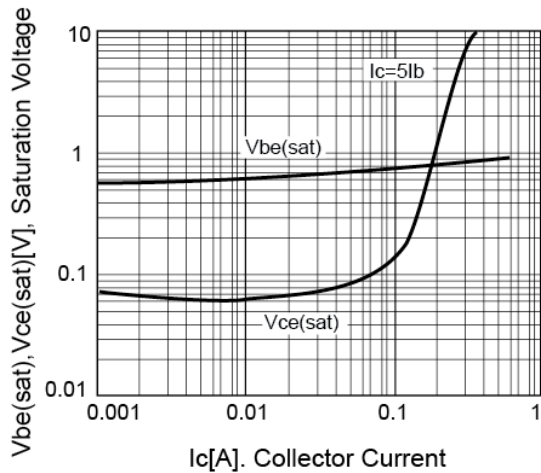
**Figure 1. Static Characteristics**



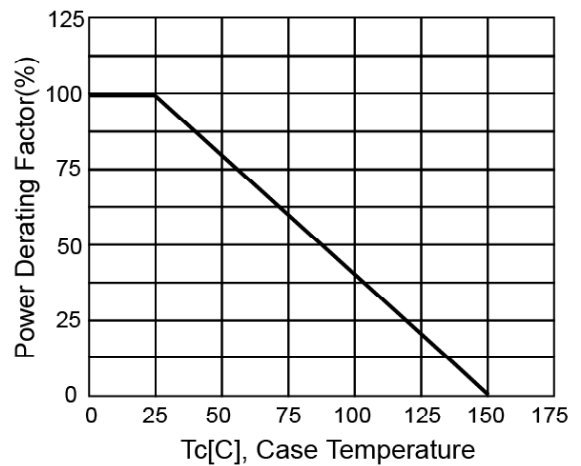
**Figure 2. DC Current Gain**



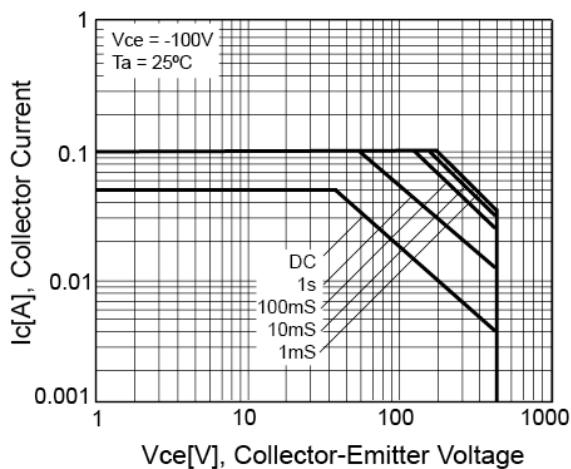
**Figure 3. VCE(SAT) v.s. VBE(SAT)**



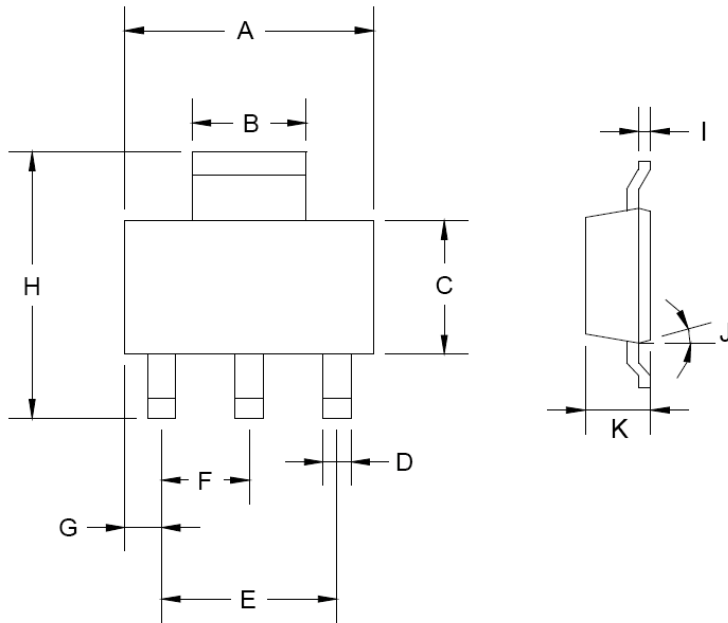
**Figure 4. Power Derating**



**Figure 5. Safety Operation Area**

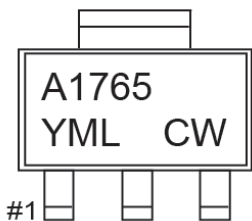


**SOT-223 Mechanical Drawing**



| SOT-223 DIMENSION |             |       |        |       |
|-------------------|-------------|-------|--------|-------|
| DIM               | MILLIMETERS |       | INCHES |       |
|                   | MIN         | MAX   | MIN    | MAX   |
| A                 | 6.350       | 6.850 | 0.250  | 0.270 |
| B                 | 2.900       | 3.100 | 0.114  | 0.122 |
| C                 | 3.450       | 3.750 | 0.136  | 0.148 |
| D                 | 0.595       | 0.635 | 0.023  | 0.025 |
| E                 | 4.550       | 4.650 | 0.179  | 0.183 |
| F                 | 2.250       | 2.350 | 0.088  | 0.093 |
| G                 | 0.835       | 1.035 | 0.032  | 0.041 |
| H                 | 6.700       | 7.300 | 0.263  | 0.287 |
| I                 | 0.250       | 0.355 | 0.010  | 0.014 |
| J                 | 10°         | 16°   | 10°    | 16°   |
| K                 | 1.550       | 1.800 | 0.061  | 0.071 |

**Marking Diagram**



- Y** = Year Code
- M** = Month Code  
(**A**=Jan, **B**=Feb, **C**=Mar, **D**=Apr, **E**=May, **F**=Jun, **G**=Jul, **H**=Aug, **I**=Sep, **J**=Oct, **K**=Nov, **L**=Dec)
- L** = Lot Code

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