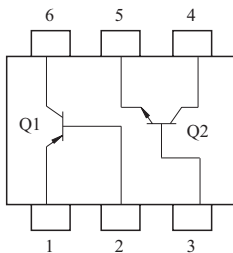


### GENERAL PURPOSE APPLICATION.

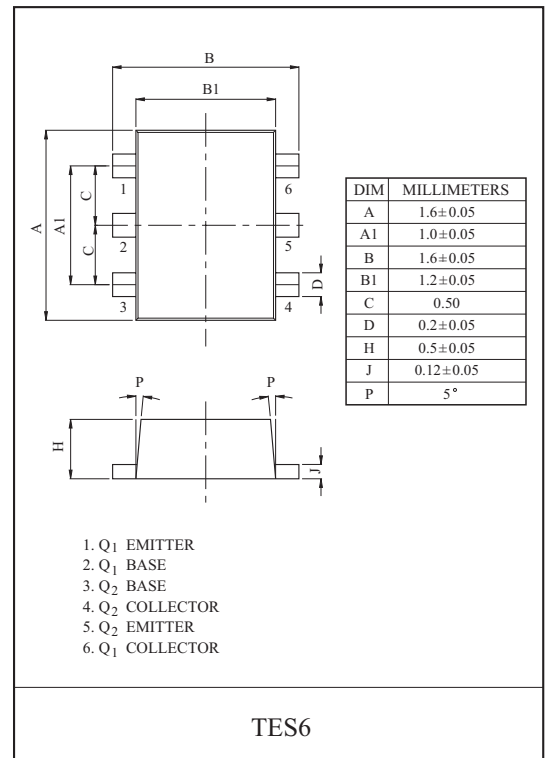
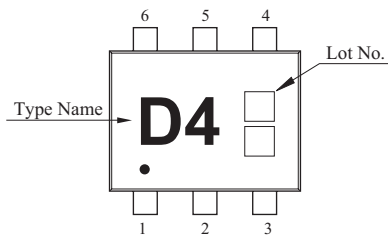
### FEATURES

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

### EQUIVALENT CIRCUIT (TOP VIEW)



### MARKING



### Q<sub>1</sub> MAXIMUM RATING (Ta=25 °C)

| CHARACTERISTIC            | SYMBOL           | RATING | UNIT |
|---------------------------|------------------|--------|------|
| Collector-Base Voltage    | V <sub>CBO</sub> | -50    | V    |
| Collector-Emitter Voltage | V <sub>CEO</sub> | -50    | V    |
| Emitter-Base Voltage      | V <sub>EBO</sub> | -5     | V    |
| Collector Current         | I <sub>C</sub>   | -150   | mA   |
| Base Current              | I <sub>B</sub>   | -30    | mA   |

### Q<sub>2</sub> MAXIMUM RATING (Ta=25 °C)

| CHARACTERISTIC            | SYMBOL           | RATING | UNIT |
|---------------------------|------------------|--------|------|
| Collector-Base Voltage    | V <sub>CBO</sub> | 60     | V    |
| Collector-Emitter Voltage | V <sub>CEO</sub> | 50     | V    |
| Emitter-Base Voltage      | V <sub>EBO</sub> | 5      | V    |
| Collector Current         | I <sub>C</sub>   | 150    | mA   |
| Base Current              | I <sub>B</sub>   | 30     | mA   |

### Q<sub>1</sub>, Q<sub>2</sub> MAXIMUM RATING (Ta=25 °C)

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

\* Total Raing.

# KTX102E

## Q<sub>1</sub> ELECTRICAL CHARACTERISTICS (Ta=25 °C)

| CHARACTERISTIC                       | SYMBOL                 | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT. |
|--------------------------------------|------------------------|---|------|------|------|-------|
| Collector Cut-off Current            | I <sub>CBO</sub>       | V <sub>CB</sub> =-50V, I <sub>E</sub> =0                                      | -    | -    | -0.1 | μA    |
| Emitter Cut-off Current              | I <sub>EBO</sub>       | V <sub>EB</sub> =-5V, I <sub>C</sub> =0                                       | -    | -    | -0.1 | μA    |
| DC Current Gain                      | h <sub>FE</sub> (Note) | V <sub>CE</sub> =-6V, I <sub>C</sub> =-2 mA                                   | 120  | -    | 400  |       |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub>   | I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA                                 | -    | -0.1 | -0.3 | V     |
| Transition Frequency                 | f <sub>T</sub>         | V <sub>CE</sub> =-10V, I <sub>C</sub> =-1 mA                                  | 80   | -    | -    | MHz   |
| Collector Output Capacitance         | C <sub>ob</sub>        | V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1 MHz                             | -    | 4.0  | 7.0  | pF    |
| Noise Figure                         | NF                     | V <sub>CE</sub> =-6V, I <sub>C</sub> =-0.1 mA, f=1 kHz, R <sub>g</sub> =10 kΩ | -    | 1.0  | 10   | dB    |

Note) h<sub>FE</sub> Classification : Y(4)120~240, GR(6)200~400

## Q<sub>2</sub> ELECTRICAL CHARACTERISTICS (Ta=25 °C)

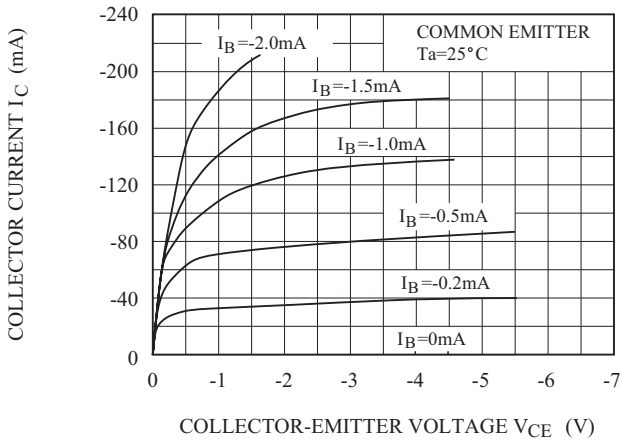
| CHARACTERISTIC                       | SYMBOL                 | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT. |
|--------------------------------------|------------------------|---|------|------|------|-------|
| Collector Cut-off Current            | I <sub>CBO</sub>       | V <sub>CB</sub> =60V, I <sub>E</sub> =0                                     | -    | -    | 0.1  | μA    |
| Emitter Cut-off Current              | I <sub>EBO</sub>       | V <sub>EB</sub> =5V, I <sub>C</sub> =0                                      | -    | -    | 0.1  | μA    |
| DC Current Gain                      | h <sub>FE</sub> (Note) | V <sub>CE</sub> =6V, I <sub>C</sub> =2mA                                    | 120  | -    | 400  |       |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub>   | I <sub>C</sub> =100mA, I <sub>B</sub> =10mA                                 | -    | 0.1  | 0.25 | V     |
| Transition Frequency                 | f <sub>T</sub>         | V <sub>CE</sub> =10V, I <sub>C</sub> =1 mA                                  | 80   | -    | -    | MHz   |
| Collector Output Capacitance         | C <sub>ob</sub>        | V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1 MHz                            | -    | 2.0  | 3.5  | pF    |
| Noise Figure                         | NF                     | V <sub>CE</sub> =6V, I <sub>C</sub> =0.1 mA, f=1 kHz, R <sub>g</sub> =10 kΩ | -    | 1.0  | 10   | dB    |

Note) h<sub>FE</sub> Classification : Y(4)120~240, GR(6)200~400

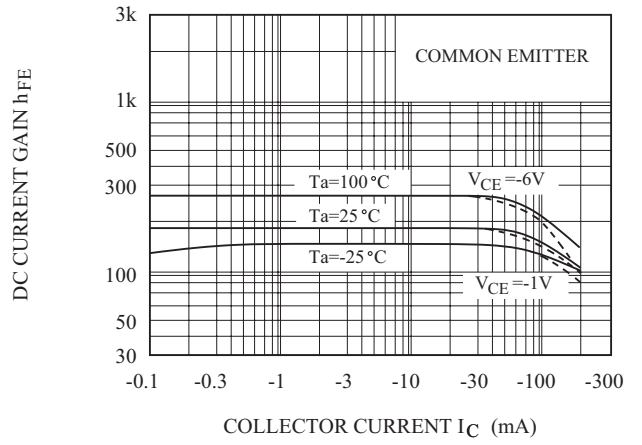
# KTX102E

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

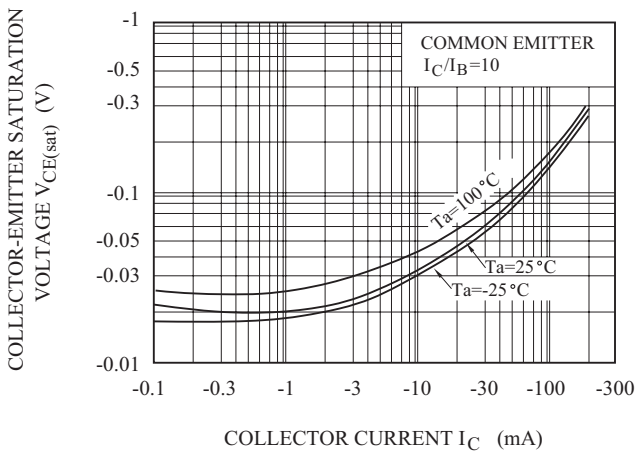
$I_C - V_{CE}$



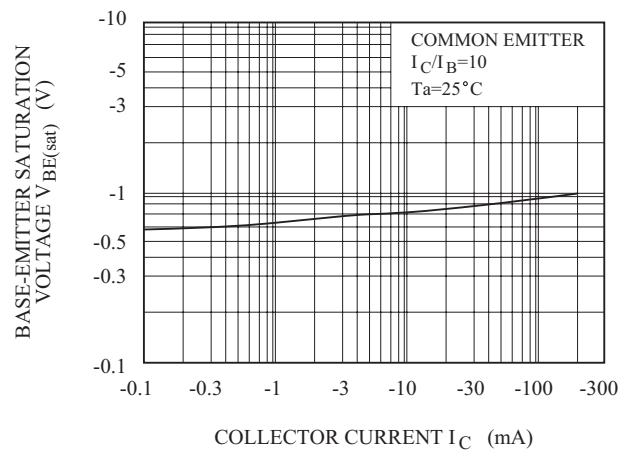
$h_{FE} - I_C$



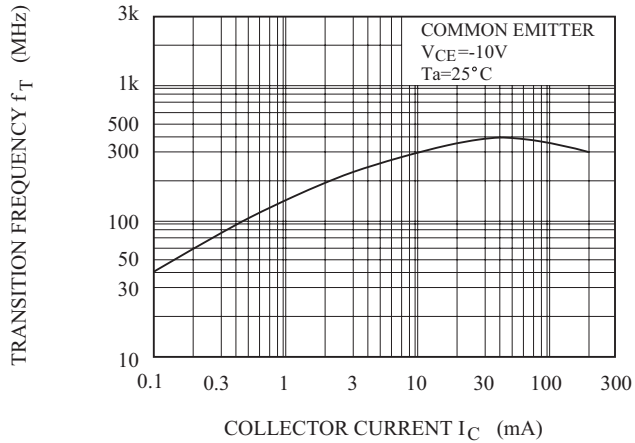
$V_{CE(sat)} - I_C$



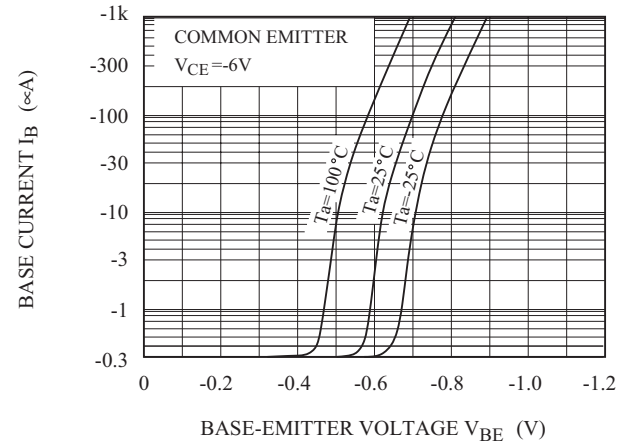
$V_{BE(sat)} - I_C$



$f_T - I_C$

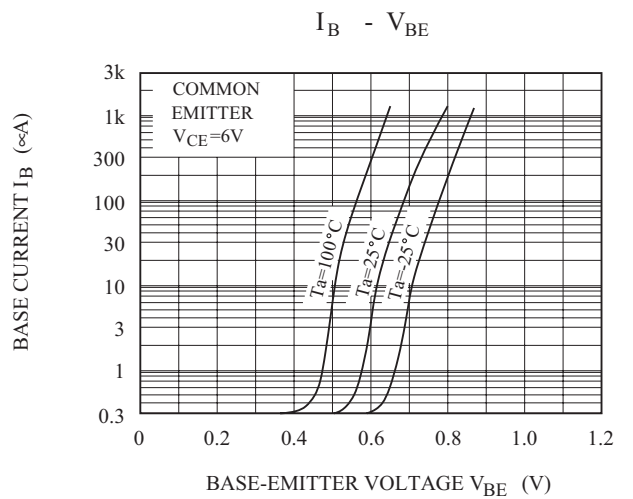
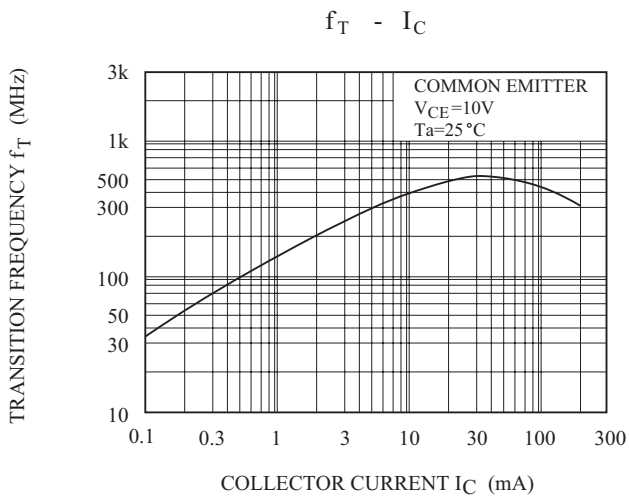
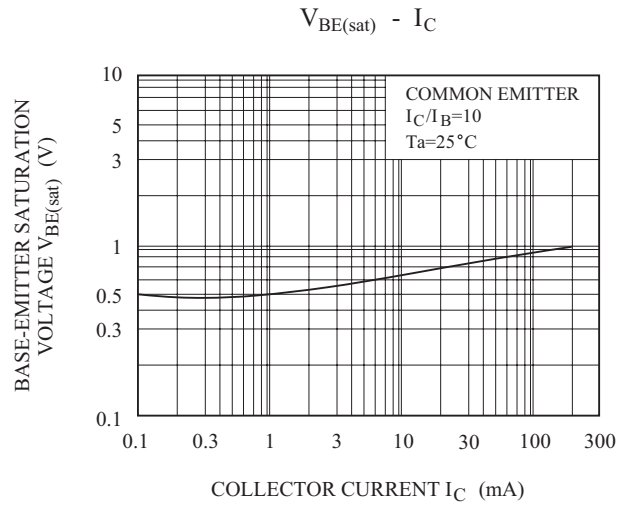
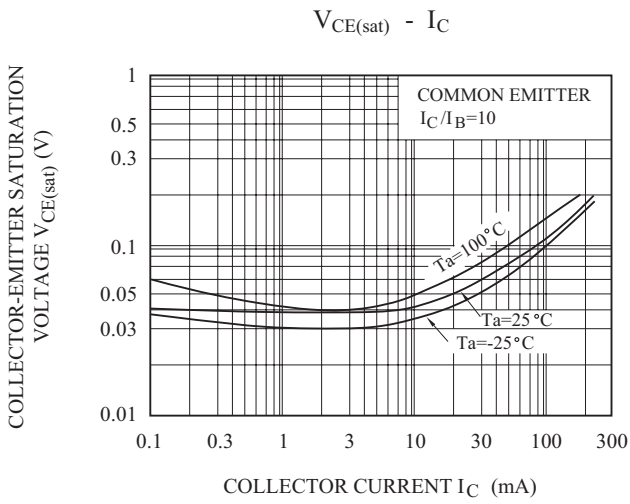
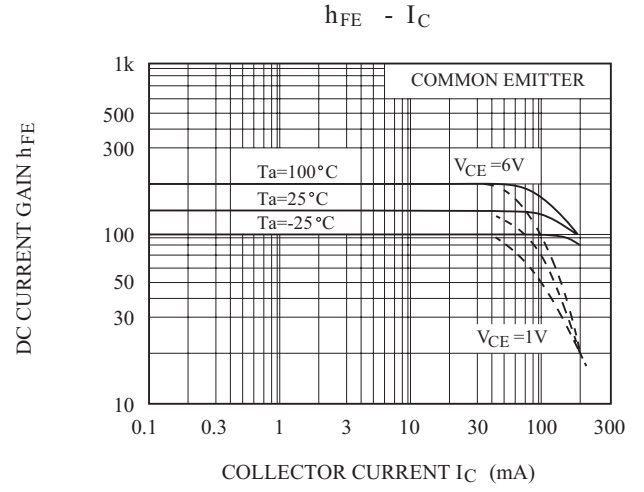
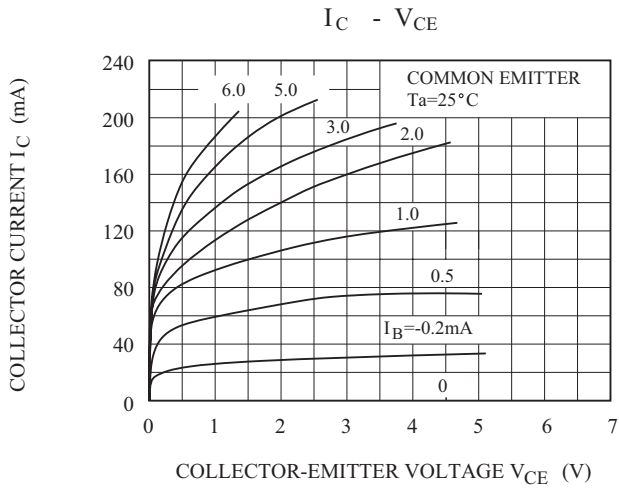


$I_B - V_{BE}$



# KTX102E

Q<sub>2</sub> (NPN TRANSISTOR)



# KTX102E

---

