NextGen Components,Inc.

PART CODE: SOT23T3904S1AM

SPECIFICATION SHEET

SPECIFICATION SHEET NO.	N0310- SOT23T3904S1AM
DATE	Mar. 10, 2021
REVISION	A0
DESCRIPITION	SMD Plastic-Encapsulate Transistors, SOT-23 series, 3 pads MMBT3904 Type, Complementary NPN Collector Power Dissipation 200mW. Collector Current 100mA Max. Operating Temp. Range -55°C ~+150°C, Package in Tape/Reel, 3000pcs/Reel RoHS/RoHS III compliant
CUSTOMER	
CUSTOMER PART NUMBER	
CROSS REF. PART NUMBER	
ORIGINAL PART NUMBER	MDD MMBT3904
PART CODE	SOT23T3904S1AM

VENDOR APPROVE
Issued/Checked/Approved   
DATE: March 10, 2021

CUSTOMER APPROVE
DATE:

NextGen Components,Inc.

PART CODE: SOT23T3904S1AM

SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

MAIN FEATURE

- Epitaxial planar die construction
- Complementary NPN
- Collector Power Dissipation 200mW
- Collector Current 100mA.

APPLICATION

- For printed circuit board

RFQ
Request For Quotation

PART CODE GUIDE

SOT23	T3904	S	1AM
1	2	3	4

1) **SOT23:** SMD Plastic-Encapsulate Transistors, 3 pads SOT-23 series Code

2) **T3904**: Type code for MMBT3904

3) **S**: Package code, Package in Tape/Reel, 3000pcs/Reel

4) **1AM:** Marking code for "1AM" on the case surface, Different Marking for different specification.

MORE ITEMS AVAILABLE

SOT23C1623S0L4	SOT23C1623S0L5	SOT23C1623S0L6	SOT23C1623S0L7	SOT23C3356SR23
SOT23C3356SR24	SOT23C3356SR25	SOT23T493AS93A	SOT23BC807SAW	SOT23BC807SBW
SOT23BC807SCW	SOT23BC856S03A	SOT23BC856S03B	SOT23BC857S03E	SOT23BC857S03F
SOT23BC857S03G	SOT23BC858S03J	SOT23BC858S03K	SOT23BC858S03L	SOT23T5401S02L
SOT2355551S0G1	SOT23BTA44S03D	SOT23BTA94S04D	SOT23BTA56S2GM	SOT232222AS01P
SOT232907AS02F	**SOT23T3904S1AM**	SOT23T3906S02A	SOT23T4401S02X	SOT23T4403S02T
SOT23S8050SJ3Y	SOT23S8550S2TY	SOT23S9012S2T1	SOT23S9013S0J3	SOT23S9014S0J6
SOT23S9015S0M6	SOT23S9018S0J8	SOT23SS805S0Y1	SOT23SS855S0Y2	
SOT23BC817S06A	SOT23BC817S06B	SOT23BC817S06C		

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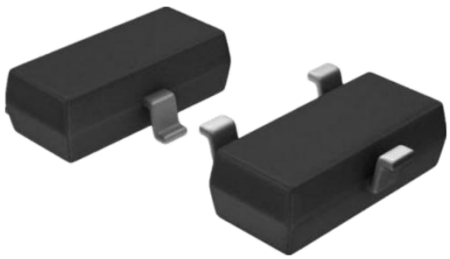
SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

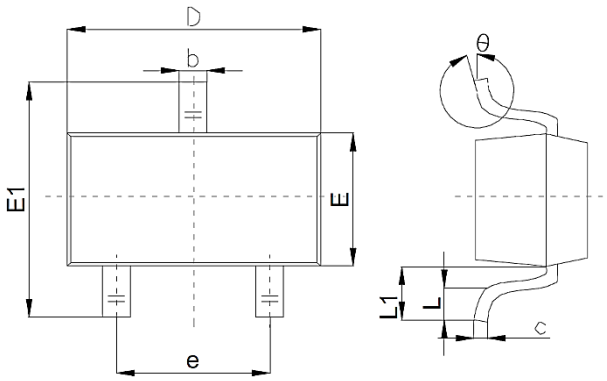
DIMENSION (Unit: Inch/mm)

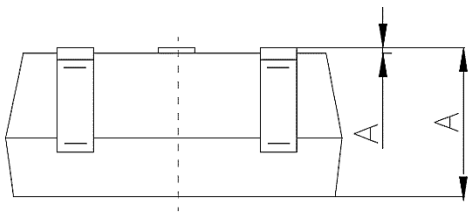
Image for reference



Marking: 1AM

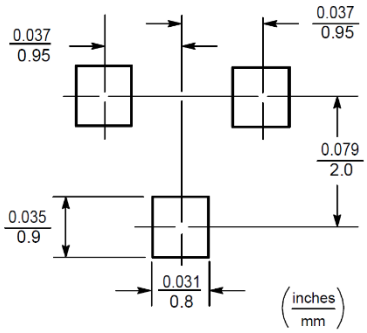
SOT-23

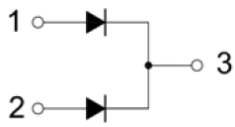




Symbol	Value (mm)		
	Min.	Typ.	Max.
A	1.0		1.4
A1			0.10
b	0.35		0.50
c	0.10		0.20
D	2.70	2.90	3.10
E	1.40		1.60
E1	2.40		2.80
e		1.9	
L	0.10		0.30
L1	0.40		
θ	0°		10°

Recommend Pad Layout





1.Base
2.Emitter
3.Collector

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PART CODE: **SOT23T3904S1AM**

SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

MECHANICAL DATA

Case	Terminals	Polarity	Mounting Position	Weight per piece
JEDEC SOT-23 molded plastic body	Solder plated, Solderable per MIL-STD-750, Method 2026	Polarity symbol marking on case	Any	0.00019 Ounce, 0.00591 grams

MAX. RATINGS AT Ta=25 °C

Parameter	SYMBOLS	VALUE	UNITS
		LIMIT	
Collector-Base Voltage	V_{CBO}	60	Volts
Collector-Emitter Voltage	V_{CEO}	40	Volts
Emitter-Base Voltage	V_{EBO}	6	Volts
Collector Current	I_C	200	mA
Collector Power Dissipation	P_C	200	mW
Thermal Resistance Junction to Ambient	R_{QJA}	625	°C/W
Junction temperature	TJ	+150	°C
Storage temperature range	T_{STG}	-55 ~ +150	°C

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SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

ELECTRICAL CHARACTERISTICS AT Ta= 25 °C

Parameter	SYMBOLS	VALUE			UNIT	Condition
		Min.	Typ.	Max.		
Collector-base breakdown voltage	$V_{(BR)CBO}$	60			V	I_C= 10μA, I_E=0
Collector-emitter breakdown voltage	$V_{(BR)CEO}$ *	40			V	I_C= 1mA, I_B=0
Emitter-base breakdown voltage	$V_{(BR)EBO}$	6			V	I_E= 10μA, I_C=0
Collector cut-off current	I_{CBO}			0.1	μA	V_{CB}=60V, I_E=0
Collector cut-off current	I_{CEX}			50	nA	V_{CE}= 30V, $V_{BE(off)}$=3V
Emitter cut-off current	I_{EBO}			0.1	μA	V_{EB}= 5V, I_C=0
DC Current gain	$h_{FE(1)}$*	100		300		V_{CE}=1V, I_C= 10mA
	$h_{FE(2)}$	60				V_{CE}=1V, I_C= 50mA
	$h_{FE(3)}$ *	30				V_{CE}=1V, I_C= 100mA
Collector-emitter saturation voltage	$V_{CE(sat)}$ *			0.3	V	IC=50 mA, I_B=5mA
				-		
Base-emitter saturation voltage	$V_{BE(sat)}$ *			0.95	V	I_C=50 mA, I_B=5mA
				-		
Transition frequency	f_T	300			MHz	V_{CE}=20V, I_C= 10mA, f=100MHz
Delay time	t_d			35	ns	V_{CC}=3V,V_{BE}=-0.5V I_C=10mA, I_{B1}=-I_{B2}=1.0mA
Rise time	t_r			35	ns	
Storage time	t_s			200	ns	V_{CC}=3V I_C=10mA I_{B1}=-I_{B2}=1.0mA
Fall time	t_f			50	ns	

Note: * pulse test: Pulse Width ≤300μs, Duty Cycle≤ 2.0%.

CLASSIFICATION OF h_{FE}

Rank	O	Y
Range	100 ~ 200	200 ~ 300
Marking	1AM	1AM

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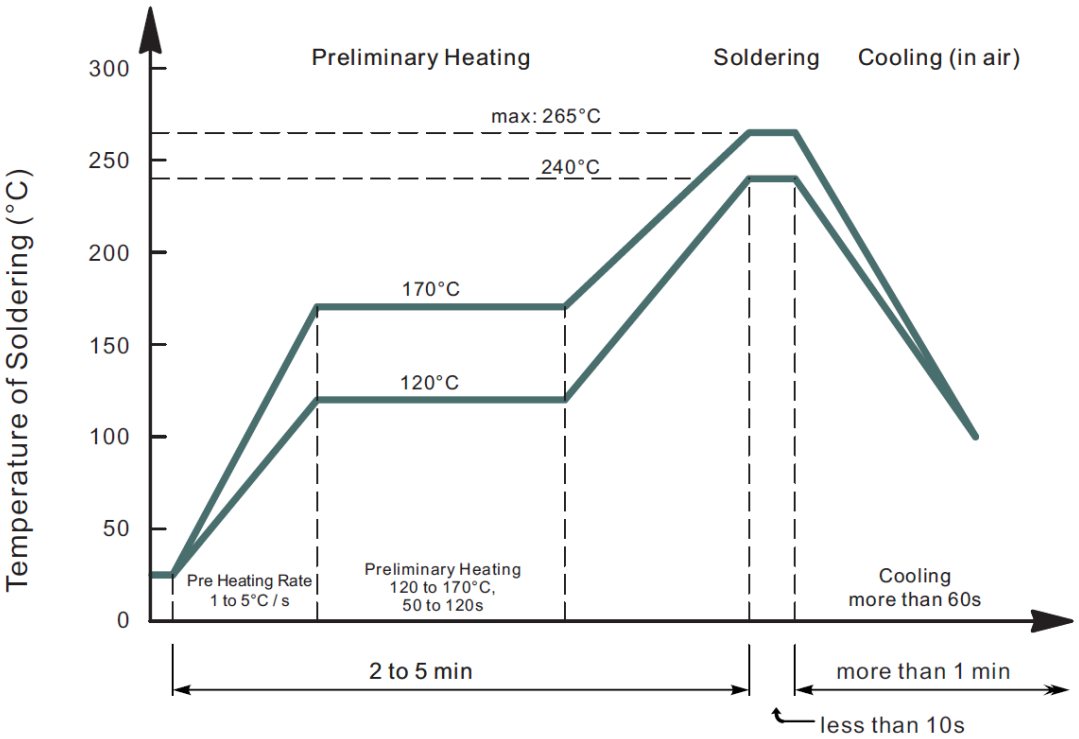
PART CODE: **SOT23T3904S1AM**

SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

RELIABILITY

Number	Experiment Items	Experiment Method And Conditions	Reference Documents
1	Solder Resistance Test	Test 260°C± 5°C for 10 ± 2 sec. Immerse body into solder 1/16" ± 1/32"	MIL-STD-750D METHOD-2031.2
2	Solderability Test	230°C ±5°C for 5 sec.	MIL-STD-750D METHOD-2026.1 0
3	Pull Test	1 kg in axial lead direction for 10 sec.	MIL-STD-750D METHOD-2036.4
4	Bend Test	0.5Kg Weight Applied To Each Lead, Bending Arcs 90 °C ± 5 °C For 3 Times	MIL-STD-750D METHOD-2036.4
5	High Temperature Reverse Bias Test	T_A=100°C for 1000 Hours at V_R=80% Rated V_R	MIL-STD-750D METHOD-1038.4
6	Forward Operation Life Test	TA=25°C Rated Average Rectified Current	MIL-STD-750D METHOD-1027.3
7	Intermittent Operation Life Test	On state: 5 min with rated IRMS Power Off state: 5 min with Cool Forced Air. On and off for 1000 cycles.	MIL-STD-750D METHOD-1036.3
8	Pressure Cooker Test	15 PSIG, T_A=121°C, 4 hours	MIL-S-19500 APPENOIXC
9	Temperature Cycling Test	-55°C~+125°C; 30 Minutes For Dwelled Time 5 minutes for transferred time. Total: 10 cycles.	MIL-STD-750D METHOD-1051.7
10	Thermal Shock Test	0°C for 5 minutes., 100°C for 5minutes, Total: 10 cycles	MIL-STD-750D METHOD-1056.7
11	Forward Surge Test	8.3ms Single Sale Sine-wave One Surge.	MIL-STD-750D METHOD-4066.4
12	Humidity Test	T_A=65°C, RH=98% for 1000 hours.	MIL-STD-750D METHOD-1021.3
13	High Temperature Storage life Test	150°C for 1000 Hours	MIL-STD-750D METHOD-1031.5

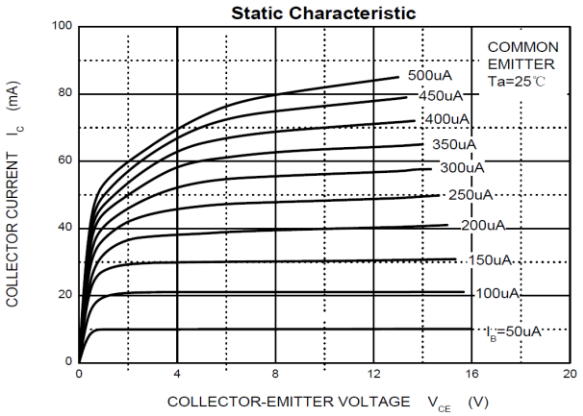
SUGGESTED REFLOW PROFILE (For Reference Only)

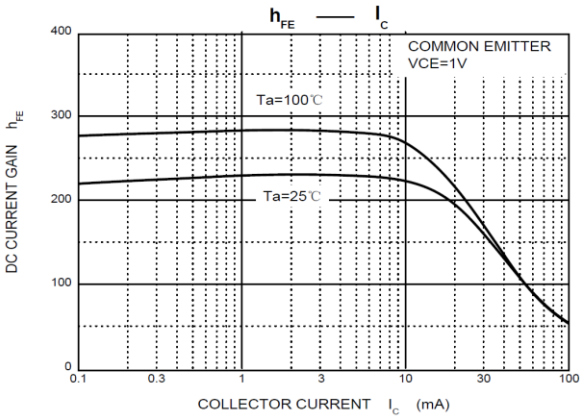


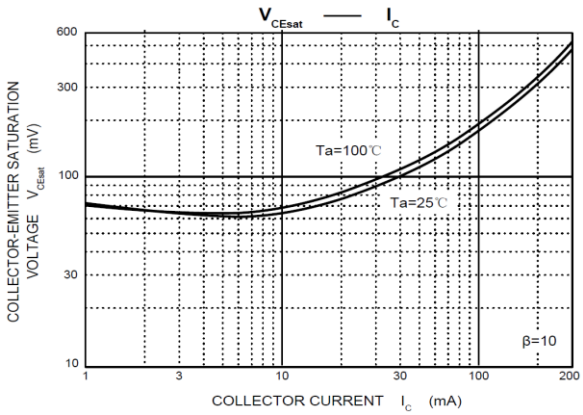
- Recommended peak temperature is over 245℃, If peak temperature is below 245 ℃, you may adjust the following parameters; time length of peak temperature (longer), time length of soldering (longer), thickness of solder paste (thicker)
- Welding shall not exceed 2 times
- Remark: lead free solder paste (96.5 sn/3.0 Ag/0.5Cu)

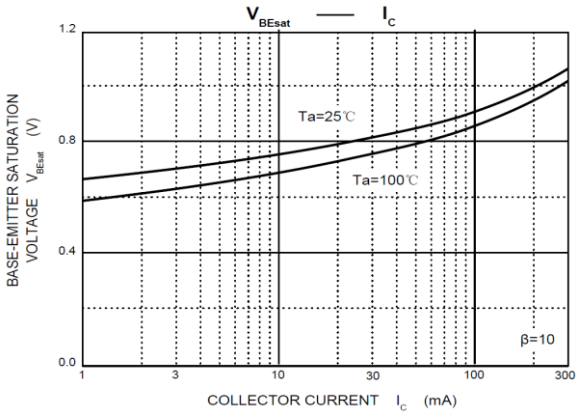
SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

RATINGS AND CHARACTERISTIC CURVES (For Reference Only)









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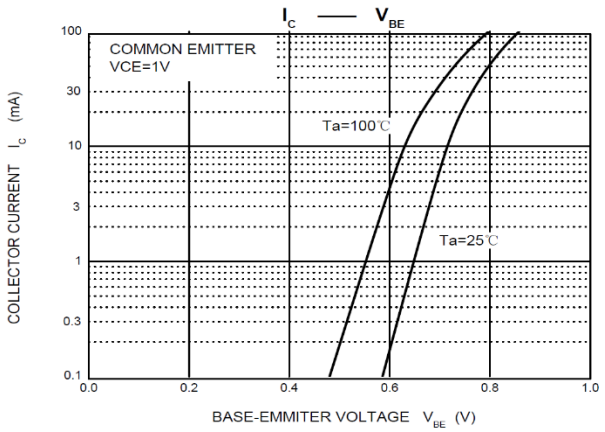
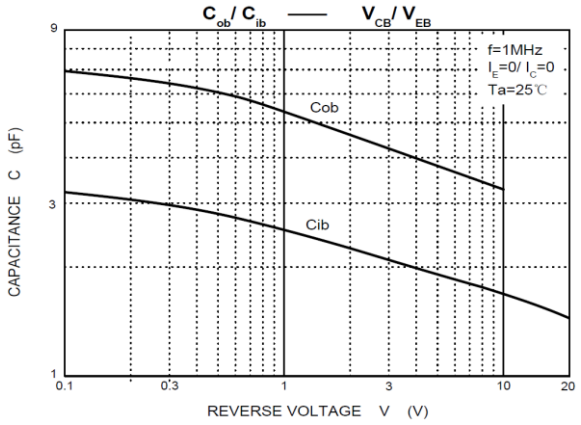
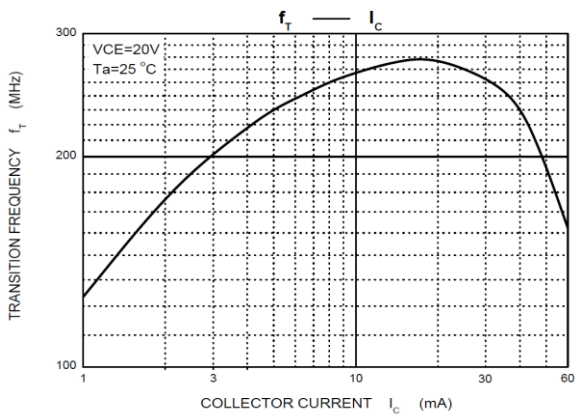
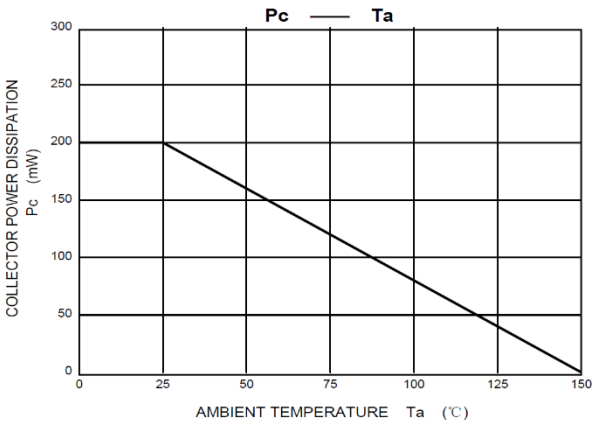
RATINGS AND CHARACTERISTIC CURVES (For Reference Only)









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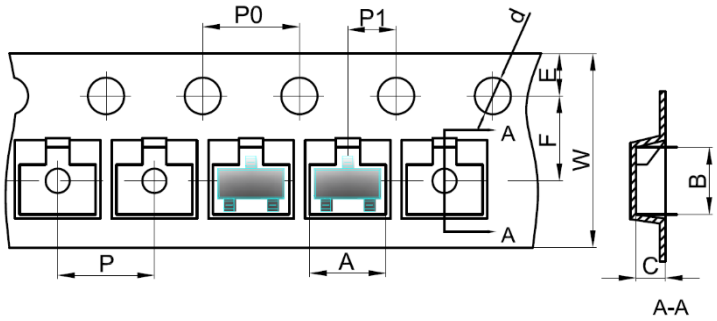
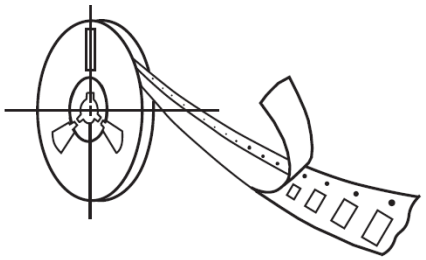
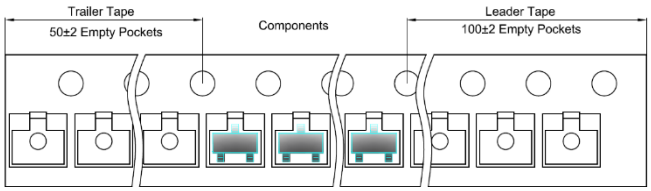
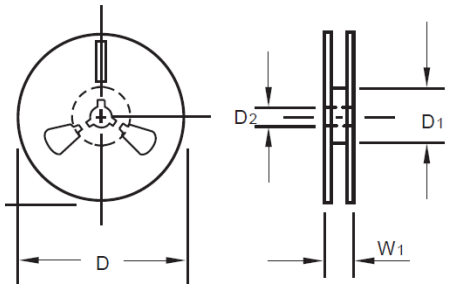
TAPE/REEL (Unit: mm)

All Devices are packed in accordance with EIA standard RS-481-A and specifications.









Item	Symbol	Tolerance	SOT-23
Carrier width	A	0.1	3.15
Carrier Length	B	0.1	2.77
Carrier Depth	C	0.1	1.22
Sprocket hole	d	0.05	1.55
7”Reel outside diameter	D	2.0	178.00
7”Reel inner diameter	D1	Min.	54.4
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.25
Tape width	W	0.3	8.00
Reel width	W1	1.0	19.50

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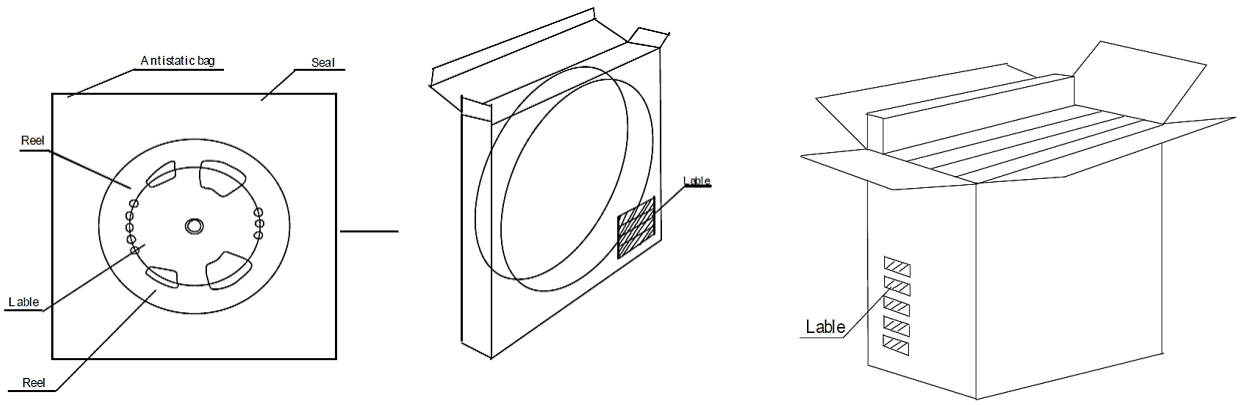
SMD PLASTIC-ENCCAPULATE TRANSISTORS SOT23 SERIES

PACKAGE

Case Code	Reel Size	MPQ (pcs)	Component Spacing (mm)	Qty. Per Box (pcs)	Inner Box L*W*H (mm)	Reel Size (mm)	Carton size L*W*H (mm)	Qty. Per Carton (pcs)	G. W (kg)
SOT-23	7”	3,000		45,000	212*207*207	178	430*430*230	180,000	6.5



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