

Plastic-Encapsulate Transistors

TRANSISTOR (NPN)

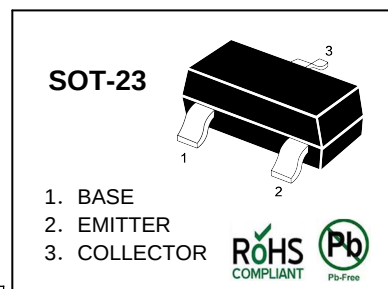
FEATURE

Low Saturation Voltage

● MARKING:619

MAXIMUM RATINGS ($T_a=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	50	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current -Continuous	2	A
P_C	Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C}/\text{W}$
P_{CM}	Maximum Power Dissipation (note 1)	0.625	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient (note 1)	200	$^{\circ}\text{C}/\text{W}$
T_J	Junction Temperature	150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature	-55~+150	$^{\circ}\text{C}$



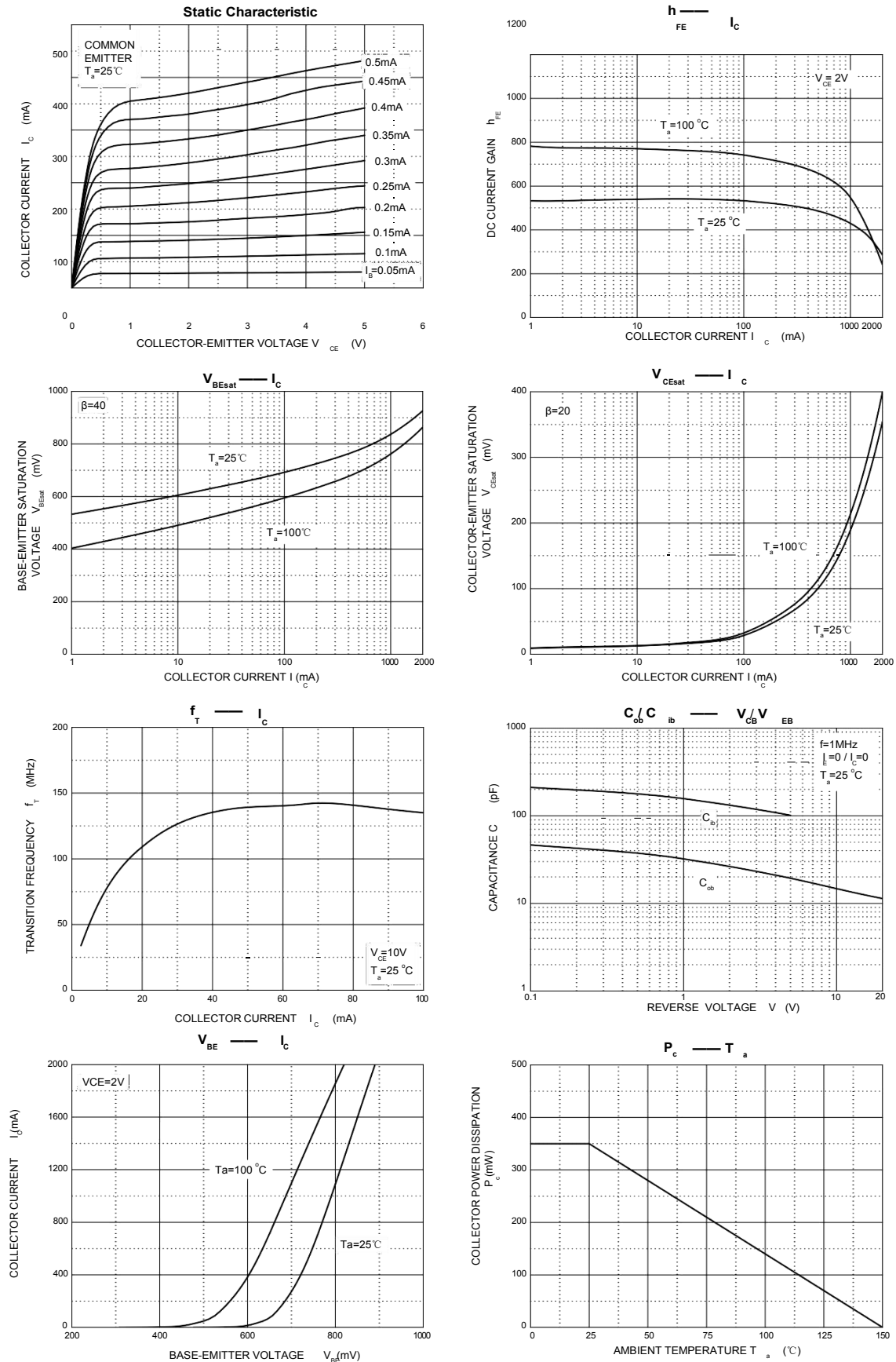
ELECTRICAL CHARACTERISTICS ($T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0$	50			V
Collector-emitter breakdown voltage (note 2)	$V_{(BR)CEO}$	$I_C=10\text{mA}, I_B=0$	50			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0$	5			V
Collector cut-off current	I_{CBO}	$V_{CB}=40\text{V}, I_E=0$			100	nA
Emitter cut-off current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			100	nA
DC current gain (note 2)	$h_{FE(1)}$	$V_{CE}=2\text{V}, I_C=10\text{mA}$	200			
	$h_{FE(2)}$	$V_{CE}=2\text{V}, I_C=0.2\text{A}$	300			
	$h_{FE(3)}$	$V_{CE}=2\text{V}, I_C=1\text{A}$	200			
	$h_{FE(4)}$	$V_{CE}=2\text{V}, I_C=2\text{A}$	100			
	$h_{FE(5)}$	$V_{CE}=2\text{V}, I_C=6\text{A}$		40		
Collector-emitter saturation voltage (note 2)	$V_{CE(sat)1}$	$I_C=0.1\text{A}, I_B=10\text{mA}$			20	mV
	$V_{CE(sat)2}$	$I_C=1\text{A}, I_B=10\text{mA}$			200	mV
	$V_{CE(sat)3}$	$I_C=2\text{A}, I_B=100\text{mA}$			240	mV
Base-emitter saturation voltage (note 2)	$V_{BE(sat)}$	$I_C=2\text{A}, I_B=50\text{mA}$			1	V
Base-emitter on voltage (note 2)	$V_{BE(on)}$	$I_C=2\text{A}, V_{CE}=2\text{V}$			1	V
Output capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$			20	pF
Turn-on time	$t_{(on)}$	$V_{CC}=10\text{V}, I_C=1\text{A}, I_{B1}=-I_{B2}=10\text{mA}$		170		ns
Turn-off time	$t_{(off)}$			750		ns
Transition frequency	f_T	$V_{CE}=10\text{V}, I_C=50\text{mA}, f=100\text{MHz}$	100			MHz

Notes :

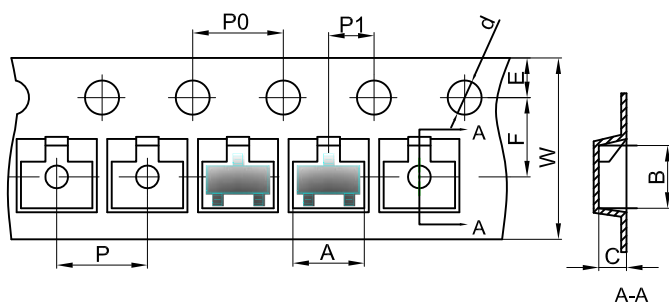
- Maximum power dissipation is calculated assuming that the device is mounted on a ceramic substrate measuring 15x15x0.6mm.
- Pulse test: Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2.0\%$.

Typical Characteristics



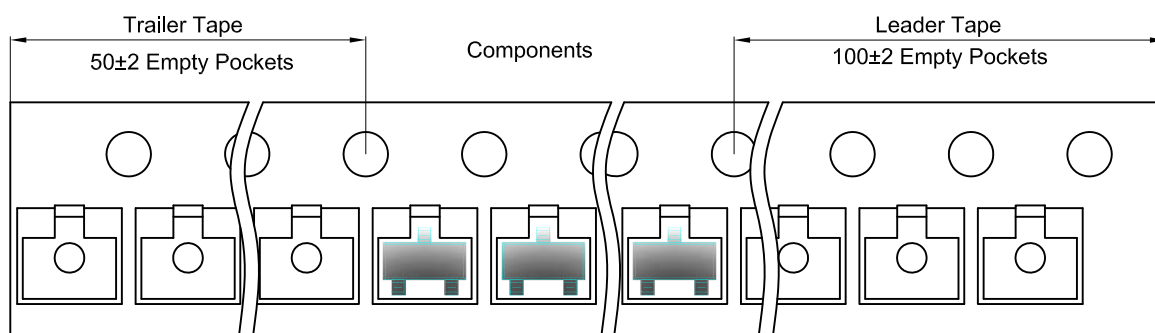
SOT-23 Tape and Reel

SOT-23 Embossed Carrier Tape

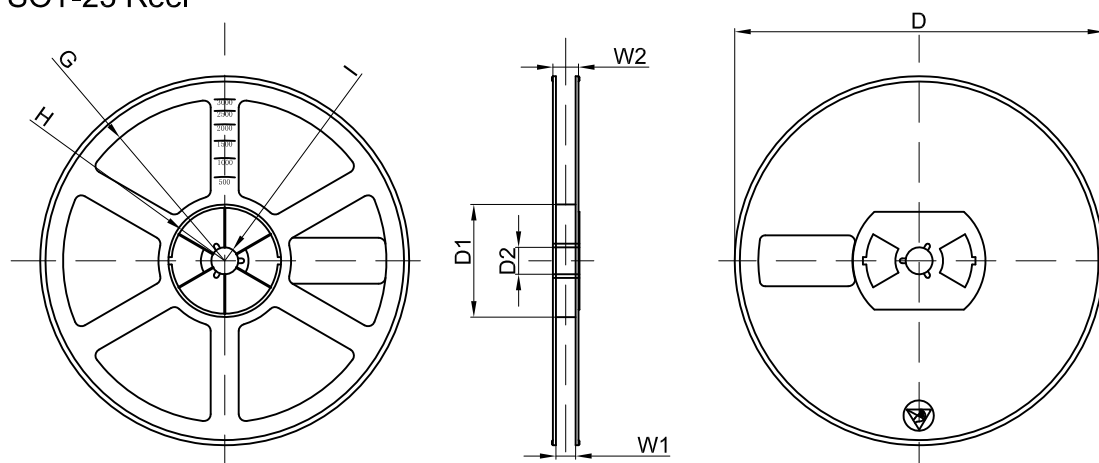


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer

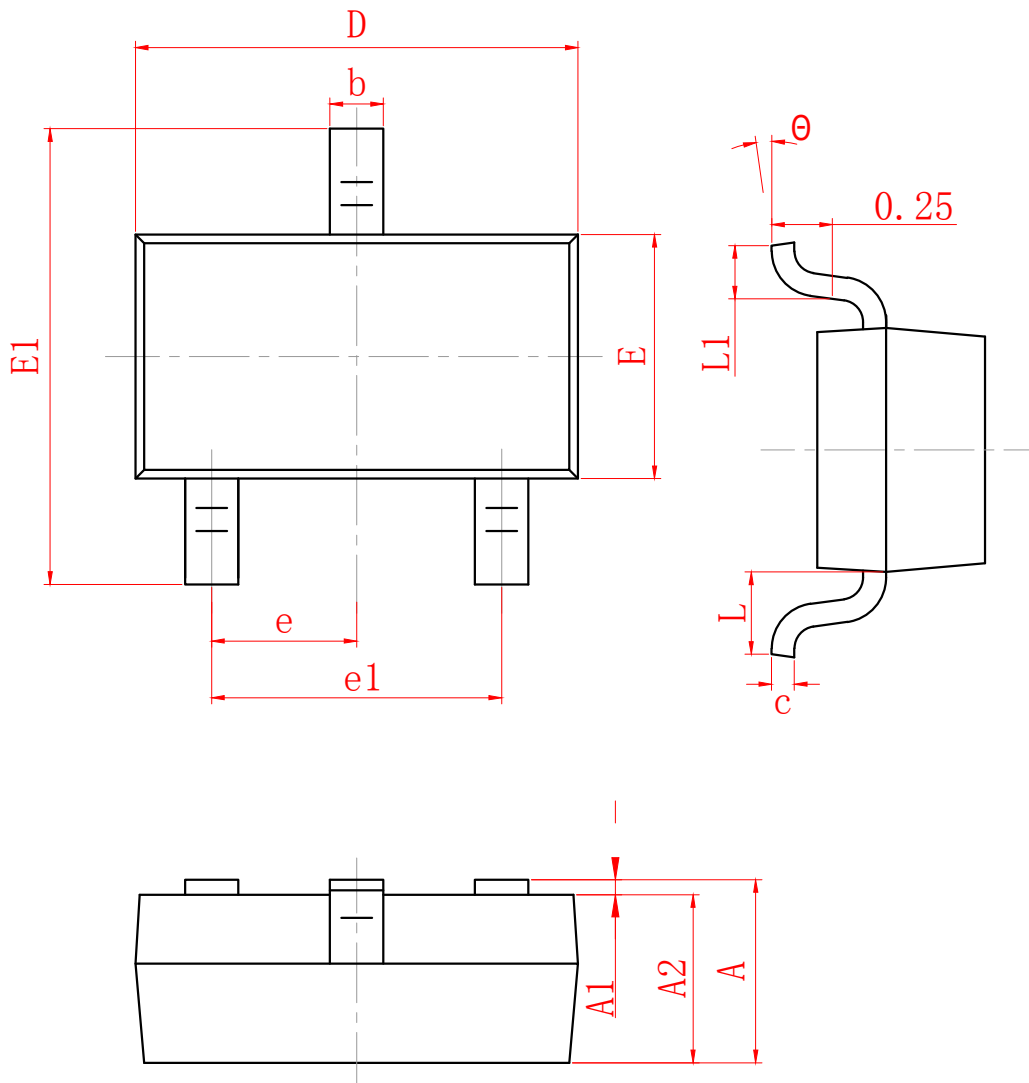


SOT-23 Reel



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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