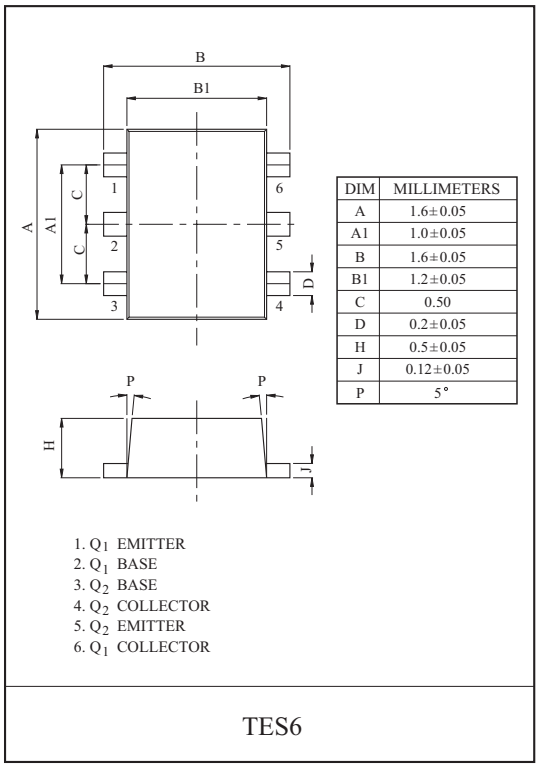
# KTX102E

**EPITAXIAL PLANAR PNP/NPN TRANSISTOR**

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.

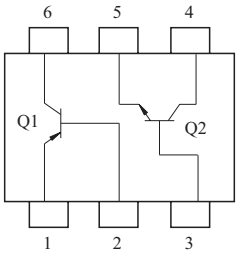



| DIM | MILLIMETERS |
|---|---|
| A | 1.6±0.05 |
| A1 | 1.0±0.05 |
| B | 1.6±0.05 |
| B1 | 1.2±0.05 |
| C | 0.50 |
| D | 0.2±0.05 |
| H | 0.5±0.05 |
| J | 0.12±0.05 |
| P | 5° |

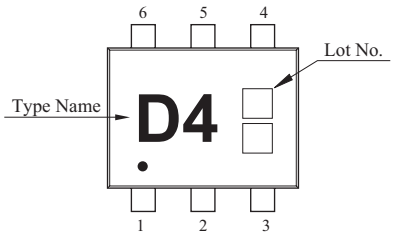
1. $Q_1$ EMITTER
2. $Q_1$ BASE
3. $Q_2$ BASE
4. $Q_2$ COLLECTOR
5. $Q_2$ EMITTER
6. $Q_1$ COLLECTOR

TES6

EQUIVALENT CIRCUIT (TOP VIEW)




MARKING




$Q_1$ MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | -50 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | -50 | V |
| Emitter-Base Voltage | $V_{EBO}$ | -5 | V |
| Collector Current | $I_C$ | -150 | mA |
| Base Current | $I_B$ | -30 | mA |

$Q_2$ MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector-Base Voltage | $V_{CBO}$ | 60 | V |
| Collector-Emitter Voltage | $V_{CEO}$ | 50 | V |
| Emitter-Base Voltage | $V_{EBO}$ | 5 | V |
| Collector Current | $I_C$ | 150 | mA |
| Base Current | $I_B$ | 30 | mA |

$Q_1$, $Q_2$ MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | SYMBOL | RATING | UNIT |
|---|---|---|---|
| Collector Power Dissipation | $P_C$ * | 200 | mW |
| Junction Temperature | $T_j$ | 150 | ℃ |
| Storage Temperature Range | $T_{stg}$ | -55～150 | ℃ |

* Total Raing.

$Q_1$ ELECTRICAL CHARACTERISTICS (Ta=25℃)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT. |
|---|---|---|---|---|---|---|
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$=-50V, $I_E$=0 | - | - | -0.1 | ㎂ |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$=-5V, $I_C$=0 | - | - | -0.1 | ㎂ |
| DC Current Gain | $h_{FE}$ (Note) | $V_{CE}$=-6V, $I_C$=-2㎃ | 120 | - | 400 | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=-100㎃, $I_B$=-10㎃ | - | -0.1 | -0.3 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=-10V, $I_C$=-1㎃ | 80 | - | - | ㎒ |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$=-10V, $I_E$=0, f=1㎒ | - | 4.0 | 7.0 | ㎊ |
| Noise Figure | NF | $V_{CE}$=-6V, $I_C$=-0.1㎃, f=1㎑, Rg=10㏀ | - | 1.0 | 10 | ㏈ |

Note) $h_{FE}$ Classification : Y(4)120~240, GR(6)200~400

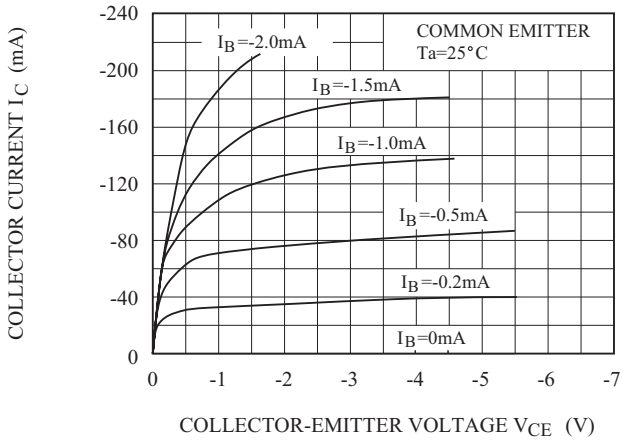
$Q_2$ ELECTRICAL CHARACTERISTICS (Ta=25℃)

| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT. |
|---|---|---|---|---|---|---|
| Collector Cut-off Current | $I_{CBO}$ | $V_{CB}$=60V, $I_E$=0 | - | - | 0.1 | ㎂ |
| Emitter Cut-off Current | $I_{EBO}$ | $V_{EB}$=5V, $I_C$=0 | - | - | 0.1 | ㎂ |
| DC Current Gain | $h_{FE}$ (Note) | $V_{CE}$=6V, $I_C$=2㎃ | 120 | - | 400 | |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C$=100㎃, $I_B$=10㎃ | - | 0.1 | 0.25 | V |
| Transition Frequency | $f_T$ | $V_{CE}$=10V, $I_C$=1㎃ | 80 | - | - | ㎒ |
| Collector Output Capacitance | $C_{ob}$ | $V_{CB}$=10V, $I_E$=0, f=1㎒ | - | 2.0 | 3.5 | ㎊ |
| Noise Figure | NF | $V_{CE}$=6V, $I_C$=0.1㎃, f=1㎑, Rg=10㏀ | - | 1.0 | 10 | ㏈ |

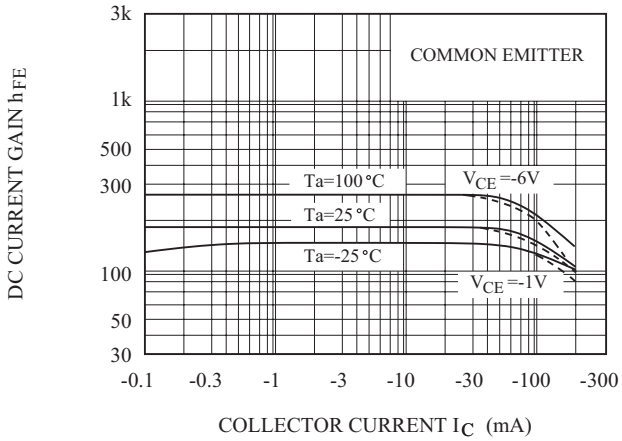
Note) $h_{FE}$ Classification : Y(4)120~240, GR(6)200~400

$Q_1$ (PNP TRANSISTOR)

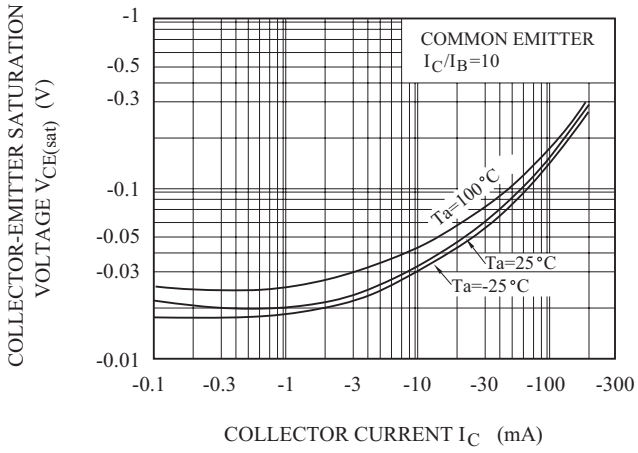
$I_C$ - $V_{CE}$



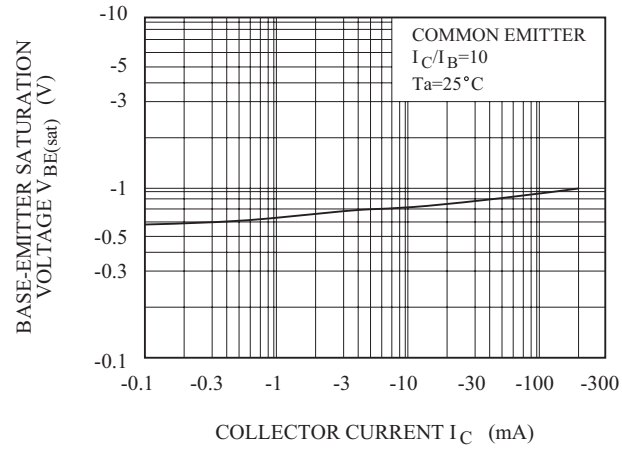

$h_{FE}$ - $I_C$



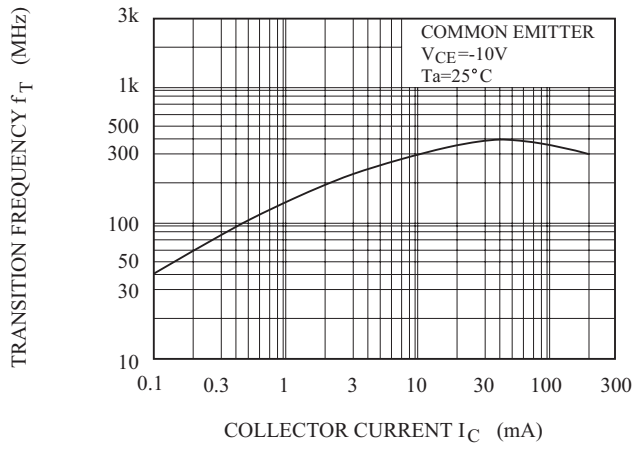

$V_{CE(sat)}$ - $I_C$



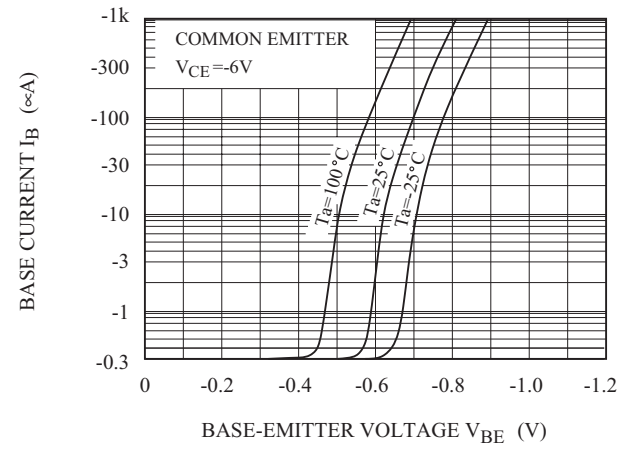

$V_{BE(sat)}$ - $I_C$




$f_T$ - $I_C$

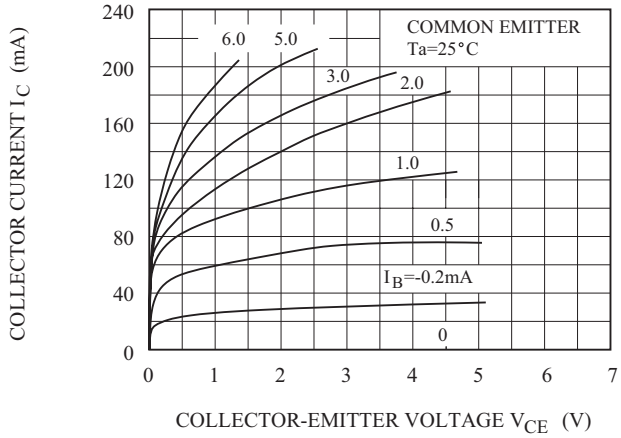



$I_B$ - $V_{BE}$

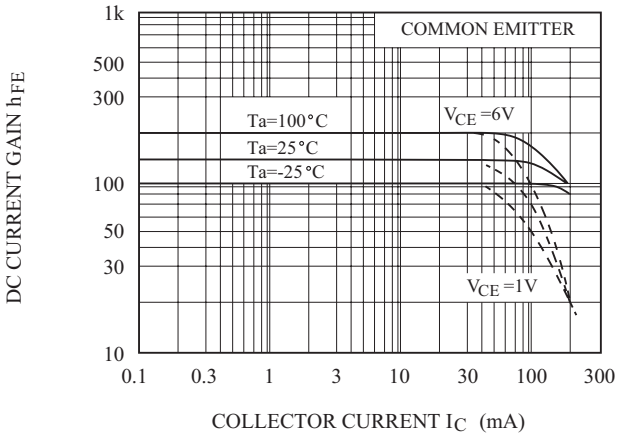


$Q_2$ (NPN TRANSISTOR)

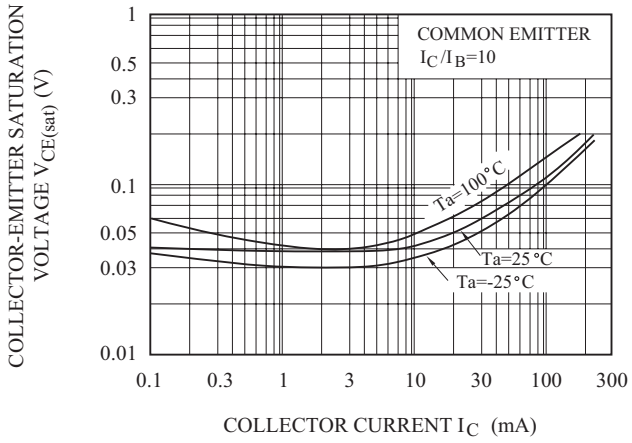
$I_C$ - $V_{CE}$



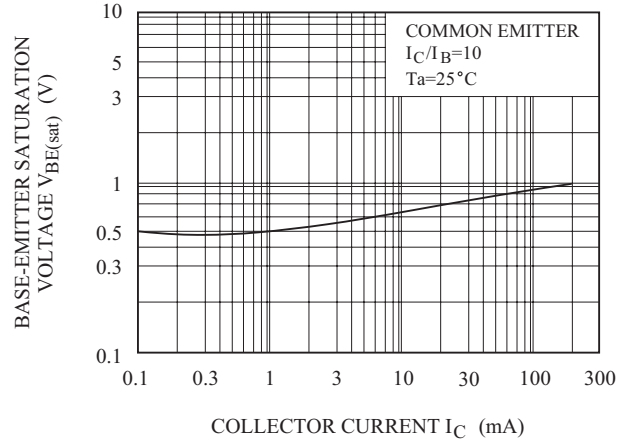

$h_{FE}$ - $I_C$



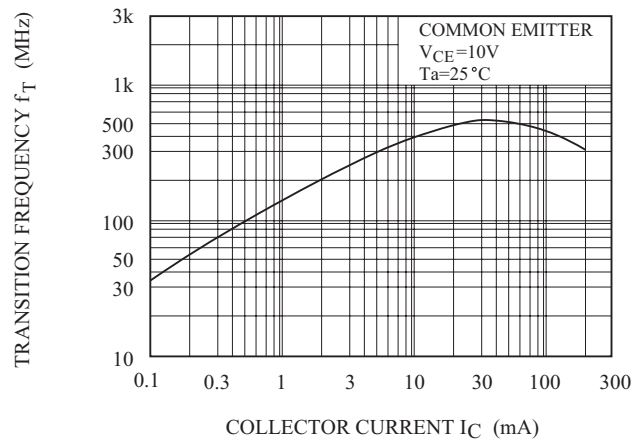

$V_{CE(sat)}$ - $I_C$



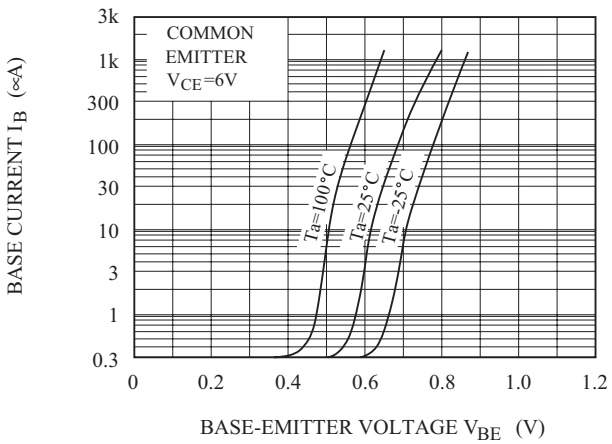

$V_{BE(sat)}$ - $I_C$

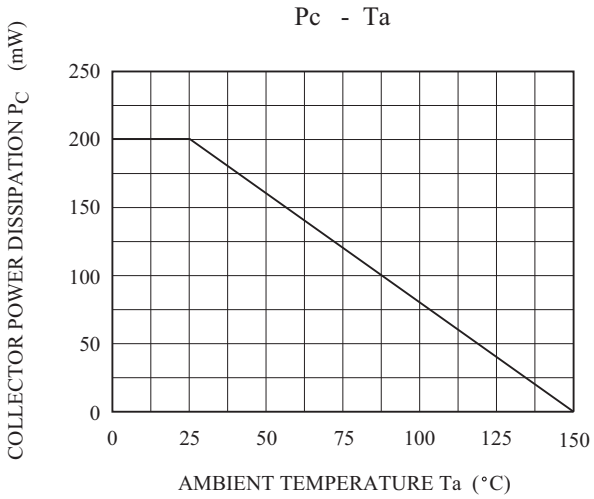



$f_T$ - $I_C$




$I_B$ - $V_{BE}$




Pc - Ta
COLLECTOR POWER DISSIPATION $P_C$ (mW)
250
200
150
100
50
0
0
25
50
75
100
125
150
AMBIENT TEMPERATURE Ta (°C)