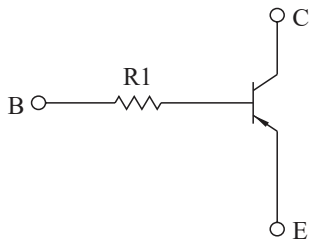


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

## FEATURES

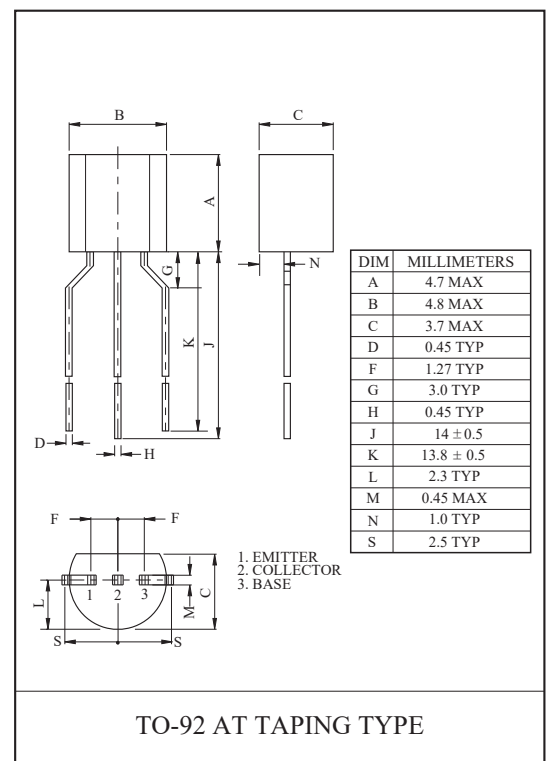
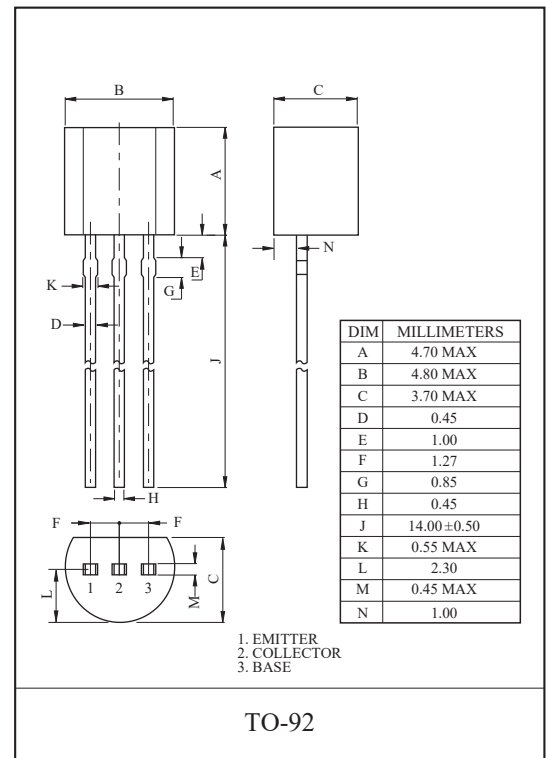
- With Built-in Bias Resistors.
- Simplify Circuit Design.
- Reduce a Quantity of Parts and Manufacturing Process.

## EQUIVALENT CIRCUIT



## 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           | $I_C$     | -100      | mA   |
| Collector Power Dissipation | $P_C$     | 625       | mW   |
| Junction Temperature        | $T_j$     | -55~150   | ℃    |
| Storage Temperature Range   | $T_{stg}$ | -55 ~ 150 | ℃    |



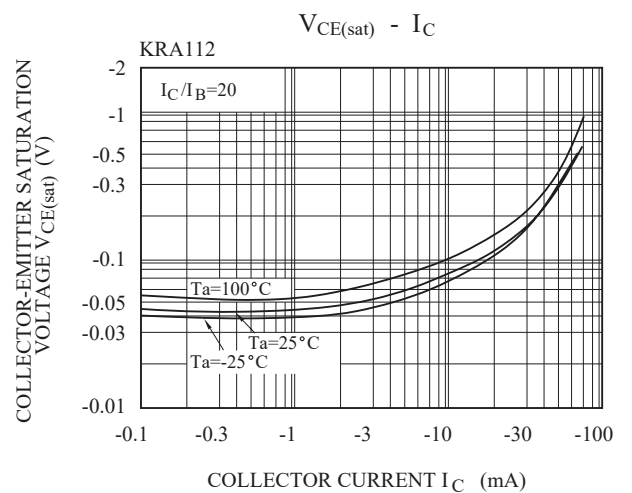
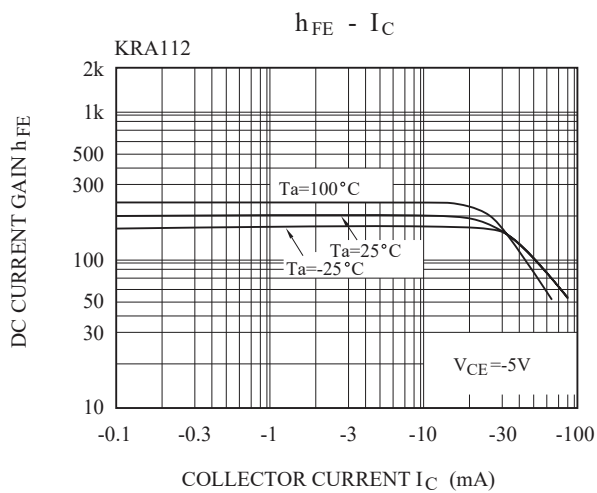
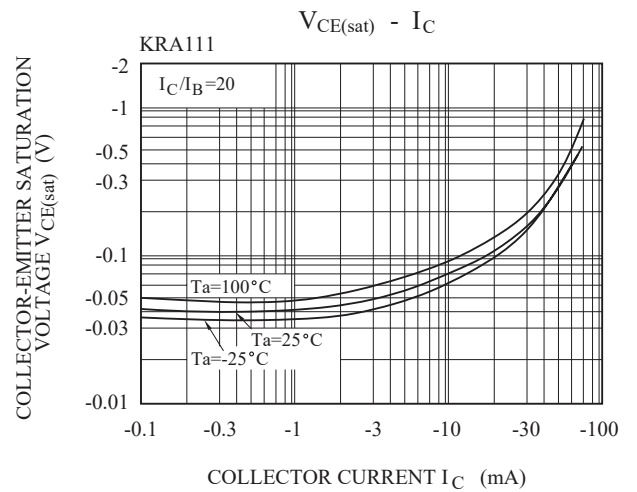
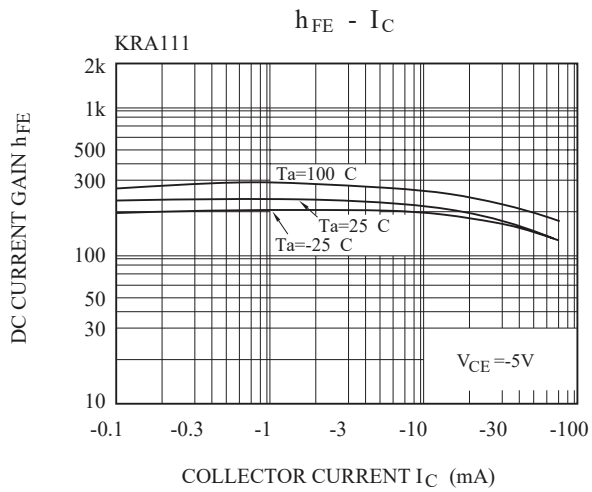
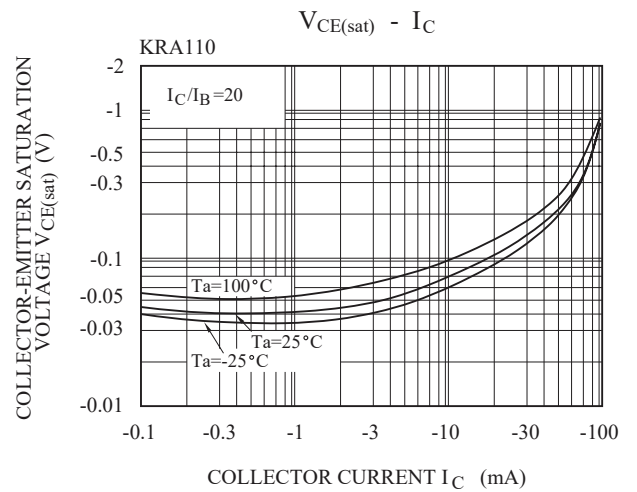
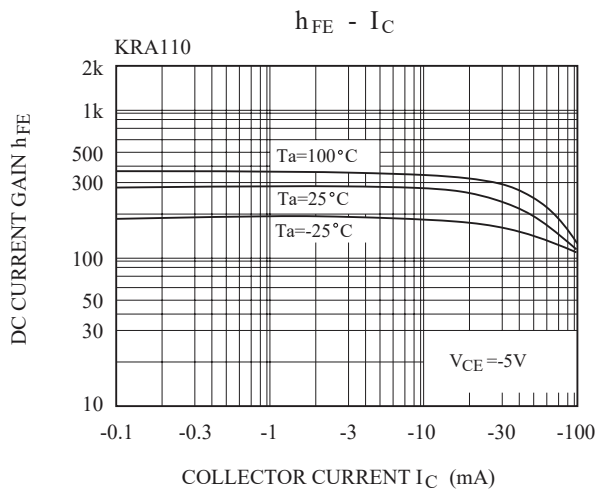
# KRA110~KRA114

## ELECTRICAL CHARACTERISTICS (Ta=25℃)

| 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                           | -    | -     | -100 | nA   |
| Emitter Cut-off Current              |              |        | I <sub>EBO</sub>     | V <sub>EB</sub> =-5V, I <sub>C</sub> =0                            | -    | -     | -100 | nA   |
| DC Current Gain                      |              |        | h <sub>FE</sub>      | V <sub>CE</sub> =-5V, I <sub>C</sub> =-1mA                         | 120  | -     | -    |      |
| Collector-Emitter Saturation Voltage |              |        | V <sub>CE(sat)</sub> | I <sub>C</sub> =-10mA, I <sub>B</sub> =-0.5mA                      | -    | -0.1  | -0.3 | V    |
| Transition Frequency                 |              |        | f <sub>T</sub> *     | V <sub>CE</sub> =-10V, I <sub>C</sub> =-5mA                        | -    | 250   | -    | MHz  |
| Switching Time                       | Rise Time    | KRA110 | t <sub>r</sub>       | V <sub>O</sub> =-5V<br>V <sub>IN</sub> =-5V<br>R <sub>L</sub> =1kΩ | -    | 0.2   | -    | μS   |
|                                      |              | KRA111 |                      |                                                                    | -    | 0.065 | -    |      |
|                                      |              | KRA112 |                      |                                                                    | -    | 0.4   | -    |      |
|                                      |              | KRA113 |                      |                                                                    | -    | 0.1   | -    |      |
|                                      |              | KRA114 |                      |                                                                    | -    | 0.15  | -    |      |
|                                      | Storage Time | KRA110 | t <sub>stg</sub>     |                                                                    | -    | 2.0   | -    |      |
|                                      |              | KRA111 |                      |                                                                    | -    | 1.7   | -    |      |
|                                      |              | KRA112 |                      |                                                                    | -    | 3.0   | -    |      |
|                                      |              | KRA113 |                      |                                                                    | -    | 2.0   | -    |      |
|                                      |              | KRA114 |                      |                                                                    | -    | 1.5   | -    |      |
|                                      | Fall Time    | KRA110 | t <sub>f</sub>       |                                                                    | -    | 0.3   | -    |      |
|                                      |              | KRA111 |                      |                                                                    | -    | 0.3   | -    |      |
|                                      |              | KRA112 |                      |                                                                    | -    | 1.7   | -    |      |
|                                      |              | KRA113 |                      |                                                                    | -    | 0.8   | -    |      |
|                                      |              | KRA114 |                      |                                                                    | -    | 1.5   | -    |      |
| Input Resistor                       |              | KRA110 | R1                   | -                                                                  | 3.29 | 4.7   | 6.11 | kΩ   |
|                                      |              | KRA111 |                      |                                                                    | 7    | 10    | 13   |      |
|                                      |              | KRA112 |                      |                                                                    | 70   | 100   | 130  |      |
|                                      |              | KRA113 |                      |                                                                    | 15.4 | 22    | 28.6 |      |
|                                      |              | KRA114 |                      |                                                                    | 32.9 | 47    | 61.1 |      |

Note : \* Characteristic of Transistor Only.

# KRA110~KRA114



# KRA110~KRA114

