

# 2SC5077, 2SC5077A

Silicon NPN triple diffusion planar type

For high breakdown voltage high-speed switching

## Features

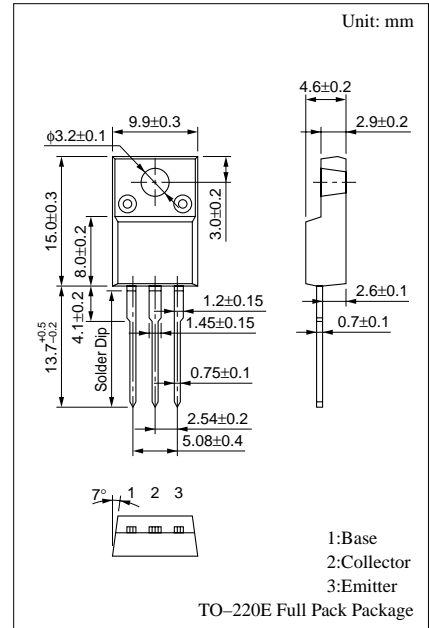
- High-speed switching
- High collector to base voltage  $V_{CBO}$
- Wide area of safe operation (ASO)
- Satisfactory linearity of forward current transfer ratio  $h_{FE}$
- Full-pack package with outstanding insulation, which can be installed to the heat sink with one screw

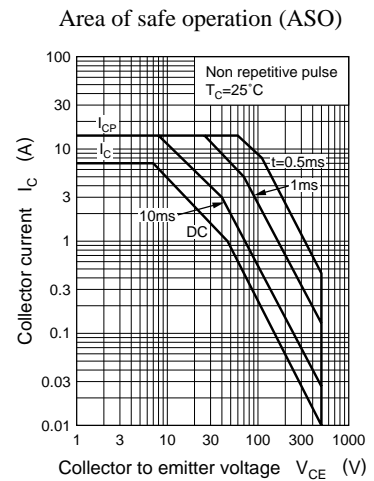
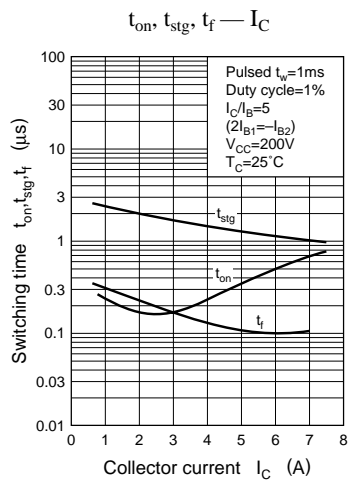
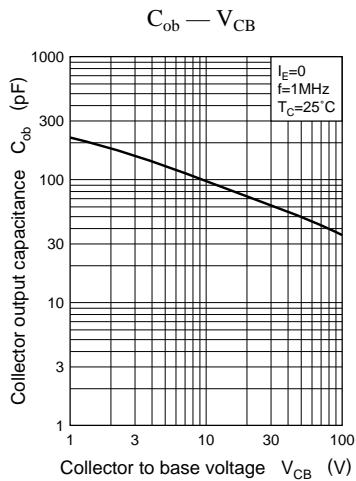
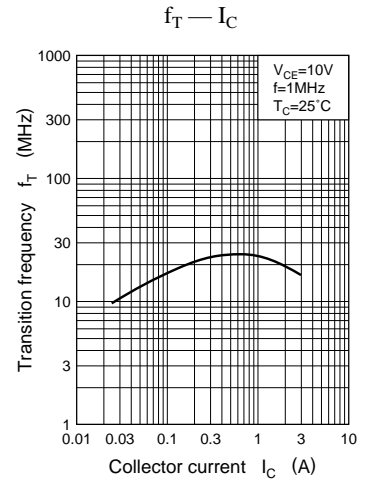
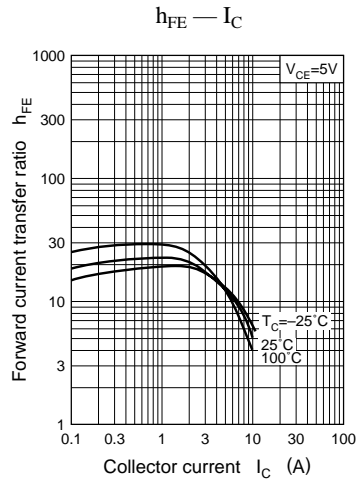
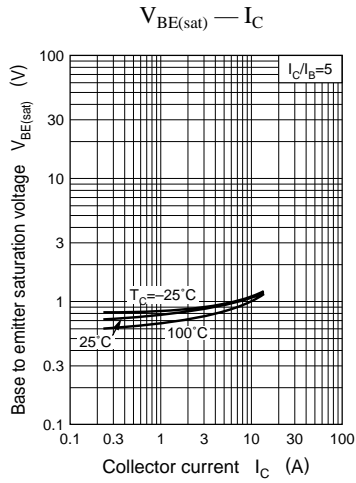
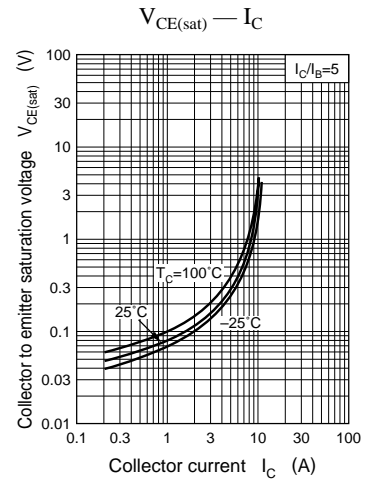
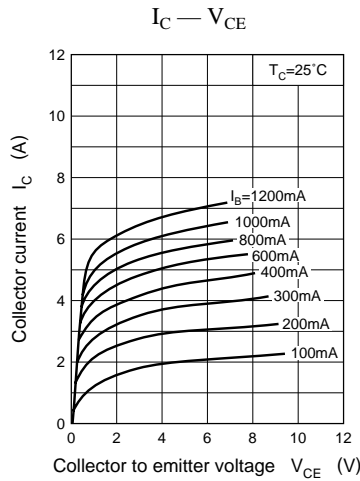
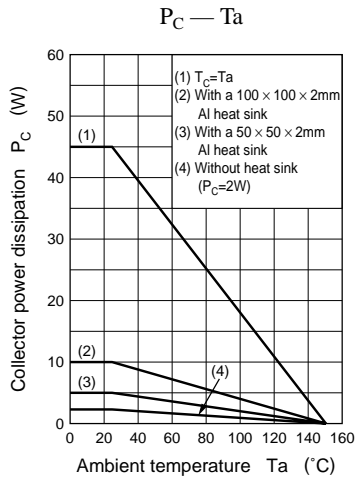
## Absolute Maximum Ratings ( $T_C=25^\circ\text{C}$ )

| Parameter  | Symbol    | Rated       | Unit             |
|--|-----------|-------------|------------------|
| Collector to base voltage                        | $V_{CBO}$ | 800         | V                |
| 2SC5077A   |           | 900         |                  |
| Collector to emitter voltage                     | $V_{CES}$ | 800         | V                |
| 2SC5077A   |           | 900         |                  |
| Collector to emitter voltage                     | $V_{CEO}$ | 500         | V                |
| Emitter to base voltage                          | $V_{EBO}$ | 8           | V                |
| Peak collector current                           | $I_{CP}$  | 15          | A                |
| Collector current                                | $I_C$     | 7           | A                |
| Base current                                     | $I_B$     | 4           | A                |
| Collector power dissipation                      | $P_C$     | 45          | W                |
| $T_C=25^\circ\text{C}$<br>$T_a=25^\circ\text{C}$ |           | 2           |                  |
| Junction temperature                             | $T_j$     | 150         | $^\circ\text{C}$ |
| Storage temperature                              | $T_{stg}$ | -55 to +150 | $^\circ\text{C}$ |

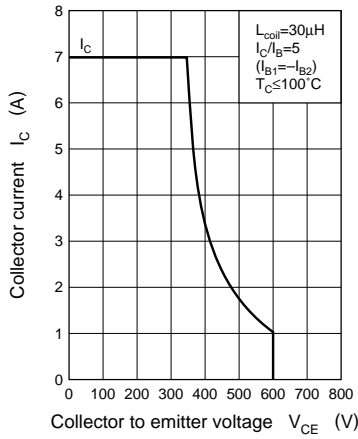
## Electrical Characteristics ( $T_C=25^\circ\text{C}$ )

| Parameter                               | Symbol        | Conditions   | min | typ | max | Unit          |
|---|---------------|--|-----|-----|-----|---------------|
| Collector cutoff current                | $I_{CBO}$     | $V_{CB} = 800\text{V}, I_E = 0$  |     |     | 100 | $\mu\text{A}$ |
|   |               | $V_{CB} = 900\text{V}, I_E = 0$  |     |     | 100 |               |
| Emitter cutoff current                  | $I_{EBO}$     | $V_{EB} = 5\text{V}, I_C = 0$  |     |     | 100 | $\mu\text{A}$ |
| Collector to emitter voltage            | $V_{CEO}$     | $I_C = 10\text{mA}, I_B = 0$   | 500 |     |     | $\mu\text{A}$ |
| Forward current transfer ratio          | $h_{FE1}$     | $V_{CE} = 5\text{V}, I_C = 0.1\text{A}$  | 15  |     |     | V             |
|   | $h_{FE2}$     | $V_{CE} = 5\text{V}, I_C = 4\text{A}$  | 8   |     |     |               |
| Collector to emitter saturation voltage | $V_{CE(sat)}$ | $I_C = 4\text{A}, I_B = 0.8\text{A}$   |     |     | 1.0 | V             |
| Base to emitter saturation voltage      | $V_{BE(sat)}$ | $I_C = 4\text{A}, I_B = 0.8\text{A}$   |     |     | 1.5 | V             |
| Transition frequency                    | $f_T$         | $V_{CE} = 10\text{V}, I_C = 0.5\text{A}, f = 1\text{MHz}$                            |     |     | 1.0 | MHz           |
| Turn-on time                            | $t_{on}$      | $I_C = 4\text{A}, I_{B1} = 0.8\text{A}, I_{B2} = -1.6\text{A}, V_{CC} = 200\text{V}$ |     |     | 1.0 | $\mu\text{s}$ |
| Storage time                            | $t_{stg}$     |  |     |     | 3.0 | $\mu\text{s}$ |
| Fall time                               | $t_f$         |  |     |     | 0.3 | $\mu\text{s}$ |

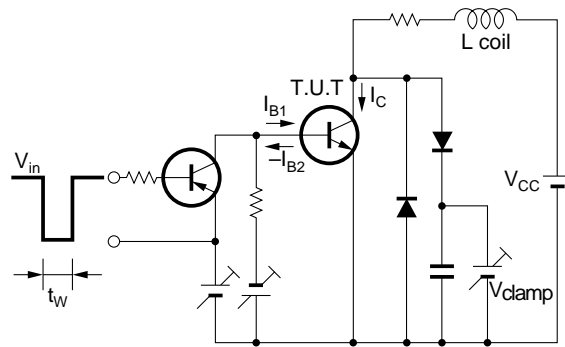




Area of safe operation, reverse bias ASO



Reverse bias ASO measuring circuit



$R_{th(t)} - t$

