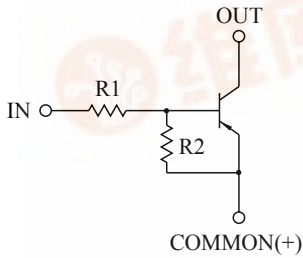


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

#### FEATURES

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

#### EQUIVALENT CIRCUIT



#### BIAS RESISTOR VALUES

| TYPE NO. | R1(kΩ) | R2(kΩ) |
|----------|--------|--------|
| KRA301E  | 4.7    | 4.7    |
| KRA302E  | 10     | 10     |
| KRA303E  | 22     | 22     |
| KRA304E  | 47     | 47     |
| KRA305E  | 2.2    | 47     |
| KRA306E  | 4.7    | 47     |

| DIM | MILLIMETERS     |
|-----|-----------------|
| A   | 1.60±0.10       |
| B   | 0.85±0.10       |
| C   | 0.70±0.10       |
| D   | 0.27+0.10/-0.05 |
| E   | 1.60±0.10       |
| G   | 1.00±0.10       |
| H   | 0.50            |
| J   | 0.13±0.05       |

1. COMMON (EMITTER)  
2. IN (BASE)  
3. OUT (COLLECTOR)

ESM

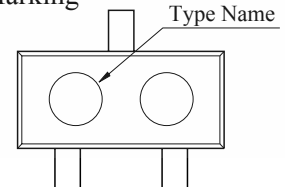
#### MAXIMUM RATING (Ta=25°C)

| CHARACTERISTIC            |              | SYMBOL           | RATING    | UNIT |
|---------------------------|--------------|------------------|-----------|------|
| Output Voltage            | KRA301E~306E | V <sub>O</sub>   | -50       | V    |
| Input Voltage             | KRA301E      | V <sub>I</sub>   | -20, 10   | V    |
|                           | KRA302E      |                  | -30, 10   |      |
|                           | KRA303E      |                  | -40, 10   |      |
|                           | KRA304E      |                  | -40, 10   |      |
|                           | KRA305E      |                  | -12, 5    |      |
|                           | KRA306E      |                  | -20, 5    |      |
| Output Current            | KRA301E~306E | I <sub>O</sub>   | -100      | mA   |
| Power Dissipation         |              | P <sub>D</sub>   | 100       | mW   |
| Junction Temperature      |              | T <sub>j</sub>   | 150       | °C   |
| Storage Temperature Range |              | T <sub>stg</sub> | -55 ~ 150 | °C   |

#### MARK SPEC

| TYPE | KRA301E | KRA302E | KRA303E | KRA304E | KRA305E | KRA306E |
|------|---------|---------|---------|---------|---------|---------|
| MARK | PA      | PB      | PC      | PD      | PE      | PF      |

#### Marking



# KRA301E~KRA306E

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC         |                | SYMBOL       | TEST CONDITION          | MIN. | TYP.  | MAX.  | UNIT |
|------------------------|----------------|--------------|-------------------------|------|-------|-------|------|
| Output Cut-off Current | KRA301E ~ 306E | $I_{O(OFF)}$ | $V_O=-50V, V_I=0$       | -    | -     | -500  | nA   |
| DC Current Gain        | KRA301E        | $G_I$        | $V_O=-5V, I_O=-10mA$    | 30   | 55    | -     |      |
|                        | KRA302E        |              |                         | 50   | 80    | -     |      |
|                        | KRA303E        |              |                         | 70   | 120   | -     |      |
|                        | KRA304E        |              |                         | 80   | 200   | -     |      |
|                        | KRA305E        |              |                         | 80   | 200   | -     |      |
|                        | KRA306E        |              |                         | 80   | 200   | -     |      |
| Output Voltage         | KRA301E ~ 306E | $V_{O(ON)}$  | $I_O=-10mA, I_I=-0.5mA$ | -    | -0.1  | -0.3  | V    |
| Input Voltage (ON)     | KRA301E        | $V_{I(ON)}$  | $V_O=-0.2V, I_O=-5mA$   | -    | -1.5  | -2.0  | V    |
|                        | KRA302E        |              |                         | -    | -1.8  | -2.4  |      |
|                        | KRA303E        |              |                         | -    | -2.1  | -3.0  |      |
|                        | KRA304E        |              |                         | -    | -2.8  | -5.0  |      |
|                        | KRA305E        |              |                         | -    | -0.8  | -1.1  |      |
|                        | KRA306E        |              |                         | -    | -0.9  | -1.3  |      |
| Input Voltage (OFF)    | KRA301E ~ 304E | $V_{I(OFF)}$ | $V_O=-5V, I_O=-0.1mA$   | -1.0 | -1.2  | -     | V    |
|                        | KRA305E ~ 306E |              |                         | -0.5 | -0.65 | -     |      |
| Transition Frequency   | KRA301E ~ 306E | $f_T^*$      | $V_O=-10V, I_O=-5mA$    | -    | 200   | -     | MHz  |
| Input Current          | KRA301E        | $I_I$        | $V_I=-5V$               | -    | -     | -1.8  | mA   |
|                        | KRA302E        |              |                         | -    | -     | -0.88 |      |
|                        | KRA303E        |              |                         | -    | -     | -0.36 |      |
|                        | KRA304E        |              |                         | -    | -     | -0.18 |      |
|                        | KRA305E        |              |                         | -    | -     | -3.6  |      |
|                        | KRA306E        |              |                         | -    | -     | -1.8  |      |

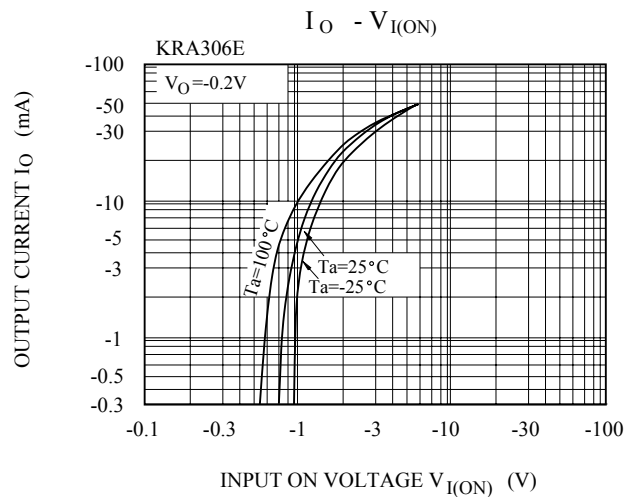
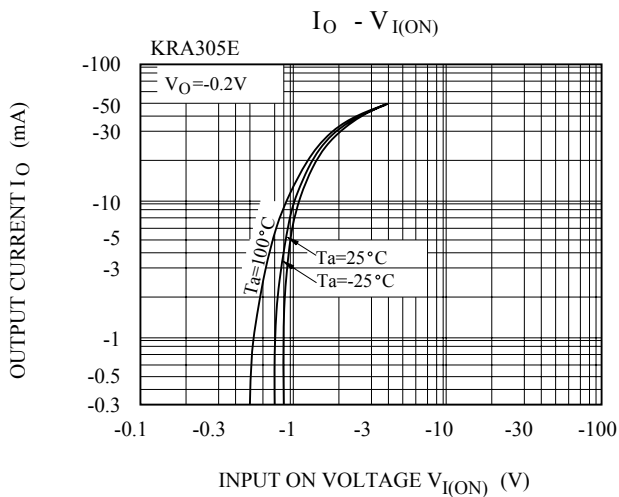
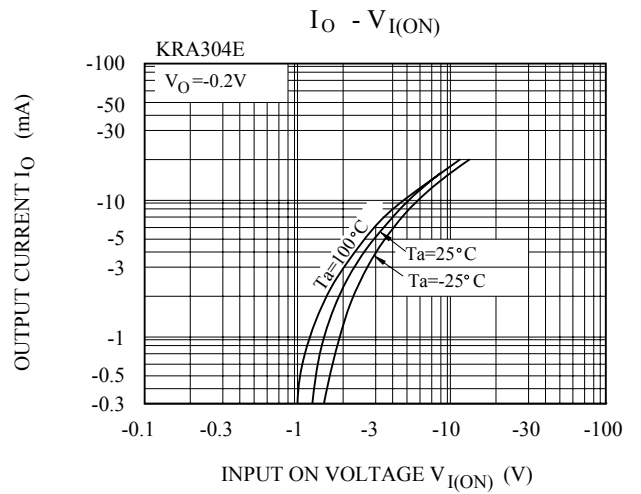
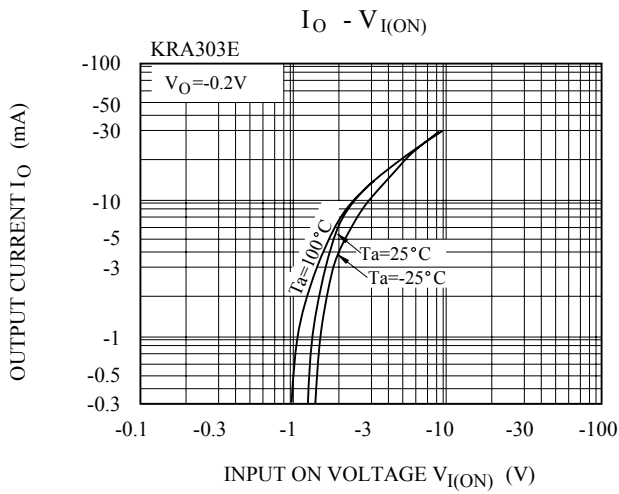
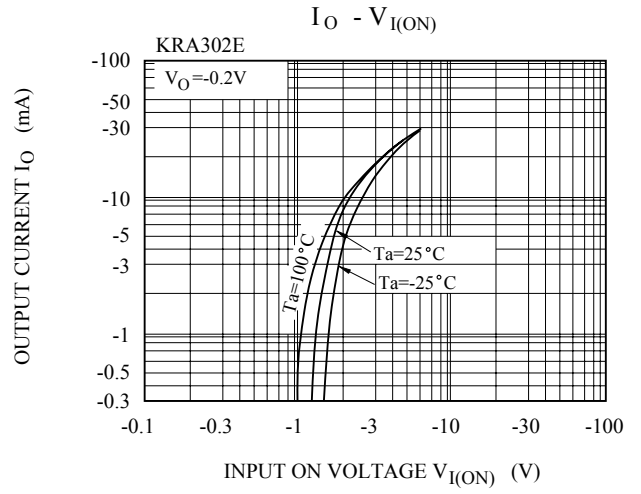
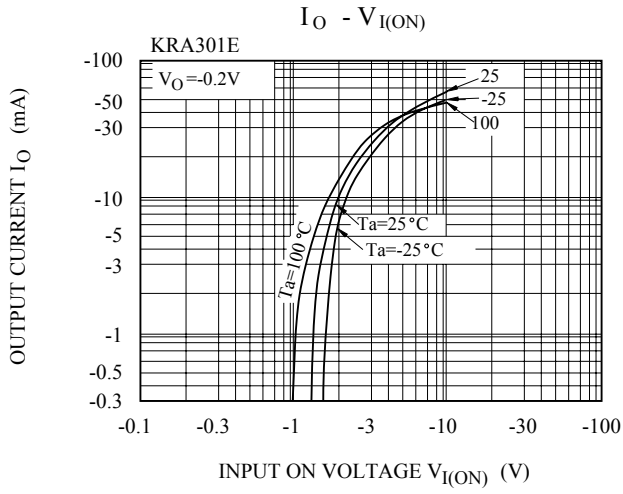
Note : \* Characteristic of Transistor Only.

# KRA301E~KRA306E

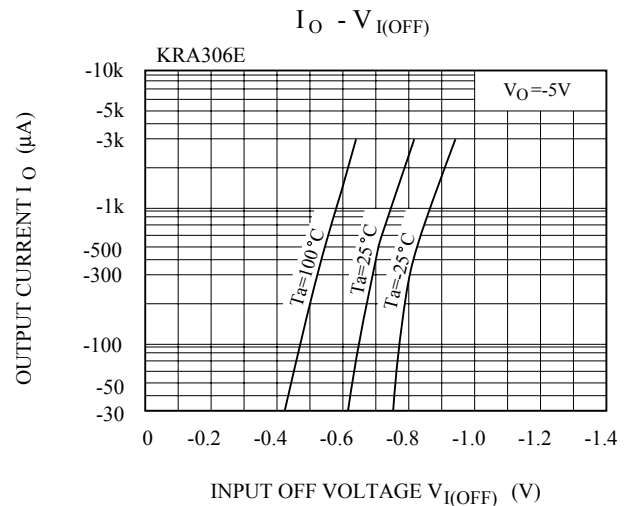
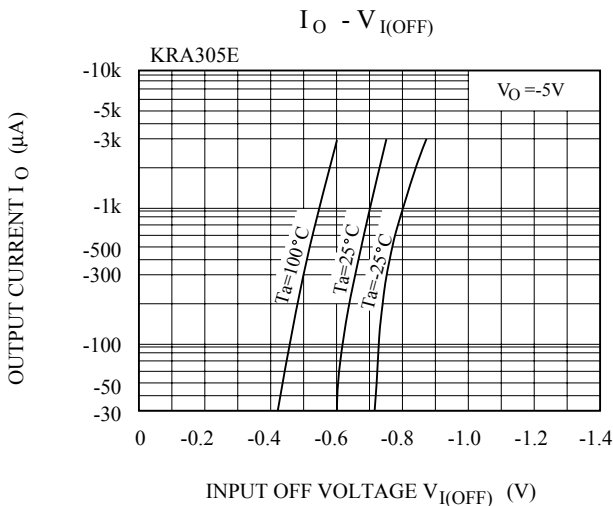
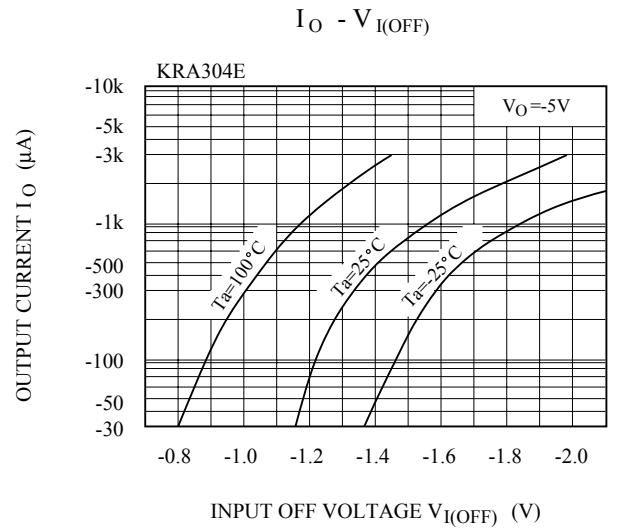
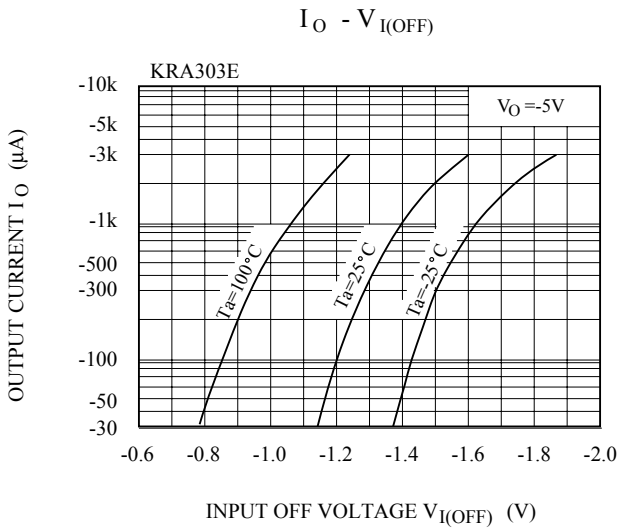
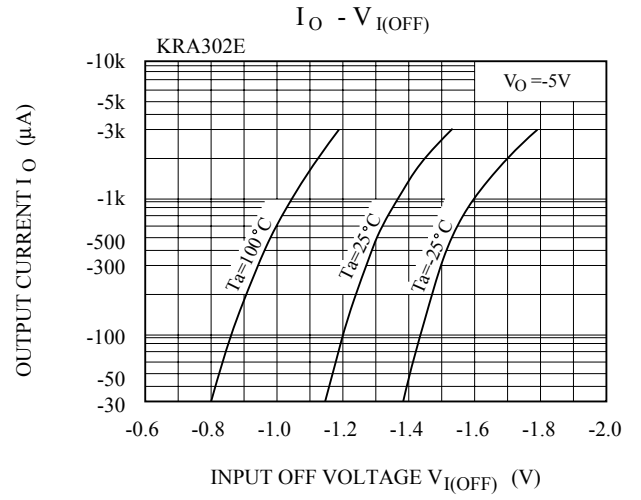
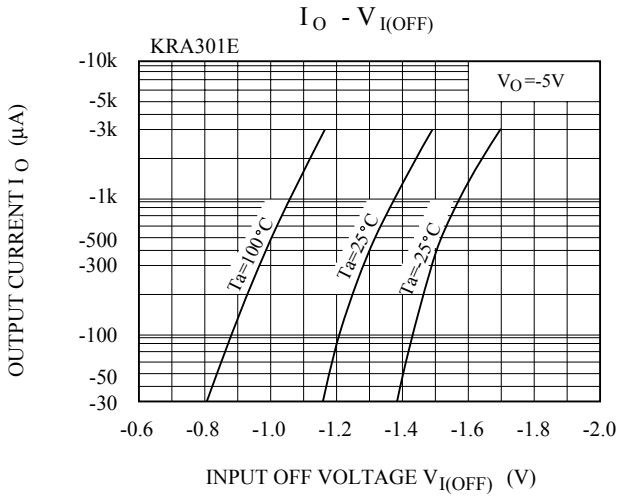
## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC    |              | SYMBOL  | TEST CONDITION   | MIN. | TYP. | MAX. | UNIT |
|-------------------|--------------|---------|--|------|------|------|------|
| Switching<br>Time | Rise Time    | KRA301E | V <sub>O</sub> =-5V<br>V <sub>IN</sub> =-5V<br>R <sub>L</sub> =1kΩ | -    | 0.07 | -    | μS   |
|                   |              | KRA302E |  | -    | 0.06 | -    |      |
|                   |              | KRA303E |  | -    | 0.2  | -    |      |
|                   |              | KRA304E |  | -    | 0.24 | -    |      |
|                   |              | KRA305E |  | -    | 0.02 | -    |      |
|                   |              | KRA306E |  | -    | 0.07 | -    |      |
|                   | Storage Time | KRA301E |  | -    | 1.1  | -    |      |
|                   |              | KRA302E |  | -    | 1.1  | -    |      |
|                   |              | KRA303E |  | -    | 1.1  | -    |      |
|                   |              | KRA304E |  | -    | 1.1  | -    |      |
|                   |              | KRA305E |  | -    | 1.1  | -    |      |
|                   |              | KRA306E |  | -    | 1.1  | -    |      |
|                   | Fall Time    | KRA301E |  | -    | 0.15 | -    |      |
|                   |              | KRA302E |  | -    | 0.24 | -    |      |
|                   |              | KRA303E |  | -    | 0.38 | -    |      |
|                   |              | KRA304E |  | -    | 0.63 | -    |      |
|                   |              | KRA305E |  | -    | 0.1  | -    |      |
|                   |              | KRA306E |  | -    | 0.2  | -    |      |

# KRA301E~KRA306E



# KRA301E~KRA306E



# KRA301E~KRA306E

