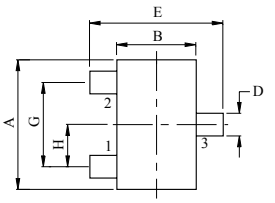
# KRA307E~KRA309E

## EPITAXIAL PLANAR PNP TRANSISTOR

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.

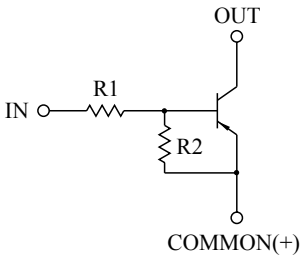



| DIM | MILLIMETERS |
|---|---|
| A | 1.60±0.10 |
| B | 0.85±0.10 |
| C | 0.70±0.10 |
| D | 0.27+0.10/-0.05 |
| E | 1.60±0.10 |
| G | 1.00±0.10 |
| H | 0.50 |
| J | 0.13±0.05 |

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

ESM

EQUIVALENT CIRCUIT




BIAS RESISTOR VALUES

| TYPE NO. | R1(kΩ) | R2(kΩ) |
|---|---|---|
| KRA307E | 10 | 47 |
| KRA308E | 22 | 47 |
| KRA309E | 47 | 22 |

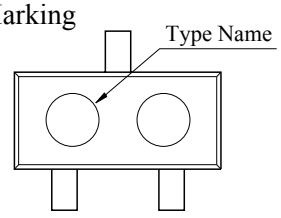
MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Output Voltage | KRA307E~309E | $V_O$ | -50 | V |
| Input Voltage | KRA307E | $V_I$ | -30, 6 | V |
| | KRA308E | | -40, 7 | |
| | KRA309E | | -40, 15 | |
| Output Current | KRA307E~309E | $I_O$ | -100 | mA |
| Power Dissipation | | $P_D$ | 100 | mW |
| Junction Temperature | | $T_j$ | 150 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -55~150 | ℃ |

MARK SPEC

| TYPE | KRA307E | KRA308E | KRA309E |
|---|---|---|---|
| MARK | PH | PI | PJ |

Marking

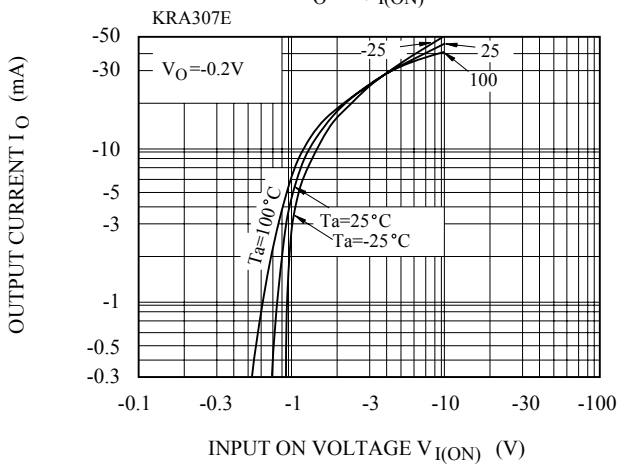


ELECTRICAL CHARACTERISTICS (Ta=25℃)

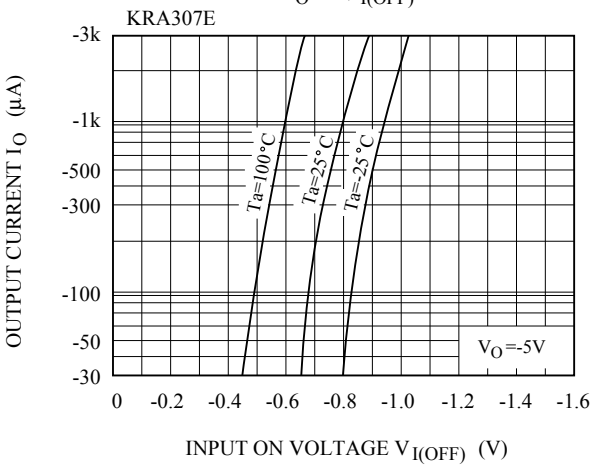
| CHARACTERISTIC | | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|---|
| Output Cut-off Current | | KRA307E~309E | $I_{O(OFF)}$ | $V_O$=-50V, $V_I$=0 | - | - | -500 | nA |
| DC Current Gain | | KRA307E | $G_I$ | $V_O$=-5V, $I_O$=-10mA | 80 | 150 | - | |
| | | KRA308E | | | 80 | 150 | - | |
| | | KRA309E | | | 70 | 140 | - | |
| Output Voltage | | KRA307E~309E | $V_{O(ON)}$ | $I_O$=-10mA, $I_I$=-0.5mA | - | -0.1 | -0.3 | V |
| Input Voltage (ON) | | KRA307E | $V_{I(ON)}$ | $V_O$=-0.2V, $I_O$=-5mA | - | -1.2 | -1.8 | V |
| | | KRA308E | | | - | -1.8 | -2.6 | |
| | | KRA309E | | | - | -3.0 | -5.8 | |
| Input Votlage (OFF) | | KRA307E | $V_{I(OFF)}$ | $V_O$=-5V, $I_O$=-0.1mA | -0.5 | -0.75 | - | V |
| | | KRA308E | | | -0.6 | -0.88 | - | |
| | | KRA309E | | | -1.5 | -1.82 | - | |
| Transition Frequency | | KRA307E~309E | $f_T$ * | $V_O$=-10V, $I_O$=-5mA | - | 200 | - | MHz |
| Input Current | | KRA307E | $I_I$ | $V_I$=-5V | - | - | -0.88 | mA |
| | | KRA308E | | | - | - | -0.36 | |
| | | KRA309E | | | - | - | -0.16 | |
| Switching Time | Rise Time | KRA307E | $t_r$ | $V_O$=-5V, $V_{IN}$=-5V<br>$R_L$=1kΩ | - | 0.07 | - | μS |
| | | KRA308E | | | - | 0.20 | - | |
| | | KRA309E | | | - | 0.38 | - | |
| | Storage Time | KRA307E | $t_{stg}$ | | - | 1.1 | - | |
| | | KRA308E | | | - | 1.3 | - | |
| | | KRA309E | | | - | 0.7 | - | |
| | Fall Time | KRA307E | $t_f$ | | - | 0.35 | - | |
| | | KRA308E | | | - | 0.4 | - | |
| | | KRA309E | | | - | 0.48 | - | |

Note : * Characteristic of Transistor Only.

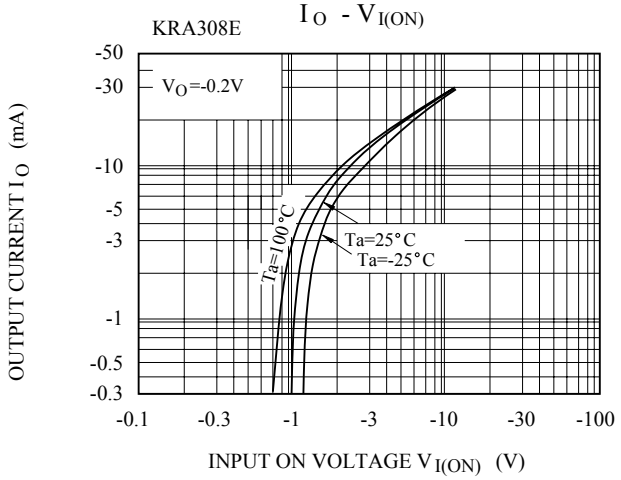
$I_O$ - $V_{I(ON)}$



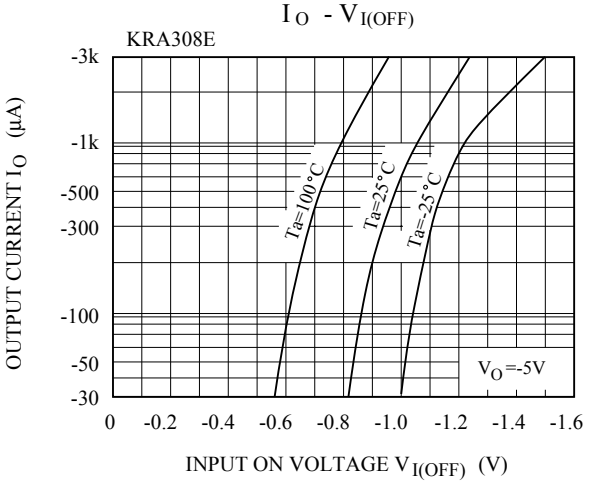

$I_O$ - $V_{I(OFF)}$



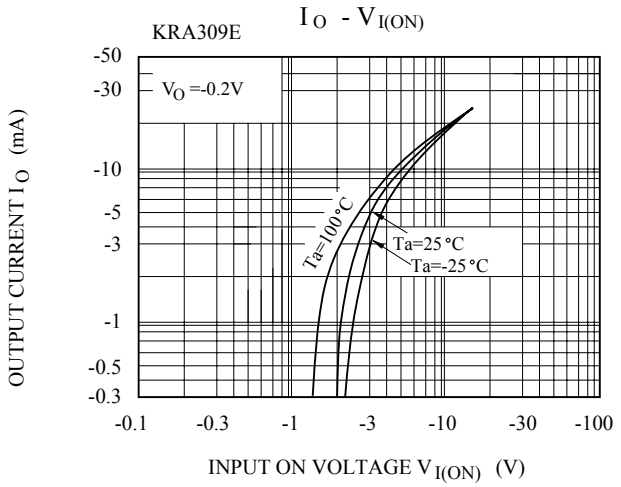

$I_O$ - $V_{I(ON)}$



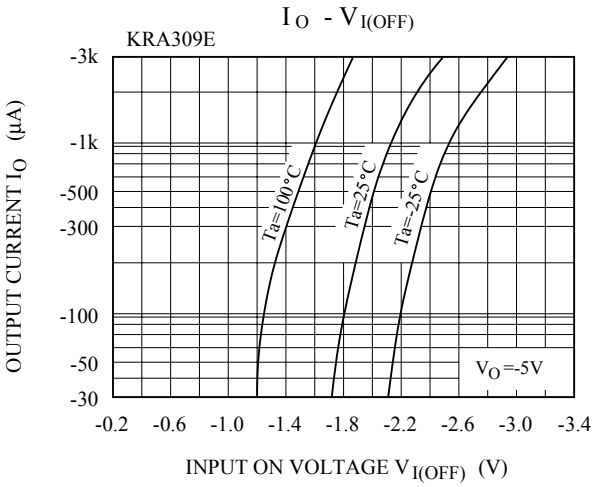

$I_O$ - $V_{I(OFF)}$




$I_O$ - $V_{I(ON)}$

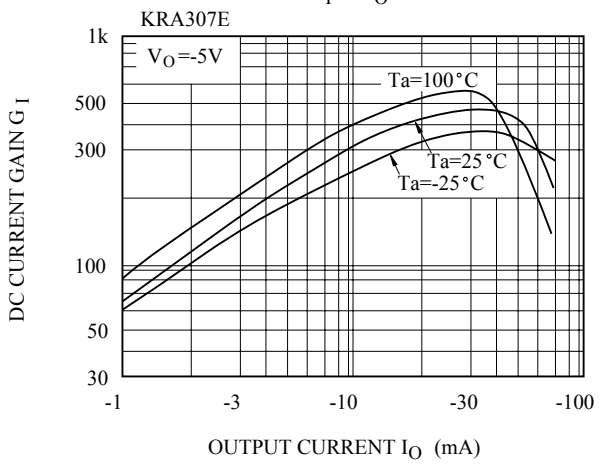



$I_O$ - $V_{I(OFF)}$



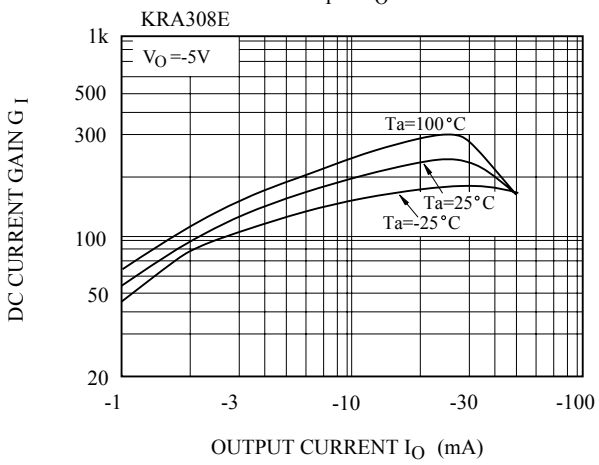
$G_I$ - $I_O$

KRA307E




$G_I$ - $I_O$

KRA308E




$G_I$ - $I_O$

KRA309E