

### DESCRIPTION

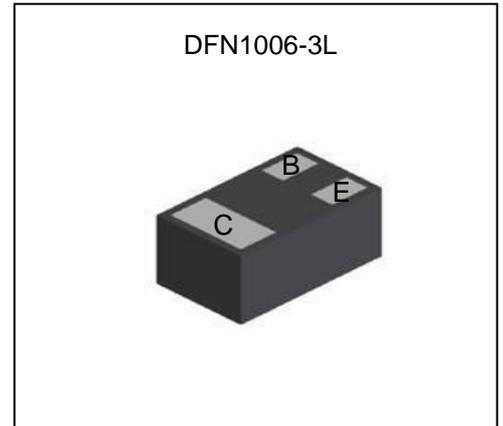
- NPN single switching transistor ultra small SMD plastic package

### FEATURE

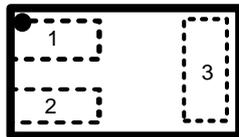
- Single General-Purpose Switching Transistor

### APPLICATION

- General-Purpose Switching and Amplification



### MARKING: 6P



1. BASE
2. EMITTER
3. COLLECTOR

### TOP VIEW

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

| Symbol           | Parameter                                   | Value    | Unit |      |
|------------------|---------------------------------------------|----------|------|------|
| V <sub>CBO</sub> | Collector-Base Voltage                      | 60       | V    |      |
| V <sub>CEO</sub> | Collector-Emitter Voltage                   | 40       | V    |      |
| V <sub>EBO</sub> | Emitter-Base Voltage                        | 6        | V    |      |
| I <sub>C</sub>   | Collector Current -Continuous               | 200      | mA   |      |
| P <sub>C</sub>   | Collector Dissipation                       | Note1    | 100  | mW   |
|                  |                                             | Note2    | 590  | mW   |
| R <sub>θJA</sub> | Thermal Resistance from Junction to Ambient | Note1    | 1250 | °C/W |
|                  |                                             | Note2    | 212  | °C/W |
| T <sub>J</sub>   | Junction Temperature                        | 150      | °C   |      |
| T <sub>stg</sub> | Storage Temperature                         | -55~+150 | °C   |      |

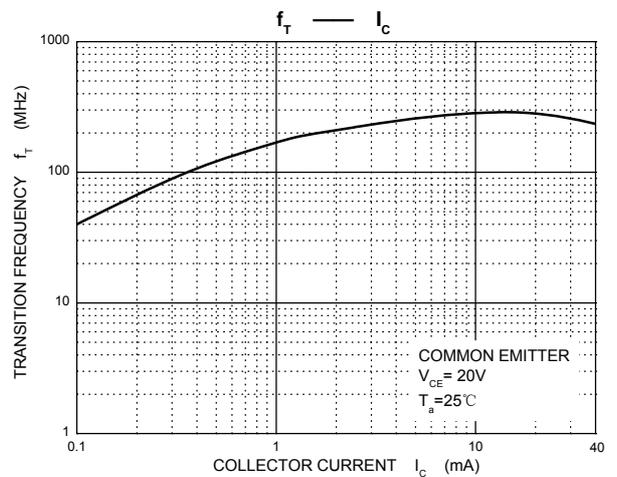
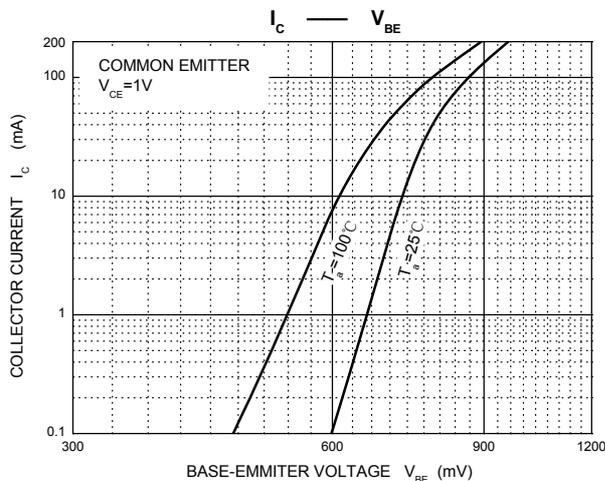
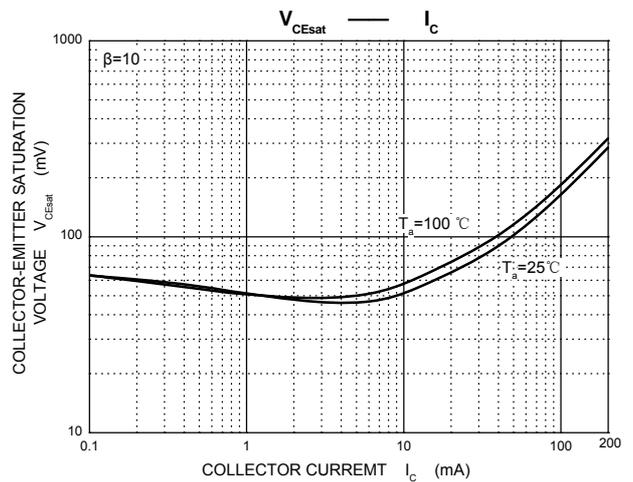
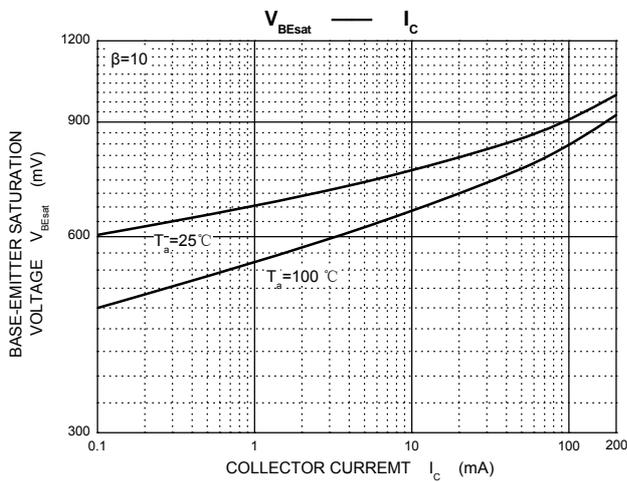
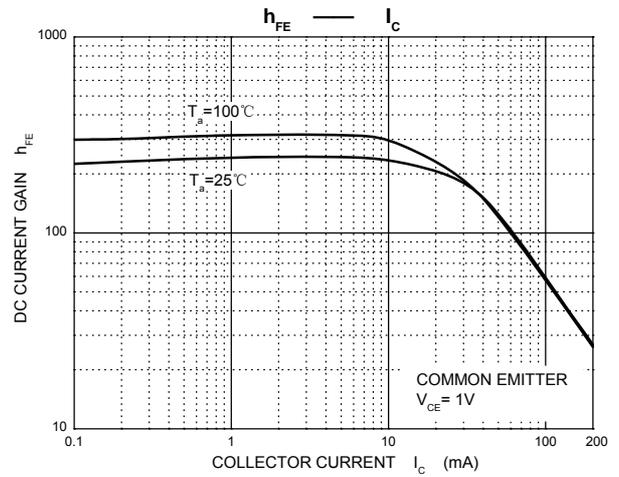
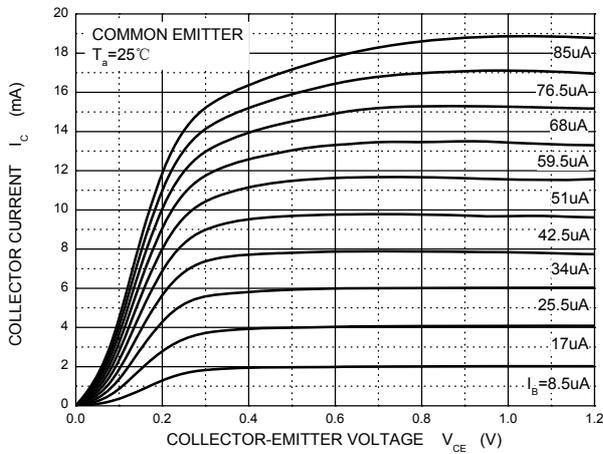
Note:1. Device mounted on an FR4 PCB, single-sided copper, tin-plated and standard footprint.

2. Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for collector 1cm<sup>2</sup>.

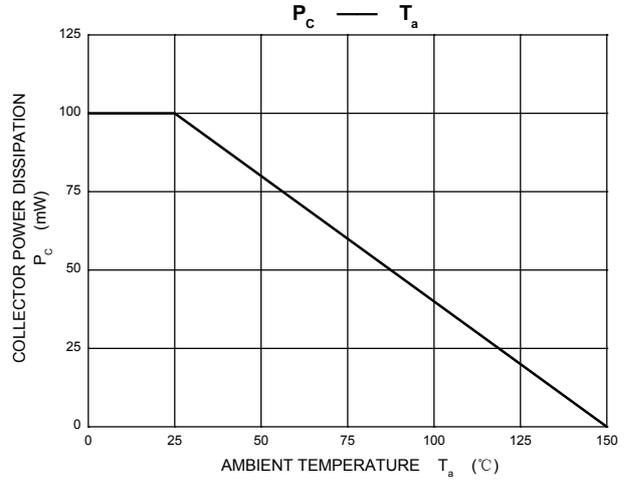
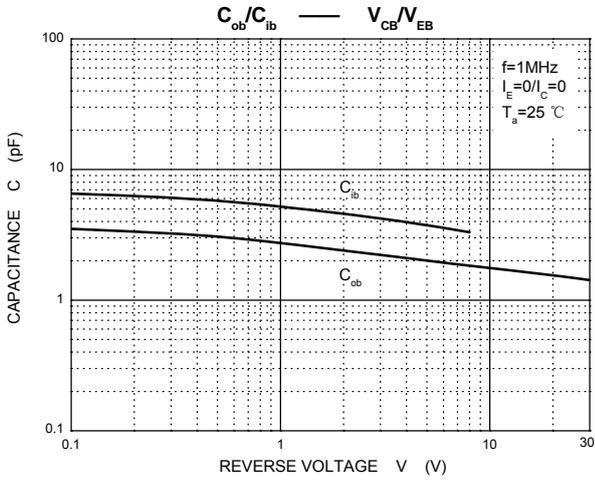
### ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

| Parameter                            | Symbol        | Test conditions                  | Min | Typ | Max  | Unit    |
|--------------------------------------|---------------|----------------------------------|-----|-----|------|---------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$ | $I_C=10\mu A, I_E=0$             | 60  |     |      | V       |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$ | $I_C=1mA, I_B=0$                 | 40  |     |      | V       |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$ | $I_E=10\mu A, I_C=0$             | 6   |     |      | V       |
| Collector cut-off current            | $I_{CBO}$     | $V_{CB}=60V, I_E=0$              |     |     | 0.1  | $\mu A$ |
| Collector cut-off current            | $I_{CEX}$     | $V_{CE}=30V, V_{BE(off)}=3V$     |     |     | 50   | nA      |
| Emitter cut-off current              | $I_{EBO}$     | $V_{EB}=5V, I_C=0$               |     |     | 0.1  | $\mu A$ |
| DC current gain                      | $h_{FE}$      | $V_{CE}=1V, I_C=10mA$            | 100 |     | 300  |         |
| Collector-emitter saturation voltage | $V_{CE(sat)}$ | $I_C=50mA, I_B=5mA$              |     |     | 0.3  | V       |
| Base-emitter saturation voltage      | $V_{BE(sat)}$ | $I_C=50mA, I_B=5mA$              |     |     | 0.95 | V       |
| Transition frequency                 | $f_T$         | $V_{CE}=20V, I_C=10mA, f=100MHz$ | 300 |     |      | MHz     |
| Delay time                           | $t_d$         | $V_{CC}=3V, V_{BE(off)}=0.5V,$   |     |     | 35   | ns      |
| Rise time                            | $t_r$         | $I_C=10mA, I_{B1}=1mA$           |     |     | 35   | ns      |
| Storage time                         | $t_s$         | $V_{CC}=3V, I_C=10mA, I_{B1}=$   |     |     | 200  | ns      |
| Fall time                            | $t_f$         | $I_{B2}=1mA$                     |     |     | 50   | ns      |

### Static Characteristic

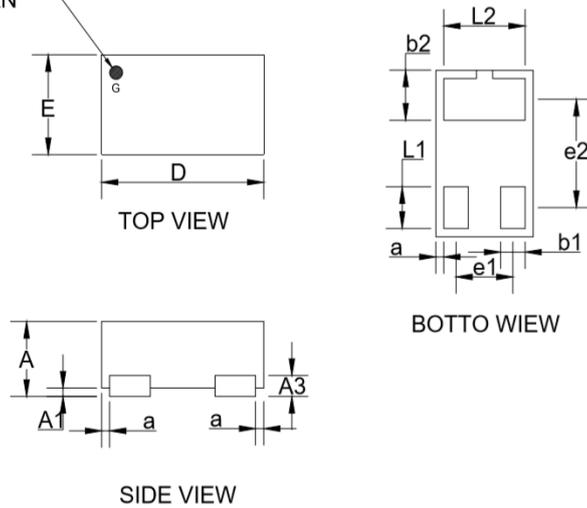


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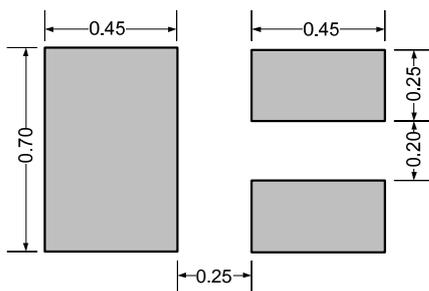
### Package Outline Dimensions

PIN 1 DOT BY MARKN



| SYMBOL | DIMENSIONS  |       |            |       |
|--------|-------------|-------|------------|-------|
|        | MILLIMETERS |       | INCHES     |       |
| A      | 0.400       | 0.500 | 0.016      | 0.020 |
| A1     | 0.000       | 0.050 | 0.000      | 0.002 |
| A3     | 0.125 REF.  |       | 0.005 REF. |       |
| a      | -           | 0.050 | -          | 0.002 |
| b1     | 0.100       | 0.200 | 0.004      | 0.008 |
| b2     | 0.200       | 0.300 | 0.008      | 0.012 |
| D      | 0.950       | 1.050 | 0.037      | 0.041 |
| E      | 0.550       | 0.650 | 0.022      | 0.026 |
| e1     | 0.350 BSC   |       | 0.014 BSC  |       |
| e2     | 0.650 BSC   |       | 0.026 BSC  |       |
| L1     | 0.200       | 0.300 | 0.008      | 0.012 |
| L2     | 0.400       | 0.600 | 0.016      | 0.024 |

### Suggested Pad Layout



**Note:**

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.050$ mm.
3. The pad layout is for reference purposes only.