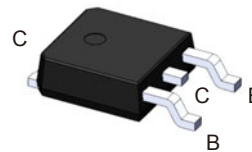
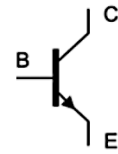


**Features**

- Fast switching speeds
- Low collector emitter saturation voltage



TO-252 (DPAK)



Schematic Diagram

**Absolute Maximum Ratings** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Parameter   | Symbol          | Value                    | Unit                 |
|---|-----------------|--------------------------|----------------------|
| Collector Base Voltage  | $V_{CBO}$       | 100                      | V                    |
| Collector Emitter Voltage                                     | $V_{CEO}$       | 80                       | V                    |
| Emitter Base Voltage  | $V_{EBO}$       | 5                        | V                    |
| Collector Current   | $I_C$           | 8                        | A                    |
| Peak Collector Current, Pulsed                                | $I_{CM}$        | 16                       | A                    |
| Power Dissipation   | $P_{tot}$       | $T_A=25^{\circ}\text{C}$ | 1.75                 |
|   |                 | $T_C=25^{\circ}\text{C}$ | 20                   |
| Max. Thermal Resistance from Junction to Case                 | $R_{\theta JC}$ | 6.25                     | $^{\circ}\text{C/W}$ |
| Max. Thermal Resistance from Junction to Ambient <sup>1</sup> | $R_{\theta JA}$ | 71.4                     | $^{\circ}\text{C/W}$ |
| Junction Temperature  | $T_J$           | 150                      | $^{\circ}\text{C}$   |
| Storage Temperature Range                                     | $T_{STG}$       | -55 to +150              | $^{\circ}\text{C}$   |

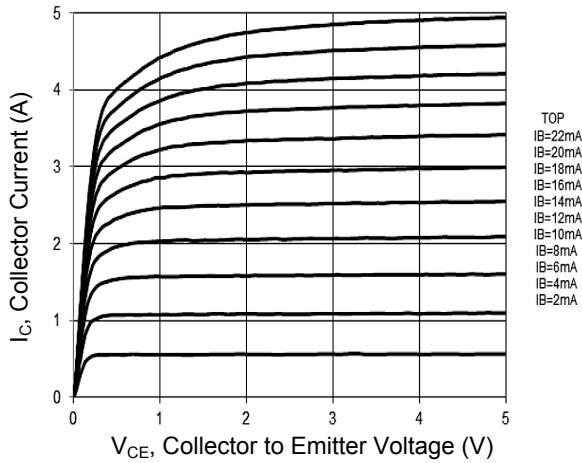
Note:

1. Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.

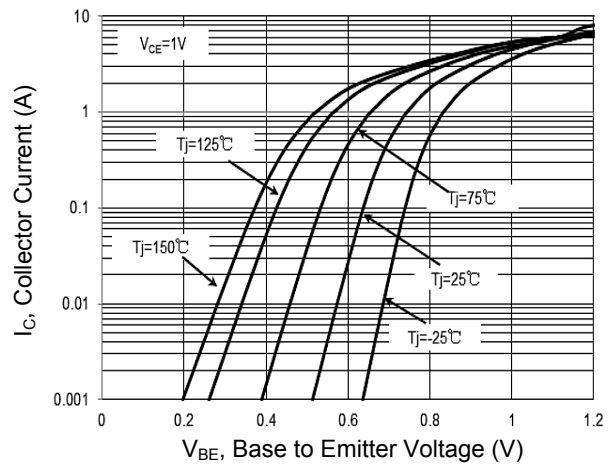
**Electrical Characteristics** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

| Parameter                            | Symbol        | Condition                            | Min. | Typ. | Max. | Unit          |
|--------------------------------------|---------------|--------------------------------------|------|------|------|---------------|
| Collector Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C=100\mu\text{A}$                 | 100  | -    | -    | V             |
| Collector Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=30\text{mA}$                    | 80   | -    | -    | V             |
| Emitter Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=100\mu\text{A}$                 | 5    | -    | -    | V             |
| Collector Emitter Cutoff Current     | $I_{CEO}$     | $V_{CE}=80\text{V}$                  | -    | -    | 10   | $\mu\text{A}$ |
| Emitter Base Cutoff Current          | $I_{EBO}$     | $V_{EB}=5\text{V}$                   | -    | -    | 50   | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=1\text{V}, I_C=2\text{A}$    | 60   | -    | -    | -             |
|                                      |               | $V_{CE}=1\text{V}, I_C=4\text{A}$    | 40   | -    | -    | -             |
| Collector Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=8\text{A}, I_B=0.4\text{A}$     | -    | -    | 1    | V             |
| Base Emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C=8\text{A}, I_B=0.8\text{A}$     | -    | -    | 1.5  | V             |
| Transition Frequency                 | $f_T$         | $V_{CE}=10\text{V}, I_C=0.5\text{A}$ | -    | 50   | -    | MHz           |
| Collector Base Capacitance           | $C_{ob}$      | $V_{CB}=10\text{V}, f=1\text{MHz}$   | -    | 84   | -    | pF            |

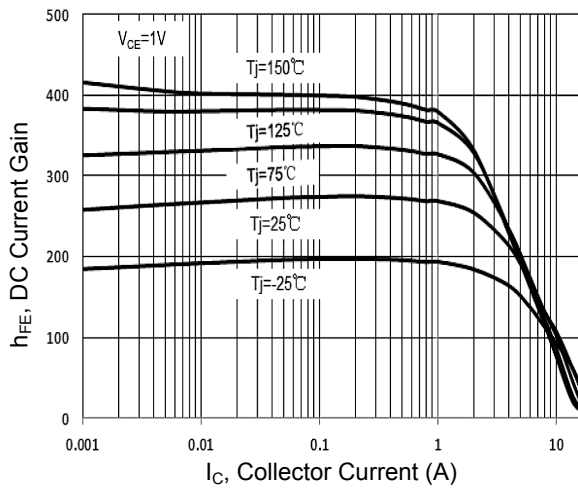
**Electrical Characteristic Curves**



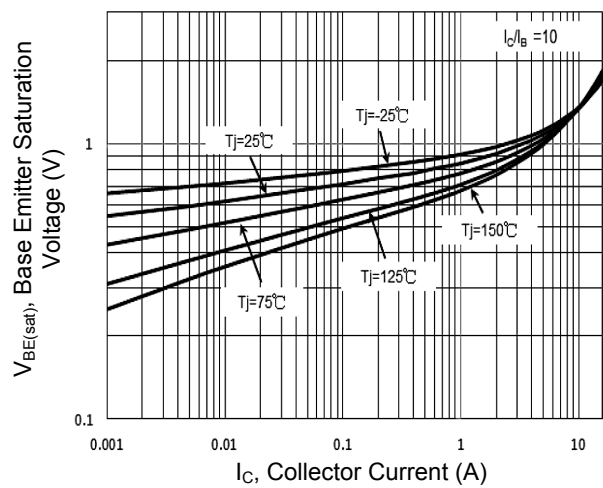
**Figure 1. Output Characteristics Curve**



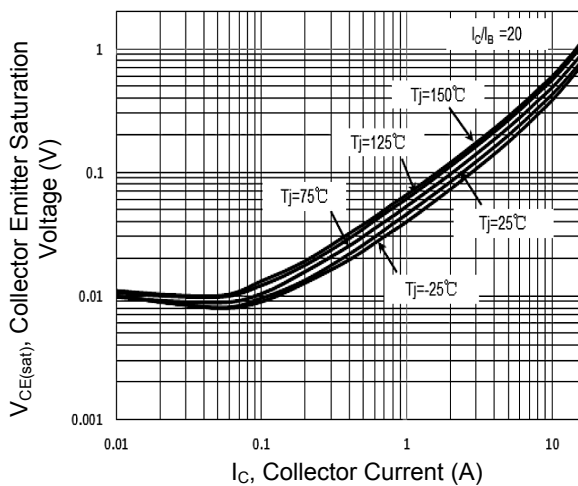
**Figure 2. Collector Current vs. Base to Emitter Voltage**



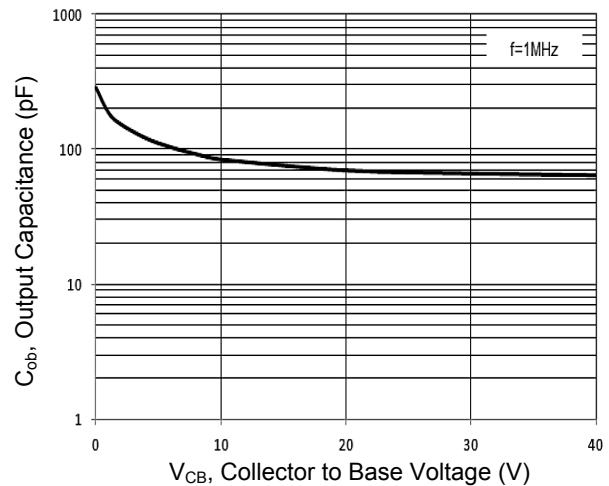
**Figure 3. DC Current Gain vs. Collector Current**



**Figure 4. Base Emitter Saturation Voltage vs. Collector Current**

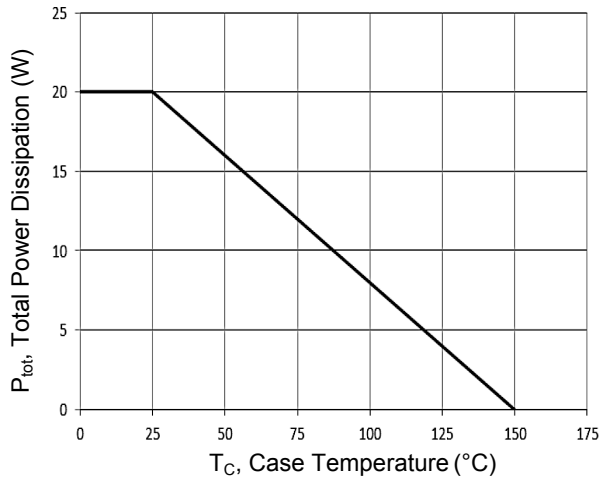


**Figure 5. Collector Emitter Saturation Voltage vs. Collector Current**



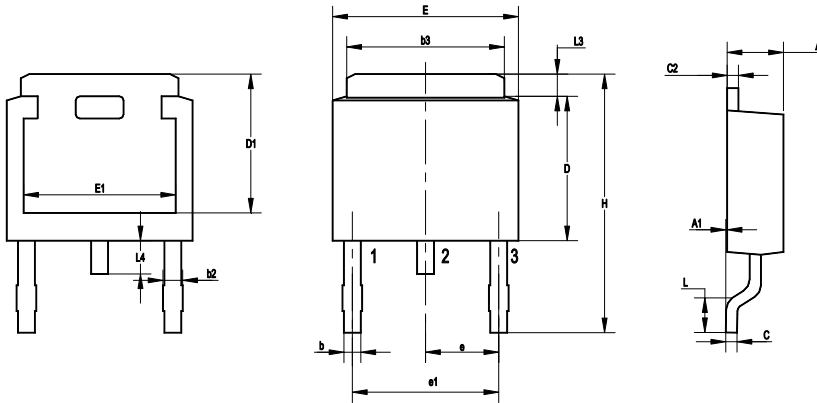
**Figure 6. Output Capacitance**

**Electrical Characteristic Curves**



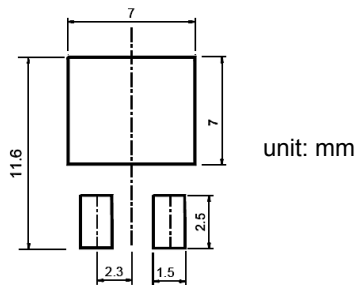
**Figure 7. Power Derating Curve**

**Package Outline Dimensions TO-252 (DPAK)**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 2.10                      | 2.50  | 0.083                | 0.098 |
| A1     | 0.00                      | 0.15  | 0.000                | 0.006 |
| b      | 0.50                      | 1.00  | 0.020                | 0.039 |
| b2     | 0.65                      | 1.15  | 0.026                | 0.045 |
| b3     | 4.90                      | 5.50  | 0.193                | 0.217 |
| C      | 0.40                      | 0.65  | 0.016                | 0.026 |
| C2     | 0.40                      | 0.65  | 0.016                | 0.026 |
| D      | 5.60                      | 6.20  | 0.220                | 0.244 |
| D1     | 5.00                      | 5.40  | 0.197                | 0.213 |
| E      | 6.10                      | 6.70  | 0.240                | 0.264 |
| E1     | 4.60                      | 5.00  | 0.181                | 0.197 |
| e      | 2.30 TYP                  |       | 0.091 TYP            |       |
| e1     | 4.60 TYP                  |       | 0.181 TYP            |       |
| H      | 9.00                      | 10.70 | 0.354                | 0.421 |
| L      | 1.40                      | 1.78  | 0.055                | 0.070 |
| L3     | 0.85                      | 1.20  | 0.033                | 0.047 |
| L4     | 0.51                      | 1.10  | 0.020                | 0.043 |

**Recommended Pad Layout**



**Order Information**

| Device     | Package       | Marking  | Packaging   | SPQ              |
|------------|---------------|----------|-------------|------------------|
| GSTSD4411R | TO-252 (DPAK) | 2SD4411R | Tape & Reel | 2,500 Pcs / Reel |

For more information, please contact us at: [inquiry@goodarksemi.com](mailto:inquiry@goodarksemi.com)