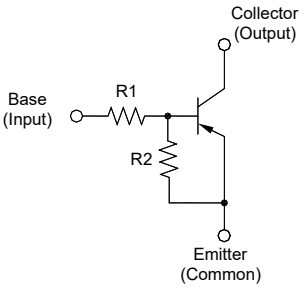
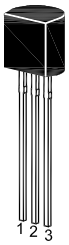
RA107S…RA109S

PNP Silicon Epitaxial Planar Transistor

for switching, interface circuit and drive circuit applications





1. Emitter 2. Collector 3. Base
TO-92 Plastic Package

Features

- With built-in bias resistors
- Simplify circuit design
- Reduce a quantity of parts and manufacturing process

Resistor Values

Type	R1 (KΩ)	R2 (KΩ)
RA107S	10	47
RA108S	22	47
RA109S	47	22

Absolute Maximum Ratings (T_a = 25 °C)

Parameter		Symbol	Value	Unit
Output Voltage		$-V_O$	50	V
Input Voltage	RA107S	V_I	- 30, 6	V
	RA108S		- 40, 7	
	RA109S		- 40, 15	
Output Current		$-I_O$	100	mA
Total Power Dissipation		P_{tot}	200	mW
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	- 55 to + 150	°C

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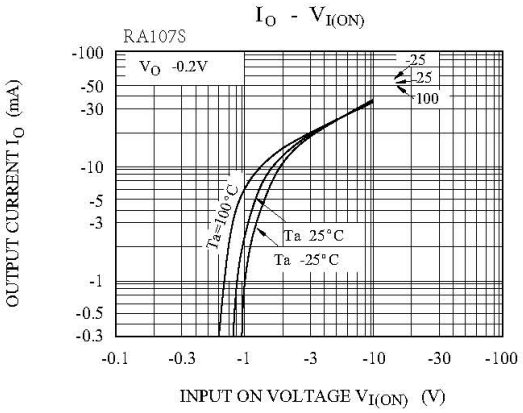
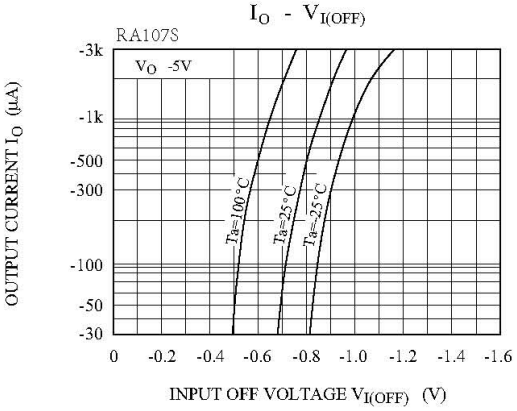
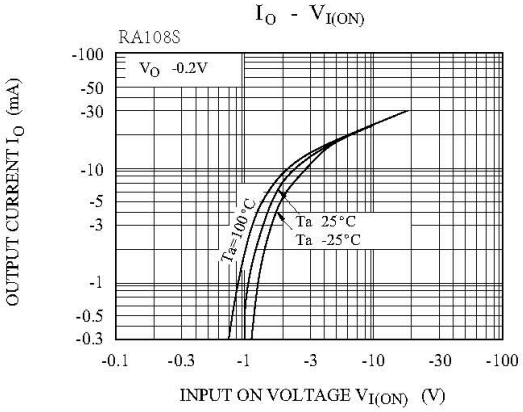
Characteristics at T_a = 25 °C

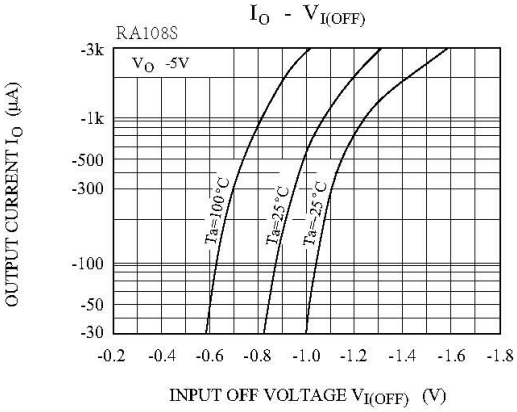
Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $-V_O$ = 5 V, $-I_O$ = 10 mA	RA107S RA108S RA109S	G_I	80 80 70	- - -	- - -	- - -
Output Cutoff Current at $-V_O$ = 50 V		$-I_{O(OFF)}$	-	-	500	nA
Input Current at $-V_I$ = 5 V	RA107S RA108S RA109S	$-I_I$	- - -	- - -	0.88 0.36 0.16	mA
Output Voltage at $-I_O$ = 10 mA, $-I_I$ = 0.5 mA		$-V_{O(ON)}$	-	-	0.3	V
Input Voltage (ON) at $-V_O$ = 0.2 V, $-I_O$ = 5 mA	RA107S RA108S RA109S	$-V_{I(ON)}$	- - -	- - -	1.8 2.6 5.8	V
Input Voltage (OFF) at $-V_O$ = 5 V, $-I_O$ = 0.1 mA	RA107S RA108S RA109S	$-V_{I(OFF)}$	0.5 0.6 1.5	- - -	- - -	V
Transition Frequency at $-V_O$ = 10 V, $-I_O$ = 5 mA		f_T [1)]	-	200	-	MHz

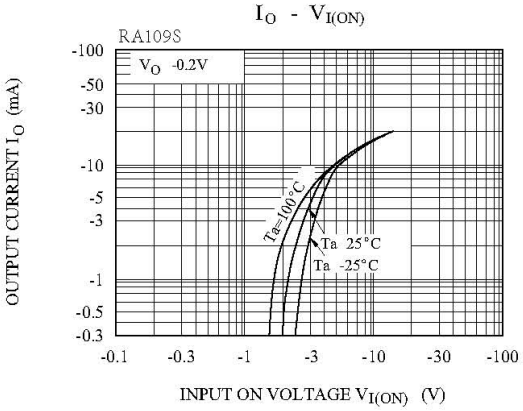
[1)] Characteristic of transistor only.

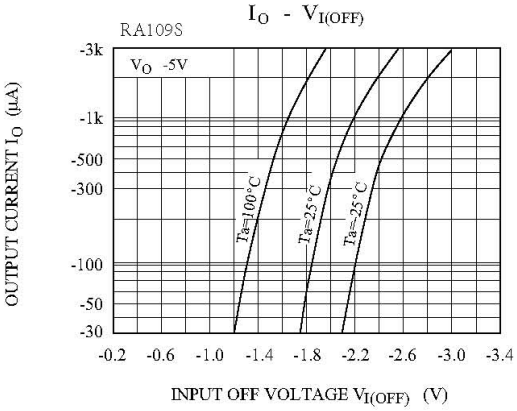

I_O - $V_{I(ON)}$
RA107S
V_O -0.2V
-25
25
100
Ta=100°C
Ta 25°C
Ta -25°C
OUTPUT CURRENT I_O (mA)
-100
-50
-30
-10
-5
-3
-1
-0.5
-0.3
-0.1
-0.3
-1
-3
-10
-30
-100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)

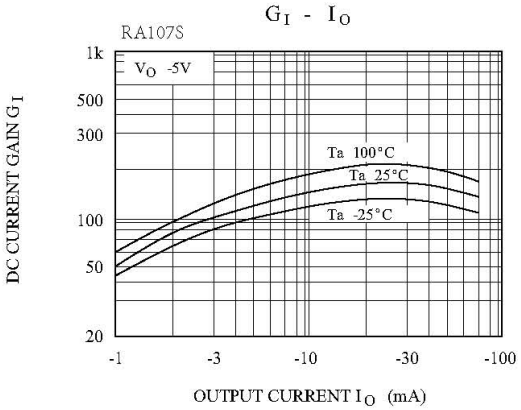

I_O - $V_{I(OFF)}$
RA107S
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (µA)
-3k
-1k
-500
-300
-100
-50
-30
0
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
-1.6
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)

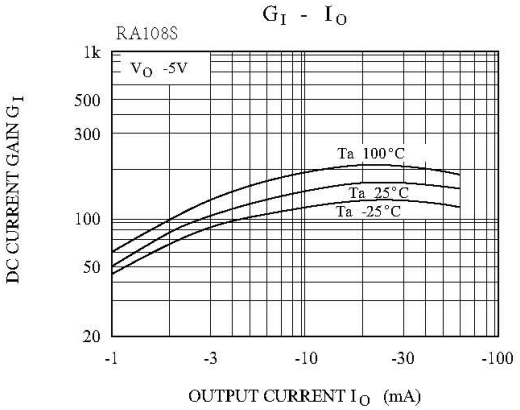

I_O - $V_{I(ON)}$
RA108S
V_O -0.2V
Ta=100°C
Ta 25°C
Ta -25°C
OUTPUT CURRENT I_O (mA)
-100
-50
-30
-10
-5
-3
-1
-0.5
-0.3
-0.1
-0.3
-1
-3
-10
-30
-100
INPUT ON VOLTAGE $V_{I(ON)}$ (V)

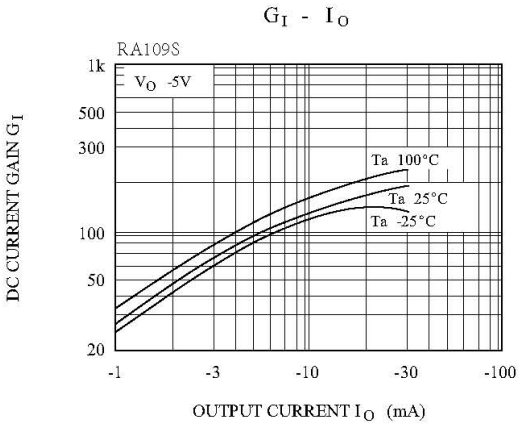

I_O - $V_{I(OFF)}$
RA108S
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (µA)
-3k
-1k
-500
-300
-100
-50
-30
-0.2
-0.4
-0.6
-0.8
-1.0
-1.2
-1.4
-1.6
-1.8
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)


I_O - $V_{I(ON)}$
RA109S
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 - $V_{I(OFF)}$
RA109S
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (µA)
-3k
-1k
-500
-300
-100
-50
-30
-0.2
-0.6
-1.0
-1.4
-1.8
-2.2
-2.6
-3.0
-3.4
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)


G_I - I_O
RA107S
V_O -5V
1k
500
300
100
50
20
Ta 100°C
Ta 25°C
Ta -25°C
-1
-3
-10
-30
-100
DC CURRENT GAIN G_I
OUTPUT CURRENT I_O (mA)


G_I - I_O
RA108S
V_O -5V
1k
500
300
100
50
20
Ta 100°C
Ta 25°C
Ta -25°C
-1
-3
-10
-30
-100
DC CURRENT GAIN G_I
OUTPUT CURRENT I_O (mA)


G_I - I_O
RA109S
V_O -5V
1k
500
300
100
50
20
Ta 100°C
Ta 25°C
Ta -25°C
-1
-3
-10
-30
-100
DC CURRENT GAIN G_I
OUTPUT CURRENT I_O (mA)