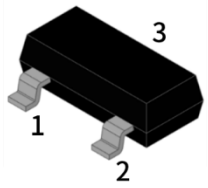
MMBTRA101SSLST1-106SSLST1

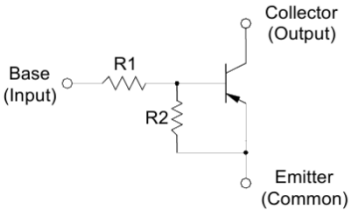
PNP Silicon Epitaxial Planar Digital Transistor

1. FEATURES

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



SOT23 (TO-236)



2. Mechanical Data

- SOT-23 Small Outline Plastic Package.
- Tin plated leads, solderable per J-STD-002 and JESD22-B102.
- Marking:

Type	R1 (KΩ)	R2 (KΩ)	Marking Code
MMBTRA101SS	4,7	4,7	RK
MMBTRA102SS	10	10	RM
MMBTRA103SS	22	22	RN
MMBTRA104SS	47	47	RP
MMBTRA105SS	2.2	2.2	RR
MMBTRA106SS	4.7	4.7	RX

3. ORDERING INFORMATION

Device	Min Pack	Inner Box	Outer Carton	Reel
MMBTRA101SSLST1-106SSLST1	3000	45000	180000	7 inch

4. ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter		Symbol	Limit	Unit
Output Voltage		-VO	50	V
Input Voltage	MMBTRA101SS	-VI	20,10	V
	MMBTRA102SS		30,-10	
	MMBTRA103SS		40,-10	
	MMBTRA104SS		40,-10	
	MMBTRA105SS		12,-5	
	MMBTRA106SS		20,-5	
Output Current		-IO	100	mA
Total Device Dissipation		Ptot	200	mW

5. THERMAL CHARACTERISTICS

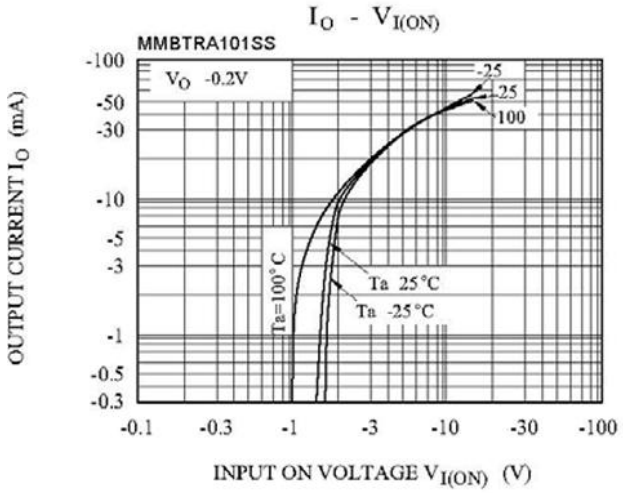
Parameter	Symbol	Limit	Unit
Junction Temperature	TJ	150	°C
Storage Temperature	TSTG	−55~+150	°C

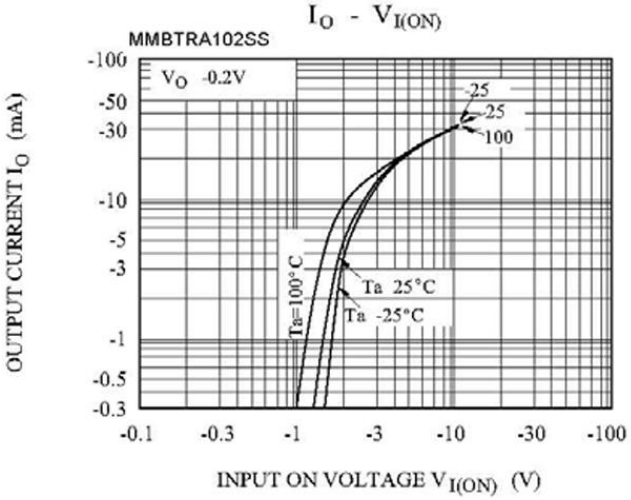
6. ELECTRICAL CHARACTERISTICS (Ta= 25ºC unless otherwise specified)

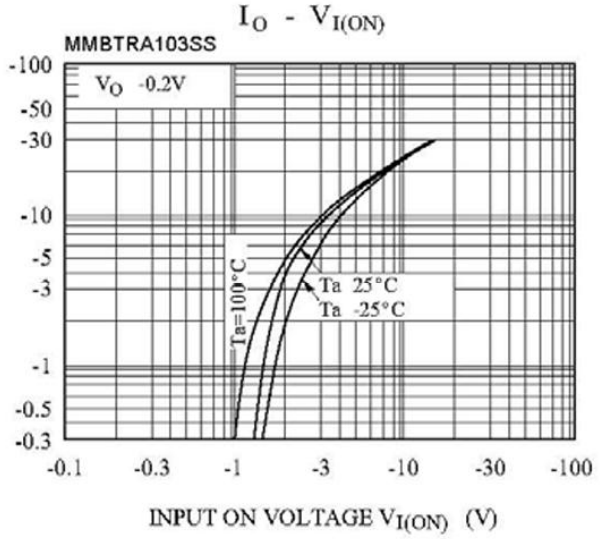
Parameter		Symbol	Min	TYP	Max	Unit
DC current gain at -VO = 5 V, -IO = 10 mA	MMBTRA101SS	GI	30			
	MMBTRA102SS		50			
	MMBTRA103SS		70			
	MMBTRA104SS		80			
	MMBTRA105SS		80			
	MMBTRA106SS		80			
Output Cutoff Current at -VO = 50 V		-IO(off)			500	nA
Input Voltage at -VI = 5 V	MMBTRA101SS	-Ii			1.8	mA
	MMBTRA102SS				0.88	
	MMBTRA103SS				0.36	
	MMBTRA104SS				0.18	
	MMBTRA105SS				3.6	
	MMBTRA106SS				1.8	
Output voltage at -IO = 10 mA, -Ii = 0.5 mA		-VO(on)			0.3	V
Input Voltage	MMBTRA101SS	VI(on)			2	V
	MMBTRA102SS		-		2.4	
	MMBTRA103SS				3	
	MMBTRA104SS				5	
	MMBTRA105SS				1.1	
	MMBTRA106SS				1.3	
Input resistance	MMBTRA101SS	R1	3.29	4.7	6.11	kΩ
	MMBTRA102SS		7	10	13	
	MMBTRA103SS		15.4	22	28.6	
	MMBTRA104SS		32.9	47	61.1	
	MMBTRA105SS		1.54	2.2	2.86	
	MMBTRA106SS		3.29	4.7	6.11	
Resistance ratio	MMBTRA101SS	R2/R1	0.8	1	1.2	
	MMBTRA102SS		0.8	1	1.2	
	MMBTRA103SS		0.8	1	1.2	
	MMBTRA104SS		0.8	1	1.2	
	MMBTRA105SS		17	21	26	
	MMBTRA106SS		8	10	12	

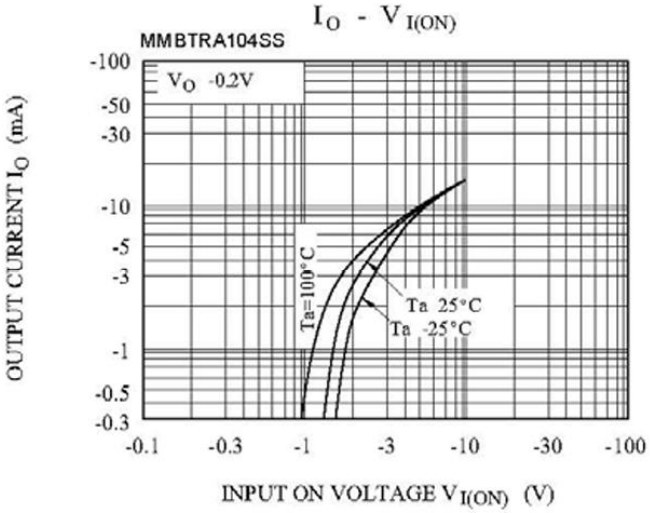
Input Voltage (off) at -VO = 5 V, -IO = 0.1 mA	MMBTRA101SS-104SS	-VI(off)	1			V
	MMBTRA105SS-106SS		0.5			
Transition frequency at -VO = 10 V, -IO = 5 mA		fT		200		MHz

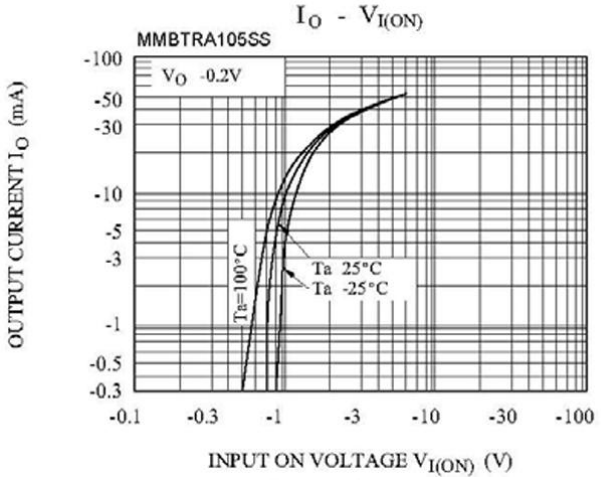
7. ELECTRICAL CHARACTERISTICS CURVES

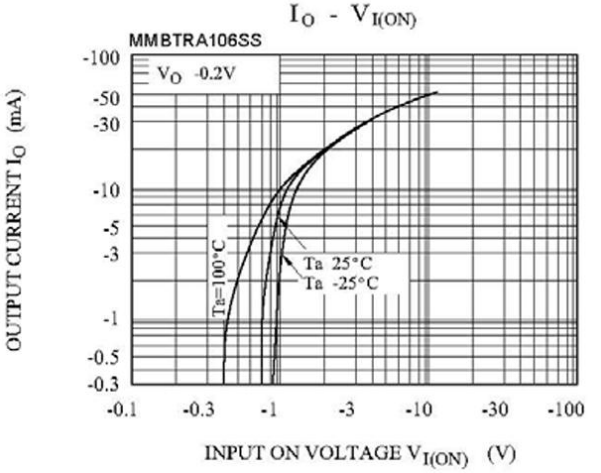


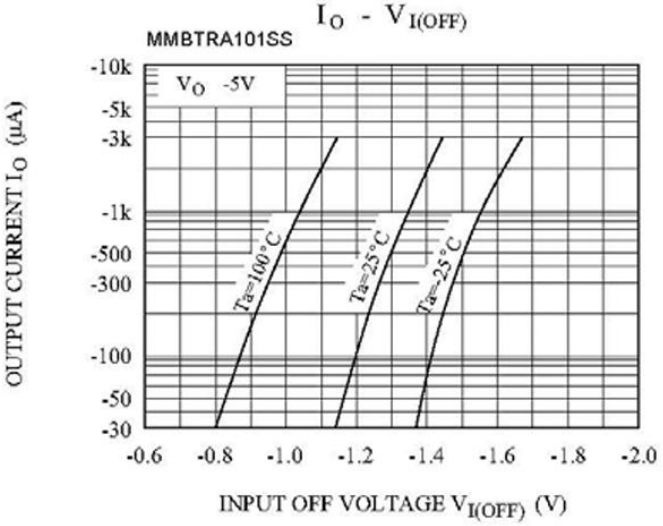


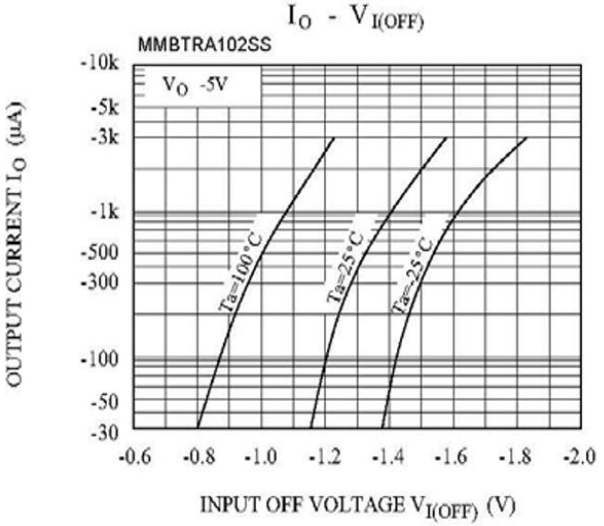


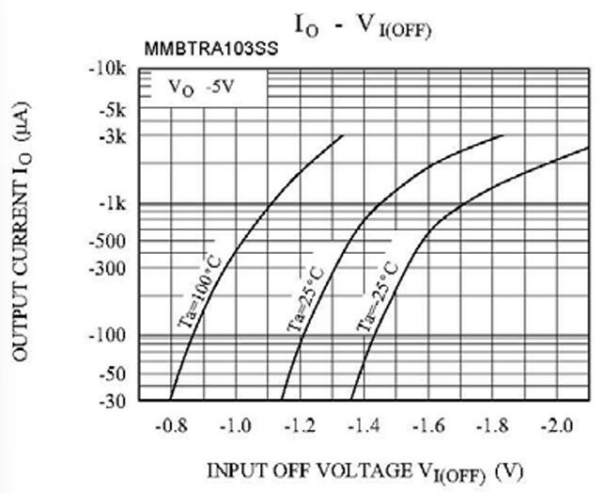


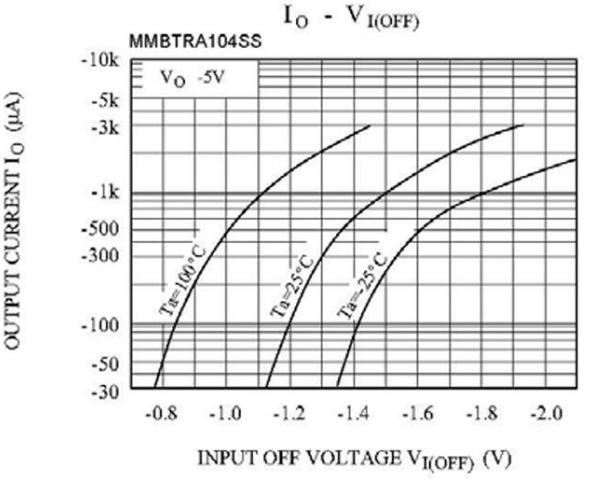

I_O - $V_{I(ON)}$
MMBTRA105SS
V_O -0.2V
Ta=100°C
Ta 25°C
Ta -25°C
OUTPUT CURRENT I_O (mA)
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


I_O - $V_{I(ON)}$
MMBTRA106SS
V_O -0.2V
Ta=100°C
Ta 25°C
Ta -25°C
OUTPUT CURRENT I_O (mA)
INPUT ON VOLTAGE $V_{I(ON)}$ (V)


I_O - $V_{I(OFF)}$
MMBTRA101SS
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (μA)
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)

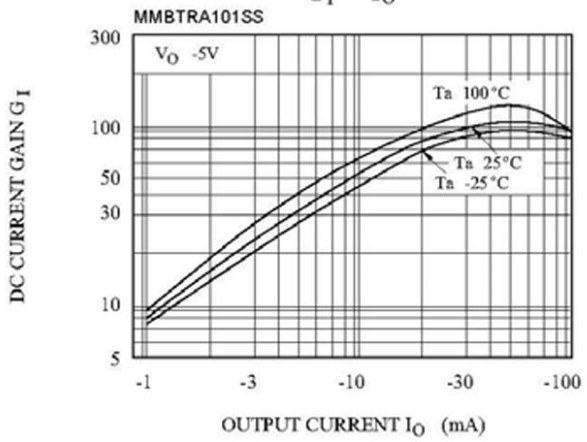

I_O - $V_{I(OFF)}$
MMBTRA102SS
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (μA)
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)


I_O - $V_{I(OFF)}$
MMBTRA103SS
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (μA)
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)


I_O - $V_{I(OFF)}$
MMBTRA104SS
V_O -5V
Ta=100°C
Ta=25°C
Ta=-25°C
OUTPUT CURRENT I_O (μA)
INPUT OFF VOLTAGE $V_{I(OFF)}$ (V)

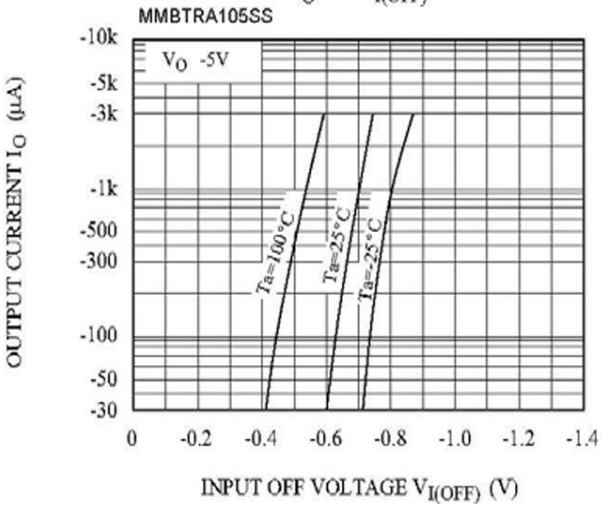
G_I - I_O

MMBTRA101SS



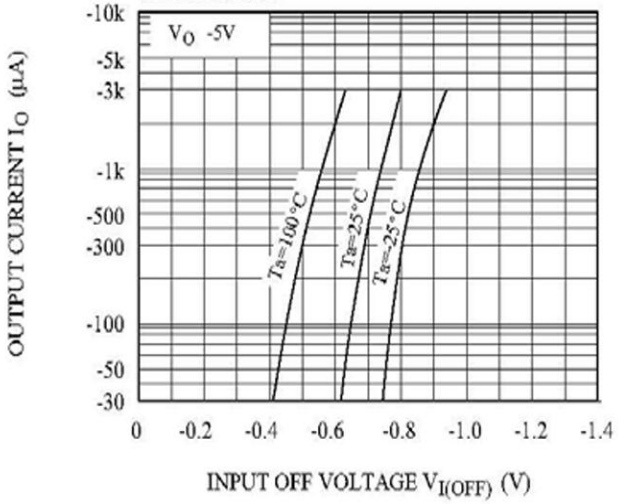
I_O - $V_{I(OFF)}$

MMBTRA105SS



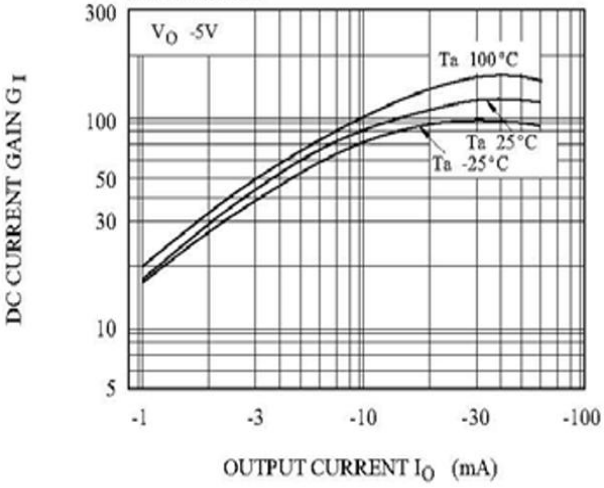
I_O - $V_{I(OFF)}$

MMBTRA106SS



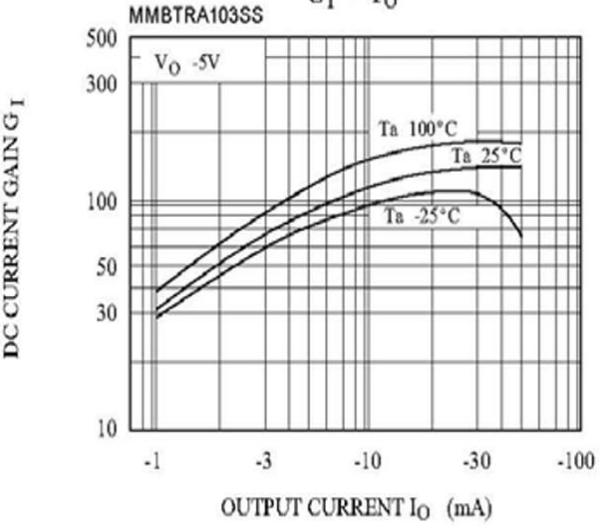
G_I - I_O

MMBTRA102SS



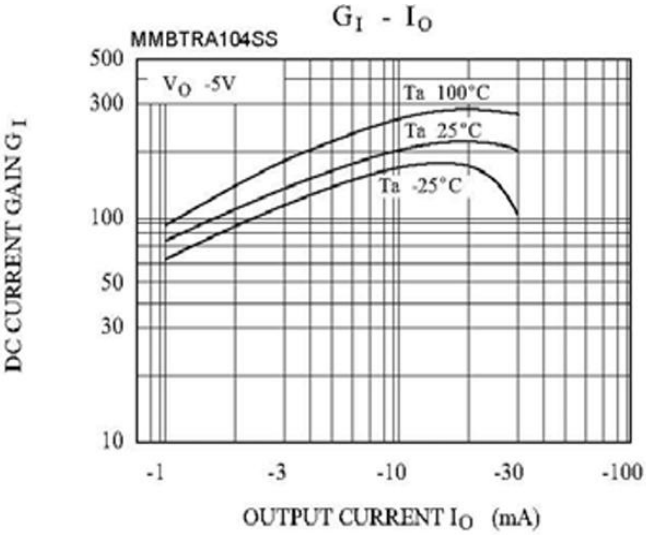
G_I - I_O

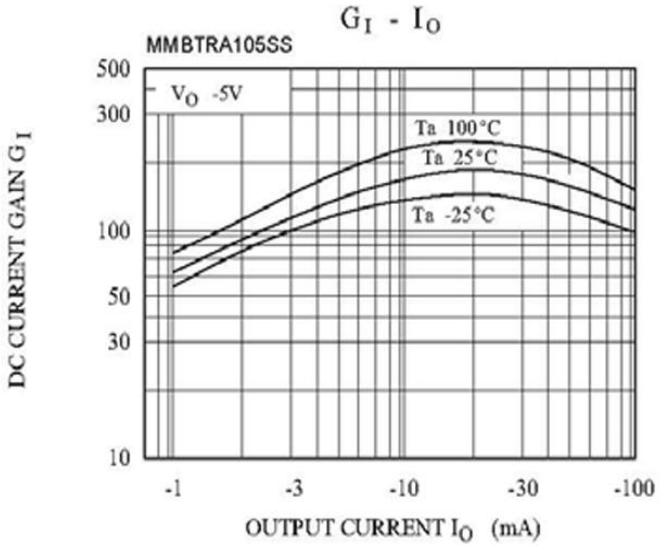
MMBTRA103SS

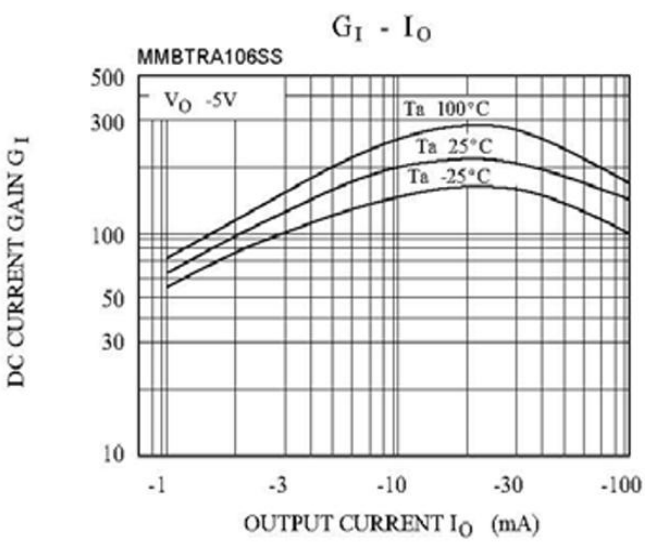


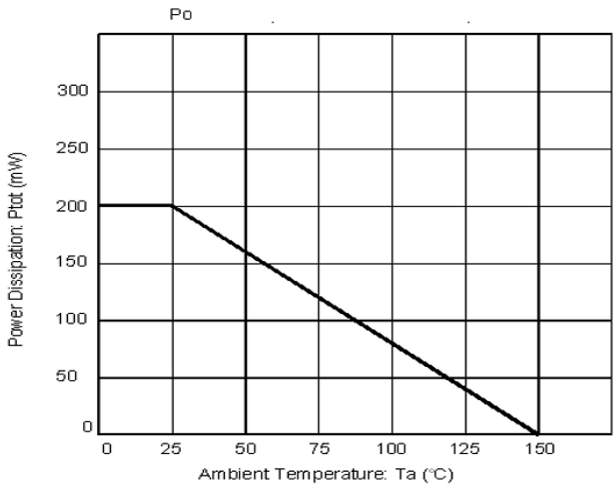
G_I - I_O

MMBTRA104SS

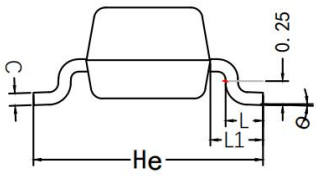


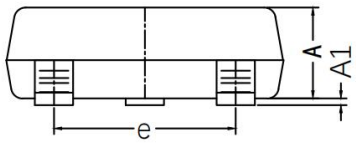


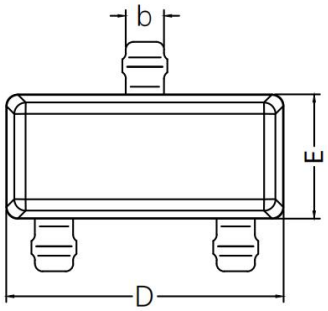




8. OUTLINE AND DIMENSIONS

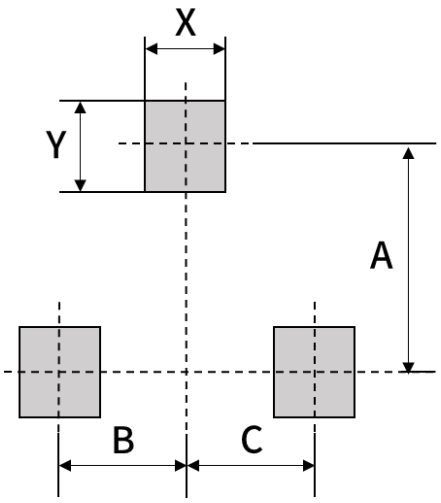






DIM	MIN	NOR	MAX
A	0.85	0.95	1.05
A1	0.01	0.06	0.10
b	0.36	0.44	0.52
c	0.09	0.13	0.18
D	2.80	2.90	3.10
E	1.20	1.30	1.40
e	1.78	1.90	2.04
L	0.30	0.40	0.50
L1	0.35	0.50	0.65
He	2.10	2.35	2.50
θ	0°	-	10°
All Dimensions in mm			

9. SUGGESTED PAD LAYOUT



SOT23		
DIM	mm	inch
A	2.00	0.079
B	0.95	0.037
C	0.95	0.037
X	0.80	0.031
Y	0.90	0.035

10. DISCLAIMER

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