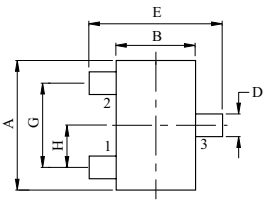
# KRC416E~KRC422E

**EPITAXIAL PLANAR NPN 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.

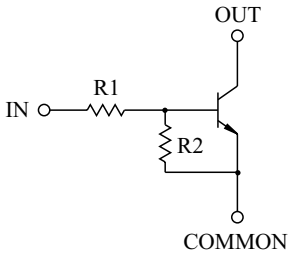



| DIM | MILLIMETERS |
|---|---|
| A | 1.60±0.10 |
| B | 0.85±0.10 |
| C | 0.70±0.10 |
| D | 0.27+0.10/-0.05 |
| E | 1.60±0.10 |
| G | 1.00±0.10 |
| H | 0.50 |
| J | 0.13±0.05 |

1. EMITTER
2. BASE
3. COLLECTOR

ESM

EQUIVALENT CIRCUIT




| TYPE NO. | R1(kΩ) | R2(kΩ) |
|---|---|---|
| KRC416E | 1 | 10 |
| KRC417E | 2.2 | 2.2 |
| KRC418E | 2.2 | 10 |
| KRC419E | 4.7 | 10 |
| KRC420E | 10 | 4.7 |
| KRC421E | 47 | 10 |
| KRC422E | 100 | 100 |

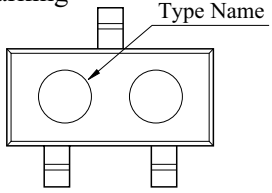
MAXIMUM RATING (Ta=25℃)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|---|---|---|---|---|
| Output Voltage | KRC416E~422E | $V_O$ | 50 | V |
| Input Voltage | KRC416E | $V_I$ | 10, -5 | V |
| | KRC417E | | 12, -10 | |
| | KRC418E | | 12,-5 | |
| | KRC419E | | 20, -7 | |
| | KRC420E | | 30, -10 | |
| | KRC421E | | 40, -15 | |
| | KRC422E | | 40, -10 | |
| Output Current | KRC416E~422E | $I_O$ | 100 | mA |
| Power Dissipation | | $P_D$ | 100 | mW |
| Junction Temperature | | $T_j$ | 150 | ℃ |
| Storage Temperature Range | | $T_{stg}$ | -55 ~ 150 | ℃ |

MARK SPEC

| TYPE | KRC416E | KRC417E | KRC418E | KRC419E | KRC420E | KRC421E | KRC422E |
|---|---|---|---|---|---|---|---|
| MARK | N2 | N4 | N5 | N6 | N7 | N8 | N9 |

Marking

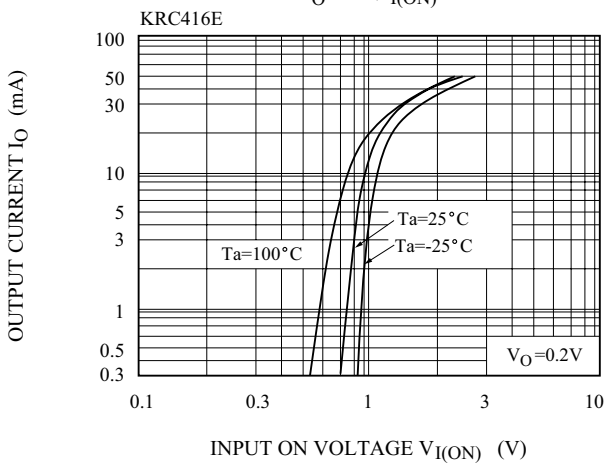


ELECTRICAL CHARACTERISTICS (Ta=25℃)

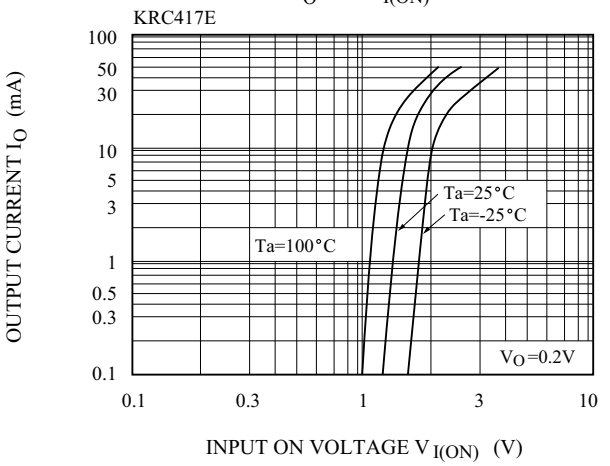
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Output Cut-off Current | KRC416E~422E | $I_{O(OFF)}$ | $V_O$=50V, $V_I$=0 | - | - | 500 | nA |
| DC Current Gain | KRC416E | $G_I$ | $V_O$=5V, $I_O$=5mA | 33 | - | - | |
| | KRC417E | | $V_O$=5V, $I_O$=20mA | 20 | - | - | |
| | KRC418E | | $V_O$=5V, $I_O$=10mA | 33 | - | - | |
| | KRC419E | | $V_O$=5V, $I_O$=10mA | 30 | - | - | |
| | KRC420E | | $V_O$=5V, $I_O$=10mA | 24 | - | - | |
| | KRC421E | | $V_O$=5V, $I_O$=5mA | 33 | - | - | |
| | KRC422E | | $V_O$=5V, $I_O$=5mA | 62 | - | - | |
| Output Voltage | KRC416E | $V_{O(ON)}$ | $I_O$=10mA, $I_I$=0.5mA | - | - | 0.3 | V |
| | KRC417E | | $I_O$=10mA, $I_I$=0.5mA | - | 0.1 | 0.3 | |
| | KRC418E | | $I_O$=10mA, $I_I$=0.5mA | - | - | 0.3 | |
| | KRC419E | | $I_O$=10mA, $I_I$=0.5mA | - | 0.1 | 0.3 | |
| | KRC420E | | $I_O$=10mA, $I_I$=0.5mA | - | 0.1 | 0.3 | |
| | KRC421E | | $I_O$=10mA, $I_I$=0.5mA | - | 0.1 | 0.3 | |
| | KRC422E | | $I_O$=5mA, $I_I$=0.25mA | - | 0.1 | 0.3 | |
| Input Voltage (ON) | KRC416E | $V_{I(ON)}$ | $V_O$=0.3V, $I_O$=20mA | - | 0.98 | 3 | V |
| | KRC417E | | $V_O$=0.3V, $I_O$=20mA | - | 1.83 | 3 | |
| | KRC418E | | $V_O$=0.3V, $I_O$=20mA | - | 1.22 | 3 | |
| | KRC419E | | $V_O$=0.3V, $I_O$=20mA | - | 1.76 | 2.5 | |
| | KRC420E | | $V_O$=0.3V, $I_O$=2mA | - | 2 | 3 | |
| | KRC421E | | $V_O$=0.3V, $I_O$=2mA | - | 3.9 | 5 | |
| | KRC422E | | $V_O$=0.3V, $I_O$=1mA | - | 1.64 | 3 | |
| Input Voltage (OFF) | KRC416E | $V_{I(OFF)}$ | $V_{CC}$=5V, $I_O$=100$\mu$A | 0.3 | 0.63 | - | V |
| | KRC417E | | | 0.5 | 1.15 | - | |
| | KRC418E | | | 0.3 | 0.67 | - | |
| | KRC419E | | | 0.3 | 0.82 | - | |
| | KRC420E | | | 0.8 | 1.68 | - | |
| | KRC421E | | | 1 | 3.09 | - | |
| | KRC422E | | | 0.5 | 1.17 | - | |
| Transition Frequency | KRC416E~422E | $f_T$* | $V_O$=10V, $I_O$=5mA | - | 250 | - | MHz |
| Input Current | KRC416E | $I_I$ | $V_I$=5V | - | - | 7.2 | mA |
| | KRC417E | | | - | - | 3.8 | |
| | KRC418E | | | - | - | 3.8 | |
| | KRC419E | | | - | - | 1.8 | |
| | KRC420E | | | - | - | 0.88 | |
| | KRC421E | | | - | - | 0.16 | |
| | KRC422E | | | - | - | 0.15 | |

Note : * Characteristic of Transistor Only.

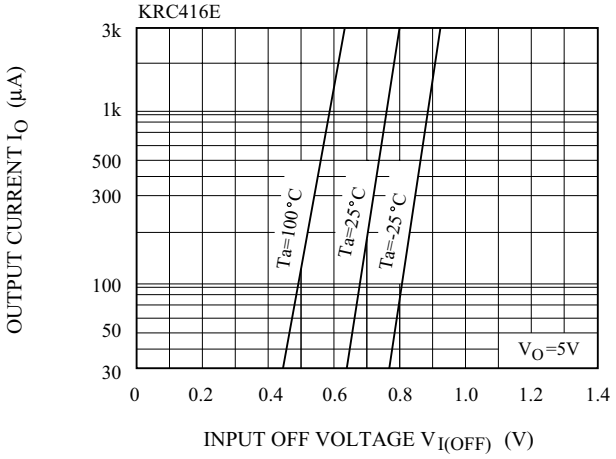
$I_O$ - $V_{I(ON)}$



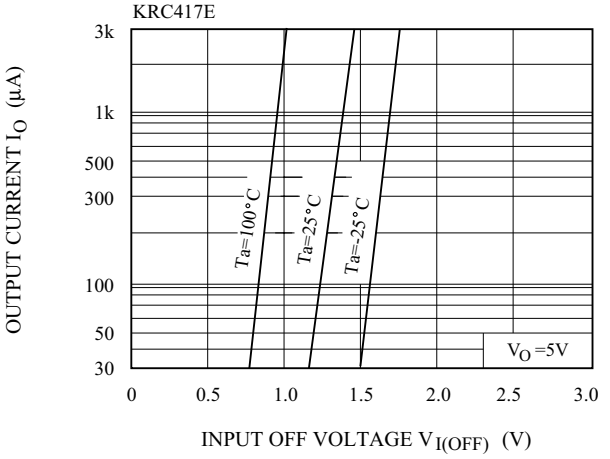

$I_O$ - $V_{I(ON)}$



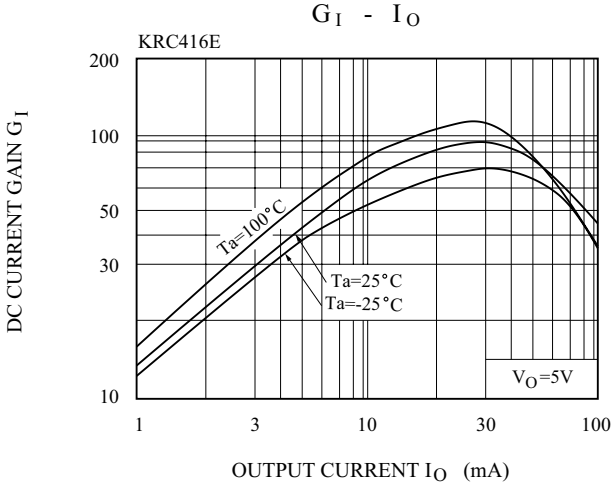

$I_O$ - $V_{I(OFF)}$




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




$G_I$ - $I_O$

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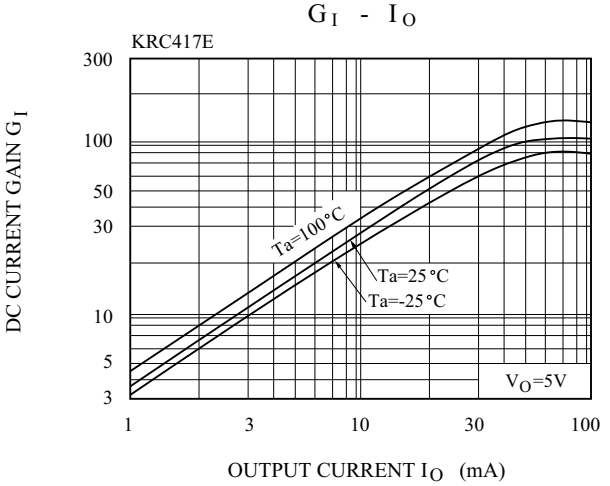
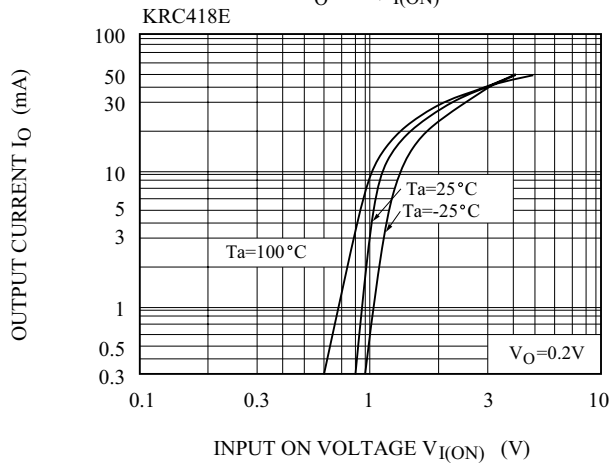
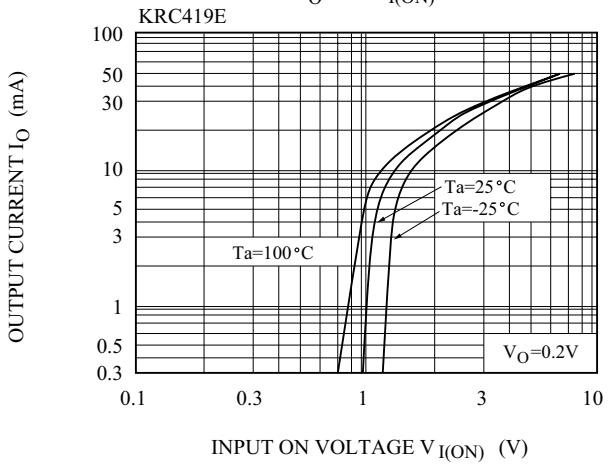


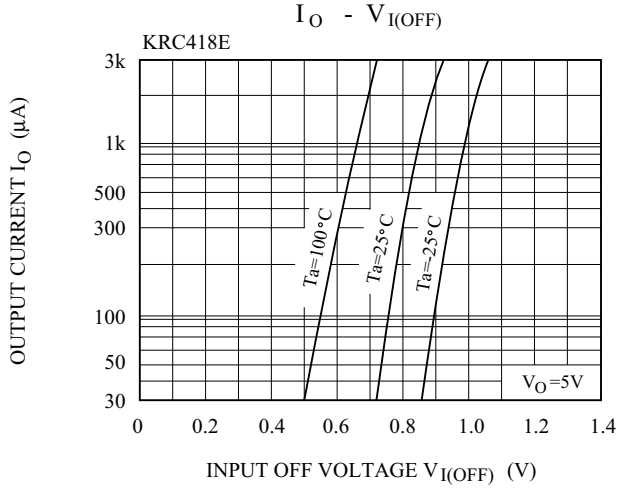
$I_O$ - $V_{I(ON)}$




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




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

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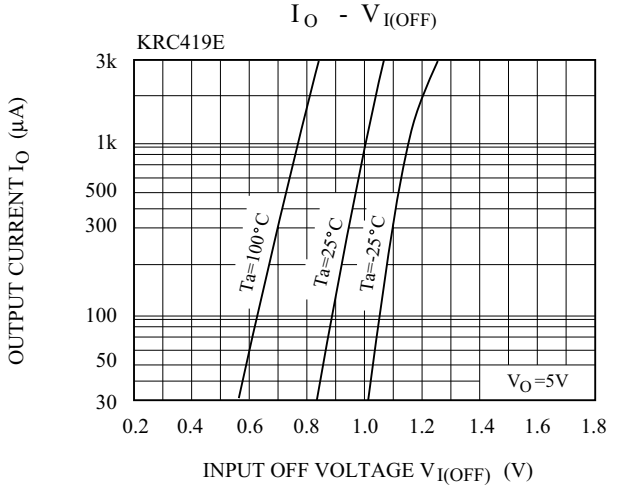


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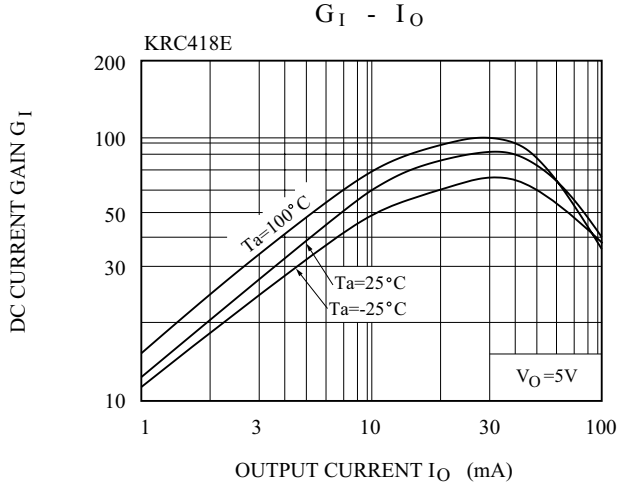


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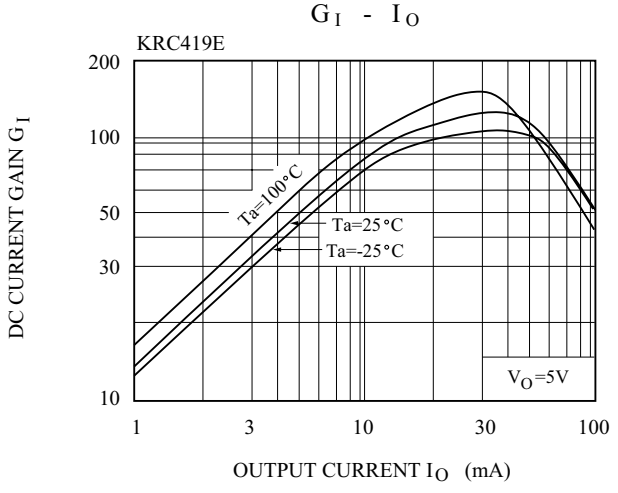

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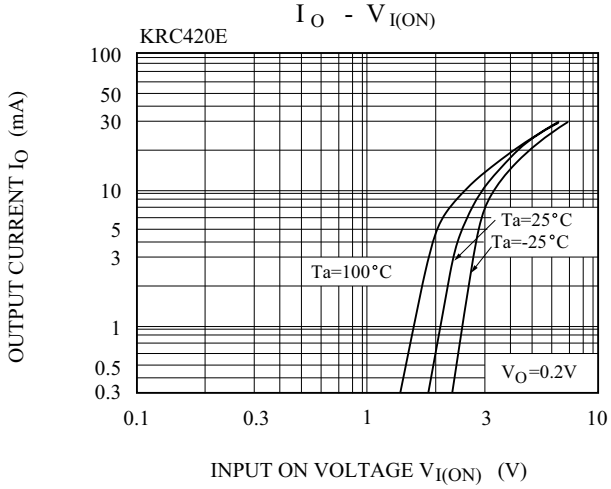


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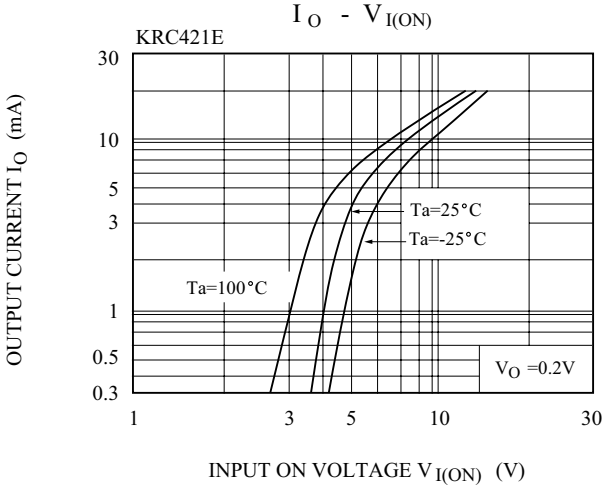


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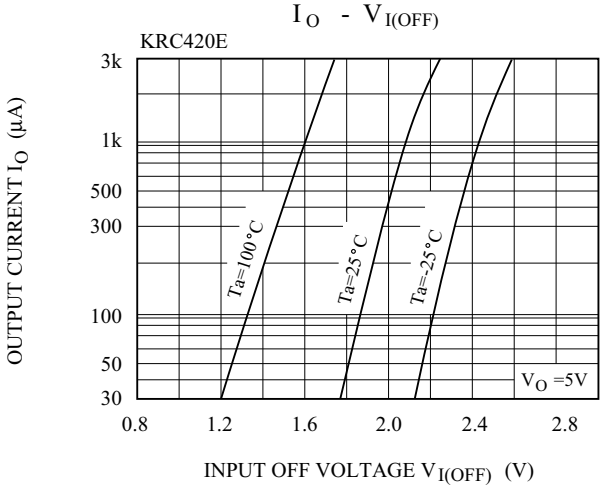


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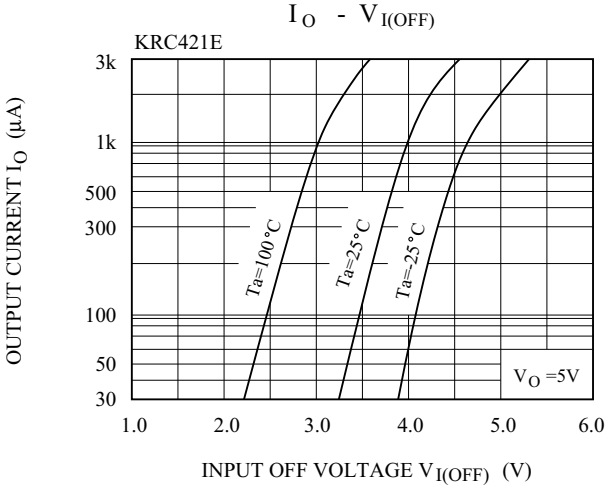


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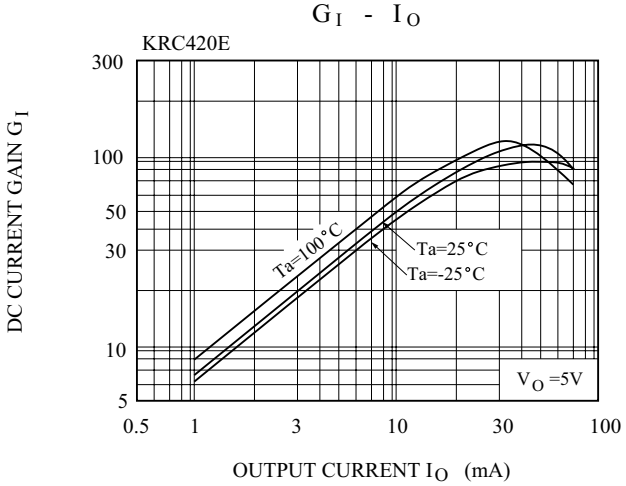
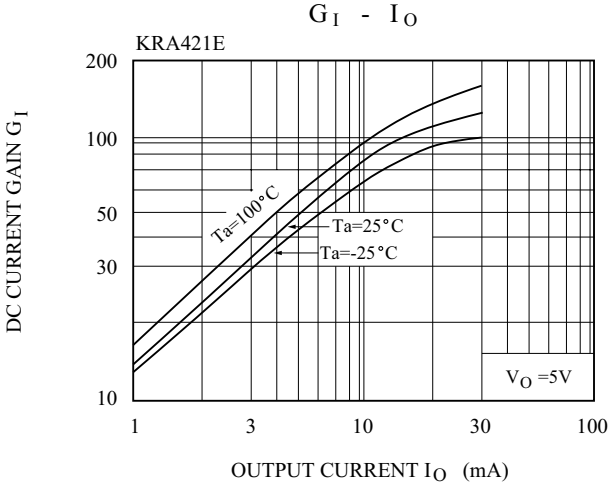
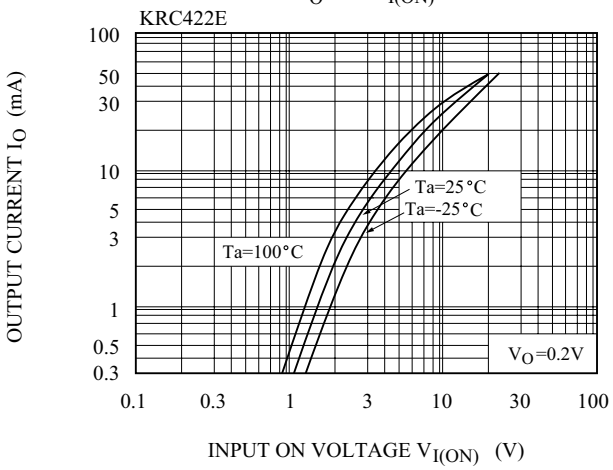



$G_I$ - $I_O$



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

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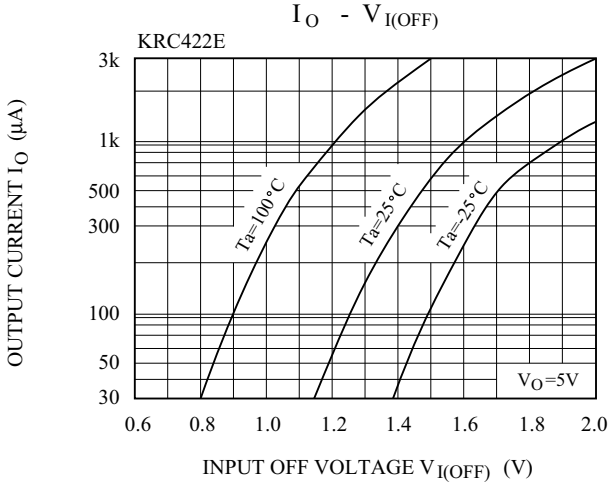


$G_I$ - $I_O$