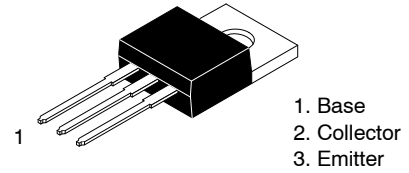


# NPN Silicon Transistor

## KSC5027

### High Voltage and High Reliability

- High Speed Switching
- Wide SOA



TO-220-3LD  
CASE 340AT

### ABSOLUTE MAXIMUM RATINGS (T<sub>C</sub> = 25°C unless otherwise noted.)

| Symbol           | Parameter                                     | Ratings   | Unit |
|------------------|---|-----------|------|
| V <sub>CBO</sub> | Collector-Base Voltage                        | 1100      | V    |
| V <sub>CEO</sub> | Collector-Emitter Voltage                     | 800       | V    |
| V <sub>EBO</sub> | Emitter-Base Voltage                          | 7         | V    |
| I <sub>C</sub>   | Collector Current (DC)                        | 3         | A    |
| I <sub>CP</sub>  | Collector Current (Pulse)                     | 10        | A    |
| I <sub>B</sub>   | Base Current                                  | 1.5       | A    |
| P <sub>C</sub>   | Collector Dissipation (T <sub>C</sub> = 25°C) | 50        | W    |
| T <sub>J</sub>   | Junction Temperature                          | 150       | °C   |
| T <sub>STG</sub> | Storage Temperature                           | -55 ~ 150 | °C   |

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### MARKING DIAGRAM



- &3 = Date Code (Year & Week)
- &K = Lot Run Traceability Code
- C5027 = Specific Device Code
- O = h<sub>FE</sub> Grade

### ORDERING INFORMATION

| Device     | Package                                 | Shipping             |
|------------|---|----------------------|
| KSC5027OTU | TO-220-3LD<br>(Pb-Free,<br>Halide Free) | 1000 Units /<br>Tube |

### ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C unless otherwise noted.)

| Symbol                               | Parameter                            | Conditions  | Min     | Typ | Max | Unit |
|--------------------------------------|--------------------------------------|---|---------|-----|-----|------|
| BV <sub>CBO</sub>                    | Collector-Base Breakdown Voltage     | I <sub>C</sub> = 1 mA, I <sub>E</sub> = 0   | 1100    | -   | -   | V    |
| BV <sub>CEO</sub>                    | Collector-Emitter Breakdown Voltage  | I <sub>C</sub> = 5 mA, I <sub>B</sub> = 0   | 800     | -   | -   | V    |
| BV <sub>EBO</sub>                    | Emitter-Base Breakdown Voltage       | I <sub>E</sub> = 1 mA, I <sub>C</sub> = 0   | 7       | -   | -   | V    |
| V <sub>CES(sus)</sub> 1              | Collector-Emitter Sustaining Voltage | I <sub>C</sub> = 1.5 A, I <sub>B1</sub> = -I <sub>B2</sub> = 0.3 A,<br>L = 2 mH, Clamped                                | 800     | -   | -   | V    |
| I <sub>CBO</sub>                     | Collector Cut-off Current            | V <sub>CB</sub> = 800 V, I <sub>E</sub> = 0   | -       | -   | 10  | μA   |
| I <sub>EBO</sub>                     | Emitter Cut-off Current              | V <sub>EB</sub> = 5 V, I <sub>C</sub> = 0   | -       | -   | 10  | μA   |
| h <sub>FE1</sub><br>h <sub>FE2</sub> | DC Current Gain                      | V <sub>CE</sub> = 5 V, I <sub>C</sub> = 0.2 A<br>V <sub>CE</sub> = 5 V, I <sub>C</sub> = 1 A                            | 10<br>8 | -   | 40  |      |
| V <sub>CE(sat)</sub>                 | Collector-Emitter Saturation Voltage | I <sub>C</sub> = 1.5 A, I <sub>B</sub> = 0.3 A  | -       | -   | 2   | V    |
| V <sub>BE(sat)</sub>                 | Base-Emitter Saturation Voltage      | I <sub>C</sub> = 1.5 A, I <sub>B</sub> = 0.3 A  | -       | -   | 1.5 | V    |
| C <sub>ob</sub>                      | Output Capacitance                   | V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz   | -       | 60  | -   | μs   |
| f <sub>T</sub>                       | Current Gain Bandwidth Product       | V <sub>CE</sub> = 10 V, I <sub>C</sub> = 0.2 A  | -       | 15  | -   | MHz  |
| t <sub>ON</sub>                      | Turn On Time                         | V <sub>CC</sub> = 400 V, I <sub>C</sub> = 5 A,<br>I <sub>B1</sub> = -2.5, I <sub>B2</sub> = 2 A, R <sub>L</sub> = 200 Ω | -       | -   | 0.5 | μs   |
| t <sub>STG</sub>                     | Storage Time                         |   | -       | -   | 3   | μs   |
| t <sub>F</sub>                       | Fall Time                            |   | -       | -   | 0.3 | μs   |

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### h<sub>FE</sub> Classification

| Classification   | N       | R       | O       |
|------------------|---------|---------|---------|
| H <sub>FE1</sub> | 10 ~ 20 | 15 ~ 30 | 20 ~ 40 |

TYPICAL CHARACTERISTICS

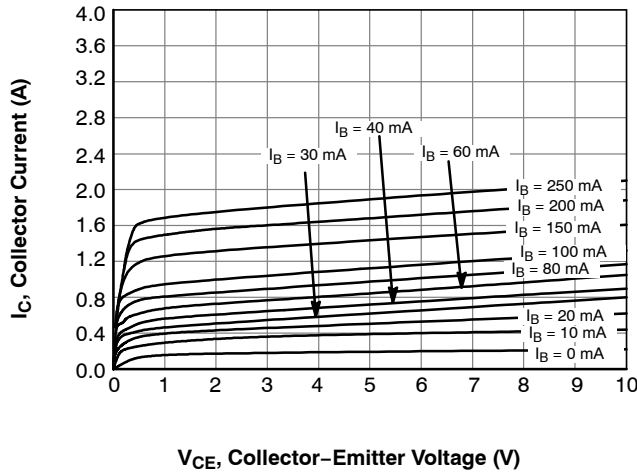


Figure 1. Static Characteristic

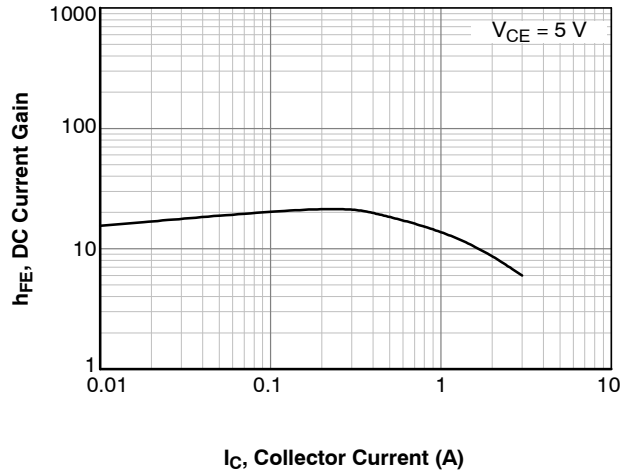


Figure 2. DC Current Gain

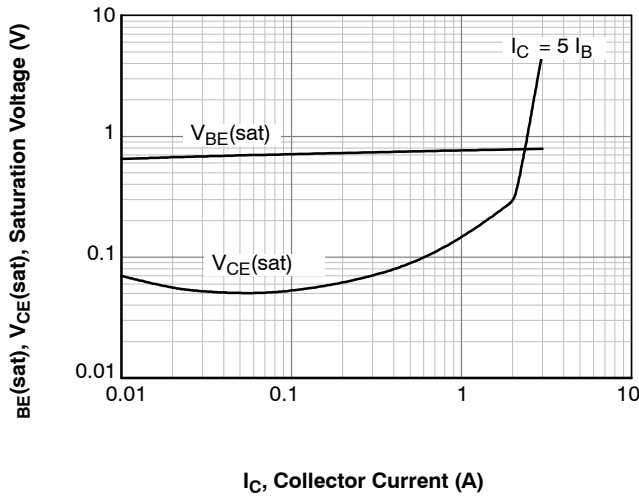


Figure 3. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

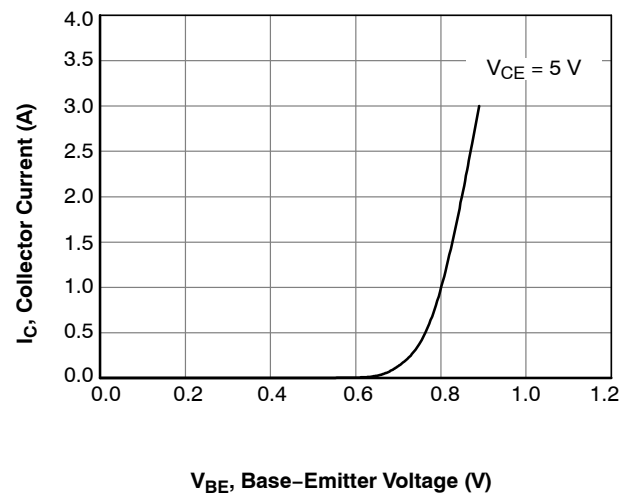


Figure 4. Base-Emitter On Voltage

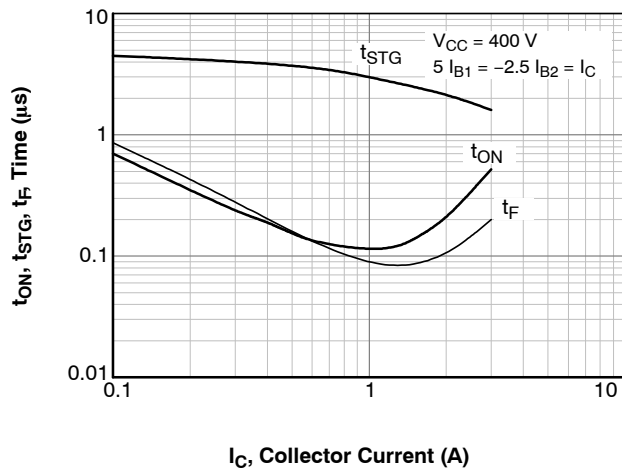


Figure 5. Switching Time

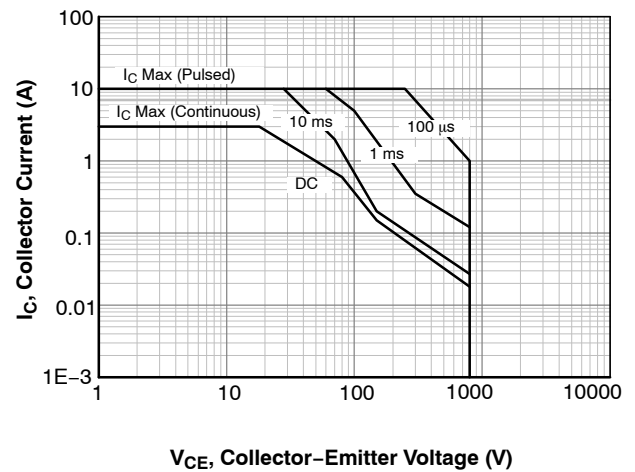
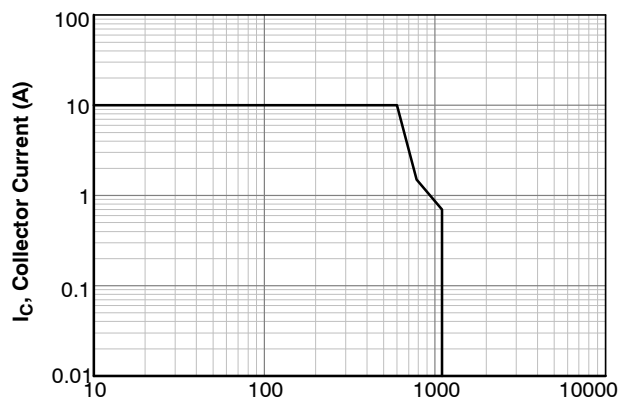


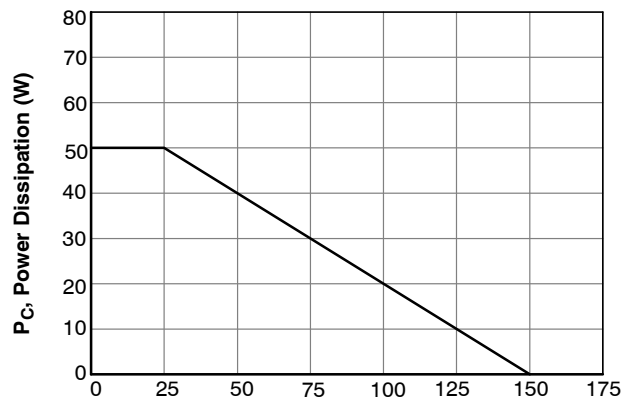
Figure 6. Safe Operating Area

TYPICAL CHARACTERISTICS (Continued)



$V_{CE}$ , Collector-Emitter Voltage (V)

Figure 7. Reverse Bias Operating Areas



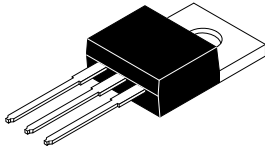
$T_C$ , Case Temperature ( $^{\circ}C$ )

Figure 8. Power Derating

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

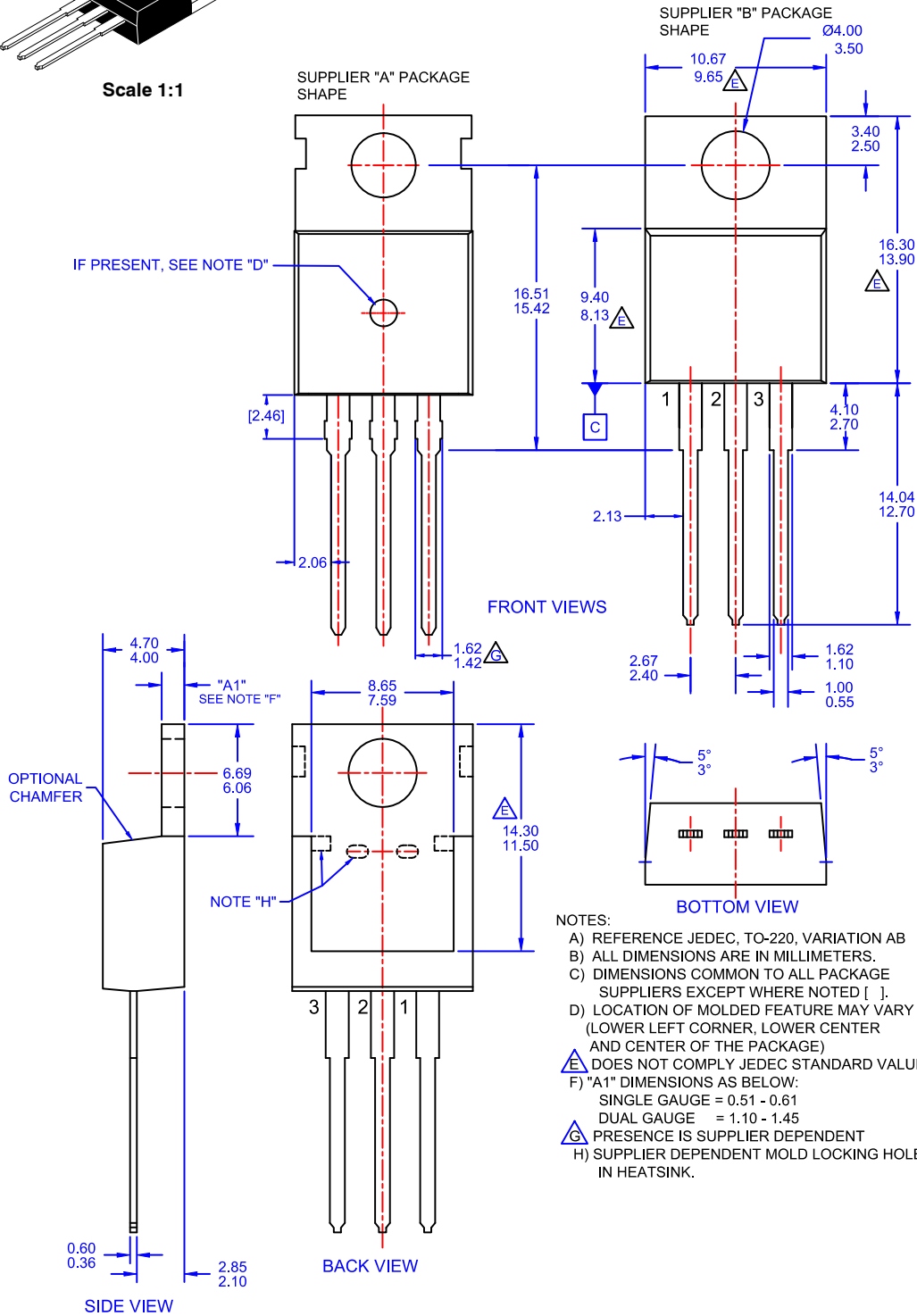
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### TO-220-3LD CASE 340AT ISSUE A

DATE 03 OCT 2017



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