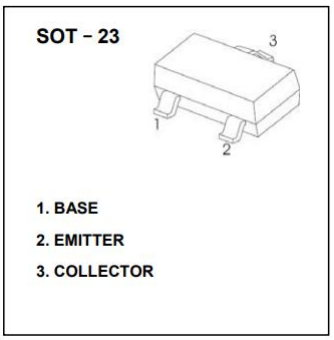
JIANGSU CHANGJING ELECTRONICS TECHNOLOGY CO., LTD.

AD-MMBT3904 Plastic-Encapsulated Transistor

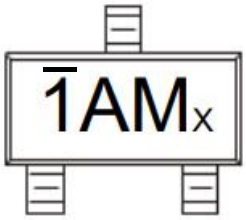
AD-MMBT3904 Transistor (NPN)



FEATURES

- Complementary to AD-MMBT3906
- AEC-Q101 qualified

MARKING



$\overline{1}$AM = Device code
X = Date code

MAXIMUM RATINGS (T_a = 25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Collector-base voltage	V_{CBO}	60	V
Collector-emitter voltage	V_{CEO}	40	V
Emitter-base voltage	V_{EBO}	6	V
Collector current	I_C [1)]	200	mA
Collector power dissipation	P_C [1)]	200	mW
Thermal resistance from junction to ambient	$R_{\theta JA}$ [2)]	625	°C/W
Thermal resistance from junction to case	$R_{\theta JC}$	16	°C/W
Operating junction and storage temperature range	T_j, T_{stg}	-55 ~ 150	°C

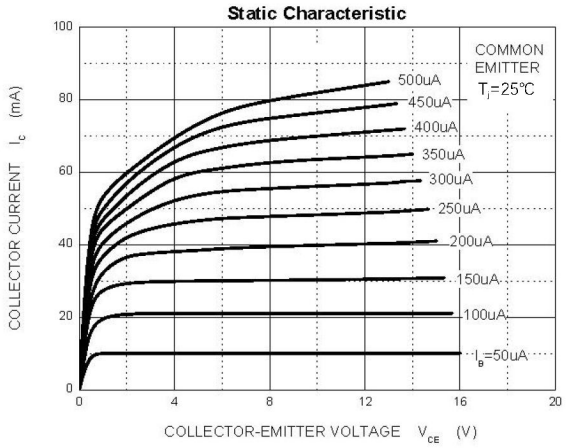
ELECTRICAL CHARACTERISTICS (T_j = 25°C unless otherwise specified)

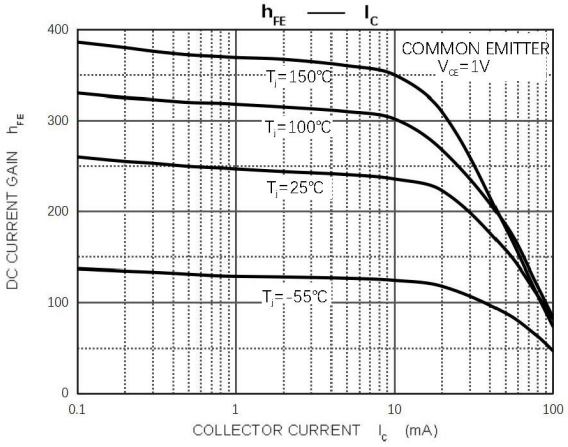
Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	I_C = 10μA, I_E = 0A	60	-	-	V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0A	40	-	-	V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	I_E = 10μA, I_C = 0A	6	-	-	V
Collector-emitter cut-off current	I_{CEX}	V_{CE} = 30V, $V_{EB(off)}$ = 3V	-	-	50	nA
Collector-base cut-off current	I_{CBO}	V_{CB} = 60V, I_E = 0A	-	-	100	nA
Emitter-base cut-off current	I_{EBO}	V_{EB} = 5V, I_C = 0A	-	-	100	nA
DC current gain	$h_{FE(1)}$	V_{CE} = 1V, I_C = 10mA	100	-	300	-
	$h_{FE(2)}$	V_{CE} = 1V, I_C = 50mA	60	-	-	
	$h_{FE(3)}$	V_{CE} = 1V, I_C = 100mA	30	-	-	
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 50mA, I_B = 5mA	-	-	0.3	V
Base-emitter saturation voltage	$V_{BE(sat)}$	I_C = 50mA, I_B = 5mA	-	-	0.95	V
Transition frequency	f_T	V_{CE} = 20V, I_C = 10mA, f = 100MHz	300	-	-	MHz
Delay time	t_d	V_{CC} = 3V, $V_{BE(off)}$ = -0.5V, I_C = 10mA, I_{B1} = 1mA	-	-	35	ns
Rise time	t_r	V_{CC} = 3V, $V_{BE(off)}$ = -0.5V, I_C = 10mA, I_{B1} = 1mA	-	-	35	ns
Storage time	t_s	V_{CC} = 3V, I_C = 10mA, I_{B1} = I_{B2} = 1mA	-	-	200	ns
Fall time	t_f	V_{CC} = 3V, I_C = 10mA, I_{B1} = I_{B2} = 1mA	-	-	50	ns

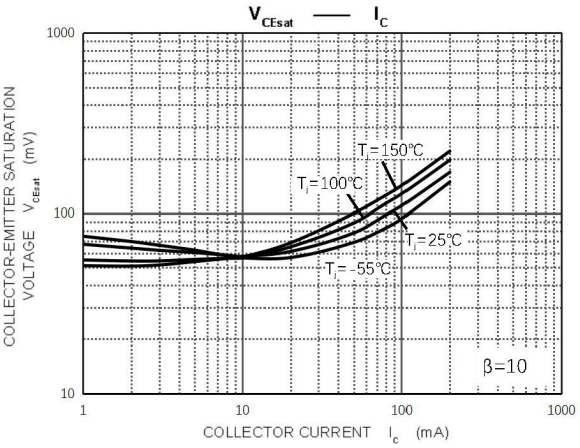
1) Maximum allowed temperature T_a = 25°C.

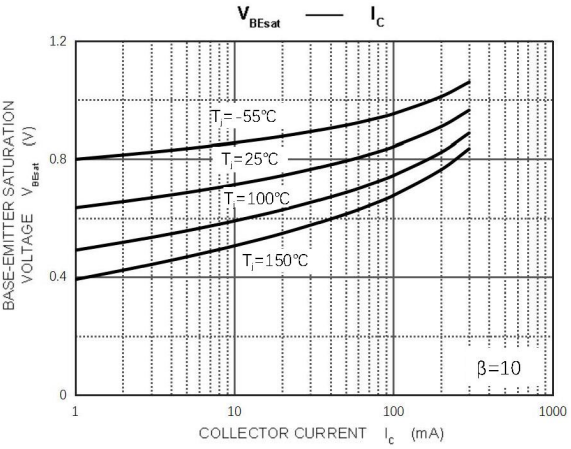
2) Measured with the device mounted on 1 inch^2 FR-4 board with no copper, in a still air environment with T_a = 25℃.

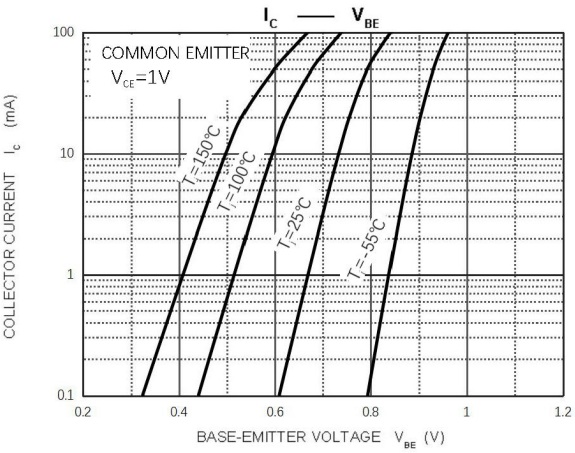
TYPICAL CHARACTERISTICS

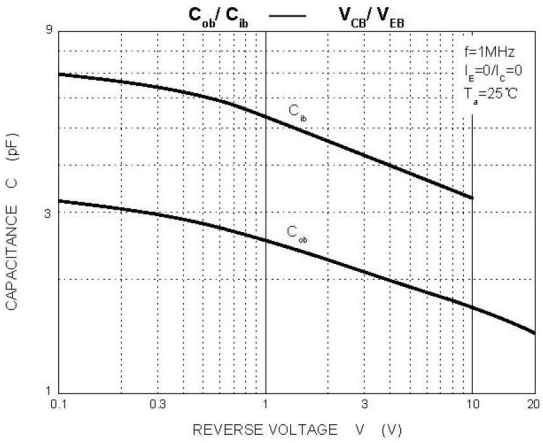


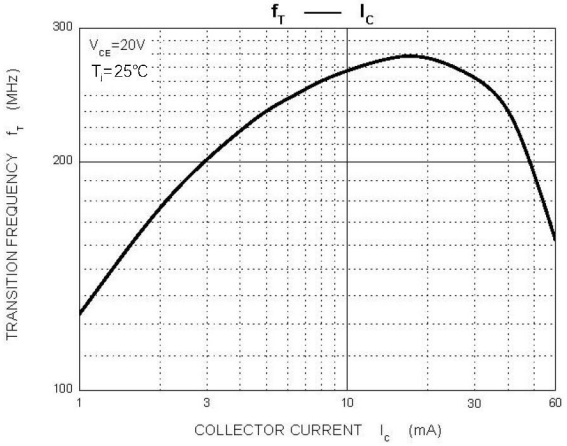


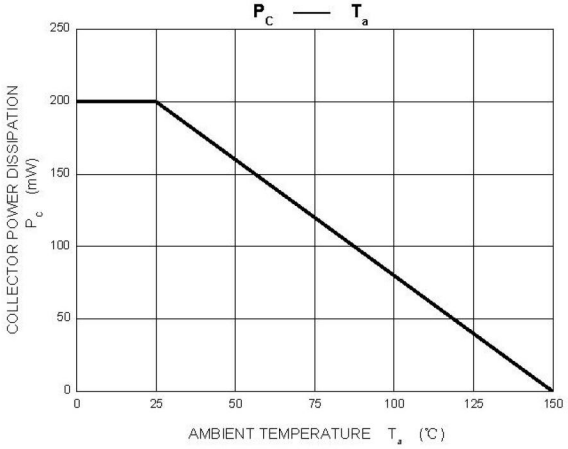




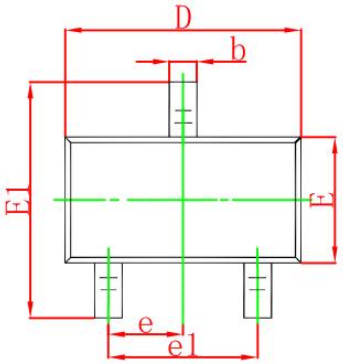


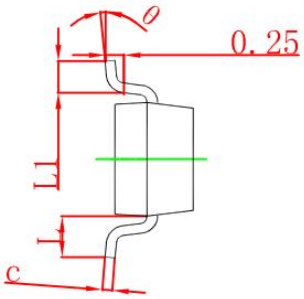


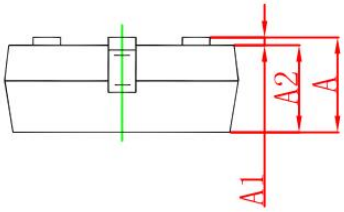




SOT-23 PACKAGE OUTLINE DIMENSIONS

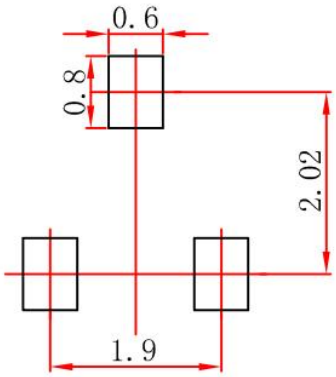






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.900	1.000	0.035	0.039
e1	1.800	2.000	0.071	0.079
L	0.500	0.600	0.020	0.024
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 SUGGESTED PAD LAYOUT

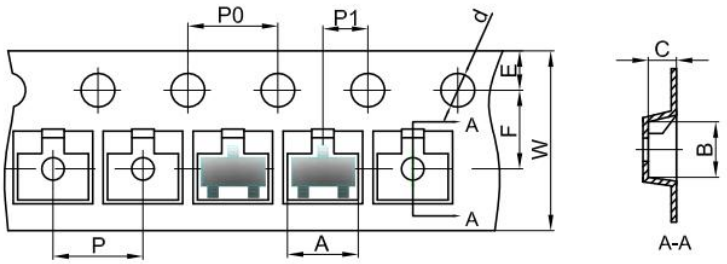


Note:

1. Controlling dimension in millimeters.
2. General tolerance: ±0.05mm.
3. The pad layout is for reference purpose only.

SOT-23 TAPE AND REEL

SOT-23 Embossed Carrier Tape

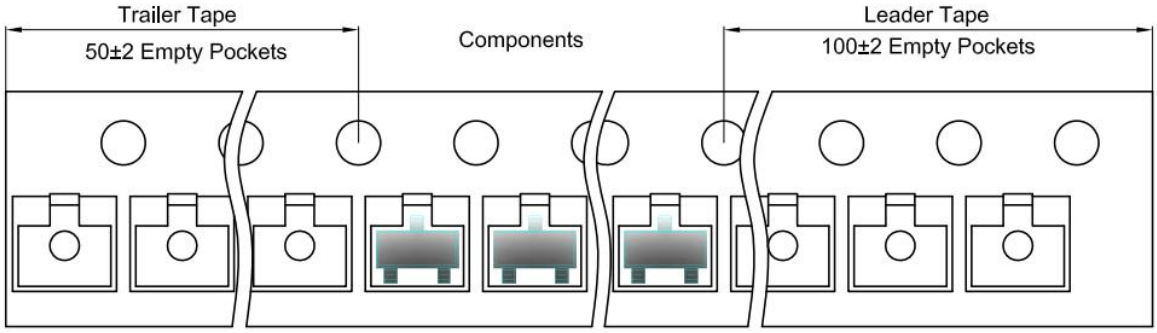


Packaging Description:

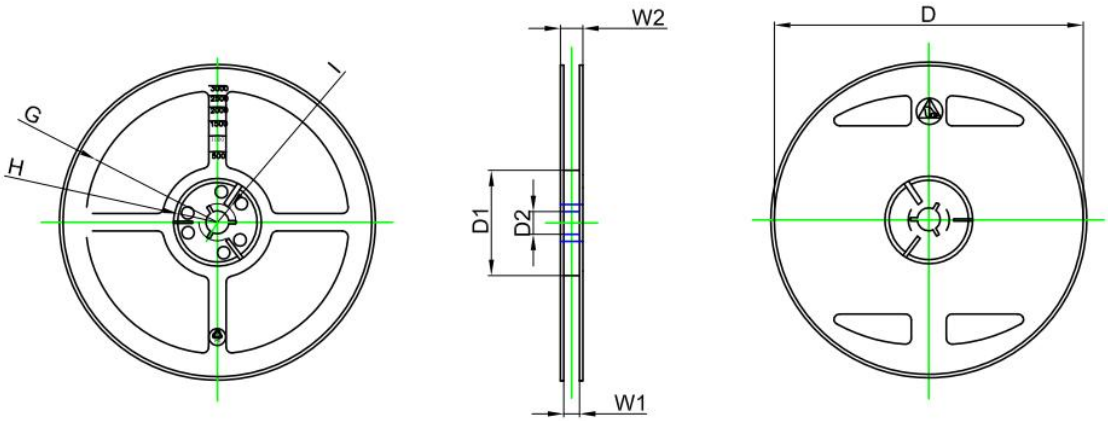
SOT-23 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel(S)



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R9.35	9.50	12.00

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	203×203×195	180,000 pcs	438×438×220	

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