

30 V Low $V_{CE(sat)}$ NPN Transistor

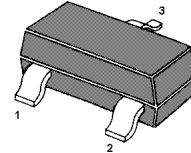
FEATURES

- Low collector-emitter saturation voltage
- High current capabilities
- Improved device reliability due to reduced heat generation.

APPLICATIONS

- General purpose switching and muting
- LCD backlighting
- Supply line switching circuits
- Battery driven equipment (mobile phones, video cameras and hand-held devices).

SOT-23



1.Base 2.Emitter 3.Collector

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}	30	V
Emitter Base Voltage		V_{EBO}	5	V
Collector Current (DC)		I_C	1	A
Peak Collector Current		I_{CM}	2	A
Peak Base Current		I_{BM}	1	A
Total Power Dissipation	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ¹⁾	P_{tot}	200	mW
	$T_{amb} \leq 25\text{ }^\circ\text{C}$ ²⁾		450	
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_s	-65 to +150	$^\circ\text{C}$
Thermal Resistance From Junction to Ambient	In free air ¹⁾	$R_{th\ j-a}$	417	K/W
	In free air ²⁾		278	
Operating Ambient Temperature		T_{amb}	-65 to +150	$^\circ\text{C}$

¹⁾ Device mounted on a printed-circuit board; single sided copper; tinplated; standard footprint.

²⁾ Device mounted on a printed-circuit board; single sided copper; tinplated; mounting pad for collector 1cm².



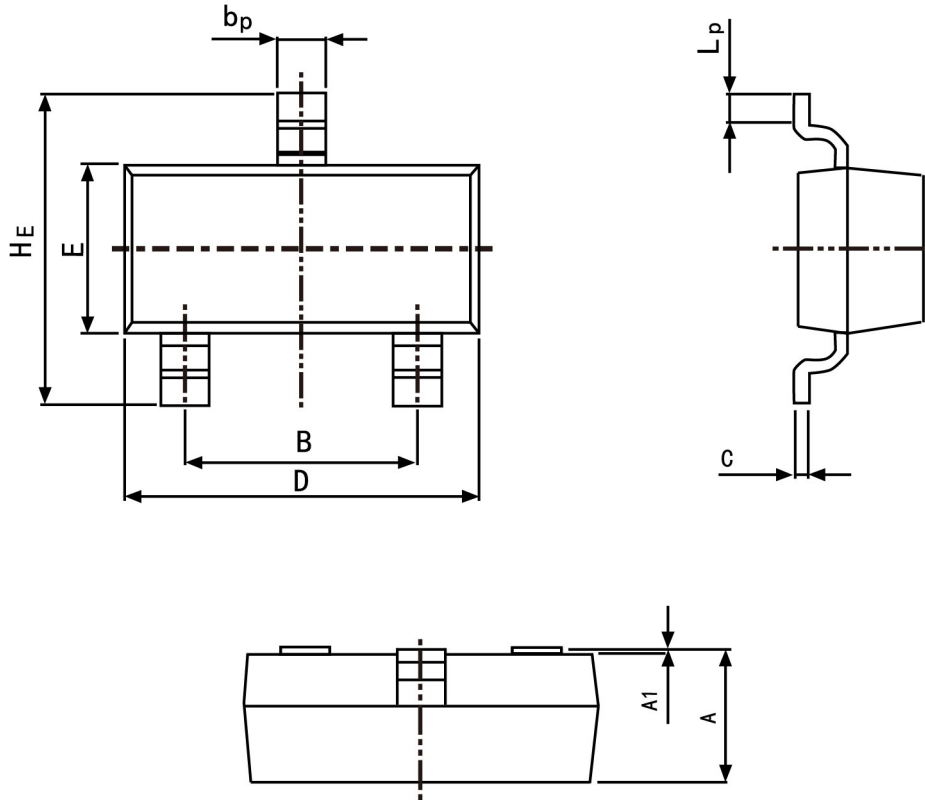
Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit
DC Current Gain					
at $V_{CE}=5V, I_C=1mA$	h_{FE}	300	-	-	
at $V_{CE}=5V, I_C=500mA$	h_{FE}	300	-	900	
at $V_{CE}=5V, I_C=1A$	h_{FE}	200	-	-	
Collector-Base Cutoff Current					
at $V_{CB}=40V$	I_{CBO}	-	-	100	nA
at $V_{CB}=40V, T_{amb}=150\text{ }^{\circ}\text{C}$		-	-	50	μA
Collector-Emitter Cutoff Current					
at $V_{CE}=30V$	I_{CEO}	-	-	100	nA
Emitter-Base Cutoff Current					
at $V_{EB}=5V$	I_{EBO}	-	-	100	nA
Collector-Emitter Saturation Voltage					
at $I_C=100mA, I_B=1mA$	$V_{CE(sat)}$	-	-	200	mV
at $I_C=500mA, I_B=50mA$		-	-	250	
at $I_C=1A, I_B=100mA$		-	-	500	
Equivalent on-Resistance					
at $I_C=500mA, I_B=50mA$;	$R_{CE(sat)}$	-	260	<500	$m\Omega$
Base-Emitter Saturation Voltage					
at $I_C=1A, I_B=100mA$	$V_{BE(sat)}$	-	-	1.2	V
Base-Emitter Turn-on Voltage					
at $V_{CE}=5V, I_C=1A$	$V_{BE(on)}$	-	-	1.1	V
Transition Frequency					
at $V_{CE}=10V, I_C=50mA, f=100MHz$	f_T	150	-	-	HMz
Collector Capacitance					
at $V_{CB}=10V, f=1MHz$	C_C	-	-	10	pF

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



Symbol	Dimension in Millimeters	
	Min	Max
A	0.95	1.40
B	1.78	2.04
b_p	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A_1	0.100	0.013
L_p	0.20	0.50