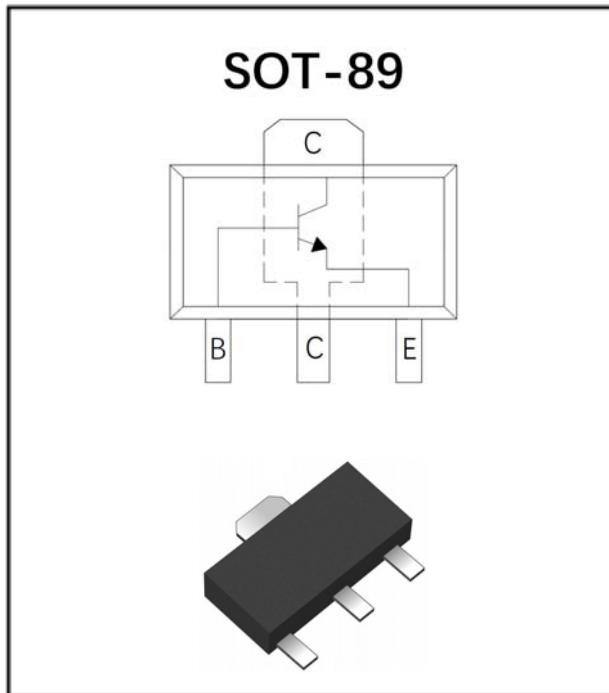


NPN Low Vcesat Transistor



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-89
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Marking:** 5E.

■Maximum Ratings (Ta=25°C 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	4.7
Collector Power Dissipation	P_C	mW	600
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	°C/W	208
Operation Junction Temperature	T_J	°C	-55 to +150
Storage Temperature	T_{stg}	°C	-55 to +150



PBSS304NXQ

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

Item	Symbol	Unit	Conditions	Min	TYP	Max
Collector-Emitter Voltage	V_{CBO}	V	$I_C=100\mu A, I_E=0$	60		
Collector-Base Voltage	V_{CEO^*}	V	$I_C=10mA, I_B=0$	60		
Emitter-Base Voltage	V_{EBO}	V	$I_E=100\mu A, I_C=0$	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}		$V_{CE}=2V, I_C=0.5A$	300		
	h_{FE}		$V_{CE}=2V, I_C=1A$	300		
	h_{FE}		$V_{CE}=2V, I_C=2A$	250		
	h_{FE}		$V_{CE}=2V, I_C=4A$	150		
	h_{FE}		$V_{CE}=2V, I_C=6A$	75		
Collector-Emitter Saturation Voltage	$V_{CE(sat)1}$	mV	$I_C=0.5A, I_B=50mA$			35
	$V_{CE(sat)2}$	mV	$I_C=1A, I_B=50mA$			70
	$V_{CE(sat)3}$	mV	$I_C=1A, I_B=10mA$			120
	$V_{CE(sat)4}$	mV	$I_C=2A, I_B=40mA$			150
	$V_{CE(sat)5}$	mV	$I_C=4A, I_B=200mA$			210
	$V_{CE(sat)6}$	mV	$I_C=4A, I_B=400mA$			200
	$V_{CE(sat)7}$	mV	$I_C=4A, I_B=80mA$			290
	$V_{CE(sat)8}$	mV	$I_C=4.7A, I_B=235mA$			245
Equivalent On-resistance	R_{CEsat}	mΩ	$I_C=4A, I_B=200mA$			53
		mΩ	$I_C=4A, I_B=80mA$			73
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		
Collector Capacitance	C_{ob}	pF	$V_{CB}=10V, I_E=0A, f=1MHz$		40	

■Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
PBSS304NXQ	F2	Approximate 0.055	1000	8000	32000	7" reel

■Characteristics (Typical)

Fig.1 - Static characteristic

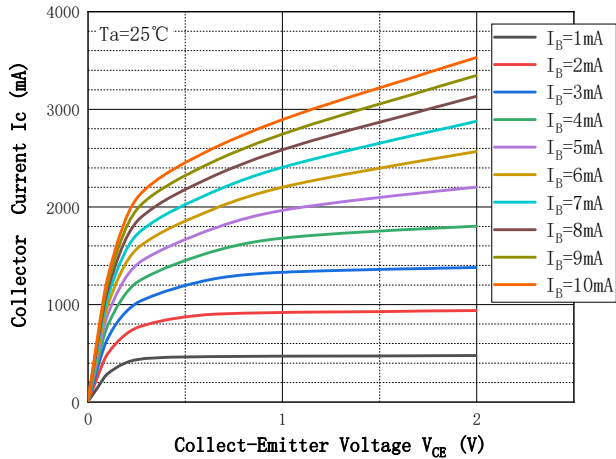


Fig.2 - DC Current Gain

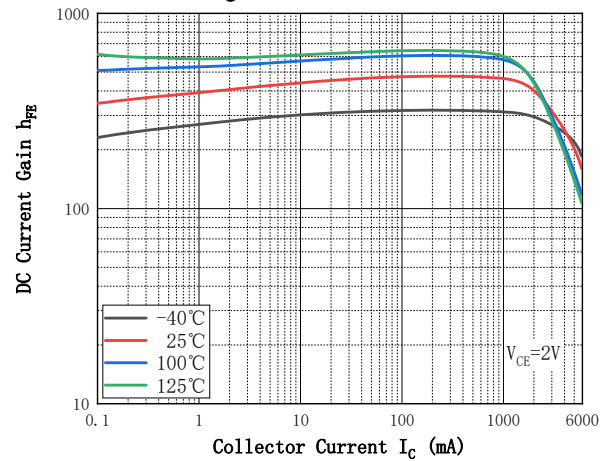


Fig.3 - Collect-Emittor Saturation Voltage

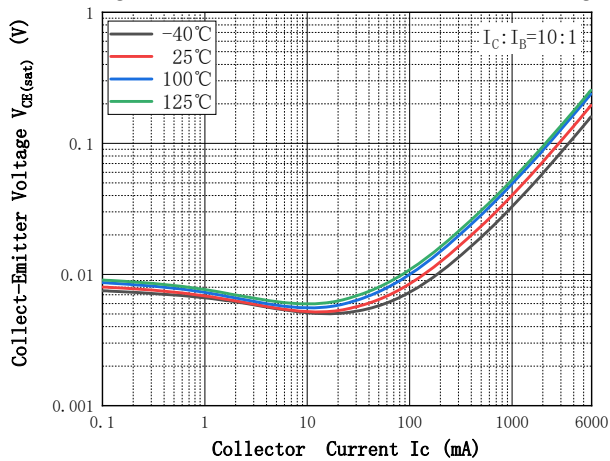


Fig.4 - Collect-Emittor Saturation Voltage

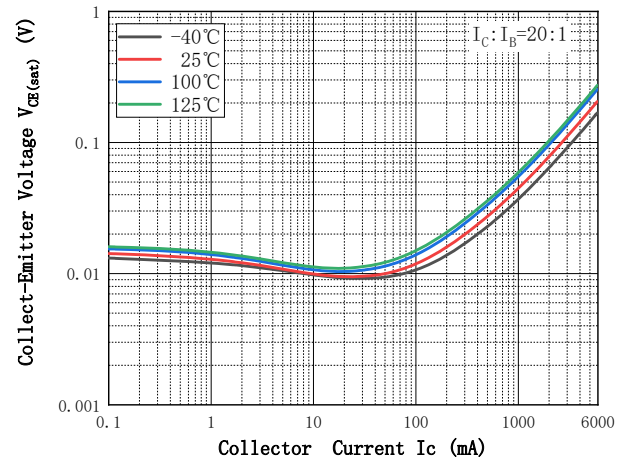


Fig.5 - Base-Emittor Voltage

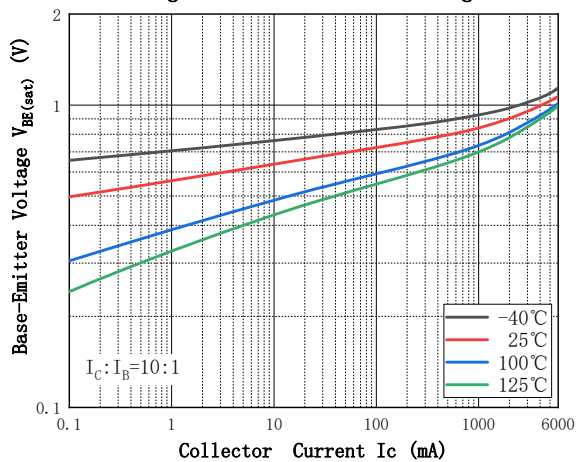


Fig.6 - Base-Emittor Voltage

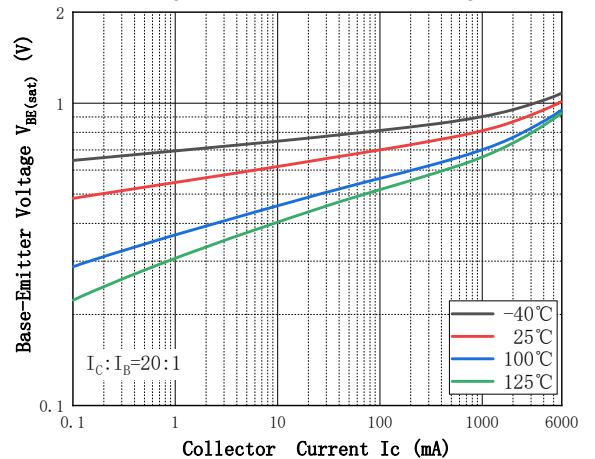




Fig.7 - Base-Emitter On Voltage

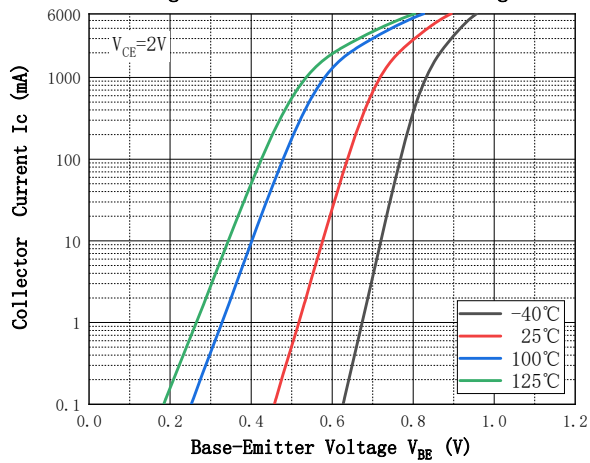


Fig.8 - Cob/Cib—VCB/VEB

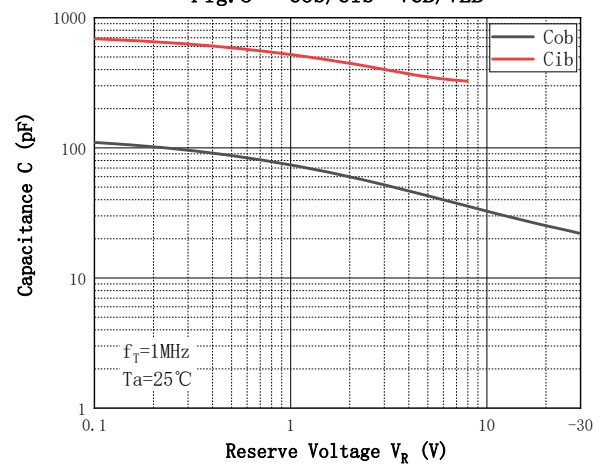
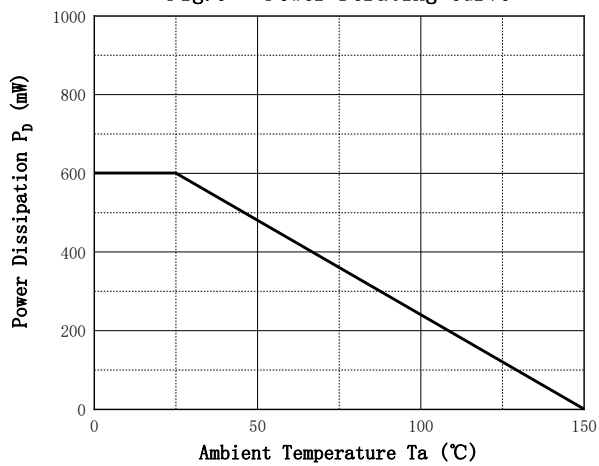


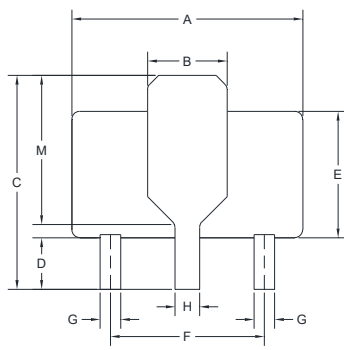
Fig.9 - Power Derating Curve



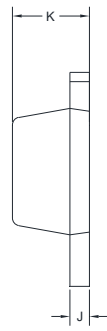


PBSS304NXQ

■SOT-89 Package Outline Dimensions



BOTTOM VIEW



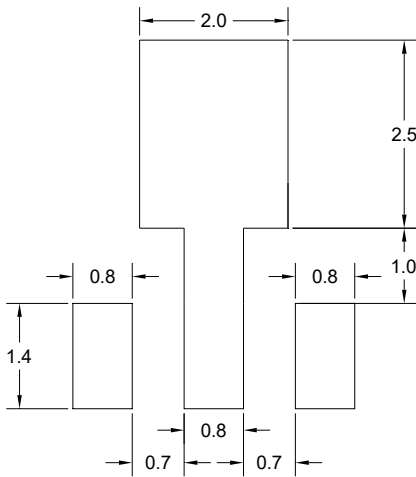
SIDE VIEW



SIDE VIEW

DIM	DIMENSIONS			
	INCHES		MM	
	MIN.	MAX.	MIN.	MAX.
A	0.173	0.181	4.400	4.600
B	0.061 TYP.		1.550 TYP.	
C	0.155	0.167	3.940	4.250
D	0.031	0.047	0.800	1.200
E	0.094	0.102	2.400	2.600
F	0.118 TYP.		3.00 TYP.	
G	0.014	0.019	0.360	0.480
H	0.017	0.022	0.440	0.560
J	0.014	0.017	0.350	0.440
K	0.055	0.063	1.400	1.600
L	0.059 TYP.		1.500 TYP.	
M	0.108 TYP.		2.750 TYP.	

■SOT-89 Suggested Pad Layout



UNIT:MM

SUGGESTED SOLDER PAD LAYOUT



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