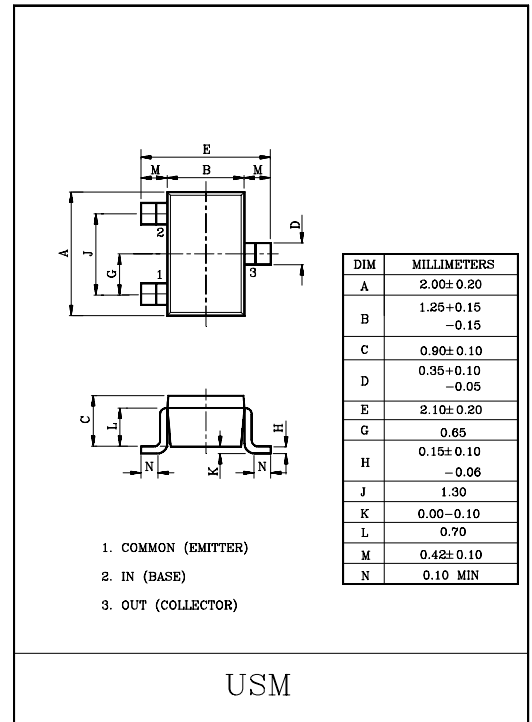
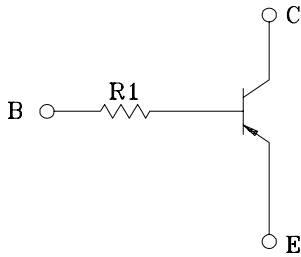


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

### FEATURES

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

### EQUIVALENT CIRCUIT



### MAXIMUM RATINGS (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>   | -100   | mA   |

| CHARACTERISTIC              | SYMBOL           | RATING  | UNIT |
|-----------------------------|------------------|---------|------|
| Collector Power Dissipation | P <sub>C</sub>   | 100     | mW   |
| Junction Temperature        | T <sub>j</sub>   | 150     | °C   |
| Storage Temperature Range   | T <sub>stg</sub> | -55~150 | °C   |

### ELECTRICAL CHARACTERISTICS (Ta=25°C)

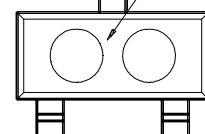
| CHARACTERISTIC                       | SYMBOL               | TEST CONDITION                                | MIN. | TYP. | MAX. | UNIT |
|--------------------------------------|----------------------|---|------|------|------|------|
| Collector Cut-off Current            | I <sub>CBO</sub>     | V <sub>CB</sub> =-50V, I <sub>E</sub> =0      | -    | -    | -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  |
| Input Resistor                       | KRA310               | R <sub>1</sub>                                | -    | 4.7  | -    | kΩ   |
|                                      | KRA311               |   | -    | 10   | -    |      |
|                                      | KRA312               |   | -    | 100  | -    |      |
|                                      | KRA313               |   | -    | 22   | -    |      |
|                                      | KRA314               |   | -    | 47   | -    |      |

Note : \*Characteristic of Transistor Only

### MARK SPEC

| TYPE | KRA310 | KRA311 | KRA312 | KRA313 | KRA314 |
|------|--------|--------|--------|--------|--------|
| MARK | PK     | PM     | PN     | PO     | PP     |

Marking Type Name



# KRA310~KRA314

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC |              | SYMBOL | TEST CONDITION   | MIN. | TYP.  | MAX. | UNIT |
|----------------|--------------|--------|--|------|-------|------|------|
| Switching Time | Rise Time    | KRA310 | V <sub>O</sub> =-5V<br>V <sub>IN</sub> =-5V<br>R <sub>L</sub> =1kΩ | -    | 0.2   | -    | μS   |
|                |              | KRA311 |  | -    | 0.065 | -    |      |
|                |              | KRA312 |  | -    | 0.4   | -    |      |
|                |              | KRA313 |  | -    | 0.1   | -    |      |
|                |              | KRA314 |  | -    | 0.15  | -    |      |
|                | Storage Time | KRA310 |  | -    | 2.0   | -    |      |
|                |              | KRA311 |  | -    | 1.7   | -    |      |
|                |              | KRA312 |  | -    | 3.0   | -    |      |
|                |              | KRA313 |  | -    | 2.0   | -    |      |
|                |              | KRA314 |  | -    | 1.5   | -    |      |
|                | Fall Time    | KRA310 |  | -    | 0.3   | -    |      |
|                |              | KRA311 |  | -    | 0.3   | -    |      |
|                |              | KRA312 |  | -    | 1.7   | -    |      |
|                |              | KRA313 |  | -    | 0.8   | -    |      |
|                |              | KRA314 |  | -    | 1.5   | -    |      |