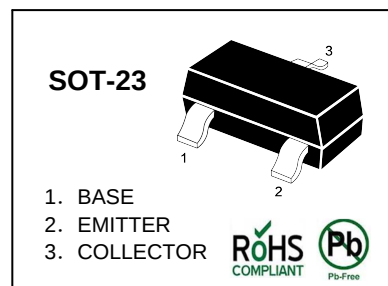


NPN Silicon Switching Transistor



Absolute Maximum Ratings ($T_a = 25\text{ }^{\circ}\text{C}$)

Parameter	Symbol	Value	Unit
Collector Base Voltage	V_{CBO}	40	V
Collector Emitter Voltage	V_{CEO}	15	V
Collector Emitter Voltage	V_{CES}	40	V
Emitter Base Voltage	V_{EBO}	4.5	V
Collector Current Continuous	I_C	200	mA
Total Device Dissipation FR-5 Board Derate above 25 $^{\circ}\text{C}$	P_{tot}	200 1.8	mW mW/ $^{\circ}\text{C}$
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	$^{\circ}\text{C/W}$
Junction and Storage Temperature Range	T_J, T_S	-55 to +150	$^{\circ}\text{C}$

(1) FR-5=1×0.75×0.062 in.

Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

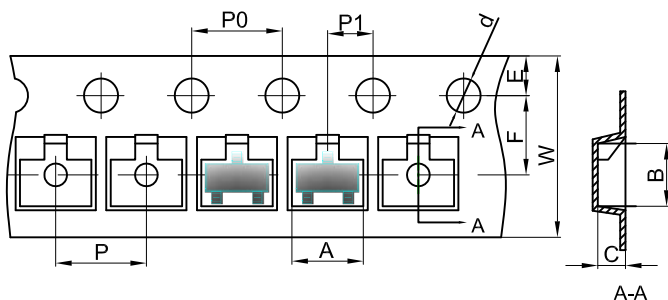
Parameter		Symbol	Min.	Max.	Unit
DC Current Gain					
at $V_{CE}=1V$, $I_C=10mA$	MMBT2369	h_{FE}	40	120	-
at $V_{CE}=1V$, $I_C=10mA$	MMBT2369A	h_{FE}	-	120	-
at $V_{CE}=0.35V$, $I_C=10mA$	MMBT2369A	h_{FE}	40	-	-
at $V_{CE}=0.35V$, $I_C=10mA$, $T_A=-55\text{ }^{\circ}\text{C}$	MMBT2369A	h_{FE}	20	-	-
at $V_{CE}=0.4V$, $I_C=30mA$	MMBT2369A	h_{FE}	30	-	-
at $V_{CE}=2.0V$, $I_C=100mA$	MMBT2369	h_{FE}	20	-	-
at $V_{CE}=1.0V$, $I_C=100mA$	MMBT2369A	h_{FE}	20	-	-
Collector Emitter Saturation Voltage					
at $I_C=10mA$, $I_B=1mA$	MMBT2369	V_{CEsat}	-	0.25	V
at $I_C=10mA$, $I_B=1mA$	MMBT2369A	V_{CEsat}	-	0.2	V
at $I_C=10mA$, $I_B=1mA$, $T_A=+125^{\circ}\text{C}$	MMBT2369A	V_{CEsat}	-	0.3	V
at $I_C=30mA$, $I_B=3.0mA$	MMBT2369A	V_{CEsat}	-	0.25	V
at $I_C=100mA$, $I_B=10mA$	MMBT2369A	V_{CEsat}	-	0.5	V
Base Emitter Saturation Voltage					
at $I_C=10mA$, $I_B=1mA$	MMBT2369A	V_{BEsat}	0.7	0.85	V
at $I_C=10mA$, $I_B=1mA$, $T_A=-55^{\circ}\text{C}$	MMBT2369A	V_{BEsat}	-	1.02	V
at $I_C=30mA$, $I_B=3mA$	MMBT2369A	V_{BEsat}	-	1.15	V
at $I_C=100mA$, $I_B=10mA$	MMBT2369A	V_{BEsat}	-	1.60	V
Collector Cutoff Current					
at $V_{CE}=20V$	MMBT2369A	I_{CES}	-	0.4	μA
Collector Cutoff Current					
at $V_{CB}=20V$		I_{CBO}	-	0.4	μA
at $V_{CB}=20V$, $T_A=150\text{ }^{\circ}\text{C}$		I_{CBO}	-	30	μA
Collector Emitter Breakdown Voltage					
at $I_C=10mA$		$V_{(BR)CEO}$	15	-	V
Collector Base Breakdown Voltage					
at $I_C=10\mu A$		$V_{(BR)CBO}$	40	-	V
Collector Emitter Breakdown Voltage					
at $I_C=10\mu A$		$V_{(BR)CES}$	40	-	V
Emitter Base Breakdown Voltage					
at $I_E=10\mu A$		$V_{(BR)EBO}$	4.5	-	V

Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
Output Capacitance at $V_{CB}=5\text{V}$, $f=1\text{MHz}$	C_{obo}	-	-	4	pF
Small Signal Current Gain at $I_C=10\text{mA}$, $V_{CE}=10\text{V}$, $f=100\text{MHz}$	H_{fe}	5.0	-	-	-
Storage Time $I_{B1}=I_{B2}=I_C=10\text{mA}$	t_s	-	5.0	13	ns
Turn-On Time $V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $I_{B1}=3\text{mA}$	t_{on}	-	8.0	12	ns
Turn-Off Time $V_{CC}=3\text{V}$, $I_C=10\text{mA}$, $I_{B1}=3.0\text{mA}$, $I_{B2}=1.5\text{mA}$	t_{off}	-	10	18	ns

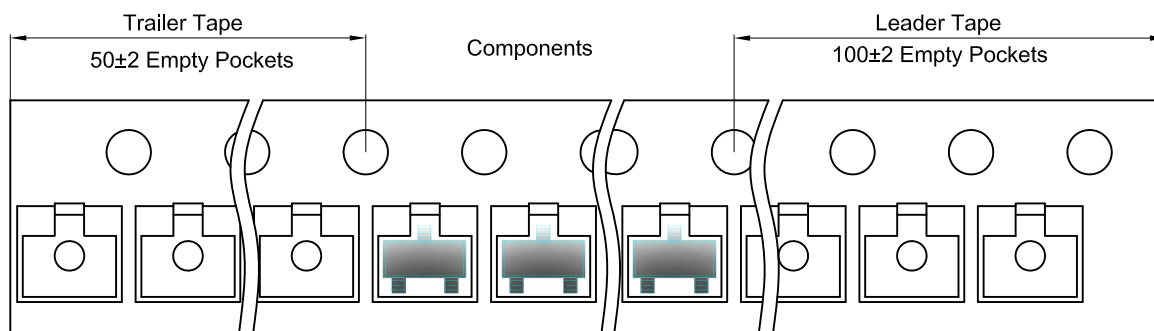
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

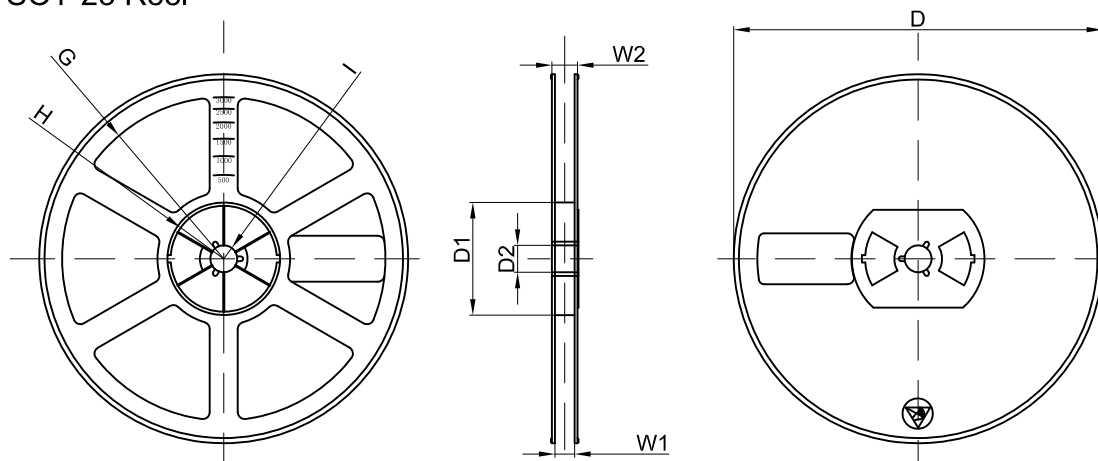


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

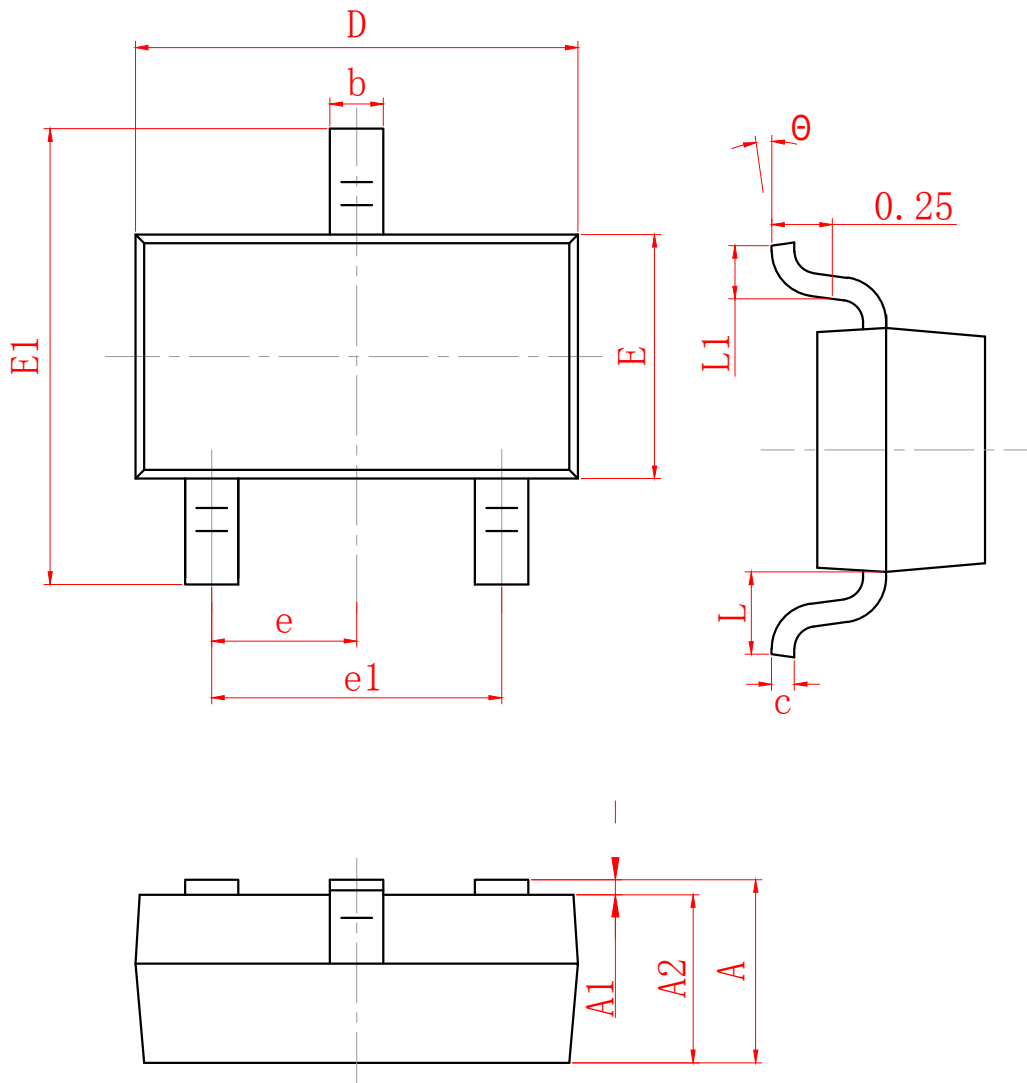


SOT-23 Reel



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	R6.50	9.50	12.30

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	



SYMBOL	MILLIMETER	
	MIN	MAX
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950 TYP	
e1	1.800	2.000
L	0.550 REF	
L1	0.300	0.500
θ	0°	8°

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