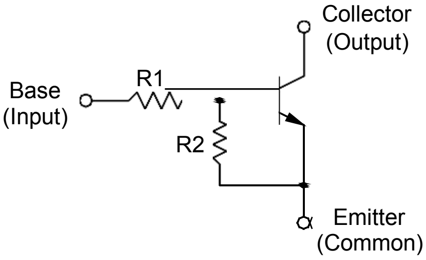
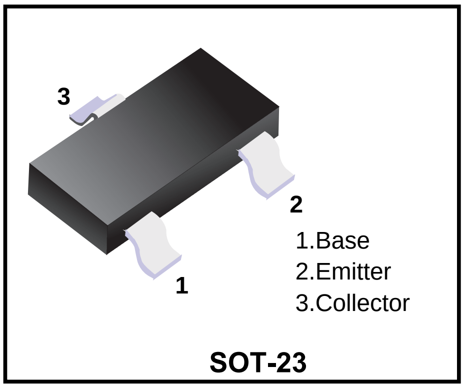
KRC101S THRU KRC106S SOT-23

NPN Silicon Epitaxial Planar Transistor

for switching and interface circuit and drive circuit applications





Features

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

Resistor Values

Type	Marking	R1 (KΩ)	R2 (KΩ)
KRC101S	NA	4.7	4.7
KRC102S	NB	10	10
KRC103S	NC	22	22
KRC104S	ND	47	47
KRC105S	NF	2.2	47
KRC106S	NE	4.7	47

Absolute Maximum Ratings (T_a = 25 °C)

Parameter		Symbol	Value	Unit
Output Voltage		V_O	50	V
Input Voltage	KRC101S	V_I	20, -10	V
	KRC102S		30, -10	
	KRC103S		40, -10	
	KRC104S		40, -10	
	KRC105S		12, -5	
	KRC106S		20, -5	
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

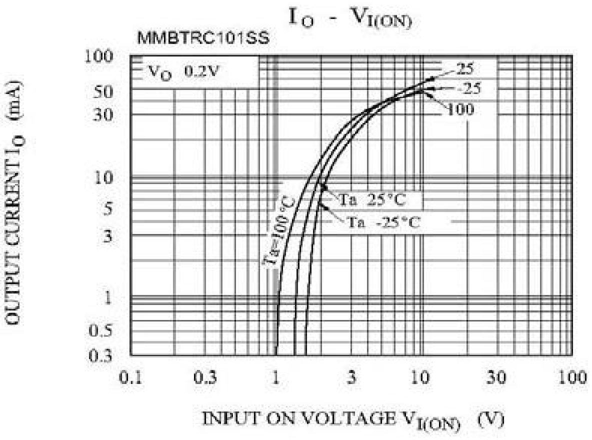
Marking

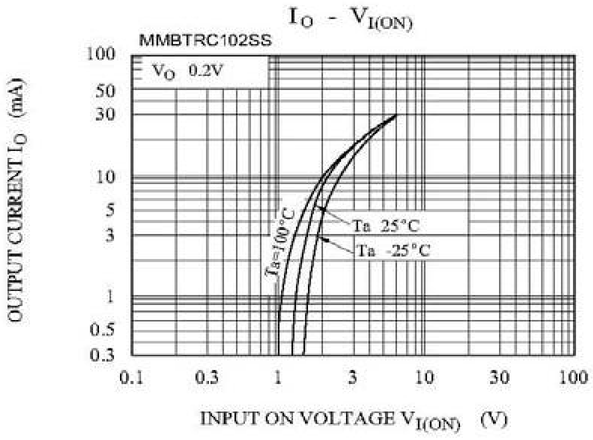
TYPE	KRC101S	KRC102S	KRC103S	KRC104S	KRC105S	KRC106S
MARK	NA	NB	NC	ND	NF	NE

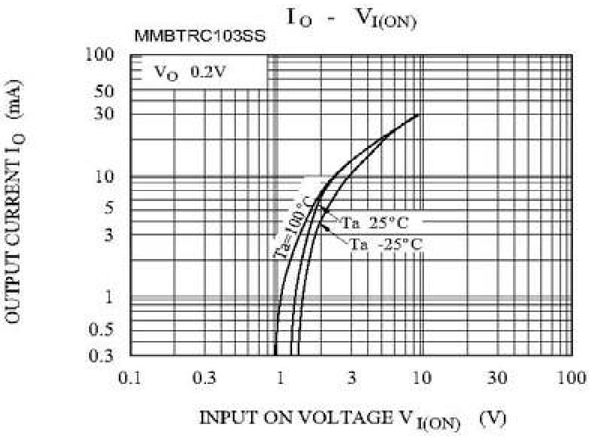
Characteristics at $T_a = 25\ ^\circ C$

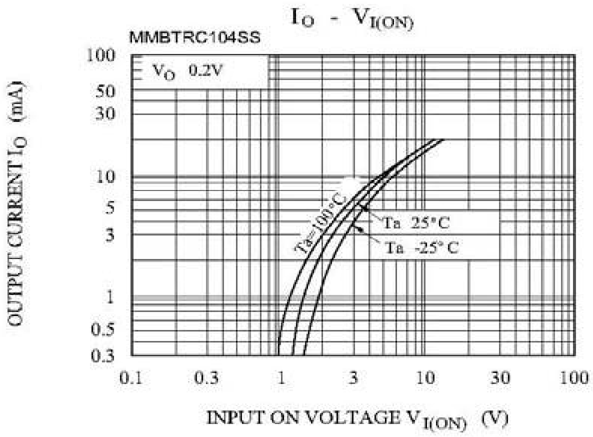
Parameter		Symbol	Min.	Typ.	Max.	Unit
DC Current Gain at $V_O = 5$ V, $I_O = 10$ mA	KRC101S	G_I	30	-	-	-
	KRC102S		50	-	-	-
	KRC103S		70	-	-	-
	KRC104S		80	-	-	-
	KRC105S		80	-	-	-
	KRC106S		80	-	-	-
Output Cutoff Current at $V_O = 50$ V		$I_{O(OFF)}$	-	-	500	nA
Input Current at $V_I = 5$ V	KRC101S	I_I	-	-	1.8	mA
	KRC102S		-	-	0.88	
	KRC103S		-	-	0.36	
	KRC104S		-	-	0.18	
	KRC105S		-	-	3.6	
	KRC106S		-	-	1.8	
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	KRC101S	$V_{I(ON)}$	-	-	2	V
	KRC102S		-	-	2.4	
	KRC103S		-	-	3	
	KRC104S		-	-	5	
	KRC105S		-	-	1.1	
	KRC106S		-	-	1.3	
Input Voltage (OFF) at $V_O = 5$ V, $I_O = 0.1$ mA	KRC101S~104S	$V_{I(OFF)}$	1	-	-	V
	KRC105S~106S		0.5	-	-	
Transition Frequency at $V_O = 10$ V, $I_O = 5$ mA		f_T 1)	-	200	-	MHz

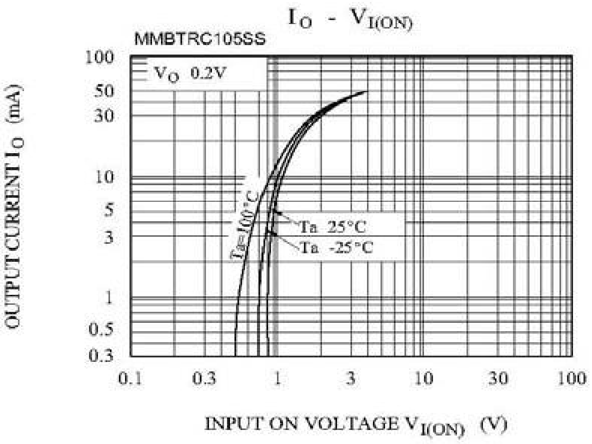
1) Characteristic of transistor only.

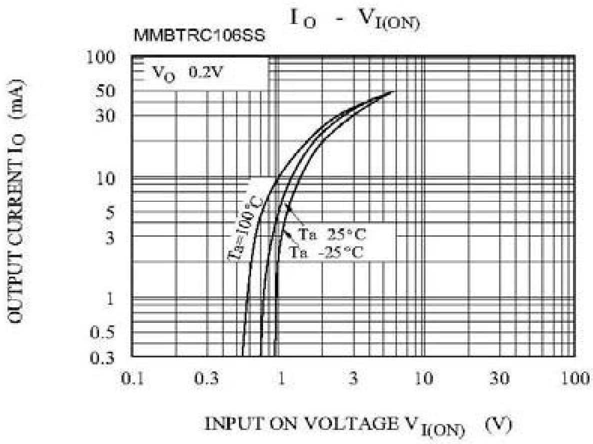

I_O - V_I(ON)
MMBTRC101SS
V_O 0.2V
25
-25
100
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

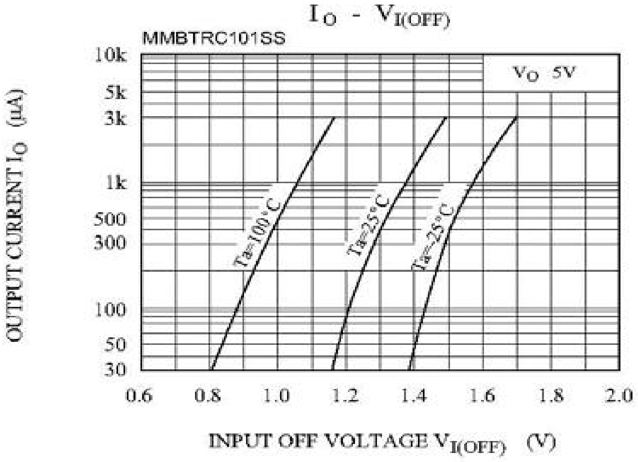

I_O - V_I(ON)
MMBTRC102SS
V_O 0.2V
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

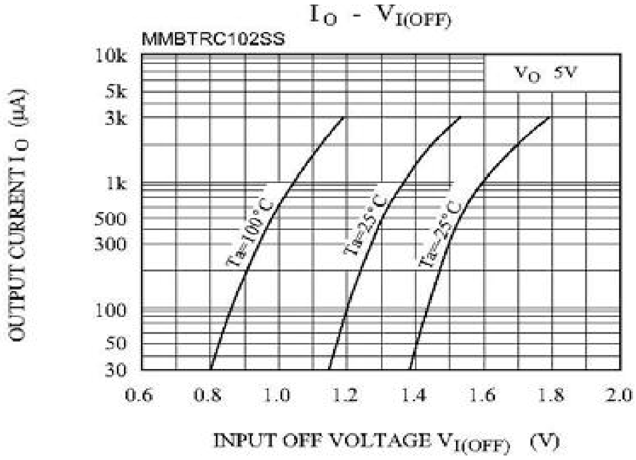

I_O - V_I(ON)
MMBTRC103SS
V_O 0.2V
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

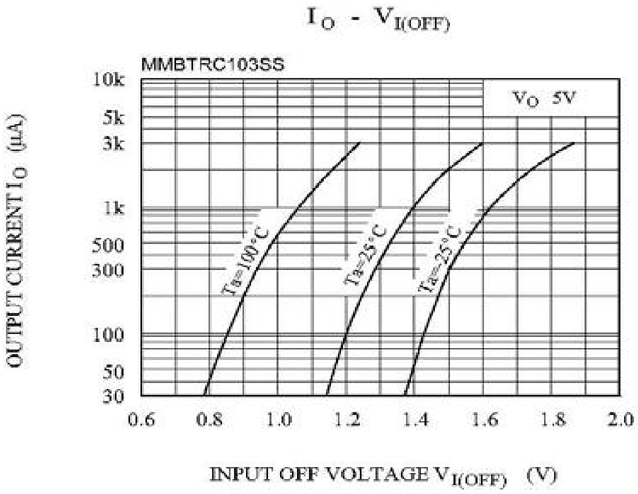

I_O - V_I(ON)
MMBTRC104SS
V_O 0.2V
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

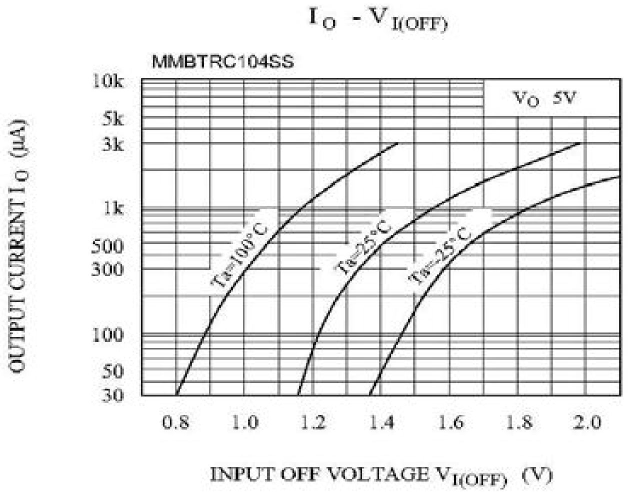

I_O - V_I(ON)
MMBTRC105SS
V_O 0.2V
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

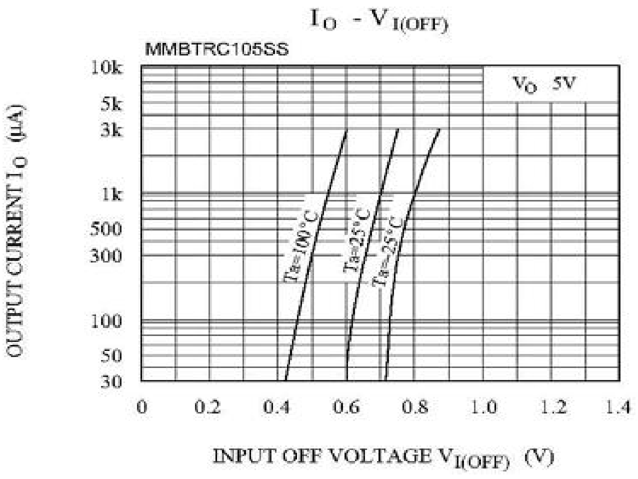

I_O - V_I(ON)
MMBTRC106SS
V_O 0.2V
Ta 25°C
Ta -25°C
Ta=100°C
OUTPUT CURRENT I_O (mA)
100
50
30
10
5
3
1
0.5
0.3
0.1
0.3
1
3
10
30
100
INPUT ON VOLTAGE V_I(ON) (V)

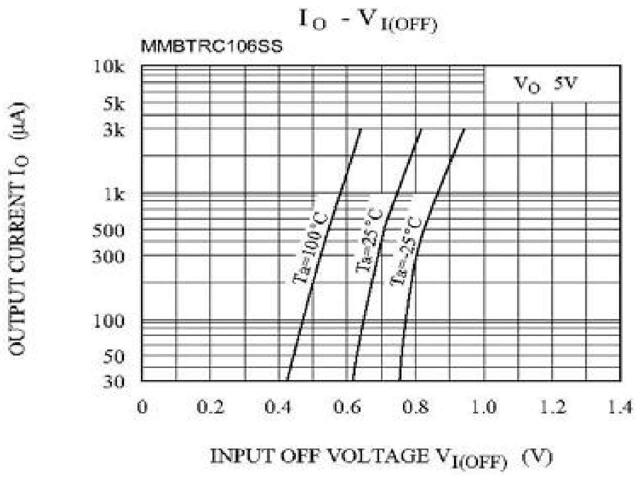

I O - VI(OFF)
MMBTRC101SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
INPUT OFF VOLTAGE VI(OFF) (V)

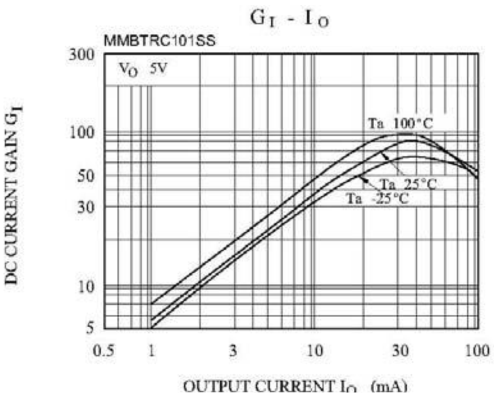

I O - VI(OFF)
MMBTRC102SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
INPUT OFF VOLTAGE VI(OFF) (V)

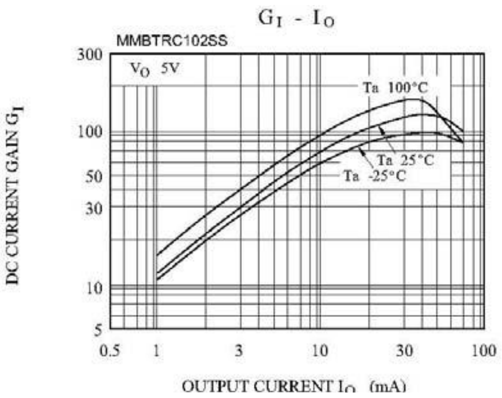

I O - VI(OFF)
MMBTRC103SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0.6
0.8
1.0
1.2
1.4
1.6
1.8
2.0
INPUT OFF VOLTAGE VI(OFF) (V)

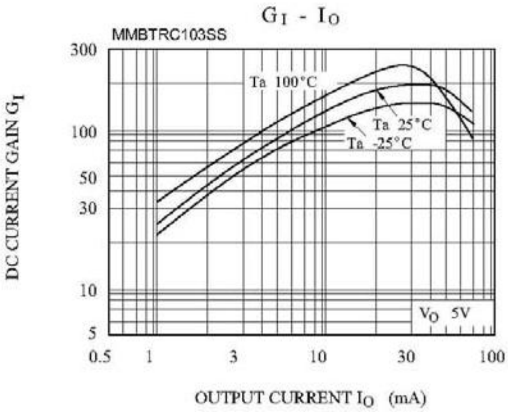

I O - V I(OFF)
MMBTRC104SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0.8
1.0
1.2
1.4
1.6
1.8
2.0
INPUT OFF VOLTAGE VI(OFF) (V)

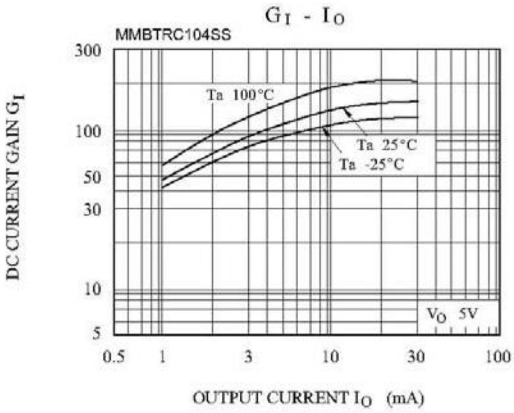

I O - V I(OFF)
MMBTRC105SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
INPUT OFF VOLTAGE VI(OFF) (V)

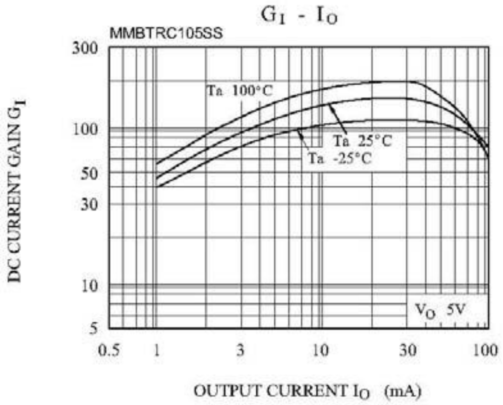

I O - V I(OFF)
MMBTRC106SS
VO 5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I O (μA)
10k
5k
3k
1k
500
300
100
50
30
0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
INPUT OFF VOLTAGE VI(OFF) (V)

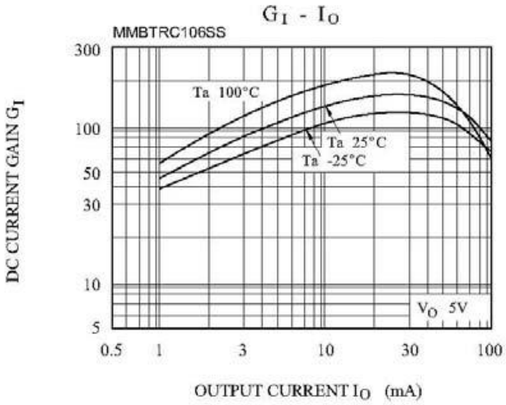

GI - IO
MMBTRC101SS
VO 5V
Ta 100°C
Ta 25°C
Ta -25°C
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)

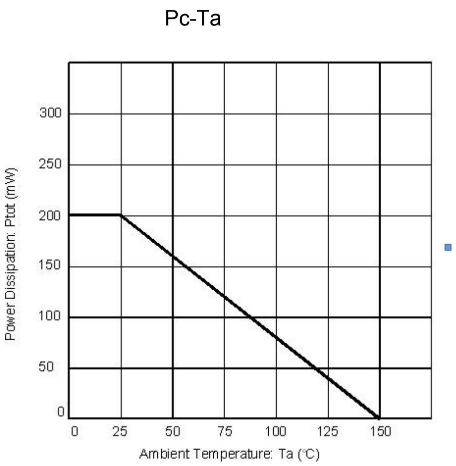

GI - IO
MMBTRC102SS
VO 5V
Ta 100°C
Ta 25°C
Ta -25°C
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)


GI - IO
MMBTRC103SS
Ta 100°C
Ta 25°C
Ta -25°C
VO 5V
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)


GI - IO
MMBTRC104SS
Ta 100°C
Ta 25°C
Ta -25°C
VO 5V
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)


GI - IO
MMBTRC105SS
Ta 100°C
Ta 25°C
Ta -25°C
VO 5V
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)


GI - IO
MMBTRC106SS
Ta 100°C
Ta 25°C
Ta -25°C
VO 5V
DC CURRENT GAIN GI
300
100
50
30
10
5
0.5
1
3
10
30
100
OUTPUT CURRENT IO (mA)

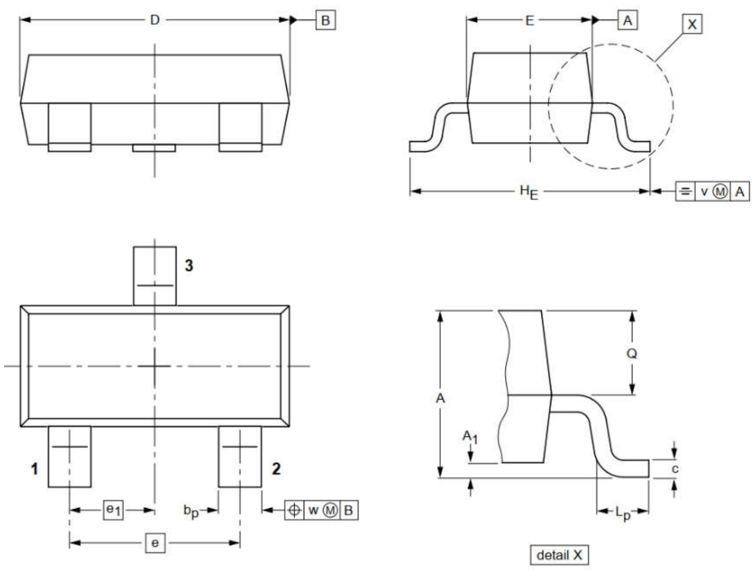

Pc-Ta
Power Dissipation: Ptot (mW)
300
250
200
150
100
50
0
0
25
50
75
100
125
150
Ambient Temperature: Ta (℃)

Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel,7”reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

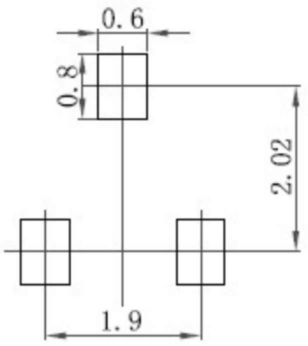
Package Dimensions

SOT-23



Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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