NPN low V_{CEsat} (BISS) transistor

FEATURES

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

APPLICATIONS

- Supply line switching circuits
- Battery management applications
- DC/DC converter applications
- Strobe flash units
- Heavy duty battery powered equipment (motor and lamp drivers).

DESCRIPTION

NPN low V_{CEsat} transistor in a SOT23 plastic package.

MARKING : ZE

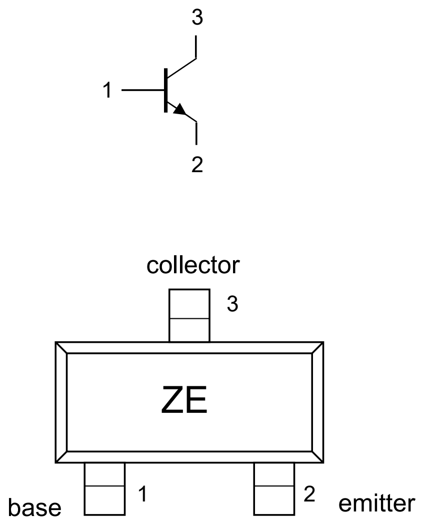


Fig.1 Simplified outline (SOT23) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 60134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	–	40	V
V_{CEO}	collector-emitter voltage	open base	–	40	V
V_{EBO}	emitter-base voltage	open collector	–	5	V
I_C	collector current (DC)		–	2	A
I_{CM}	peak collector current		–	3	A
I_{BM}	peak base current		–	300	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25$ ℃; note1	–	300	mW
		$T_{amb} \leq 25$ ℃; note2	–	480	mW
T_{stg}	storage temperature		–65	+150	℃
T_j	junction temperature		–	150	℃
T_{amb}	operating ambient temperature		–65	+150	℃

Notes

1. Device mounted on a printed-circuit board, single sided copper, tinplated and standard footprint.
2. Device mounted on a printed-circuit board, single sided copper, tinplated and mounting pad for collector 1 cm^2.

CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
I_{CBO}	collector-base cut-off current	$I_E = 0$; $V_{CB} = 30$ V	–	–	100	nA
		$I_E = 0$; $V_{CB} = 30$ V; $T_j = 150$ °C	–	–	50	μA
I_{EBO}	emitter-base cut-off current	$I_C = 0$; $V_{EB} = 4$ V	–	–	100	nA
h_{FE}	DC current gain	$I_C = 100$ mA; $V_{CE} = 2$ V	350	470	–	
		$I_C = 500$ mA; $V_{CE} = 2$ V	300	450	–	
		$I_C = 1$ A; $V_{CE} = 2$ V	300	420	–	
		$I_C = 2$ A; $V_{CE} = 2$ V	150	250	–	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 100$ mA; $I_B = 1$ mA	–	45	70	mV
		$I_C = 500$ mA; $I_B = 50$ mA	–	70	100	mV
		$I_C = 750$ mA; $I_B = 15$ mA	–	120	180	mV
		$I_C = 1$ A; $I_B = 50$ mA; note 1	–	130	180	mV
		$I_C = 2$ A; $I_B = 200$ mA; note 1	–	240	320	mV
R_{CEsat}	equivalent on-resistance	$I_C = 500$ mA; $I_B = 50$ mA; note 1	–	140	<200	mΩ
V_{BEsat}	base-emitter saturation voltage	$I_C = 2$ A; $I_B = 200$ mA; note 1	–	–	1.1	V
V_{BEon}	base-emitter turn on voltage	$I_C = 100$ mA; $V_{CE} = 2$ V	–	–	0.75	V
C_c	collector capacitance	$I_E = I_e = 0$; $V_{CB} = 10$ V; f = 1 MHz	–	15	20	pF
f_T	transition frequency	$I_C = 100$ mA; $V_{CE} = 10$ V; f = 100 MHz	100	230	–	MHz

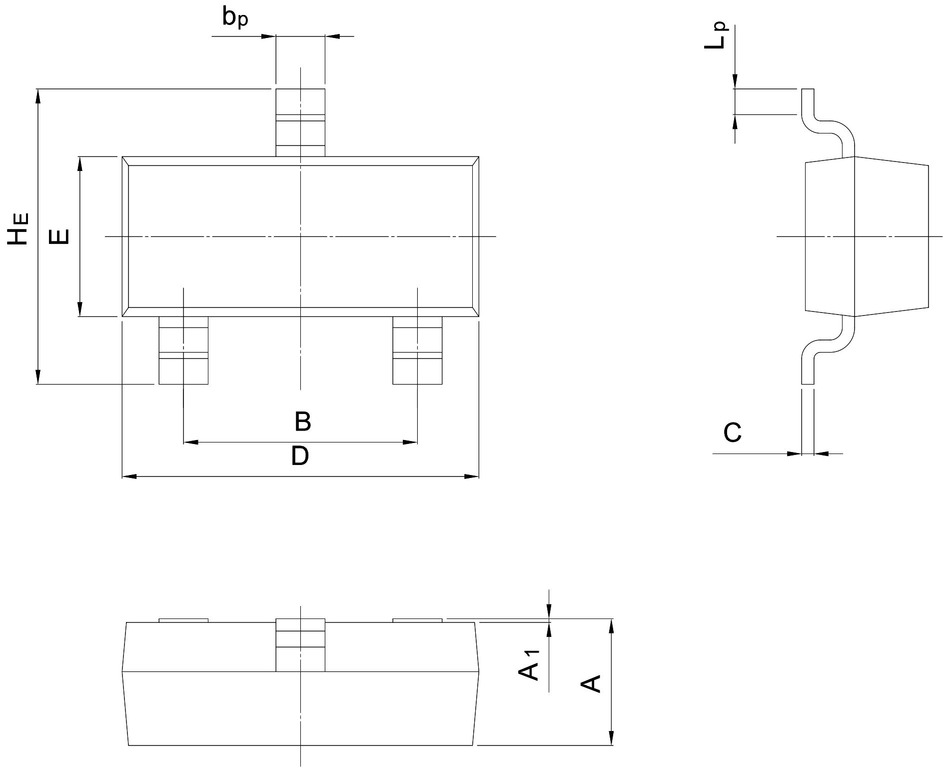
Note

1. Pulse test: $t_p \leq 300$ μs; $\delta \leq 0.02$.

PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b_p	C	D	E	H_E	A_1	L_p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20