



# STT818B

## HIGH GAIN LOW VOLTAGE PNP POWER TRANSISTOR

| Type    | Marking |
|---------|---------|
| STT818B | 818B    |

- VERY LOW COLLECTOR TO EMITTER SATURATION VOLTAGE
- DC CURRENT GAIN  $> 100$  ( $h_{FE}$ )
- 3 A CONTINUOUS COLLECTOR CURRENT ( $I_C$ )
- SURFACE-MOUNTING SOT23-6L PACKAGE IN TAPE & REEL

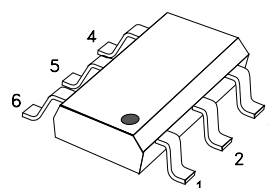
### APPLICATIONS

- POWER MANAGEMENT IN PORTABLE EQUIPMENTS
- SWITCHING REGULATOR IN BATTERY CHARGER APPLICATIONS

### DESCRIPTION

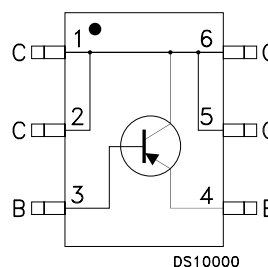
The device is manufactured in low voltage PNP Planar Technology by using a "Base Island" layout.

The resulting Transistor shows exceptional high gain performance coupled with very low saturation voltage.



**SOT23-6L  
(TSOP6)**

### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

| Symbol    | Parameter                               | Value      | Unit       |
|-----------|---|------------|------------|
| $V_{CBO}$ | Collector-Base Voltage ( $I_E = 0$ )    | -30        | V          |
| $V_{CEO}$ | Collector-Emitter Voltage ( $I_B = 0$ ) | -30        | V          |
| $V_{EBO}$ | Emitter-Base Voltage ( $I_C = 0$ )      | -5         | V          |
| $I_C$     | Collector Current                       | -3         | A          |
| $I_{CM}$  | Collector Peak Current                  | -6         | A          |
| $I_B$     | Base Current                            | -0.2       | A          |
| $I_{BM}$  | Base Peak Current                       | -0.5       | A          |
| $P_{tot}$ | Total Dissipation at $T_C = 25^\circ C$ | 1.2        | W          |
| $T_{stg}$ | Storage Temperature                     | -65 to 150 | $^\circ C$ |
| $T_j$     | Max. Operating Junction Temperature     | 150        | $^\circ C$ |

STT818B

THERMAL DATA

|                     |                                     |     |       |                      |
|---------------------|-------------------------------------|-----|-------|----------------------|
| $R_{thj-amb}^{(1)}$ | Thermal Resistance Junction-ambient | Max | 104.2 | $^{\circ}\text{C/W}$ |
|---------------------|-------------------------------------|-----|-------|----------------------|

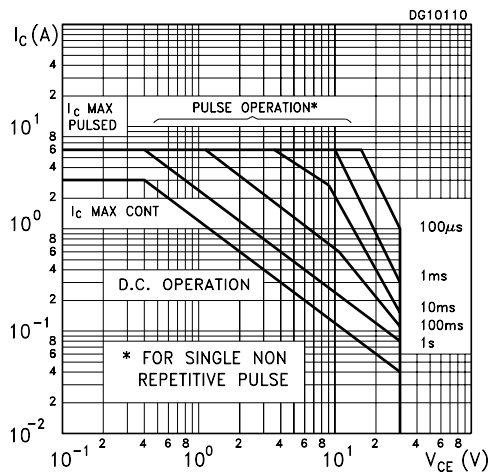
(1) Package mounted on FR4 pcb 25mm x 25mm.

ELECTRICAL CHARACTERISTICS (T<sub>case</sub> = 25  $^{\circ}\text{C}$  unless otherwise specified)

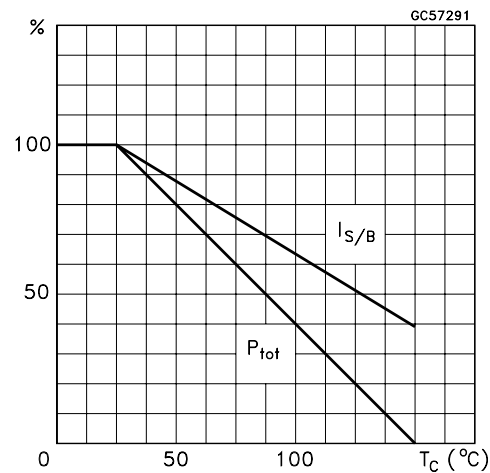
| Symbol          | Parameter   | Test Conditions  | Min.       | Typ.                     | Max.                   | Unit                           |
|-----------------|---|--|------------|--------------------------|------------------------|--------------------------------|
| $I_{CBO}$       | Collector Cut-off Current ( $I_E = 0$ )           | $V_{CB} = -30\text{ V}$<br>$V_{CB} = -30\text{ V}$ $T_C = 125\text{ }^{\circ}\text{C}$   |            |                          | -0.1<br>-20            | $\mu\text{A}$<br>$\mu\text{A}$ |
| $I_{EBO}$       | Emitter Cut-off Current ( $I_C = 0$ )             | $V_{EB} = -5\text{ V}$   |            |                          | -0.1                   | $\mu\text{A}$                  |
| $V_{(BR)CEO}^*$ | Collector-Emitter Breakdown Voltage ( $I_B = 0$ ) | $I_C = -10\text{ mA}$  | -30        |                          |                        | V                              |
| $V_{CE(sat)}^*$ | Collector-Emitter Saturation Voltage              | $I_C = -0.5\text{ A}$ $I_B = -5\text{ mA}$<br>$I_C = -2\text{ A}$ $I_B = -20\text{ mA}$<br>$I_C = -1.2\text{ A}$ $I_B = -20\text{ mA}$ |            | -0.075<br>-0.21<br>-0.25 | -0.15<br>-0.5<br>-0.25 | V<br>V<br>V                    |
| $V_{BE(sat)}^*$ | Base-Emitter Saturation Voltage                   | $I_C = -0.5\text{ A}$ $I_B = -5\text{ mA}$<br>$I_C = -1.2\text{ A}$ $I_B = -20\text{ mA}$<br>$I_C = -2\text{ A}$ $I_B = -20\text{ mA}$ |            | -0.74                    | -1.1<br>-1.1<br>-1.2   | V<br>V<br>V                    |
| $V_{BE(ON)}^*$  | Base-Emitter Voltage                              | $I_C = -0.5\text{ A}$ $V_{CE} = -2\text{ V}$   |            | -0.71                    | -1.1                   | V                              |
| $h_{FE}^*$      | DC Current Gain                                   | $I_C = -0.5\text{ A}$ $V_{CE} = -1\text{ V}$<br>$I_C = -2.5\text{ A}$ $V_{CE} = -3\text{ V}$   | 100<br>100 |                          |                        |                                |

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %.

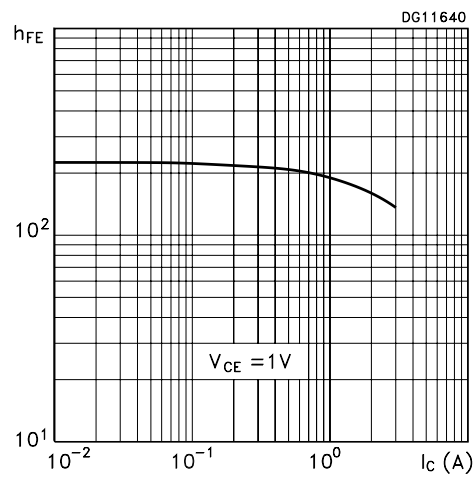
Safe Operating Area



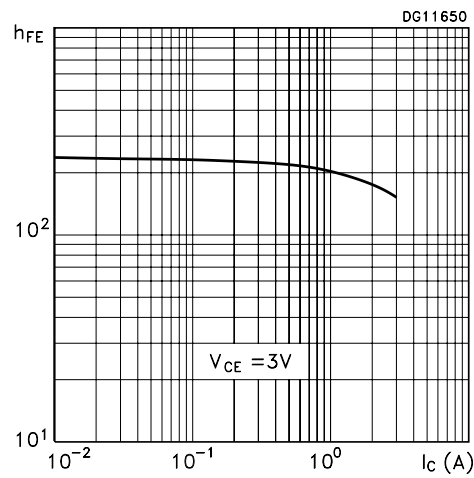
Derating Curve



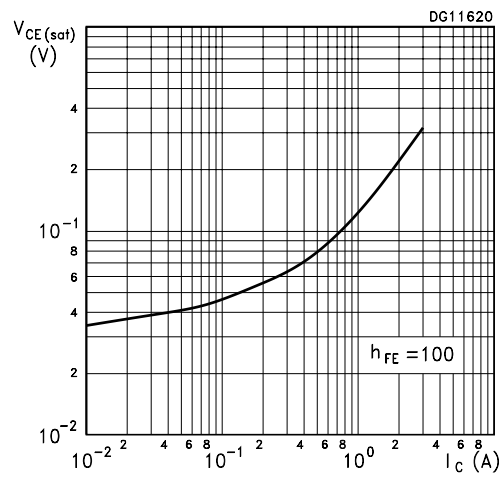
DC Current Gain



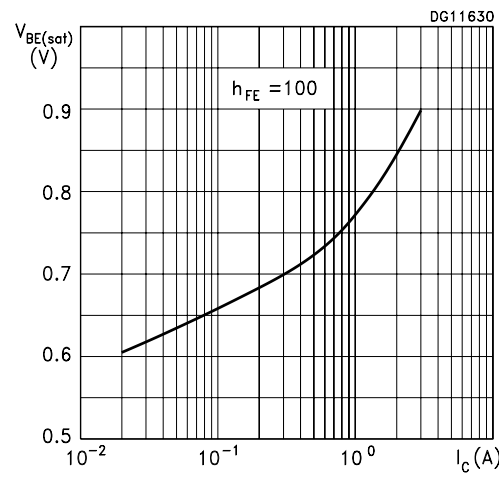
DC Current Gain



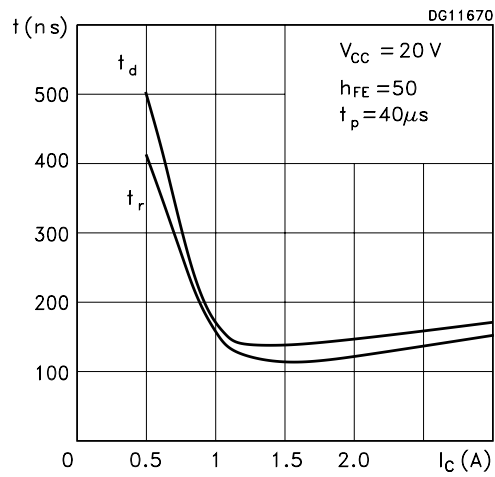
Collector-Emitter Saturation Voltage



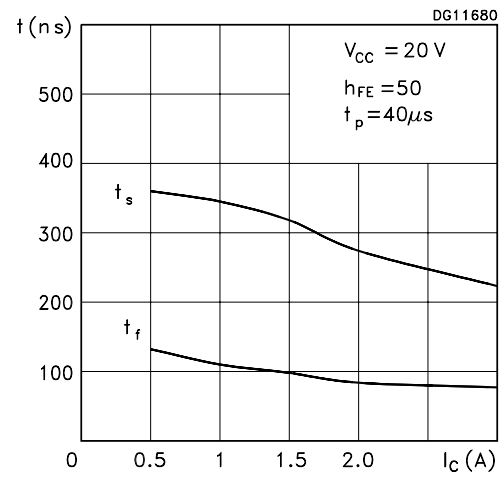
Base-Emitter Saturation Voltage



Switching Times Resistive Load

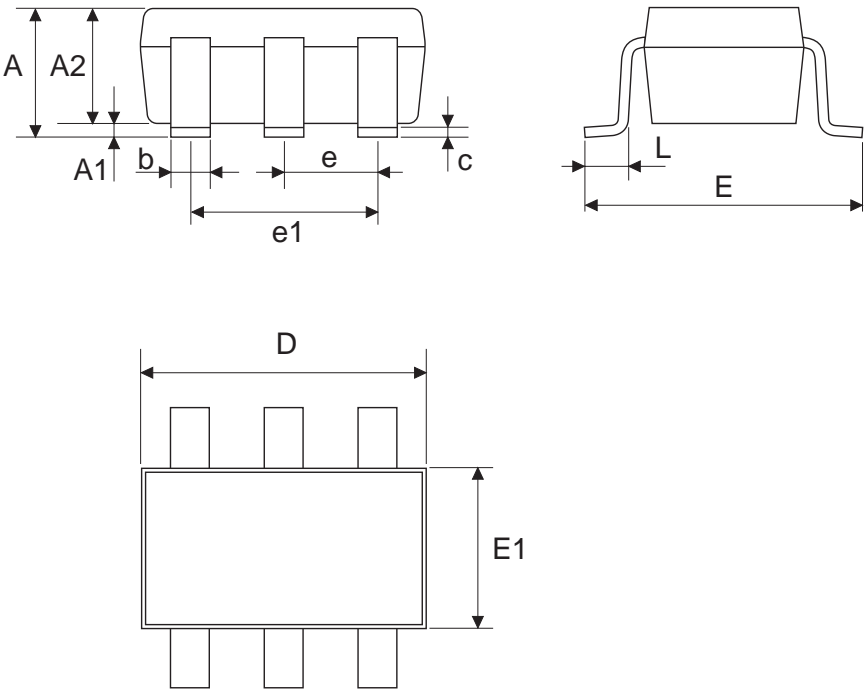


Switching Times Resistive Load



SOT23-6L MECHANICAL DATA

| DIM. | mm   |      |      | mils  |       |       |
|------|------|------|------|-------|-------|-------|
|      | MIN. | TYP. | MAX. | MIN.  | TYP.  | MAX.  |
| A    | 0.90 |      | 1.45 | 0.035 |       | 0.057 |
| A1   | 0.00 |      | 0.15 | 0.000 |       | 0.006 |
| A2   | 0.90 |      | 1.30 | 0.035 |       | 0.051 |
| b    | 0.25 |      | 0.50 | 0.010 |       | 0.020 |
| C    | 0.09 |      | 0.20 | 0.004 |       | 0.008 |
| D    | 2.80 |      | 3.10 | 0.110 |       | 0.122 |
| E    | 2.60 |      | 3.00 | 0.102 |       | 0.118 |
| E1   | 1.50 |      | 1.75 | 0.059 |       | 0.069 |
| L    | 0.35 |      | 0.55 | 0.014 |       | 0.022 |
| e    |      | 0.95 |      |       | 0.037 |       |
| e1   |      | 1.90 |      |       | 0.075 |       |



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