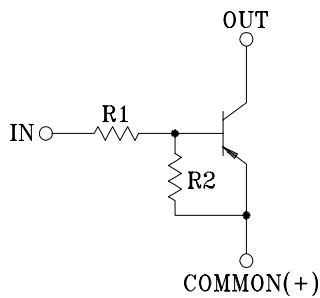


SWITCHING APPLICATION.  
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

### FEATURES

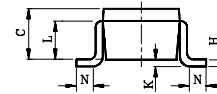
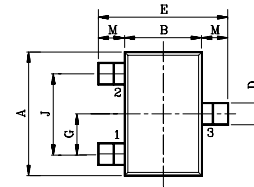
- With Built-in Bias Resistors.
- Simplify Circuit Design.
- Reduce a Quantity of Parts and Manufacturing Process.
- High Packing Density.

### EQUIVALENT CIRCUIT



### BIAS RESISTOR VALUES

| TYPE NO. | R1(k $\Omega$ ) | R2(k $\Omega$ ) |
|----------|-----------------|-----------------|
| KRA301   | 4.7             | 4.7             |
| KRA302   | 10              | 10              |
| KRA303   | 22              | 22              |
| KRA304   | 47              | 47              |
| KRA305   | 2.2             | 47              |
| KRA306   | 4.7             | 47              |



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

| DIM | MILLIMETERS              |
|-----|--------------------------|
| A   | 2.00 $\pm$ 0.20          |
| B   | 1.25 $\pm$ 0.15<br>-0.15 |
| C   | 0.90 $\pm$ 0.10          |
| D   | 0.35 $\pm$ 0.10<br>-0.05 |
| E   | 2.10 $\pm$ 0.20          |
| G   | 0.65                     |
| H   | 0.15 $\pm$ 0.10<br>-0.06 |
| J   | 1.30                     |
| K   | 0.00-0.10                |
| L   | 0.70                     |
| M   | 0.42 $\pm$ 0.10          |
| N   | 0.10 MIN                 |

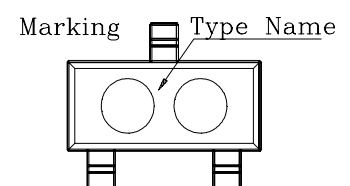
USM

### MAXIMUM RATINGS (Ta=25℃)

| CHARACTERISTIC            |                | SYMBOL           | RATING  | UNIT |
|---------------------------|----------------|------------------|---------|------|
| Output Voltage            | KRA301<br>~306 | V <sub>O</sub>   | -50     | V    |
| Input Voltage             | KRA301         | V <sub>I</sub>   | -20, 10 | V    |
|                           | KRA302         |                  | -30, 10 |      |
|                           | KRA303         |                  | -40, 10 |      |
|                           | KRA304         |                  | -40, 10 |      |
|                           | KRA305         |                  | -12, 5  |      |
|                           | KRA306         |                  | -20, 5  |      |
| Output Current            | KRA301<br>~306 | I <sub>O</sub>   | -100    | mA   |
| Power Dissipation         |                | P <sub>D</sub>   | 100     | mW   |
| Junction Temperature      |                | T <sub>j</sub>   | 150     | ℃    |
| Storage Temperature Range |                | T <sub>stg</sub> | -55~150 | ℃    |

### MARK SPEC

| TYPE | KRA301 | KRA302 | KRA303 | KRA304 | KRA305 | KRA306 |
|------|--------|--------|--------|--------|--------|--------|
| MARK | PA     | PB     | PC     | PD     | PE     | PF     |



# KRA301 ~ KRA306

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC         |              | SYMBOL       | TEST CONDITION              | MIN. | TYP.  | MAX.  | UNIT |
|------------------------|--------------|--------------|-----------------------------|------|-------|-------|------|
| Output Cut-off Current | KRA301 ~ 306 | $I_{O(OFF)}$ | $V_O = -50V, V_I = 0$       | -    | -     | -500  | nA   |
| DC Current Gain        | KRA301       | $G_I$        | $V_O = -5V, I_O = -10mA$    | 30   | 55    | -     |      |
|                        | KRA302       |              |                             | 50   | 80    | -     |      |
|                        | KRA303       |              |                             | 70   | 120   | -     |      |
|                        | KRA304       |              |                             | 80   | 200   | -     |      |
|                        | KRA305       |              |                             | 80   | 200   | -     |      |
|                        | KRA306       |              |                             | 80   | 200   | -     |      |
| Output Voltage         | KRA301 ~ 306 | $V_{O(ON)}$  | $I_O = -10mA, I_I = -0.5mA$ | -    | -0.1  | -0.3  | V    |
| Input Voltage (ON)     | KRA301       | $V_{I(ON)}$  | $V_O = -0.2V, I_O = -5mA$   | -    | -1.5  | -2.0  | V    |
|                        | KRA302       |              |                             | -    | -1.8  | -2.4  |      |
|                        | KRA303       |              |                             | -    | -2.1  | -3.0  |      |
|                        | KRA304       |              |                             | -    | -2.8  | -5.0  |      |
|                        | KRA305       |              |                             | -    | -0.8  | -1.1  |      |
|                        | KRA306       |              |                             | -    | -0.9  | -1.3  |      |
| Input Voltage (OFF)    | KRA301 ~ 304 | $V_{I(OFF)}$ | $V_O = -5V, I_O = -0.1mA$   | -1.0 | -1.2  | -     | V    |
|                        | KRA305 ~ 306 |              |                             | -0.5 | -0.65 | -     |      |
| Transition Frequency   | KRA301 ~ 306 | $f_T *$      | $V_O = -10V, I_O = -5mA$    | -    | 200   | -     | MHz  |
| Input Current          | KRA301       | $I_I$        | $V_I = -5V$                 | -    | -     | -1.8  | mA   |
|                        | KRA302       |              |                             | -    | -     | -0.88 |      |
|                        | KRA303       |              |                             | -    | -     | -0.36 |      |
|                        | KRA304       |              |                             | -    | -     | -0.18 |      |
|                        | KRA305       |              |                             | -    | -     | -3.6  |      |
|                        | KRA306       |              |                             | -    | -     | -1.8  |      |

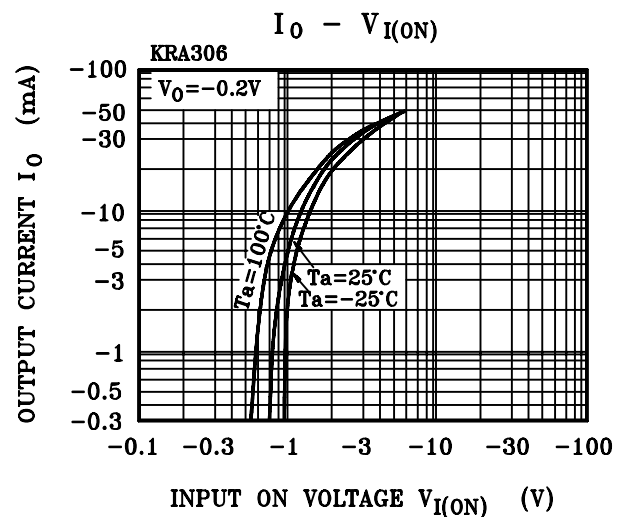
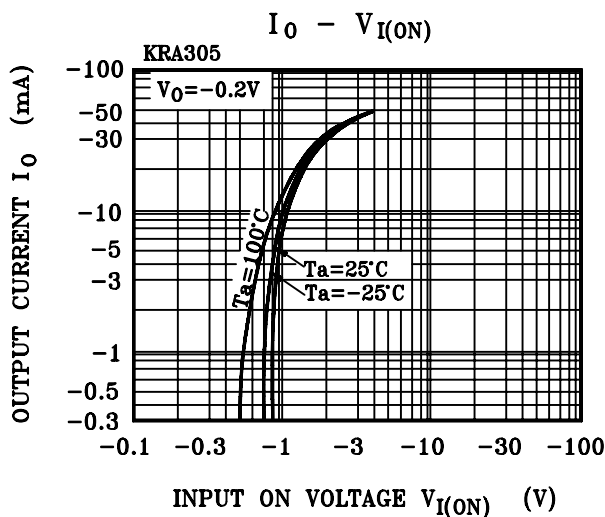
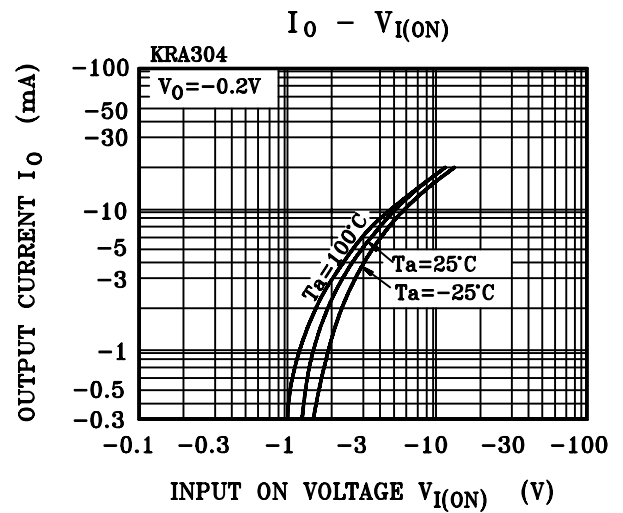
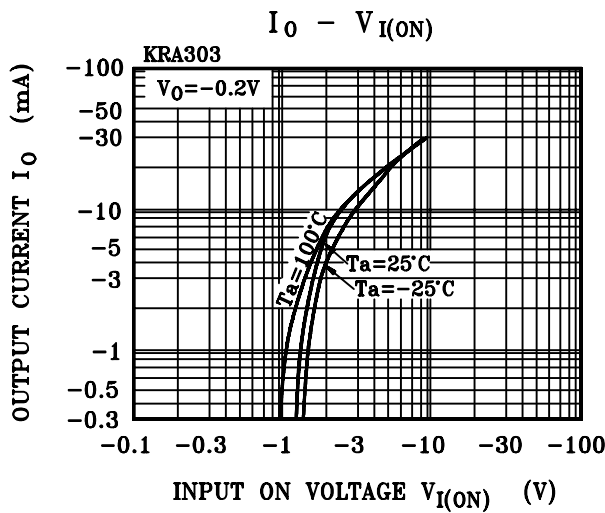
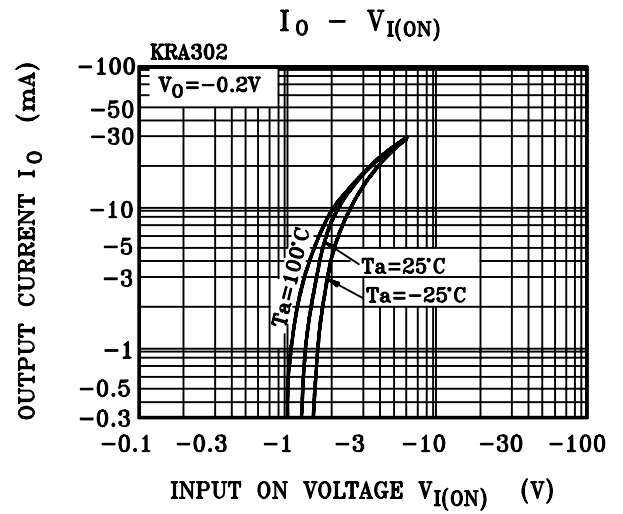
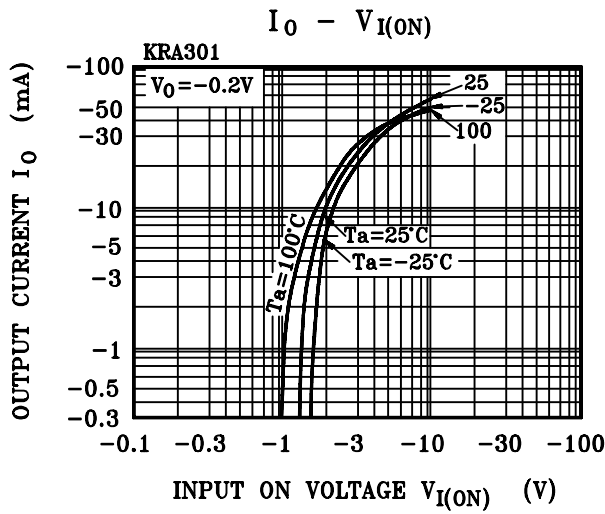
Note : \*Characteristic of Transistor Only

# KRA301 ~ KRA306

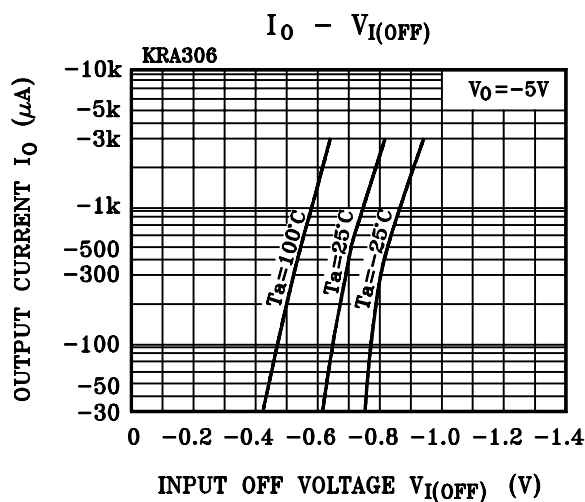
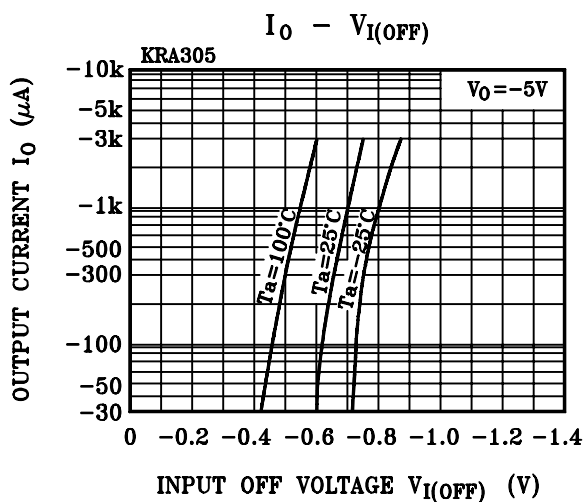
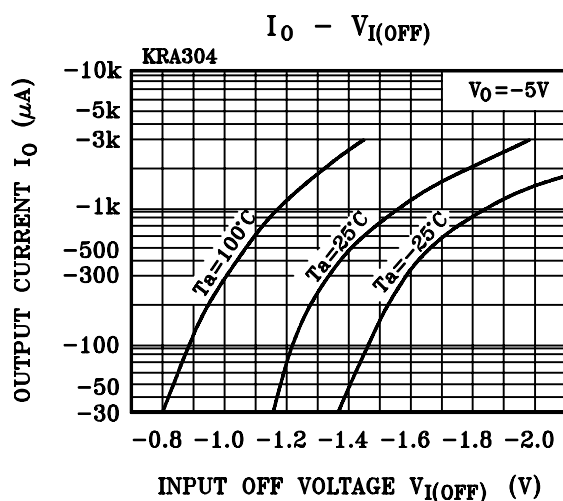
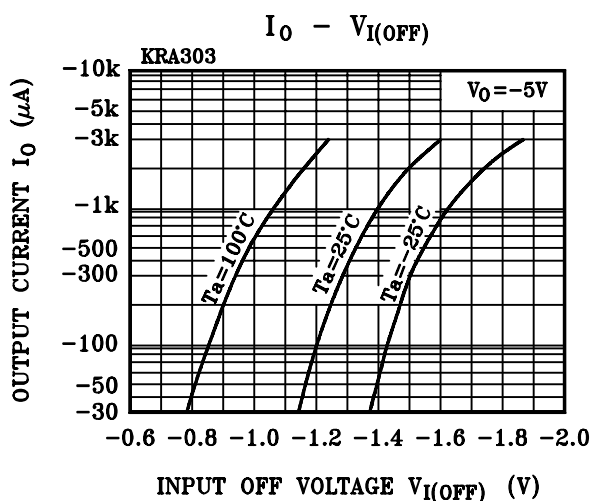
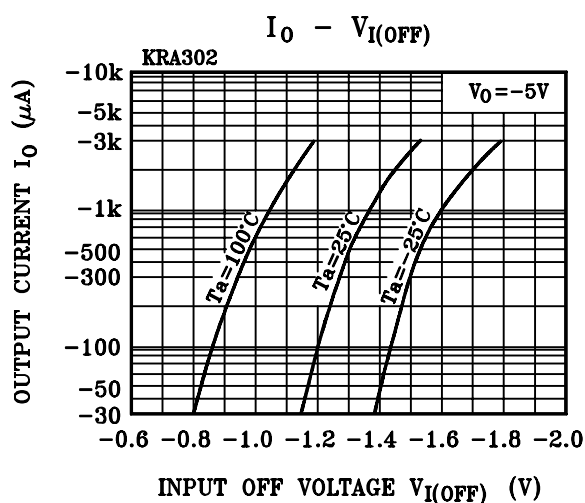
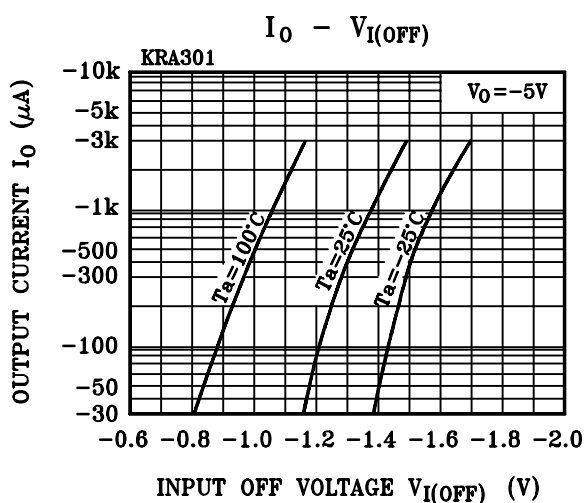
## ELECTRICAL CHARACTERISTICS (Ta=25°C)

| CHARACTERISTIC |              |        | SYMBOL           | TEST CONDITION                                                     | MIN. | TYP. | MAX. | UNIT |
|----------------|--------------|--------|------------------|--------------------------------------------------------------------|------|------|------|------|
| Switching Time | Rise Time    | KRA301 | t <sub>r</sub>   | V <sub>O</sub> =-5V<br>V <sub>IN</sub> =-5V<br>R <sub>L</sub> =1kΩ | -    | 0.07 | -    | μS   |
|                |              | KRA302 |                  |                                                                    | -    | 0.06 | -    |      |
|                |              | KRA303 |                  |                                                                    | -    | 0.2  | -    |      |
|                |              | KRA304 |                  |                                                                    | -    | 0.24 | -    |      |
|                |              | KRA305 |                  |                                                                    | -    | 0.02 | -    |      |
|                |              | KRA306 |                  |                                                                    | -    | 0.07 | -    |      |
|                | Storage Time | KRA301 | t <sub>stg</sub> |                                                                    | -    | 1.1  | -    |      |
|                |              | KRA302 |                  |                                                                    | -    | 1.1  | -    |      |
|                |              | KRA303 |                  |                                                                    | -    | 1.1  | -    |      |
|                |              | KRA304 |                  |                                                                    | -    | 1.1  | -    |      |
|                |              | KRA305 |                  |                                                                    | -    | 1.1  | -    |      |
|                |              | KRA306 |                  |                                                                    | -    | 1.1  | -    |      |
|                | Fall Time    | KRA301 | t <sub>f</sub>   |                                                                    | -    | 0.15 | -    |      |
|                |              | KRA302 |                  |                                                                    | -    | 0.24 | -    |      |
|                |              | KRA303 |                  |                                                                    | -    | 0.38 | -    |      |
|                |              | KRA304 |                  |                                                                    | -    | 0.63 | -    |      |
|                |              | KRA305 |                  |                                                                    | -    | 0.1  | -    |      |
|                |              | KRA306 |                  |                                                                    | -    | 0.2  | -    |      |

# KRA301 ~ KRA306



# KRA301 ~ KRA306



# KRA301 ~ KRA306

