



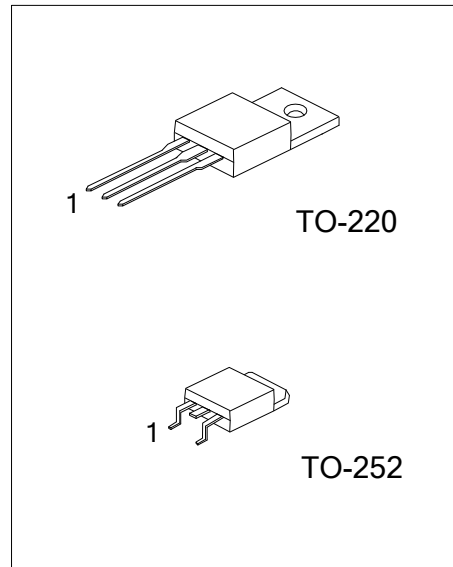
## 2SC4027

## NPN SILICON TRANSISTOR

### HIGH-VOLTAGE SWITCHING APPLICATIONS

#### ■ FEATURES

- \* High voltage and large current capacity.
- \* Fast switching time.



#### ■ ORDERING INFORMATION

| Ordering Number  |                  | Package | Pin Assignment |   |   | Packing   |
|------------------|------------------|---------|----------------|---|---|-----------|
| Lead Free        | Halogen Free     |         | 1              | 2 | 3 |           |
| 2SC4027L-x-TA3-T | 2SC4027G-x-TA3-T | TO-220  | B              | C | E | Tube      |
| 2SC4027L-x-TN3-R | 2SC4027G-x-TN3-R | TO-252  | B              | C | E | Tape Reel |

|  |   |
|--|---|
| <p>2SC4027L-x-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Rank</p> <p>(4) Lead Free</p> | <p>(1) T: Tube, R: Tape Reel</p> <p>(2) TA3: TO-220, TN3: TO-252</p> <p>(3) x: refer to Classification of <math>h_{FE1}</math></p> <p>(4) G: Halogen Free, L: Lead Free</p> |
|--|---|

■ ABSOLUTE MAXIMUM RATING ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                    |                        | SYMBOL    | RATINGS    | UNIT             |
|------------------------------|------------------------|-----------|------------|------------------|
| Collector to Base Voltage    |                        | $V_{CBO}$ | 180        | V                |
| Collector to Emitter Voltage |                        | $V_{CEO}$ | 160        | V                |
| Emitter to Base Voltage      |                        | $V_{EBO}$ | 6          | V                |
| Collector Current            |                        | $I_C$     | 1.5        | A                |
| Collector Current (Pulse)    |                        | $I_{CP}$  | 2.5        | A                |
| Collector Dissipation        | $T_A=25^\circ\text{C}$ | TO-220    | 2          | W                |
|                              |                        | TO-252    | 1          |                  |
|                              | $T_C=25^\circ\text{C}$ | TO-220    | 65         | W                |
|                              |                        | TO-252    | 15         |                  |
| Junction Temperature         |                        | $T_J$     | 150        | $^\circ\text{C}$ |
| Storage Temperature          |                        | $T_{STG}$ | -55 ~ +150 | $^\circ\text{C}$ |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

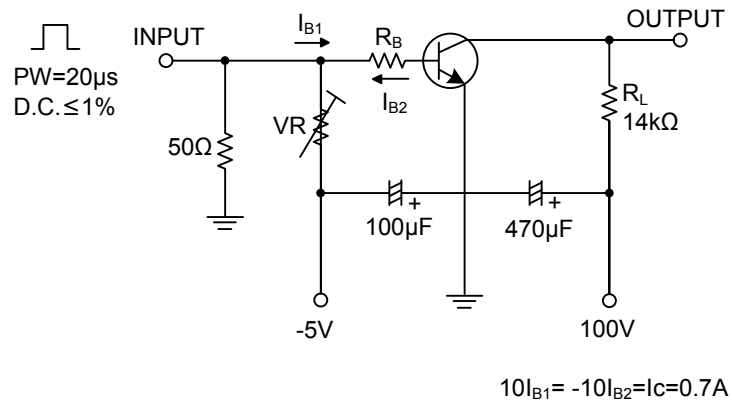
■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

| PARAMETER                            | SYMBOL        | TEST CONDITIONS                      | MIN | TYP  | MAX  | UNIT          |
|--------------------------------------|---------------|--------------------------------------|-----|------|------|---------------|
| Collector-Base Breakdown Voltage     | $BV_{CBO}$    | $I_C=10\text{A}, I_E=0$              | 180 |      |      | V             |
| Collector-Emitter Breakdown Voltage  | $BV_{CEO}$    | $I_C=1\text{mA}, R_{BE}=\infty$      | 160 |      |      | V             |
| Emitter-Base Breakdown Voltage       | $BV_{EBO}$    | $I_E=10\mu\text{A}, I_C=0$           | 6   |      |      | V             |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$  |     | 0.13 | 0.45 | V             |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$ | $I_C=500\text{mA}, I_B=50\text{mA}$  |     | 0.85 | 1.2  | V             |
| Collector Cutoff Current             | $I_{CBO}$     | $V_{CB}=120\text{V}, I_E=0$          |     |      | 1.0  | $\mu\text{A}$ |
| Emitter Cutoff Current               | $I_{EBO}$     | $V_{EB}=4\text{V}, I_C=0$            |     |      | 1.0  | $\mu\text{A}$ |
| DC Current Gain                      | $h_{FE1}$     | $V_{CE}=5\text{V}, I_C=100\text{mA}$ | 100 |      | 400  |               |
|                                      | $h_{FE2}$     | $V_{CE}=5\text{V}, I_C=10\text{mA}$  | 80  |      |      |               |
| Gain-Bandwidth Product               | $f_T$         | $V_{CE}=10\text{V}, I_C=50\text{mA}$ |     | 120  |      | MHz           |
| Output Capacitance                   | $C_{OB}$      | $V_{CB}=-10\text{V}, f=1\text{MHz}$  |     | 12   |      | pF            |
| Turn-On Time                         | $T_{ON}$      | See specified Test Circuit           |     | 60   |      | $\mu\text{s}$ |
| Storage Time                         | $T_{STG}$     |                                      |     | 1.2  |      | $\mu\text{s}$ |
| Fall Time                            | $t_F$         |                                      |     | 80   |      | $\mu\text{s}$ |

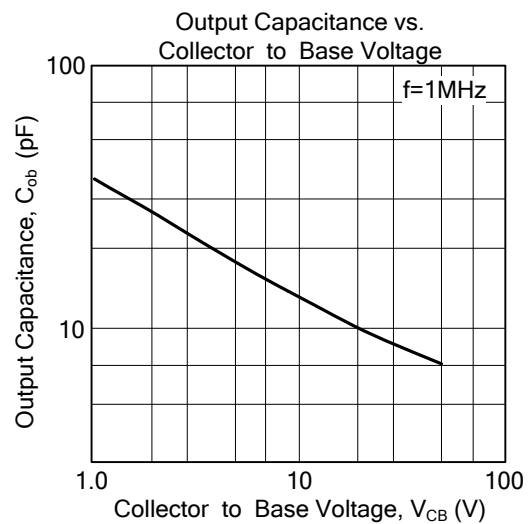
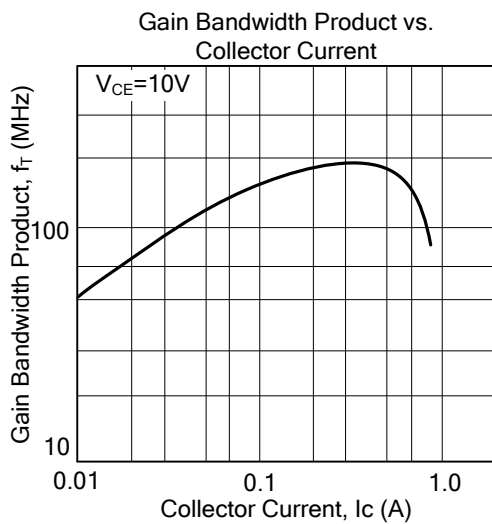
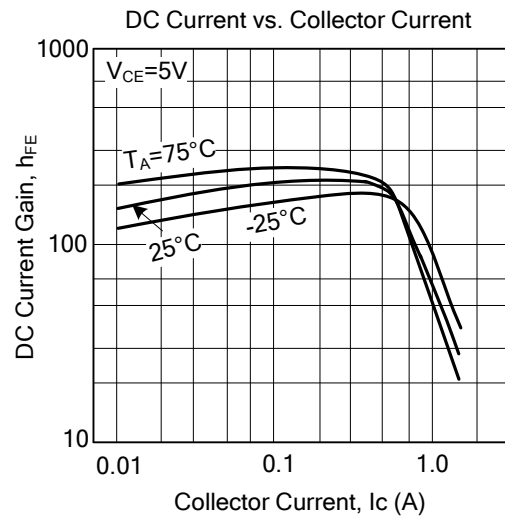
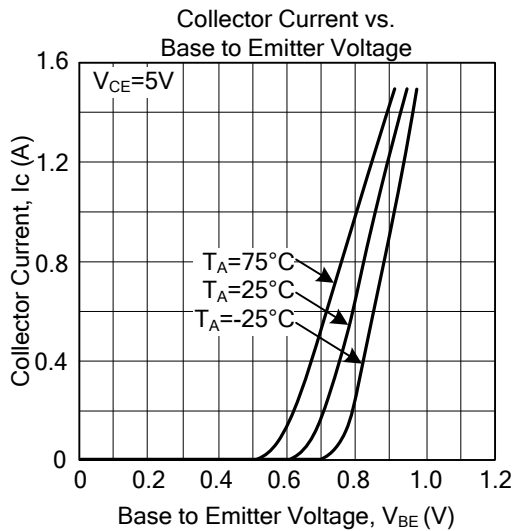
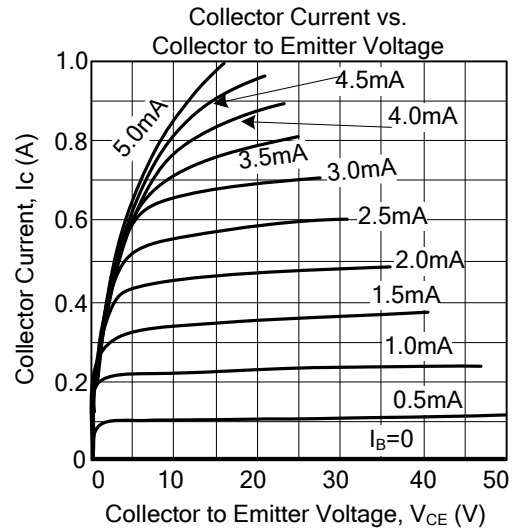
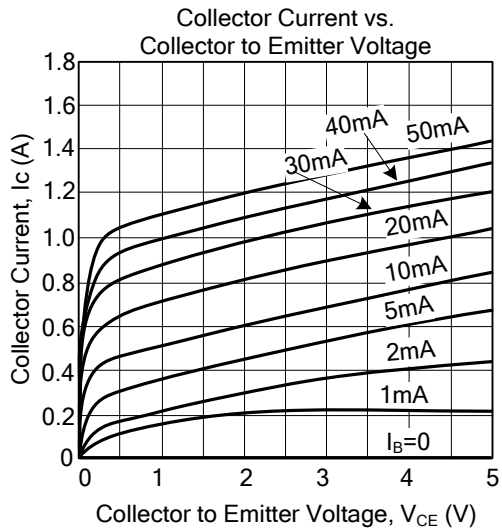
■ CLASSIFICATION OF  $h_{FE1}$

| RANK  | R       | S       | T       |
|-------|---------|---------|---------|
| RANGE | 100~200 | 140~280 | 200~400 |

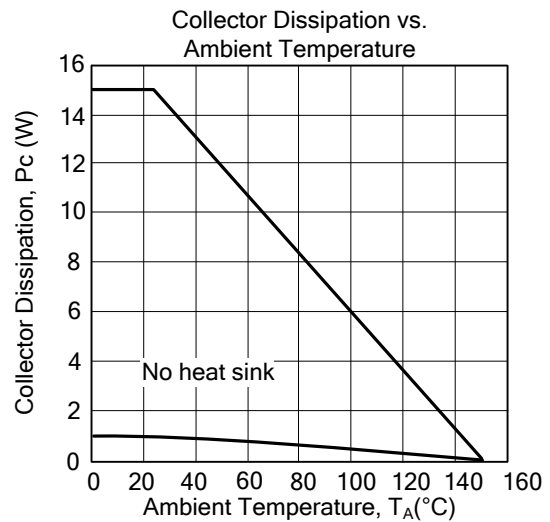
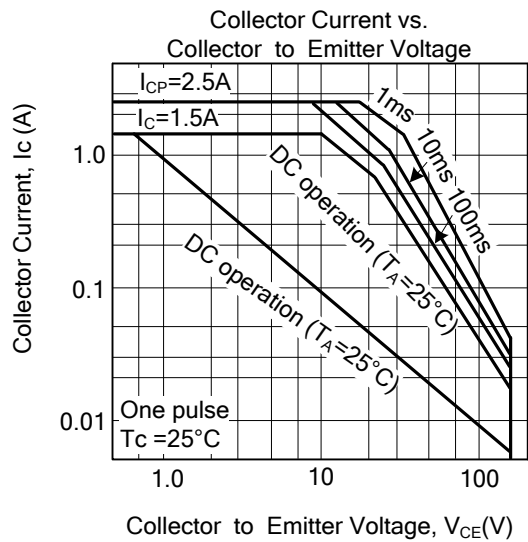
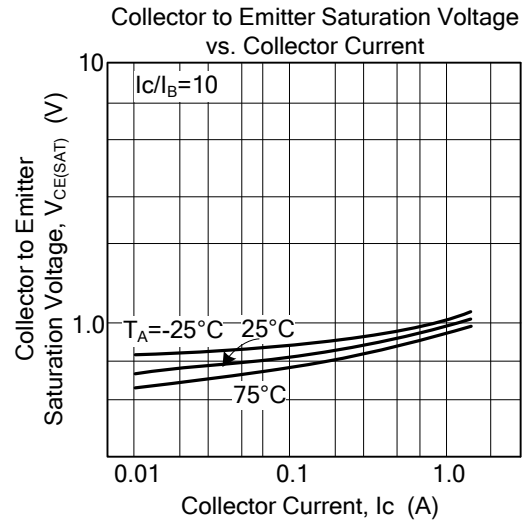
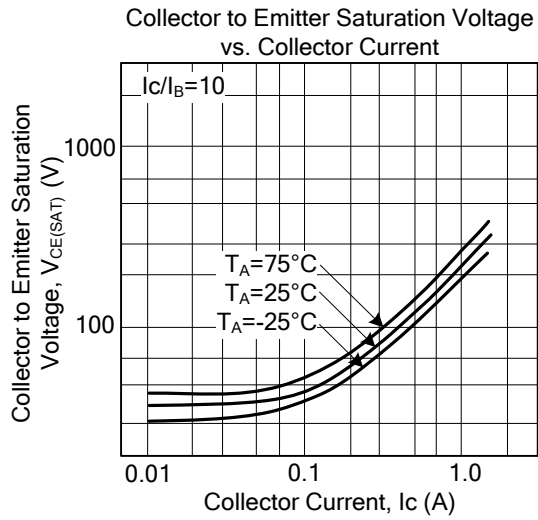
■ SWITCHING TIME TEST CIRCUIT



## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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