

## Plastic-Encapsulate Transistors

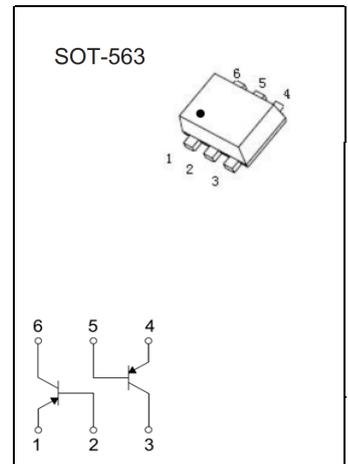
DUAL TRANSISTOR (PNP+PNP)

### FEATURES

- Epitaxial planar die construction
- Ideal for low power amplification and switching

MARKING:K3N

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



| Symbol          | Parameter  | Value    | Units                       |
|-----------------|--|----------|-----------------------------|
| $V_{CBO}$       | Collector-Base Voltage                           | -40      | V                           |
| $V_{CEO}$       | Collector-Emitter Voltage                        | -40      | V                           |
| $V_{EBO}$       | Emitter-Base Voltage                             | -5       | V                           |
| $I_C$           | Collector Current -Continuous                    | -0.2     | A                           |
| $P_C$           | Collector Power Dissipation                      | 0.2      | W                           |
| $R_{\theta JA}$ | Thermal Resistance. Junction to Ambient Air      | 625      | $^{\circ}\text{C}/\text{W}$ |
| $T_J, T_{stg}$  | Operation Junction and Storage Temperature Range | -55~+150 | $^{\circ}\text{C}$          |

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

| Parameter                            | Symbol         | Test conditions  | Min   | Typ | Max   | Unit |
|--------------------------------------|----------------|--|-------|-----|-------|------|
| Collector-base breakdown voltage     | $V_{(BR)CBO}$  | $I_C=-10\mu\text{A}, I_E=0$  | -40   |     |       | V    |
| Collector-emitter breakdown voltage  | $V_{(BR)CEO}$  | $I_C=-1\text{mA}, I_B=0$   | -40   |     |       | V    |
| Emitter-base breakdown voltage       | $V_{(BR)EBO}$  | $I_E=-10\mu\text{A}, I_C=0$  | -5    |     |       | V    |
| Collector cut-off current            | $I_{CEX}$      | $V_{CE}=-30\text{V}, V_{EB(OFF)}=-3\text{V}$                               |       |     | -50   | nA   |
| Base cut-off current                 | $I_{EBO}$      | $V_{EB}=-5\text{V}, I_C=0$   |       |     | -50   | nA   |
| DC current gain                      | $h_{FE(1)}$    | $V_{CE}=-1\text{V}, I_C=-0.1\text{mA}$                                     | 60    |     |       |      |
|                                      | $h_{FE(2)}$    | $V_{CE}=-1\text{V}, I_C=-1\text{mA}$                                       | 80    |     |       |      |
|                                      | $h_{FE(3)}$    | $V_{CE}=-1\text{V}, I_C=-10\text{mA}$                                      | 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 | $V_{CE(sat)1}$ | $I_C=-10\text{mA}, I_B=-1\text{mA}$  |       |     | -0.25 | V    |
|                                      | $V_{CE(sat)2}$ | $I_C=-50\text{mA}, I_B=-5\text{mA}$  |       |     | -0.4  | 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                 | $f_T$          | $V_{CE}=-20\text{V}, I_C=-10\text{mA}, f=100\text{MHz}$                    | 250   |     |       | MHz  |
| Collector output capacitance         | $C_{ob}$       | $V_{CB}=-5\text{V}, I_E=0, f=1\text{MHz}$                                  |       |     | 4.5   | pF   |
| Noise figure                         | NF             | $V_{CE}=-5\text{V}, I_C=-0.1\text{mA}, f=1\text{KHz}, R_g=1\text{K}\Omega$ |       |     | 4     | dB   |
| Delay time                           | $t_d$          | $V_{CC}=-3\text{V}, V_{BE}=0.5\text{V}$                                    |       |     | 35    | nS   |
| Rise time                            | $t_r$          | $I_C=-10\text{mA}, I_{B1}=-I_{B2}=-1\text{mA}$                             |       |     | 35    | nS   |
| Storage time                         | $t_s$          | $V_{CC}=-3\text{V}, I_C=-10\text{mA}$                                      |       |     | 225   | nS   |
| Fall time                            | $t_f$          | $I_{B1}=-I_{B2}=-1\text{mA}$   |       |     | 75    | nS   |

## Typical Characteristics

