KRA101M~ KRA106M

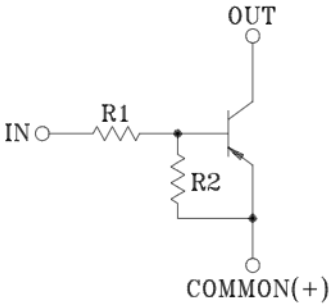
EPITAXIAL PLANAR PNP TRANSISTOR

SWITCHING APPLICATION.
INTERFACE CIRCUIT AND DRIVER CIRCUIT APPLICATION.

FEATURES

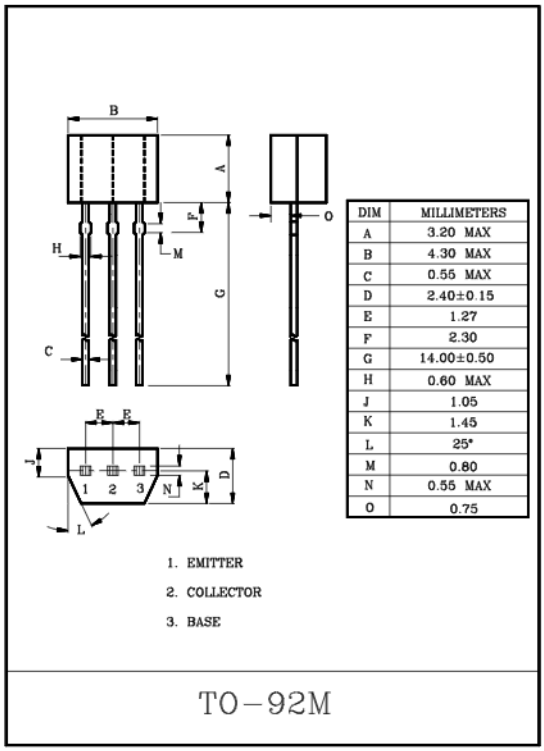
- With Built-in Bias Resistors.
- Simplify Circuit Design.
- Reduce a Quantity of Parts and Manufacturing Process.

EQUIVALENT CIRCUIT



BIAS RESISTOR VALUES

TYPE NO.	R1(kΩ)	R2(kΩ)
KRA101M	4.7	4.7
KRA102M	10	10
KRA103M	22	22
KRA104M	47	47
KRA105M	2.2	47
KRA106M	4.7	47



DIM	MILLIMETERS
A	3.20 MAX
B	4.30 MAX
C	0.55 MAX
D	2.40±0.15
E	1.27
F	2.30
G	14.00±0.50
H	0.60 MAX
J	1.05
K	1.45
L	25°
M	0.80
N	0.55 MAX
O	0.75

TO-92M

MAXIMUM RATINGS (Ta=25℃)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Output Voltage	KRA101M ~106M	V_O	-50	V
Input Voltage	KRA101M	V_I	-20, 10	V
	KRA102M		-30, 10	
	KRA103M		-40, 10	
	KRA104M		-40, 10	
	KRA105M		-12, 5	
	KRA106M		-20, 5	
Output Current	KRA101M ~106M	I_O	-100	mA
Power Dissipation		P_D	400	mW
Junction Temperature		T_j	150	℃
Storage Temperature Range		T_{stg}	-55~150	℃

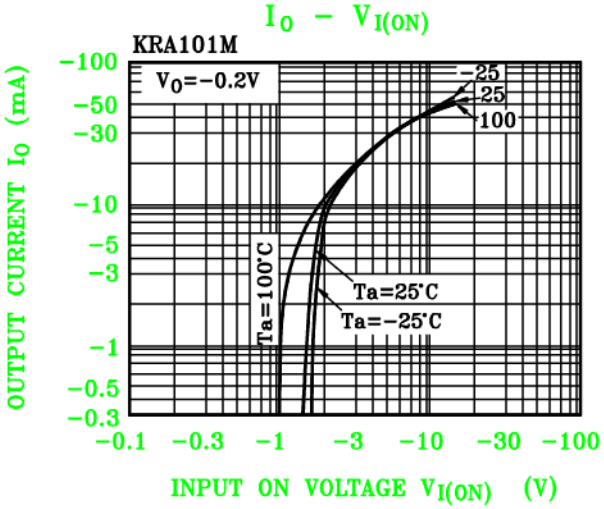
ELECTRICAL CHARACTERISTICS (Ta=25℃)

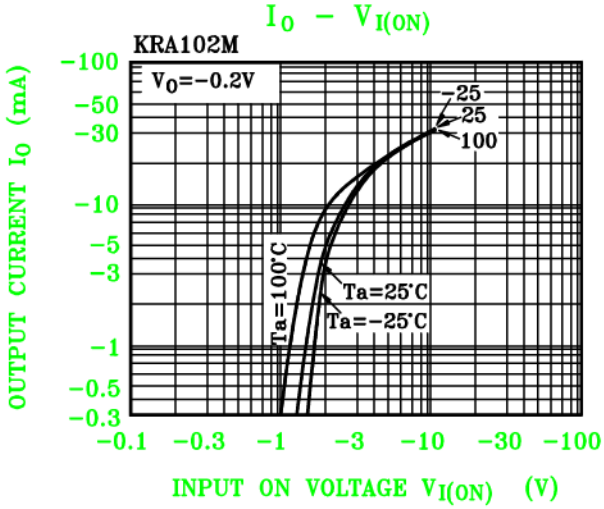
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Cut-off Current	KRA101M~106M	$I_{O(OFF)}$	V_O=-50V, V_I=0	-	-	-500	nA
DC Current Gain	KRA101M	G_I	V_O=-5V, I_O=-10mA	30	55	-	
	KRA102M			50	80	-	
	KRA103M			70	120	-	
	KRA104M			80	200	-	
	KRA105M			80	200	-	
	KRA106M			80	200	-	
Output Voltage	KRA101M~106M	$V_{O(ON)}$	I_O=-10mA, I_I=-0.5mA	-	-0.1	-0.3	V
Input Voltage (ON)	KRA101M	$V_{I(ON)}$	V_O=-0.2V, I_O=-5mA	-	-1.5	-2.0	V
	KRA102M			-	-1.8	-2.4	
	KRA103M			-	-2.1	-3.0	
	KRA104M			-	-2.8	-5.0	
	KRA105M			-	-0.8	-1.1	
	KRA106M			-	-0.9	-1.3	
Input Votlage (OFF)	KRA101M~104M	$V_{I(OFF)}$	V_O=-5V, I_O=-0.1mA	-1.0	-1.2	-	V
	KRA105M~106M			-0.5	-0.65	-	
Transition Frequency	KRA101M~106M	f_T *	V_O=-10V, I_O=-5mA	-	200	-	MHz
Input Current	KRA101M	I_I	V_I=-5V	-	-	-1.8	mA
	KRA102M			-	-	-0.88	
	KRA103M			-	-	-0.36	
	KRA104M			-	-	-0.18	
	KRA105M			-	-	-3.6	
	KRA106M			-	-	-1.8	

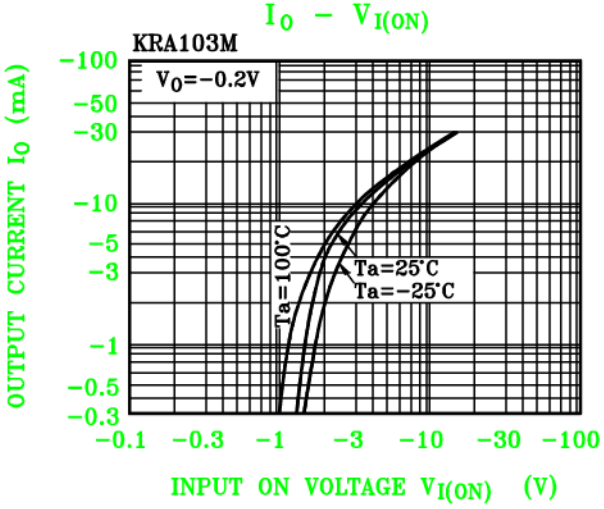
Note : *Characteristic of Transistor Only

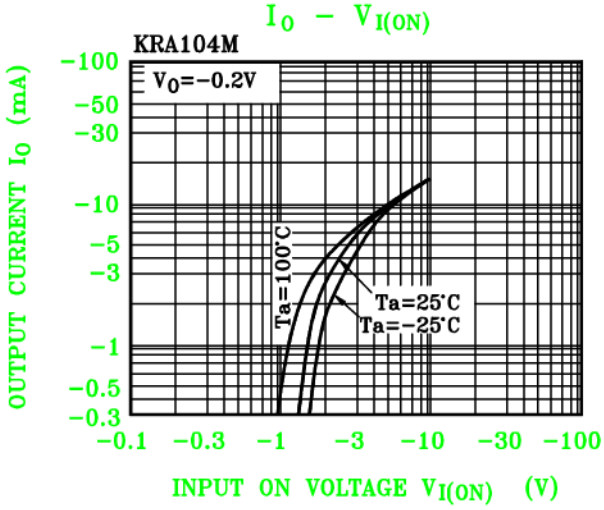
ELECTRICAL CHARACTERISTICS (Ta=25℃)

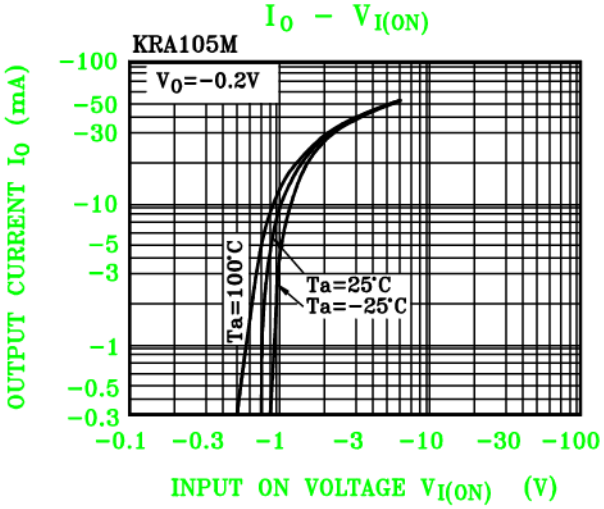
CHARACTERISTIC			SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Switching Time	Rise Time	KRA101M	t_r	V_O=-5V V_{IN}=-5V R_L=1kΩ	-	0.07	-	μS
		KRA102M			-	0.06	-	
		KRA103M			-	0.2	-	
		KRA104M			-	0.24	-	
		KRA105M			-	0.02	-	
		KRA106M			-	0.07	-	
	Storage Time	KRA101M	t_{stg}		-	1.1	-	
		KRA102M			-	1.1	-	
		KRA103M			-	1.1	-	
		KRA104M			-	1.1	-	
		KRA105M			-	1.1	-	
		KRA106M			-	1.1	-	
	Fall Time	KRA101M	t_f		-	0.15	-	
		KRA102M			-	0.24	-	
		KRA103M			-	0.38	-	
		KRA104M			-	0.63	-	
		KRA105M			-	0.1	-	
		KRA106M			-	0.2	-	

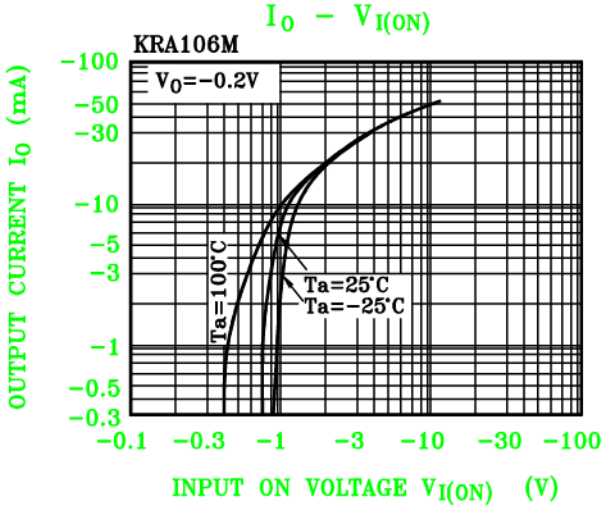

$I_O - V_{I(ON)}$
KRA101M
V_O=−0.2V
−25
25
100
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


$I_O - V_{I(ON)}$
KRA102M
V_O=−0.2V
25
25
100
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


$I_O - V_{I(ON)}$
KRA103M
V_O=−0.2V
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)

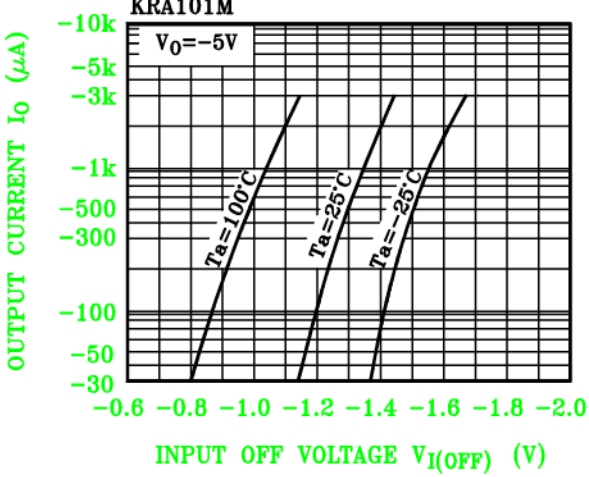

$I_O - V_{I(ON)}$
KRA104M
V_O=−0.2V
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


$I_O - V_{I(ON)}$
KRA105M
V_O=−0.2V
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


$I_O - V_{I(ON)}$
KRA106M
V_O=−0.2V
Ta=100°C
Ta=25°C
Ta=−25°C
OUTPUT CURRENT I_O (mA)
−100
−50
−30
−10
−5
−3
−1
−0.5
−0.3
−0.1 −0.3 −1 −3 −10 −30 −100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)

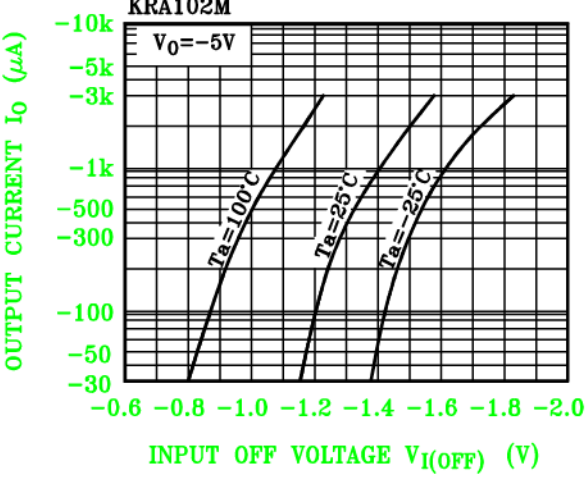
I_O – $V_{I(OFF)}$

KRA101M



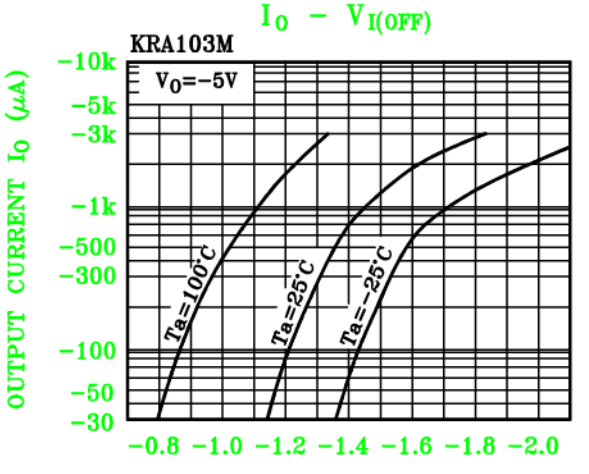
I_O – $V_{I(OFF)}$

KRA102M



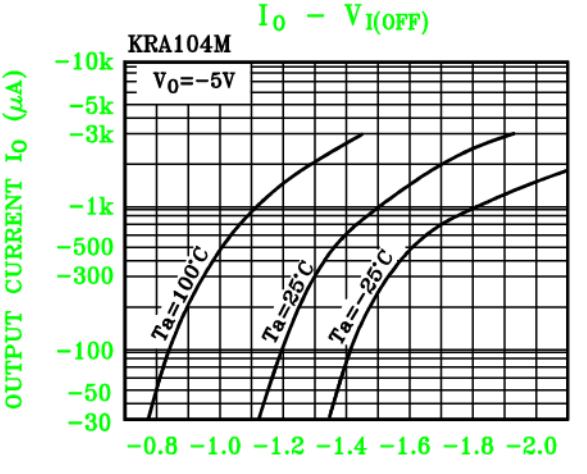
I_O – $V_{I(OFF)}$

KRA103M



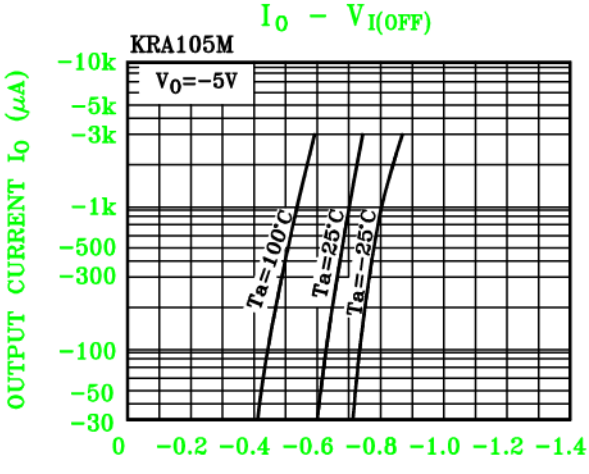
I_O – $V_{I(OFF)}$

KRA104M



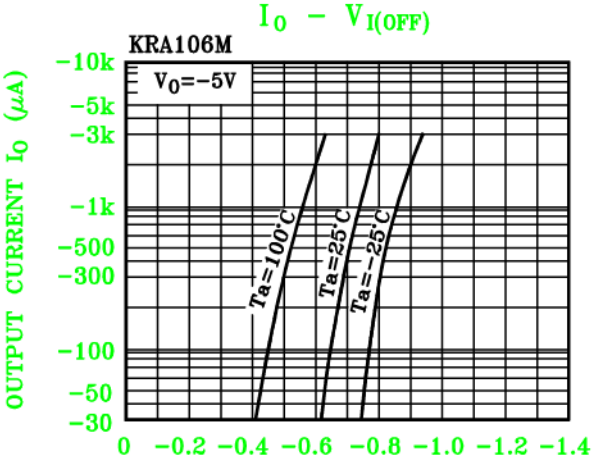
I_O – $V_{I(OFF)}$

KRA105M



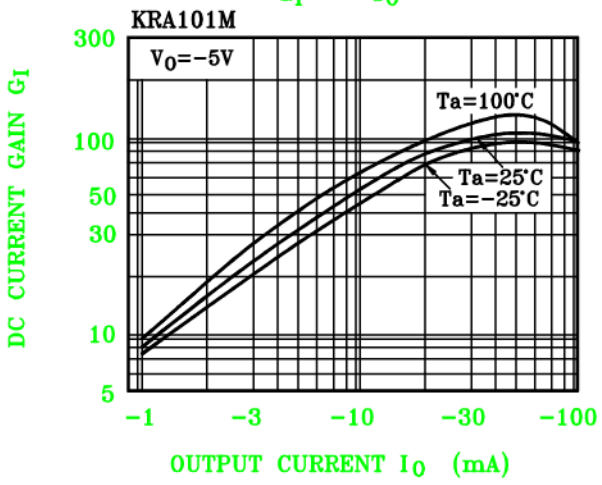
I_O – $V_{I(OFF)}$

KRA106M



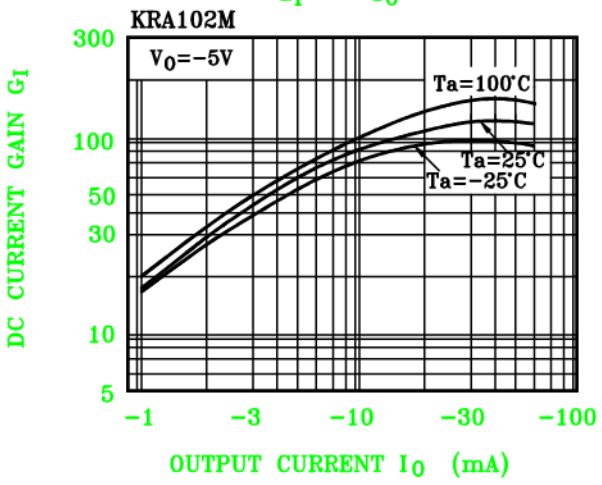
G_I – I_O

KRA101M



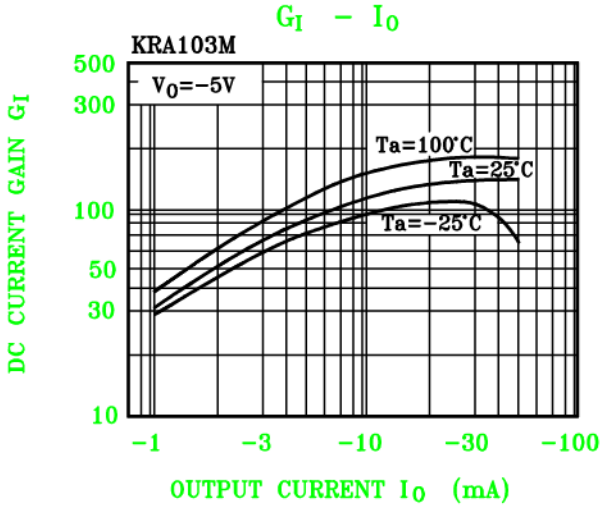
G_I – I_O

KRA102M



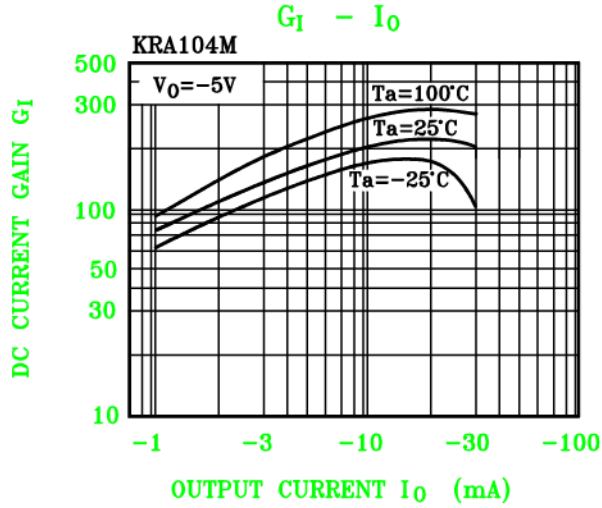
G_I – I_O

KRA103M



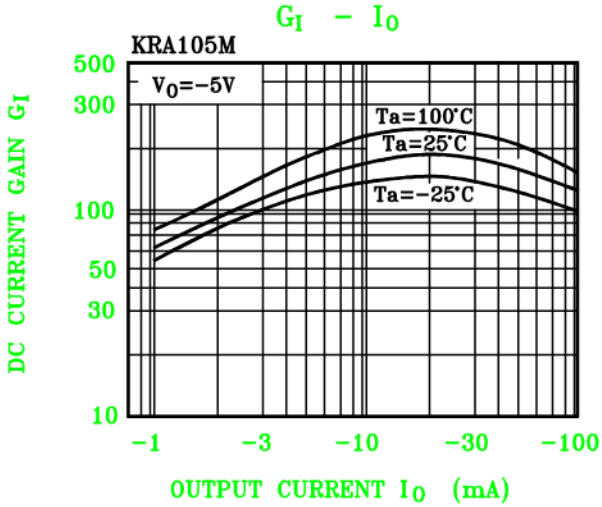
G_I – I_O

KRA104M



G_I – I_O

KRA105M



G_I – I_O

KRA106M

