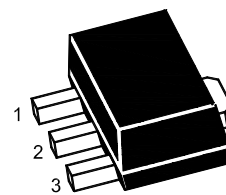




# 2SC4541U

## NPN Silicon Epitaxial Planar Transistor

for power switching and power amplifier applications



1.Base 2.Collector 3.Emitter  
SOT-89 Plastic Package

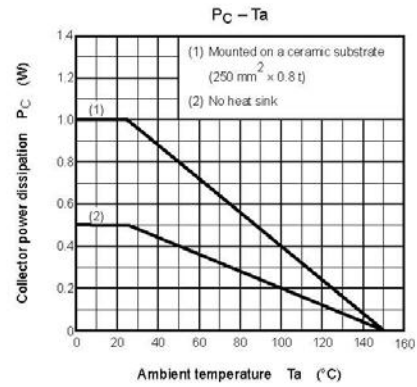
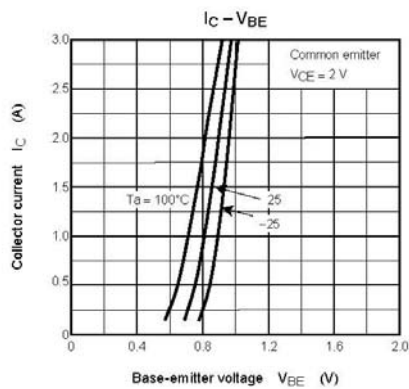
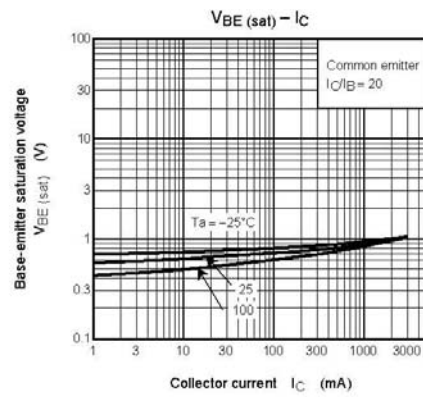
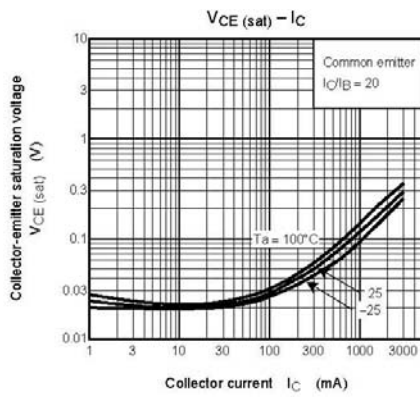
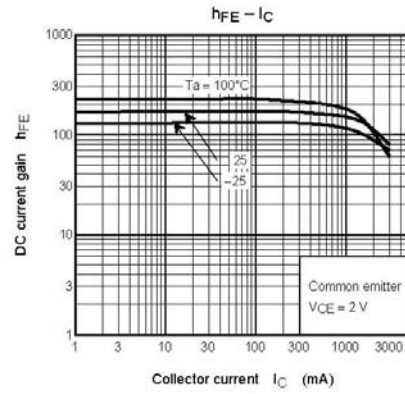
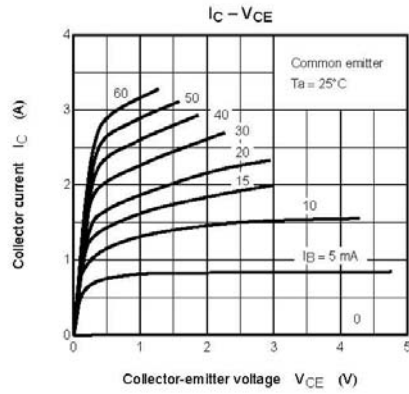
### Absolute Maximum Ratings ( $T_a = 25\text{ }^{\circ}\text{C}$ )

| Parameter                 | Symbol    | Value                  | Unit               |
|---------------------------|-----------|------------------------|--------------------|
| Collector Base Voltage    | $V_{CBO}$ | 80                     | V                  |
| Collector Emitter Voltage | $V_{CEO}$ | 50                     | V                  |
| Emitter Base Voltage      | $V_{EBO}$ | 6                      | V                  |
| Collector Current         | $I_C$     | 3                      | A                  |
| Base Current              | $I_B$     | 0.6                    | A                  |
| Total Power Dissipation   | $P_{tot}$ | 0.5<br>1 <sup>1)</sup> | W                  |
| Junction Temperature      | $T_j$     | 150                    | $^{\circ}\text{C}$ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150          | $^{\circ}\text{C}$ |

<sup>1)</sup> mounted on a ceramic substrate ( 250 mm<sup>2</sup> X 0.8 t)

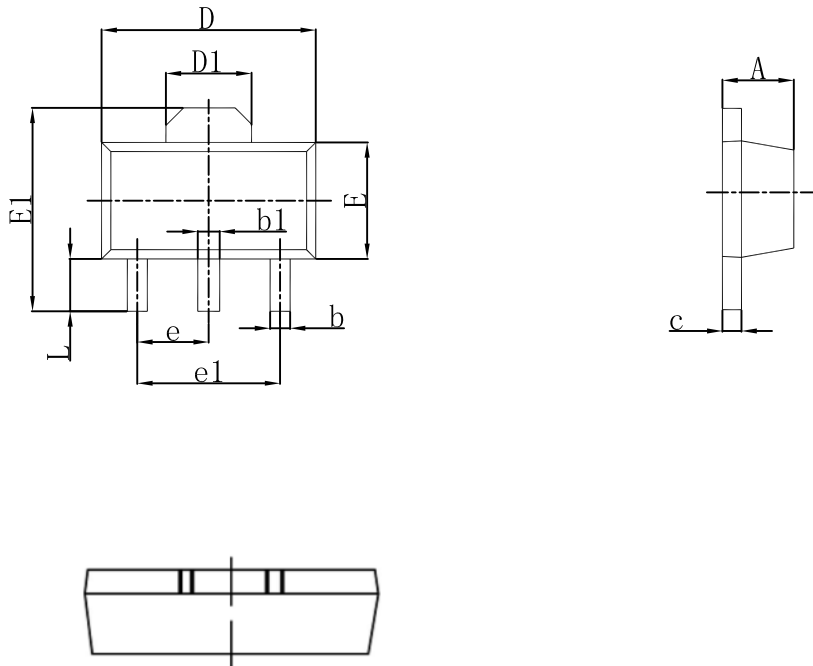
### Characteristics at $T_a = 25\text{ }^{\circ}\text{C}$

| Parameter                                                                                                            | Symbol               | Min.      | Typ.   | Max.     | Unit          |
|----------------------------------------------------------------------------------------------------------------------|----------------------|-----------|--------|----------|---------------|
| DC Current Gain<br>at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$<br>at $V_{CE} = 2\text{ V}$ , $I_C = 2\text{ A}$ | $h_{FE}$<br>$h_{FE}$ | 120<br>40 | -<br>- | 400<br>- | -<br>-        |
| Collector Base Cutoff Current<br>at $V_{CB} = 80\text{ V}$                                                           | $I_{CBO}$            | -         | -      | 0.1      | $\mu\text{A}$ |
| Emitter Base Cutoff Current<br>at $V_{EB} = 6\text{ V}$                                                              | $I_{EBO}$            | -         | -      | 0.1      | $\mu\text{A}$ |
| Collector Emitter Breakdown Voltage<br>at $I_C = 10\text{ mA}$                                                       | $V_{(BR)CEO}$        | 50        | -      | -        | V             |
| Collector Emitter Saturation Voltage<br>at $I_C = 1.5\text{ A}$ , $I_B = 75\text{ mA}$                               | $V_{CE(sat)}$        | -         | -      | 0.5      | V             |
| Base Emitter Saturation Voltage<br>at $I_C = 1.5\text{ A}$ , $I_B = 75\text{ mA}$                                    | $V_{BE(sat)}$        | -         | -      | 1.2      | V             |
| Transition Frequency<br>at $V_{CE} = 2\text{ V}$ , $I_C = 100\text{ mA}$                                             | $f_T$                | -         | 100    | -        | MHz           |
| Collector Output Capacitance<br>at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$                                       | $C_{ob}$             | -         | 20     | -        | pF            |
| Turn-on Time<br>at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$                 | $t_{on}$             | -         | 100    | -        | ns            |
| Storage Time<br>at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$                 | $t_{stg}$            | -         | 500    | -        | ns            |
| Fall Time<br>at $V_{CC} = 30\text{ V}$ , $I_C = 1.5\text{ A}$ , $I_{B1} = -I_{B2} = 75\text{ mA}$                    | $t_f$                | -         | 100    | -        | ns            |





## SOT-89-3L Outlines Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.400                     | 1.600 | 0.055                | 0.063 |
| b      | 0.320                     | 0.520 | 0.013                | 0.020 |
| b1     | 0.400                     | 0.580 | 0.016                | 0.023 |
| c      | 0.350                     | 0.440 | 0.014                | 0.017 |
| D      | 4.400                     | 4.600 | 0.173                | 0.181 |
| D1     | 1.550 REF.                |       | 0.061 REF.           |       |
| E      | 2.300                     | 2.600 | 0.091                | 0.102 |
| E1     | 3.940                     | 4.250 | 0.155                | 0.167 |
| e      | 1.500 TYP.                |       | 0.060 TYP.           |       |
| e1     | 3.000 TYP.                |       | 0.118 TYP.           |       |
| L      | 0.900                     | 1.200 | 0.035                | 0.047 |