



NXP low V_{CEsat} (BISS) transistors



Efficient, low V_{CEsat} BISS transistors in a range of package options

These low V_{CEsat} transistors live up to their name as Breakthrough In Small Signal (BISS) transistors. They offer low power losses with higher energy efficiency than standard transistors in the same package, and are available in smaller packages that save PCB space. Choose from single and double transistors, resistor equipped transistors (RETs), or load switches, which combine a low V_{CEsat} transistor with a RET in a single package.

Key features

- ▶ Low V_{CEsat} and high current capability
- ▶ Broad portfolio supports all kinds of applications
- ▶ Wide voltage range, including high-voltage types up to 500 V
- ▶ AEC-Q101 qualified

Applications

- ▶ Portable applications, e.g. mobile phones, DSC, PDA
- ▶ Power management
- ▶ Load switches
- ▶ Battery chargers
- ▶ DC/DC converter
- ▶ LED driver circuits in LCD backlight units

Summary of key arguments

Criteria for decision	Competitive advantage	Customers benefit from
Energy consumption	High power handling capabilities on ultra-small footprint, with third-generation BISS transistors reducing heat by 65% versus typical general-purpose transistors	<ul style="list-style-type: none"> ▶ optimum power performance while saving space ▶ being able to integrate more functions onto a PCB
Integration	Portfolio includes double transistors and RETs, as well as load switches, which reduce component count from four to one versus single-device solutions	<ul style="list-style-type: none"> ▶ fewer components ▶ simpler circuit layouts ▶ lower pick-and-place costs
Saving space	Enable the same performance in smaller packages	<ul style="list-style-type: none"> ▶ increased layout flexibility and more PCB space
Track record	A portfolio, now in its third generation, that has shipped more than 1 billion devices, has been designed into all kinds of applications, and is used by most of the top manufacturers	<ul style="list-style-type: none"> ▶ mature products

Product highlights

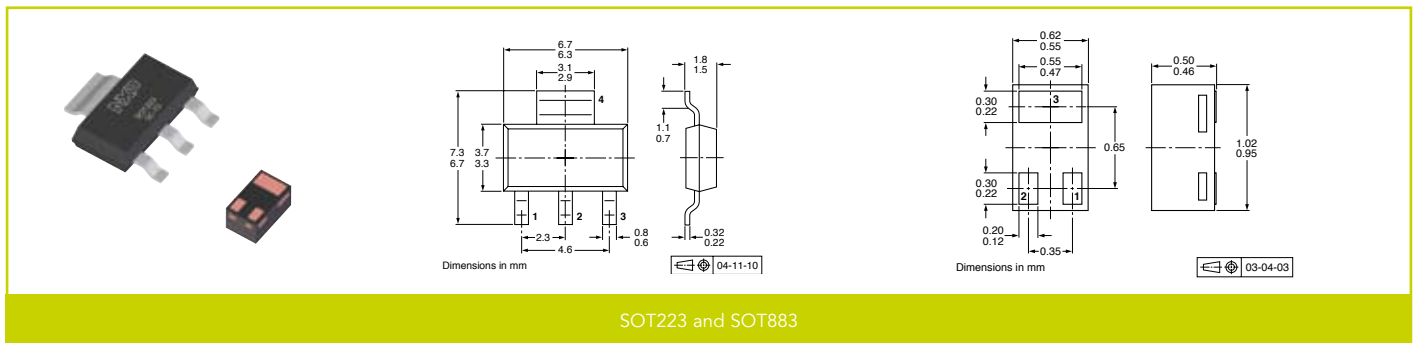
Best-in-class ratings for I_C and V_{CEsat} in a wide and flexible package range e.g.

PBSS302NZ	5.8 A, 20 V	in SOT223
PBHV8540Z	0.5 A, 500 V	High voltage transistor in SOT223
PBSS306NX	4.5 A, 100 V	in SOT89
PBSS304PD	3 A, 80 V	in SOT457
PBL5602xD	1.5 A, 60 V	Loadswitch in SOT457
PBSS4350T	2 A, 50 V	in SOT23
PBSS2515M	0.5 A, 15 V	in ultra-small SOT883

Have a look at NXP's complete low V_{CEsat} (BISS) transistor portfolio and get details at: www.nxp.com → products → bipolar transistors → Low V_{CEsat} (BISS) transistors

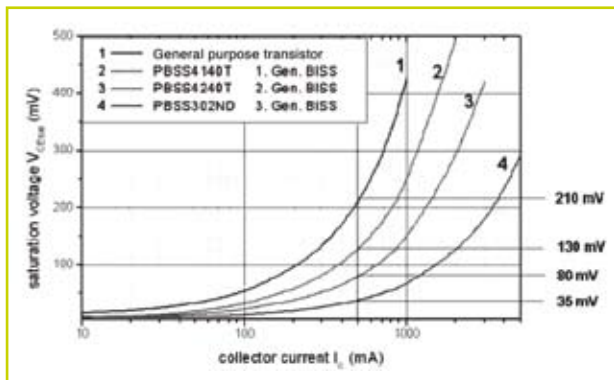
Package information: highest performance to smallest footprint

The collector current I_C can reach up to 6 A while using a SOT223 package with a footprint of 6.5 x 3.5 mm. A product in leadless SOT883 - whose footprint is just 2.6 % of a SOT223 - can still reach a collector current I_C of 0.5 A. This gives great opportunities for the miniaturization of end product.



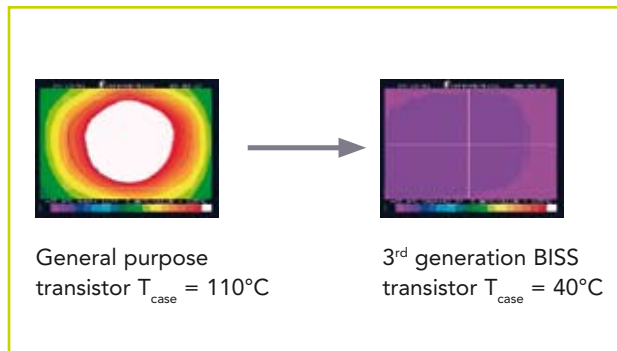
Saturation voltage

General purpose vs. low V_{CEsat} (BISS) transistor



65 % heat reduction by BISS transistors

Temperature profile of device surface (T_{case}). Comparison of a general purpose transistor and a 3rd generation BISS transistor.



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