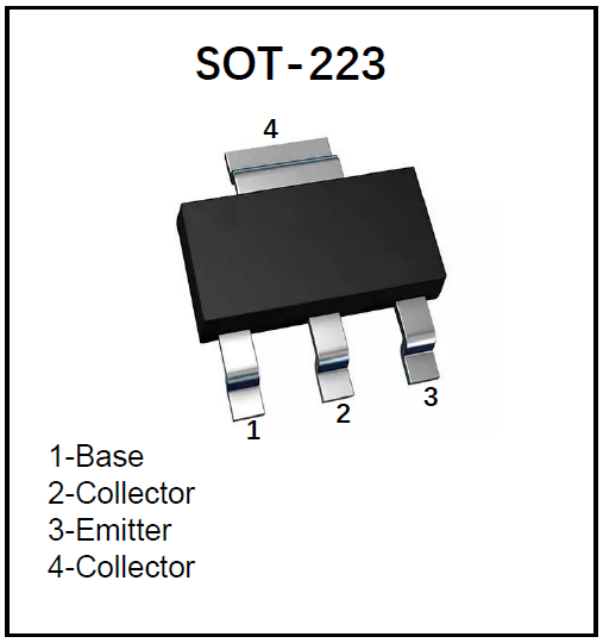
PNP Low Vcesat Transistor



Features

- Moisture Sensitivity Level 1
- Low collector-emitter saturation voltage
- Part no. with suffix “Q” means AEC-Q101 qualified

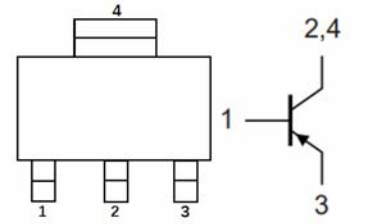
Application

- DC/DC converters; MOSFET gate driving
- Motor control; Power switches

Mechanical Data

- **Package**: SOT-223
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** S304PZ.

■Equivalent circuit



■**Maximum Ratings** (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Value
Minimum Collector-Emitter Voltage	V_{CEO}	V	-60
Minimum Collector-Base Voltage	V_{CBO}	V	-60
Minimum Emitter-Base Voltage	V_{EBO}	V	-5
Collector Current	I_C	A	-4.5
Power Dissipation (Note1)	P_D	W	0.7
Power Dissipation (Note2)	P_D	W	1
Operation Junction Temperature	T_j	℃	-55 to +150
Storage Temperature	T_{stg}	℃	-55 to +150

■Electrical Characteristics (Ta=25℃ unless otherwise noted)

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-Emitter Voltage	V_{CBO}	V	I_C= -100uA,I_E=0	-60		
Collector-Base Voltage	V_{CEO}	V	I_C= -10mA,I_B=0	-60		
Emitter-Base Voltage	V_{EBO}	V	I_E= -100μA,I_C=0	-5		
Collector-Base cut-off current	I_{CBO}	nA	V_{CB}= -60V, I_E =0			-100
Collector-Emitter cut-off current	I_{EBO}	nA	V_{EB}= -5V, I_C =0			-100
DC Current Gain	h_{FE}		V_{CE}= -2V,I_C= -0.5A	200		
	h_{FE}		V_{CE}= -2V,I_C= -1A	200		
	h_{FE}		V_{CE}= -2V,I_C= -2A	150		
	h_{FE}		V_{CE}= -2V,I_C= -4A	120		
	h_{FE}		V_{CE}= -2V,I_C= -6A	60		
Collector-Emitter Saturation Voltage	$V_{CE(sat)}1$	mV	I_C= -0.5A,I_B= -50mA			-50
	$V_{CE(sat)}2$	mV	I_C= -1A,I_B= -50mA			-90
	$V_{CE(sat)}3$	mV	I_C= -1A,I_B= -10mA			-190
	$V_{CE(sat)}4$	mV	I_C= -2A,I_B= -40mA			-230
	$V_{CE(sat)}5$	mV	I_C= -4A,I_B= -200mA			-300
	$V_{CE(sat)}6$	mV	I_C= -4A,I_B= -400mA			-230
	$V_{CE(sat)}7$	mV	I_C= -4.5A,I_B= -225mA			-375
Equivalent On-resistance	R_{CEsat}	mΩ	I_C= -2A,I_B= -40mA			115
		mΩ	I_C= -4A,I_B= -200mA			75
Base-Emitter Saturation Voltage	$V_{BE(sat)}1$	V	I_C= -1A,I_B= -100mA			-0.9
	$V_{BE(sat)}2$	V	I_C= -4A,I_B=-400mA			-1.05
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	V	V_{CE}= -2V I_C= -2A			-0.85
Transition Frequency	f_T	MHz	I_C= -100mA, V_{CE}= -10V,f=100MHz		100	

■Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
PBSS304PZQ	F2	Approximate 0.11	2500	5000	25000	13” reel

■ Thermal Characteristics

Parameter	Symbol	Unit	Value
Thermal resistance, junction-to-ambient	RθJ-A(1)	℃/W	179
Thermal resistance, junction-to-ambient	RθJ-A(2)	℃/W	125

Note：

（1）Thermal resistance from junction to ambient, mounted on FR4 P.C.B. with standard footprint.

（2）Thermal resistance from junction to ambient ,mounted on FR4 P.C.B. with 1cm^2 copper collector pad area.

■**Characteristics** (Typical)

Fig. 1 - Static characteristic

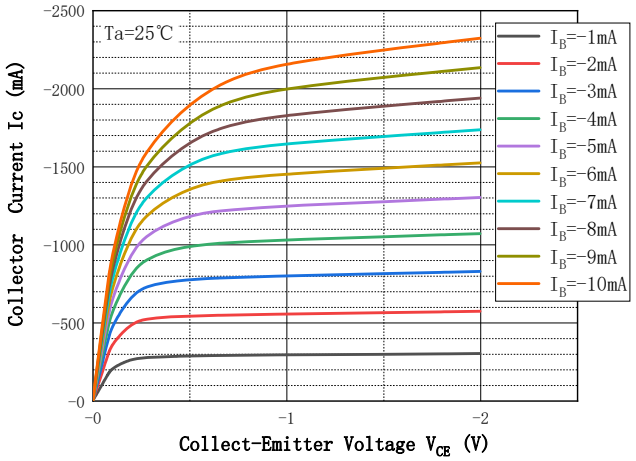


Fig. 2 - DC Current Gain

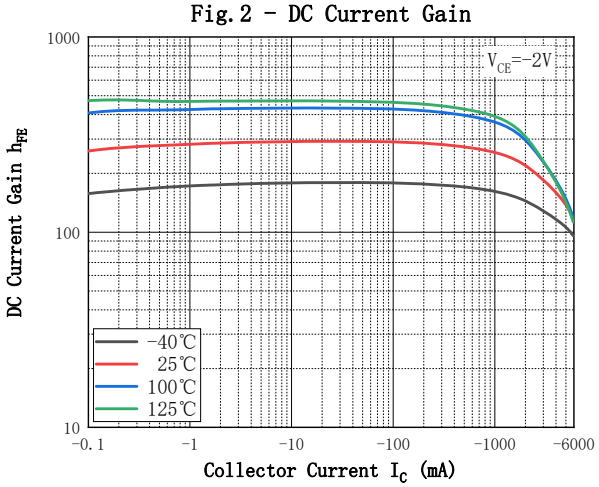


Fig. 3 - Collect-Emitter Saturation Voltage

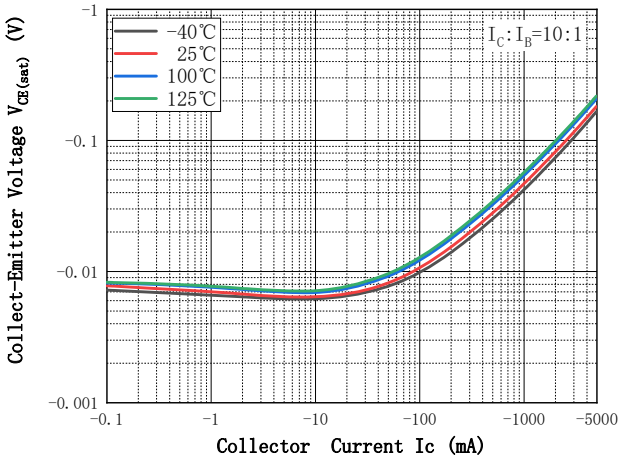


Fig. 4 - Base-Emitter Voltage

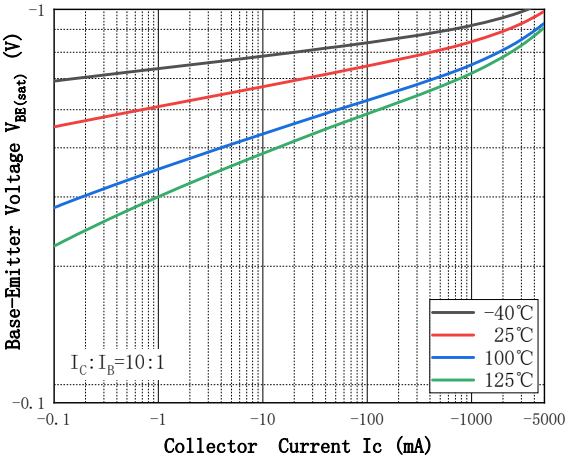


Fig.5 - Base-Emitter On Voltage

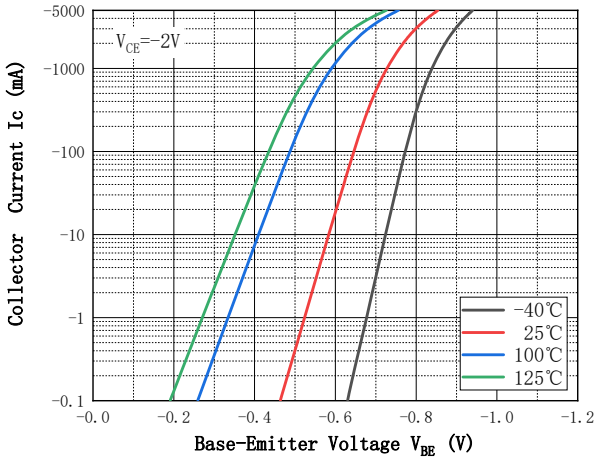


Fig.6 - Cob/Cib—VCB/VEB

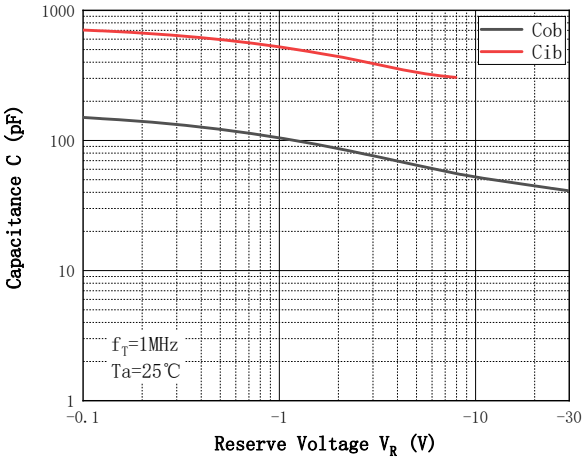
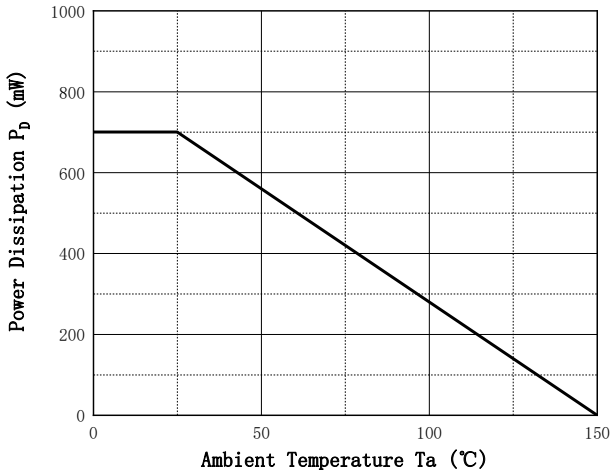
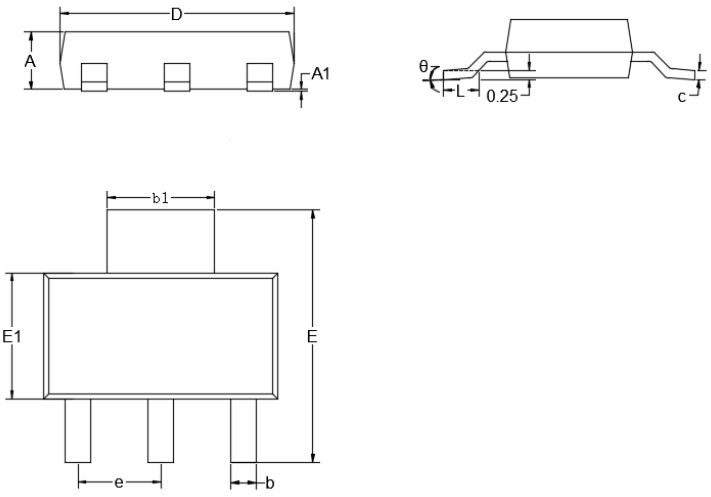


Fig.7 - Power Derating Curve

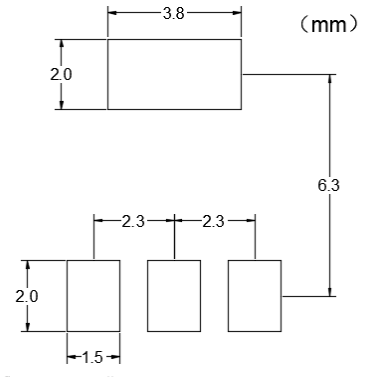


■SOT-223 Package Outline Dimensions



DIMENSIONS				
DIM	INCHES		MM	
	MIN	MAX	MN	MAX
A	0.0591	0.0670	1.5000	1.7000
A1	0.0008	0.0039	0.0200	0.1000
b	0.0259	0.0330	0.6600	0.8400
b1	0.1140	0.1220	2.9000	3.1000
c	0.0090	0.0138	0.2300	0.3500
D	0.2480	0.2640	6.3000	6.7000
E	0.2637	0.2874	6.7000	7.3000
E1	0.1290	0.1460	3.3000	3.7000
e	0.0866	0.0945	2.2000	2.4000
L	0.0295	0.0492	0.7500	1.2500
θ	0°	10°	0°	10°

■SOT-223 Suggested Pad Layout



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