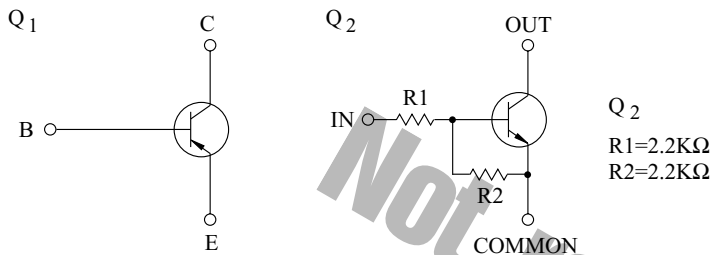


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

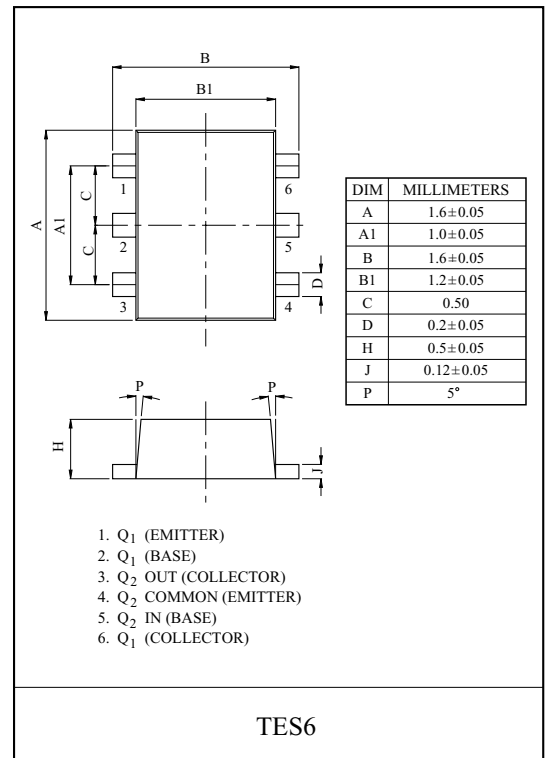
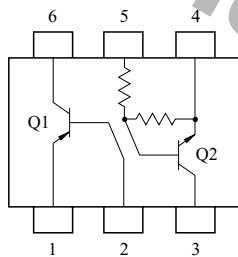
### FEATURES

- Including two devices in TES6.  
(Thin Extreme Super mini type with 6 leads.)
- With Built-in bias resistors.
- Simplify circuit design.
- Reduce a quantity of parts and manufacturing process.

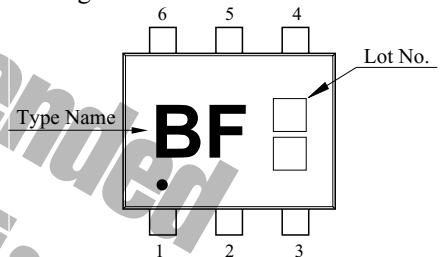
### EQUIVALENT CIRCUIT



### EQUIVALENT CIRCUIT (TOP VIEW)



### Marking



### Q1 MAXIMUM RATING (Ta=25 )

| CHARACTERISTIC            | SYMBOL            | RATING | UNIT |
|---------------------------|-------------------|--------|------|
| Collector-Base Voltage    | V <sub>CBO</sub>  | -15    | V    |
| Collector-Emitter Voltage | V <sub>CEO</sub>  | -12    | V    |
| Emitter-Base Voltage      | V <sub>EBO</sub>  | -6     | V    |
| Collector Current         | I <sub>C</sub>    | -500   | mA   |
|                           | I <sub>CP</sub> * | -1     | A    |

\* Single pulse Pw=1mS.

### Q2 MAXIMUM RATING (Ta=25 )

| CHARACTERISTIC | SYMBOL         | RATING  | UNIT |
|----------------|----------------|---------|------|
| Output Voltage | V <sub>O</sub> | 50      | V    |
| Input Voltage  | V <sub>I</sub> | 12, -10 | V    |
| Output Current | I <sub>O</sub> | 100     | mA   |

### Q1, Q2 MAXIMUM RATING (Ta=25 )

| CHARACTERISTIC            | SYMBOL           | RATING  | UNIT |
|---------------------------|------------------|---------|------|
| Power Dissipation         | P <sub>D</sub> * | 200     | mW   |
| Junction Temperature      | T <sub>j</sub>   | 150     |      |
| Storage Temperature Range | T <sub>stg</sub> | -55 150 |      |

\* Total Raing.

# KTX211E

## Q1 ELECTRICAL CHARACTERISTICS (Ta=25 )

| CHARACTERISTIC                       | SYMBOL        | TEST CONDITION                      | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|---------------|-------------------------------------|------|------|------|------|
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB}=-15V, I_E=0$                | -    | -    | -100 | nA   |
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_E=-10 \mu A$                     | -15  | -    | -    | V    |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C=-1mA$                          | -12  | -    | -    | V    |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E=-10 \mu A$                     | -6   | -    | -    | V    |
| DC Current Gain                      | $h_{FE}$      | $V_{CE}=-2V, I_C=-10mA$             | 270  | -    | 680  | -    |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C=-200mA, I_B=-10mA$             | -    | -100 | -250 | mV   |
| Transition Frequency                 | $f_T$         | $V_{CE}=-2V, I_C=-10mA, f_T=100MHz$ | -    | 260  | -    | MHz  |
| Collector Output Capacitance         | $C_{ob}$      | $V_{CB}=-10V, I_E=0, f=1MHz$        | -    | 6.5  | -    | pF   |

## Q2 ELECTRICAL CHARACTERISTICS (Ta=25 )

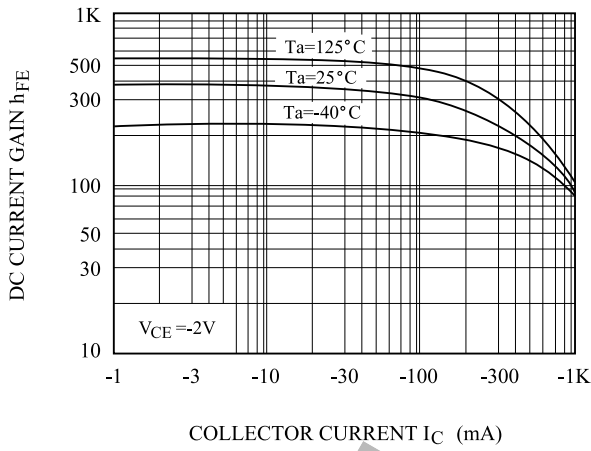
| CHARACTERISTIC         | SYMBOL       | TEST CONDITION        | MIN. | TYP. | MAX. | UNIT. |
|------------------------|--------------|-----------------------|------|------|------|-------|
| Output Cut-off Current | $I_{O(OFF)}$ | $V_O=50V, V_I=0$      | -    | -    | 500  | nA    |
| DC Current Gain        | $G_I$        | $V_O=5V, I_O=20mA$    | 20   | -    | -    |       |
| Output Voltage         | $V_{O(ON)}$  | $I_O=10mA, I_I=0.5mA$ | -    | 0.1  | 0.3  | V     |
| Input Voltage (ON)     | $V_{I(ON)}$  | $V_O=0.3V, I_O=20mA$  | -    | 1.83 | 3    | V     |
| Input Voltage (OFF)    | $V_{I(OFF)}$ | $V_O=5V, I_O=0.1mA$   | 0.5  | 1.15 | -    | V     |
| Transition Frequency   | $f_T^*$      | $V_O=10V, I_O=5mA$    | -    | 250  | -    | MHz   |
| Input Current          | $I_I$        | $V_I=5V$              | -    | -    | 3.8  | mA    |

Note : \* Characteristic of Transistor Only.

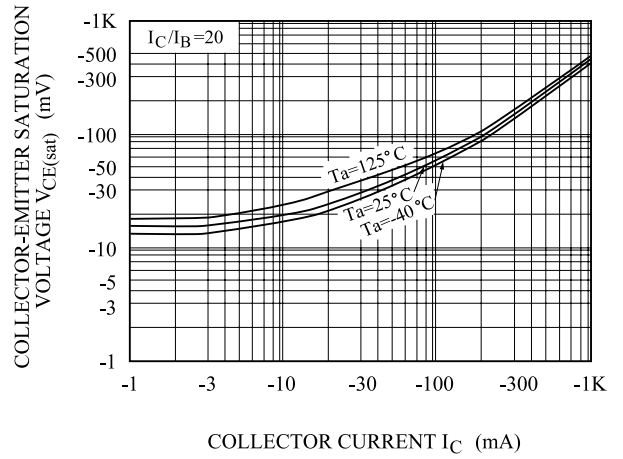
# KTX211E

Q<sub>1</sub> (PNP TRANSISTOR)

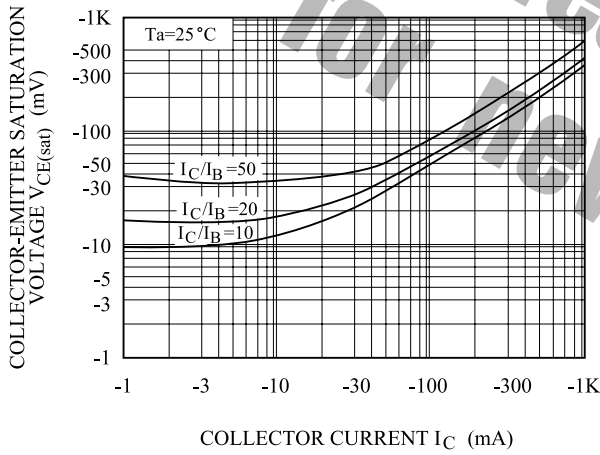
$h_{FE} - I_C$



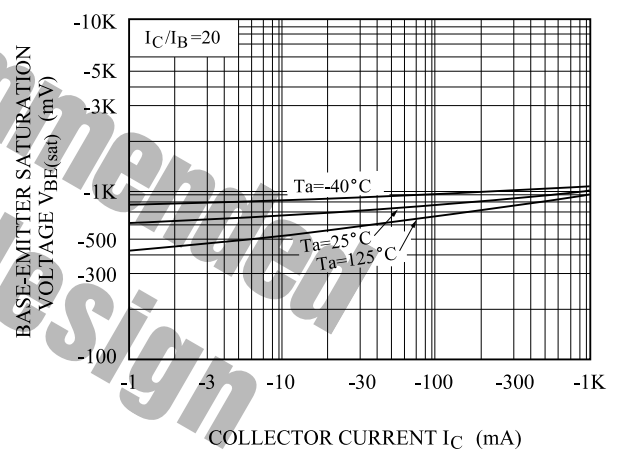
$V_{CE(sat)} - I_C$



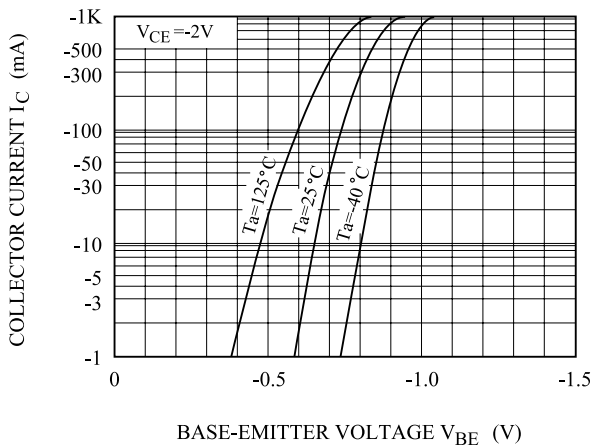
$V_{CE(sat)} - I_C$



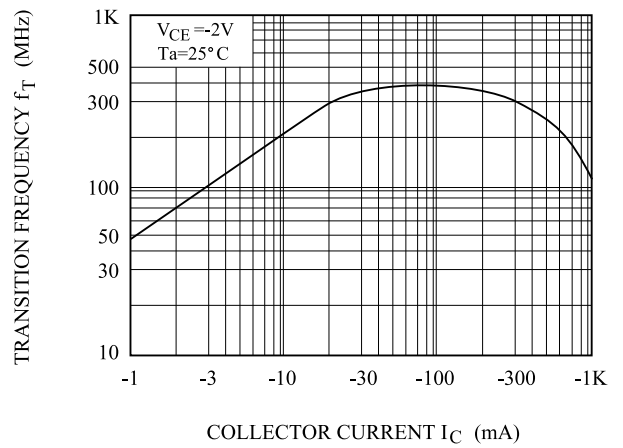
$V_{BE(sat)} - I_C$



$I_C - V_{BE}$



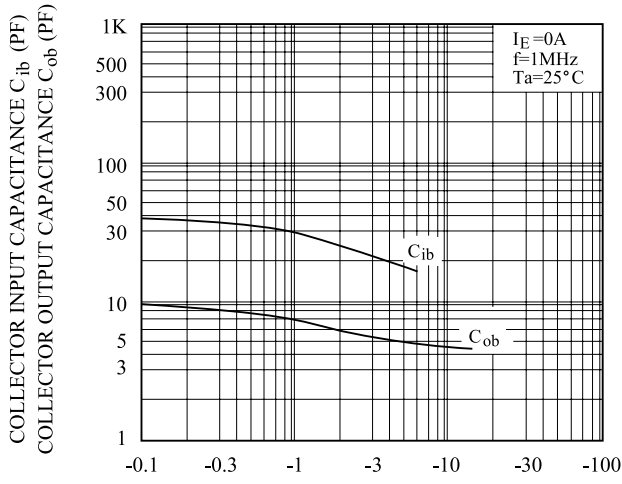
$f_T - I_C$



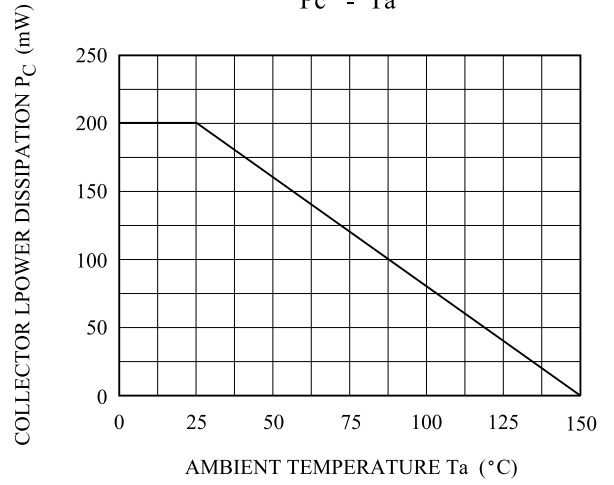
# KTX211E

Q<sub>1</sub> (PNP TRANSISTOR)

$C_{ob} - V_{CB}$ ,  $C_{ib} - V_{EB}$



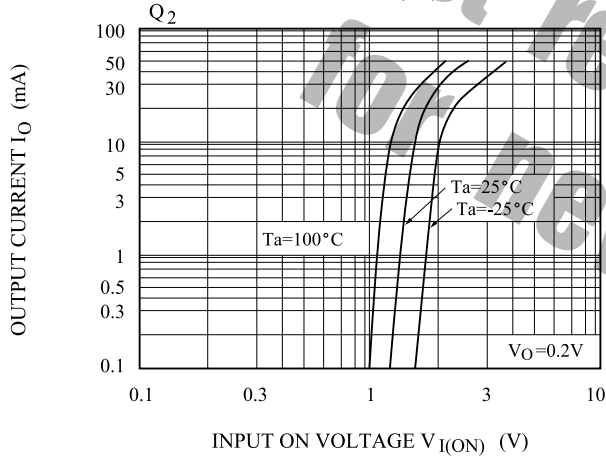
$P_c - T_a$



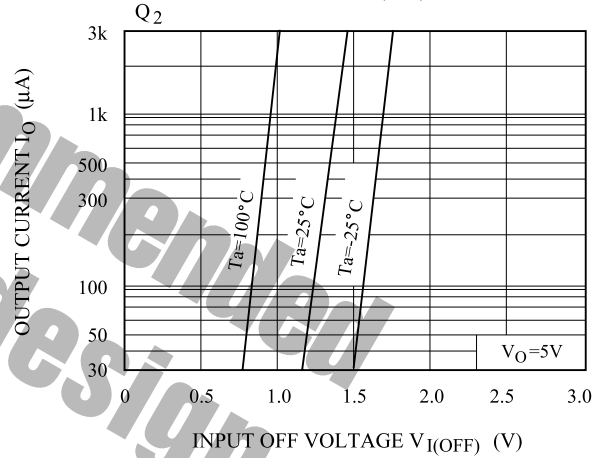
COLLECTOR-BASE VOLTAGE  $V_{CB}$  (V)  
EMITTER-BASE VOLTAGE  $V_{EB}$  (V)

Not recommended for new design

$I_O - V_{I(ON)}$



$I_O - V_{I(OFF)}$



$G_I - I_O$

