

### FEATURES

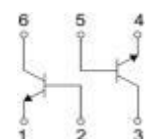
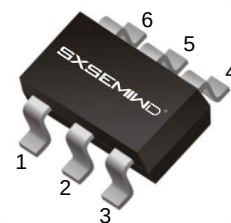
Epitaxial planar die construction

Ideal for low power amplification and switching

### MAXIMUM RATINGS ( $T_a=25^{\circ}\text{C}$ unless otherwise noted)

| Symbol         | Parameter                                        | Value         | Units              |
|----------------|--------------------------------------------------|---------------|--------------------|
| $V_{CBO}$      | Collector-Base Voltage                           | 60            | V                  |
| $V_{CEO}$      | Collector-Emitter Voltage                        | 40            | V                  |
| $V_{EBO}$      | Emitter-Base Voltage                             | 6             | V                  |
| $I_C$          | Collector Current -Continuous                    | 0.2           | A                  |
| $P_C$          | Collector Power Dissipation                      | 0.2           | W                  |
| $T_J, T_{stg}$ | Operation Junction and Storage Temperature Range | $-55\sim+150$ | $^{\circ}\text{C}$ |

SOT-363

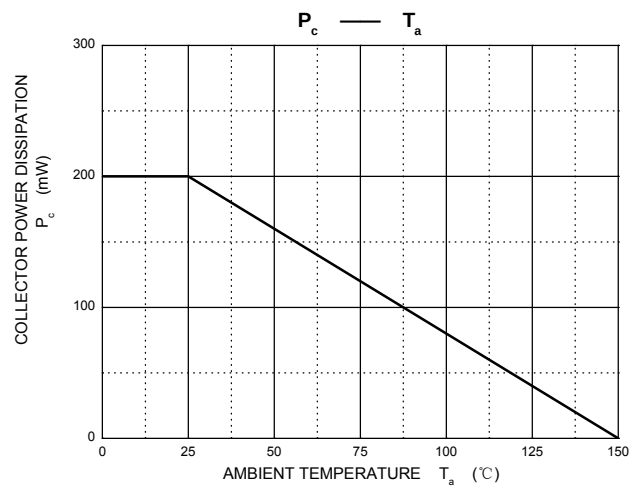
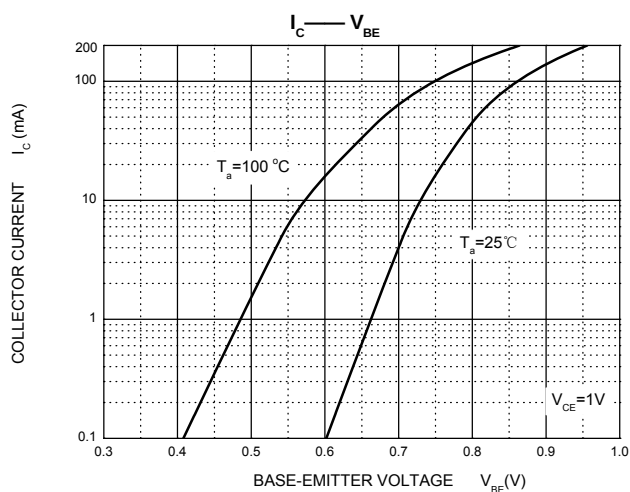
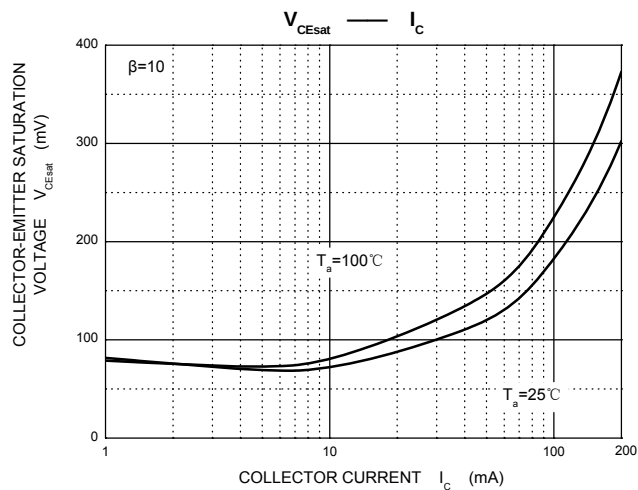
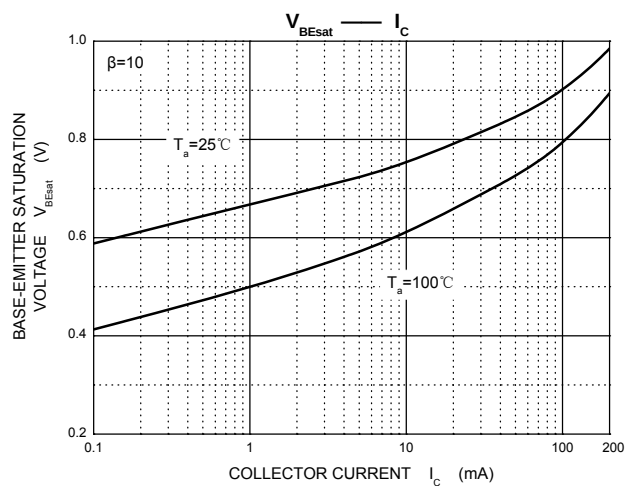
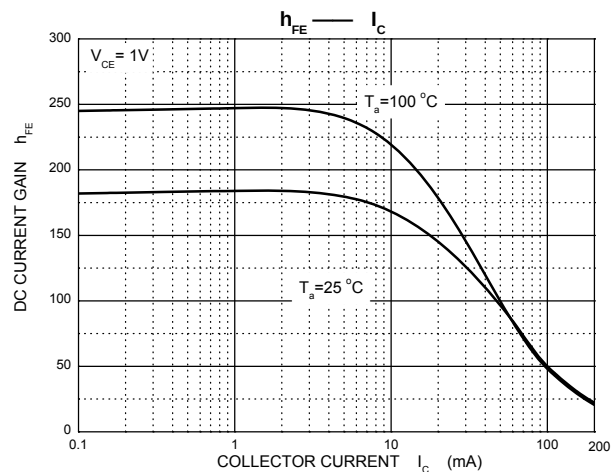
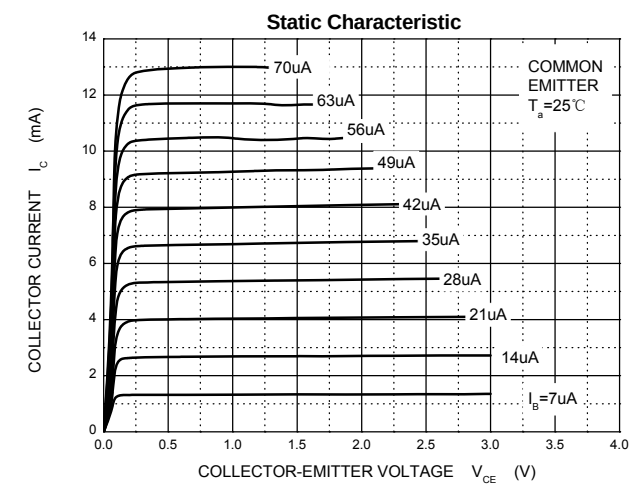


MARKING:K6N

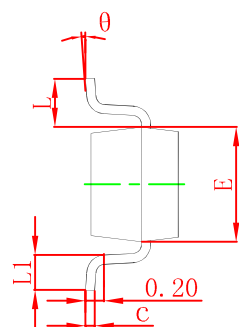
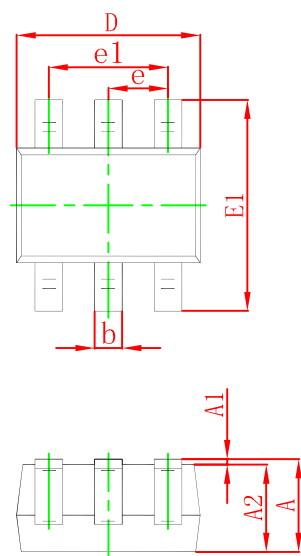
### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

| Parameter                            | Symbol         | Test conditions                                                          | Min  | Typ | Max  | Unit          |
|--------------------------------------|----------------|--------------------------------------------------------------------------|------|-----|------|---------------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$  | $I_C=10\mu\text{A}, I_E=0$                                               | 60   |     |      | V             |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$  | $I_C=1\text{mA}, I_B=0$                                                  | 40   |     |      | V             |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$  | $I_E=10\mu\text{A}, I_C=0$                                               | 6    |     |      | V             |
| Collector cut-off current            | $I_{CBO}$      | $V_{CB}=30\text{V}, I_E=0$                                               |      |     | 0.05 | $\mu\text{A}$ |
| Emitter cut-off current              | $I_{EBO}$      | $V_{EB}=5\text{V}, I_C=0$                                                |      |     | 0.05 | $\mu\text{A}$ |
| Collector cut-off current            | $I_{CEX}$      | $V_{CE}=30\text{V}, V_{BE(off)}=3\text{V}$                               |      |     | 0.05 | $\mu\text{A}$ |
| DC current gain                      | $h_{FE(1)}$    | $V_{CE}=1\text{V}, I_C=0.1\text{mA}$                                     | 40   |     |      |               |
|                                      | $h_{FE(2)}$    | $V_{CE}=1\text{V}, I_C=1\text{mA}$                                       | 70   |     |      |               |
|                                      | $h_{FE(3)}$    | $V_{CE}=1\text{V}, I_C=10\text{mA}$                                      | 100  |     | 300  |               |
|                                      | $h_{FE(4)}$    | $V_{CE}=1\text{V}, I_C=50\text{mA}$                                      | 60   |     |      |               |
|                                      | $h_{FE(5)}$    | $V_{CE}=1\text{V}, I_C=100\text{mA}$                                     | 30   |     |      |               |
| Collector-emitter saturation voltage | $V_{CE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$                                        |      |     | 0.2  | V             |
|                                      | $V_{CE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$                                        |      |     | 0.3  | V             |
| Base-emitter saturation voltage      | $V_{BE(sat)1}$ | $I_C=10\text{mA}, I_B=1\text{mA}$                                        | 0.65 |     | 0.85 | V             |
|                                      | $V_{BE(sat)2}$ | $I_C=50\text{mA}, I_B=5\text{mA}$                                        |      |     | 0.95 | V             |
| Transition frequency                 | $f_T$          | $V_{CE}=20\text{V}, I_C=10\text{mA}, f=100\text{MHz}$                    | 300  |     |      | MHz           |
| Collector output capacitance         | $C_{ob}$       | $V_{CB}=5\text{V}, I_E=0, f=1\text{MHz}$                                 |      |     | 4    | pF            |
| Noise figure                         | NF             | $V_{CE}=5\text{V}, I_C=0.1\text{mA}, f=1\text{kHz}, R_S=1\text{K}\Omega$ |      |     | 5    | dB            |
| Delay time                           | $t_d$          | $V_{CC}=3\text{V}, V_{BE(off)}=-0.5\text{V}$                             |      |     | 35   | nS            |
| Rise time                            | $t_r$          | $I_C=10\text{mA}, I_{B1}=-I_{B2}=1\text{mA}$                             |      |     | 35   | nS            |
| Storage time                         | $t_s$          | $V_{CC}=3\text{V}, I_C=10\text{mA}$                                      |      |     | 200  | nS            |
| Fall time                            | $t_f$          | $I_{B1}=-I_{B2}=1\text{mA}$                                              |      |     | 50   | nS            |

## Typical Characteristics

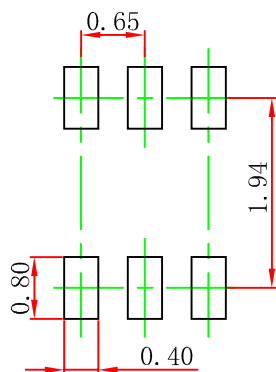


SOT-363 Package Outline Dimensions



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 0.900                     | 1.100 | 0.035                | 0.043 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.000 | 0.035                | 0.039 |
| b      | 0.150                     | 0.350 | 0.006                | 0.014 |
| c      | 0.100                     | 0.150 | 0.004                | 0.006 |
| D      | 2.000                     | 2.200 | 0.079                | 0.087 |
| E      | 1.150                     | 1.350 | 0.045                | 0.053 |
| E1     | 2.150                     | 2.400 | 0.085                | 0.094 |
| e      | 0.650 TYP                 |       | 0.026 TYP            |       |
| e1     | 1.200                     | 1.400 | 0.047                | 0.055 |
| L      | 0.525 REF                 |       | 0.021 REF            |       |
| L1     | 0.260                     | 0.460 | 0.010                | 0.018 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

SOT-363 Suggested Pad Layout



**Note:**

- Controlling dimension in millimeters.
- General tolerance: ± 0.05mm.
- The pad layout is for reference purposes only.