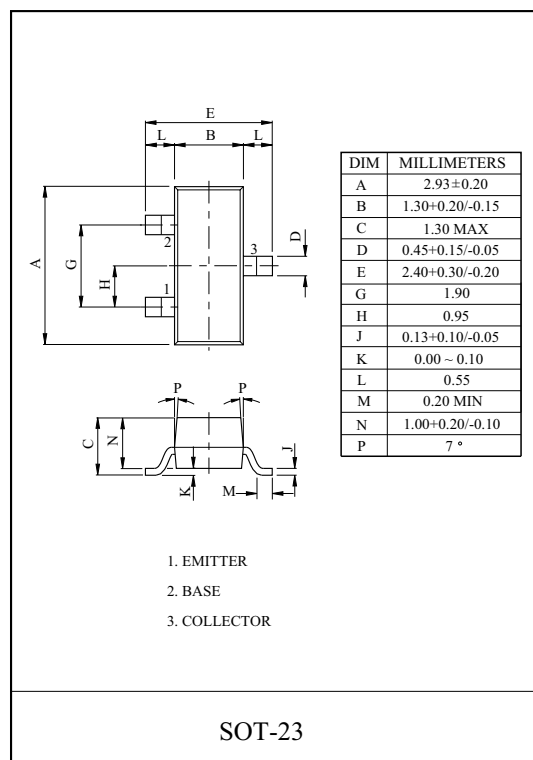
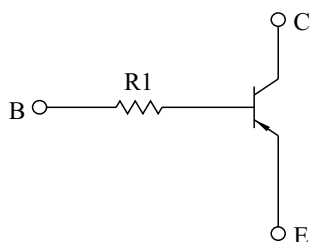


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

### FEATURES

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

### EQUIVALENT CIRCUIT



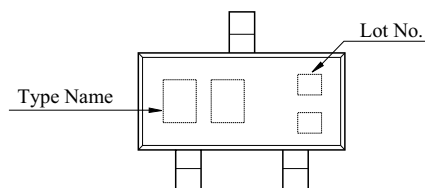
### MAXIMUM RATING (Ta=25℃)

| 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 | $P_C$     | 200       | mW   |
| Junction Temperature        | $T_j$     | 150       | ℃    |
| Storage Temperature Range   | $T_{stg}$ | -55 ~ 150 | ℃    |

### MARK SPEC

| TYPE | KRA110S | KRA111S | KRA112S | KRA113S | KRA114S |
|------|---------|---------|---------|---------|---------|
| MARK | PK      | PM      | PN      | PO      | PP      |

### Marking



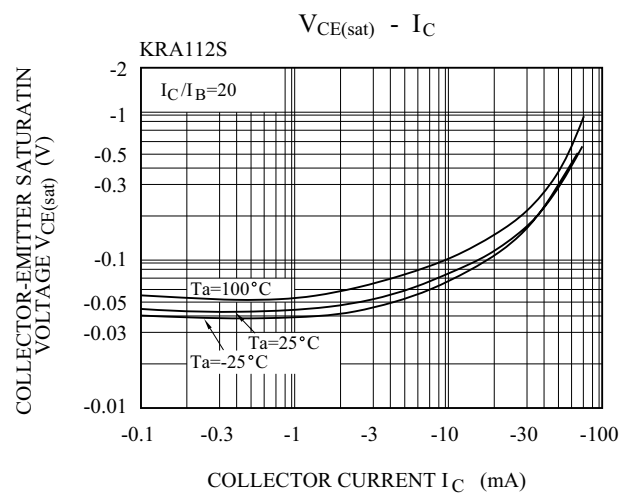
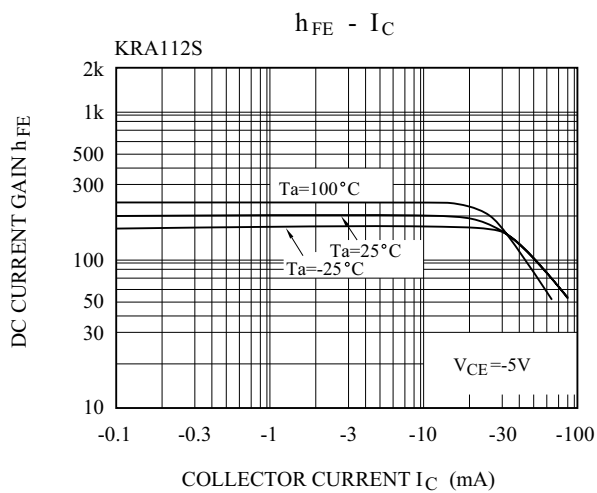
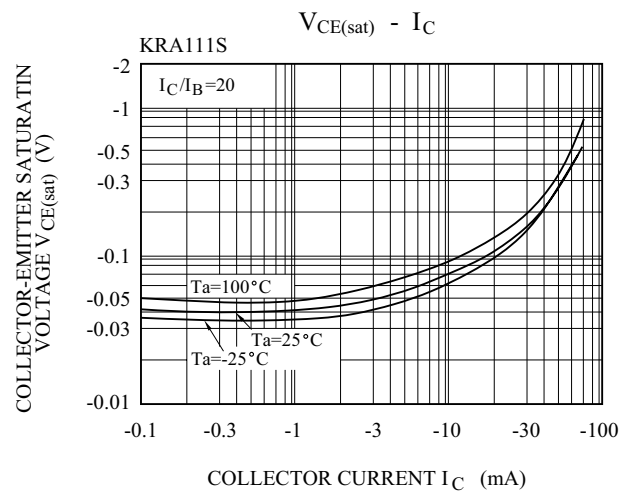
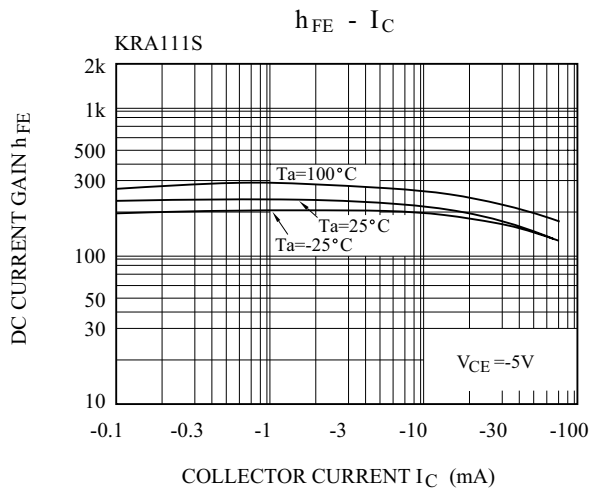
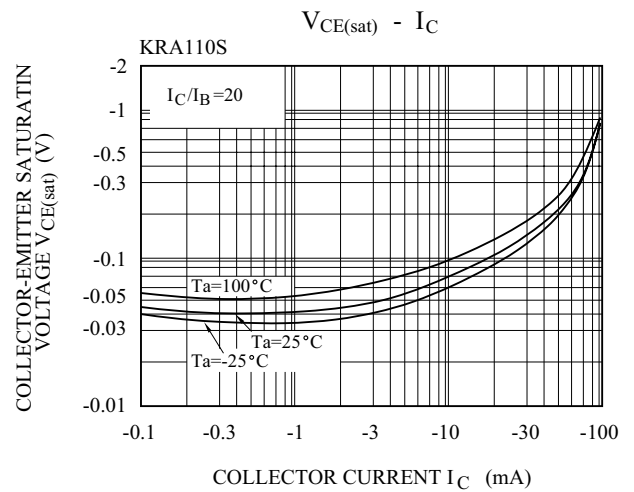
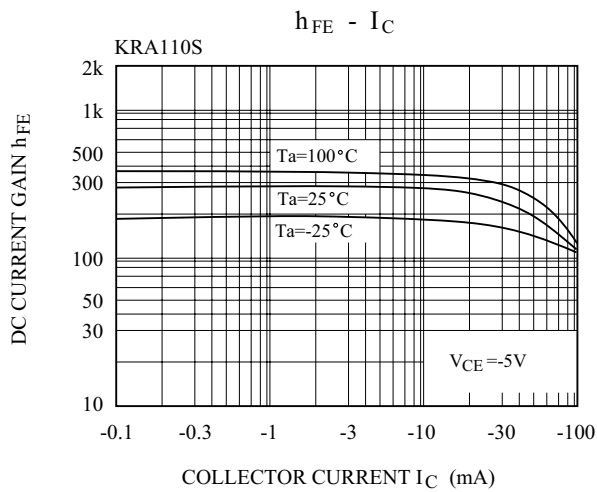
# KRA110S~KRA114S

## ELECTRICAL CHARACTERISTICS (Ta=25 °C)

| CHARACTERISTIC                       |              | SYMBOL        | TEST CONDITION                              | MIN. | TYP.  | MAX. | UNIT       |
|--------------------------------------|--------------|---------------|---------------------------------------------|------|-------|------|------------|
| Collector Cut-off Current            |              | $I_{CBO}$     | $V_{CB}=-50V, I_E=0$                        | -    | -     | -100 | nA         |
| Emitter Cut-off Current              |              | $I_{EBO}$     | $V_{EB}=-5V, I_C=0$                         | -    | -     | -100 | nA         |
| DC Current Gain                      |              | $h_{FE}$      | $V_{CE}=-5V, I_C=-1mA$                      | 120  | -     | -    |            |
| Collector-Emitter Saturation Voltage |              | $V_{CE(sat)}$ | $I_C=-10mA, I_B=-0.5mA$                     | -    | -0.1  | -0.3 | V          |
| Transition Frequency                 |              | $f_T^*$       | $V_{CE}=-10V, I_C=-5mA$                     | -    | 250   | -    | MHz        |
| Input Resistor                       | KRA110S      | $R_1$         |                                             | -    | 4.7   | -    | k $\Omega$ |
|                                      | KRA111S      |               |                                             | -    | 10    | -    |            |
|                                      | KRA112S      |               |                                             | -    | 100   | -    |            |
|                                      | KRA113S      |               |                                             | -    | 22    | -    |            |
|                                      | KRA114S      |               |                                             | -    | 47    | -    |            |
| Switching Time                       | Rise Time    | KRA110S       | $V_O=-5V$<br>$V_{IN}=-5V$<br>$R_L=1k\Omega$ | -    | 0.2   | -    | $\mu S$    |
|                                      |              | KRA111S       |                                             | -    | 0.065 | -    |            |
|                                      |              | KRA112S       |                                             | -    | 0.4   | -    |            |
|                                      |              | KRA113S       |                                             | -    | 0.1   | -    |            |
|                                      |              | KRA114S       |                                             | -    | 0.15  | -    |            |
|                                      | Storage Time | KRA110S       |                                             | -    | 2.0   | -    |            |
|                                      |              | KRA111S       |                                             | -    | 1.7   | -    |            |
|                                      |              | KRA112S       |                                             | -    | 3.0   | -    |            |
|                                      |              | KRA113S       |                                             | -    | 2.0   | -    |            |
|                                      |              | KRA114S       |                                             | -    | 1.5   | -    |            |
|                                      | Fall Time    | KRA110S       |                                             | -    | 0.3   | -    |            |
|                                      |              | KRA111S       |                                             | -    | 0.3   | -    |            |
|                                      |              | KRA112S       |                                             | -    | 1.7   | -    |            |
|                                      |              | KRA113S       |                                             | -    | 0.8   | -    |            |
|                                      |              | KRA114S       |                                             | -    | 1.5   | -    |            |

Note : \* Characteristic of Transistor Only.

# KRA110S~KRA114S



# KRA110S~KRA114S

