

# BCA68-25-AU

## NPN Low $V_{CE(SAT)}$ Transistor

**Voltage**

**20V**

**Current**

**2A**

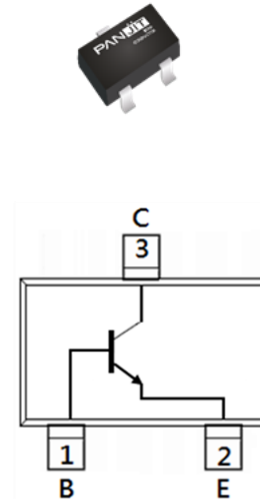
### Features

- Silicon NPN epitaxial type
- Low  $V_{CE(SAT)}$  0.6V(max)@ $I_C/I_B= 2A / 200mA$
- High collector current capability
- Excellent DC current gain characteristics
- AEC-Q101 qualified
- Lead free in compliance with EU RoHS 2.0
- Green molding compound as per IEC61249 Standard
- PNP complement : BCA69-25-AU

### Mechanical Data

- Case : SOT-23 Package
- Terminals : Solderable per MIL-STD-750, Method 2026
- Approx. Weight : 0.0084 grams

SOT-23



### Maximum Ratings and Thermal Characteristics ( $T_A=25^{\circ}C$ unless otherwise noted)

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	$V_{CBO}$	32	V
Collector-Emitter Voltage	$V_{CEO}$	20	
Emitter-Base Voltage	$V_{EBO}$	5	
Collector Current (DC)	$I_C$	2	A
Collector Current (Pulse)	$I_{CM}$	4	
Base Current (DC)	$I_B$	0.2	
Base Current (Pulse)	$I_{BM}$	0.4	
Power Dissipation	$P_D$	0.83	W
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~150	$^{\circ}C$
Thermal Resistance From Junction to Ambient <sup>(Note 2)</sup>	$R_{\theta JA}$	150	$^{\circ}C/W$

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## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>OFF Characteristics</b>						
Collector-Emitter Breakdown Voltage	BV <sub>CEO</sub>	I <sub>C</sub> = 10mA, I <sub>B</sub> = 0A	20	-	-	V
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	I <sub>C</sub> = 0.1mA, I <sub>E</sub> = 0A	32	-	-	
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	I <sub>E</sub> = 0.1mA, I <sub>C</sub> = 0A	5	-	-	
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> = 32V, I <sub>E</sub> = 0A	-	-	100	nA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> = 5V, I <sub>C</sub> = 0A	-	-	100	
Collector-Emitter Cutoff Current	I <sub>CES</sub>	V <sub>CES</sub> = 20V, I <sub>E</sub> = 0A	-	-	100	
<b>ON Characteristics</b>						
DC Current Gain <sup>(Note 1)</sup>	h <sub>FE</sub>	V <sub>CE</sub> = 1V, I <sub>C</sub> = 500mA	160	240	375	-
		V <sub>CE</sub> = 1V, I <sub>C</sub> = 1A	60	-	-	
		V <sub>CE</sub> = 1V, I <sub>C</sub> = 2A	40	-	-	
Collector-Emitter Saturation Voltage (Note 1)	V <sub>CE(SAT)</sub>	I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA	-	125	500	mV
		I <sub>C</sub> = 2A, I <sub>B</sub> = 200mA	-	240	600	
Base-Emitter Turn-On Voltage <sup>(Note 1)</sup>	V <sub>BE(ON)</sub>	V <sub>CE</sub> = 10V, I <sub>C</sub> = 5mA	-	0.6	0.7	V
		V <sub>CE</sub> = 1V, I <sub>C</sub> = 1A	-	0.85	1	
Transition Frequency	f <sub>T</sub>	V <sub>CE</sub> = 5V, I <sub>E</sub> = 50mA	40	170	-	MHz
Base input Capacitance	C <sub>IB</sub>	V <sub>EB</sub> = 0.5V, f=1MHz	-	103	-	pF
Collector Output Capacitance	C <sub>OB</sub>	V <sub>CB</sub> = 10V, f=1MHz	-	10	-	

Notes :

1. Pulse width ≤ 300us, Duty cycle ≤ 2%.
2. Mounted on FR4 PCB at 1 inch square copper pad.

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## TYPICAL CHARACTERISTIC CURVES

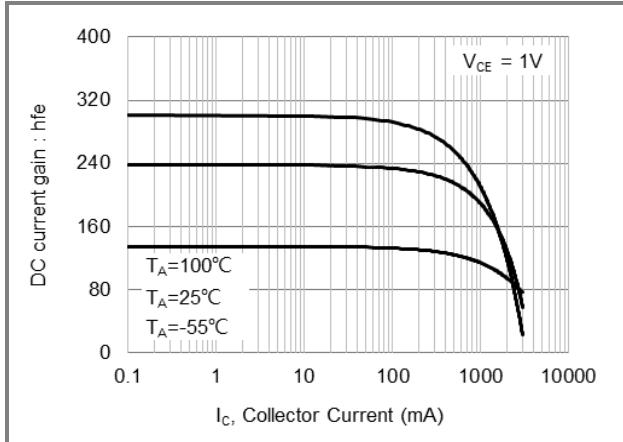


Fig.1 DC Current Gain

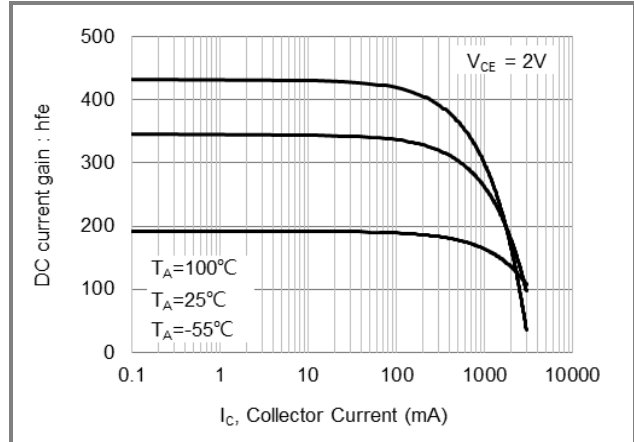


Fig.2 DC Current Gain

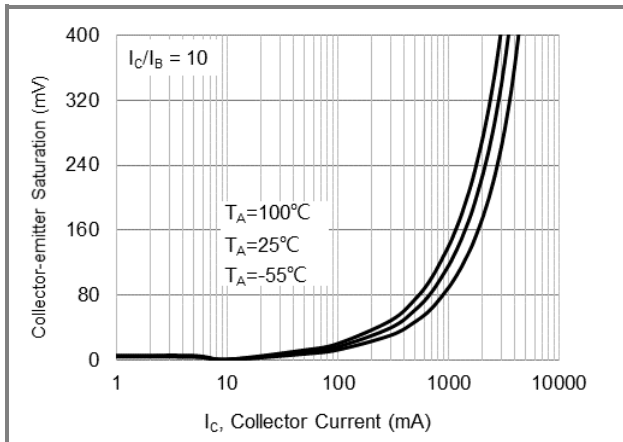


Fig.3 Collector-Emitter Saturation Voltage

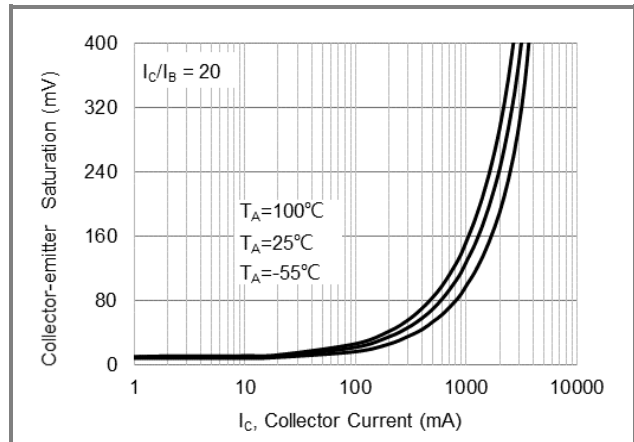


Fig.4 Collector-Emitter Saturation Voltage

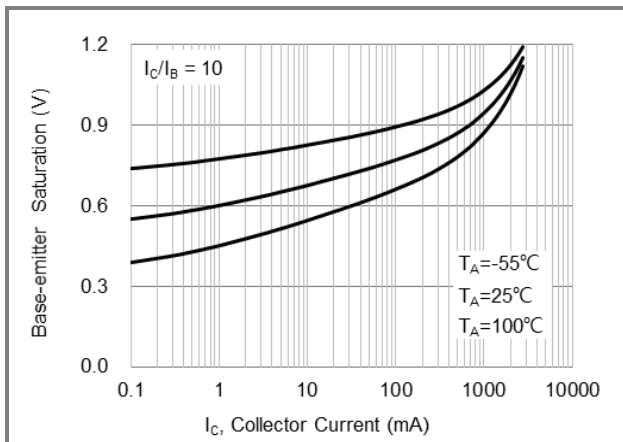


Fig.5 Base-Emitter Saturation Voltage

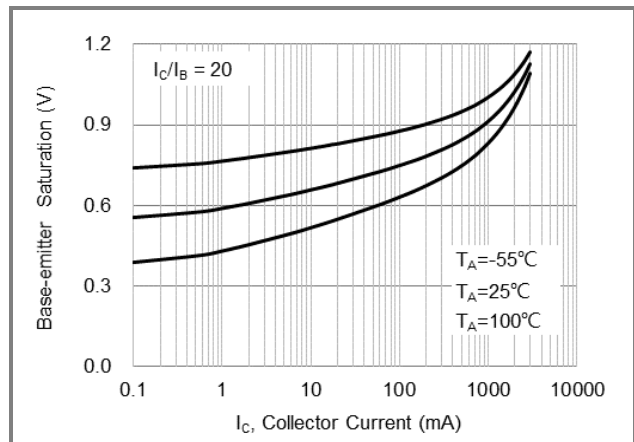


Fig.6 Base-Emitter Saturation Voltage

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## TYPICAL CHARACTERISTIC CURVES

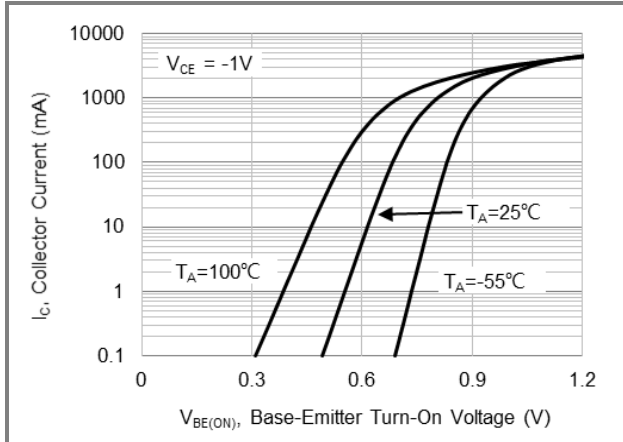


Fig.7 Base-Emitter Turn-On Voltage

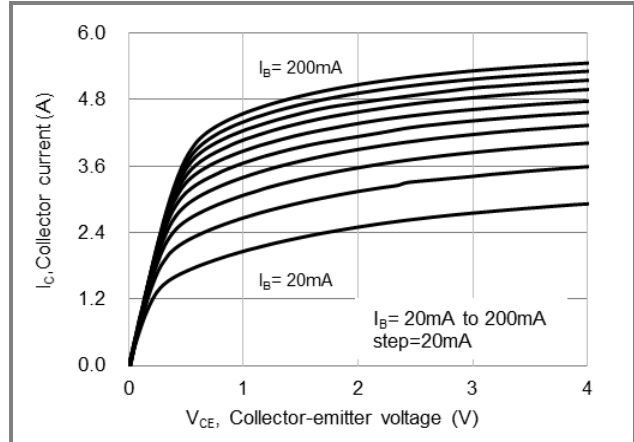


Fig.8 Collector Current

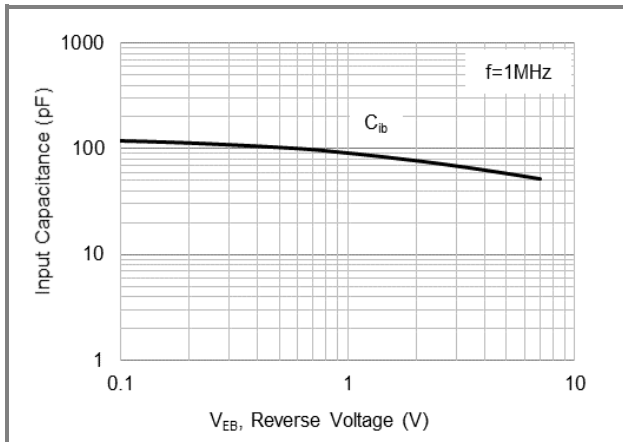


Fig.9 Input Capacitance

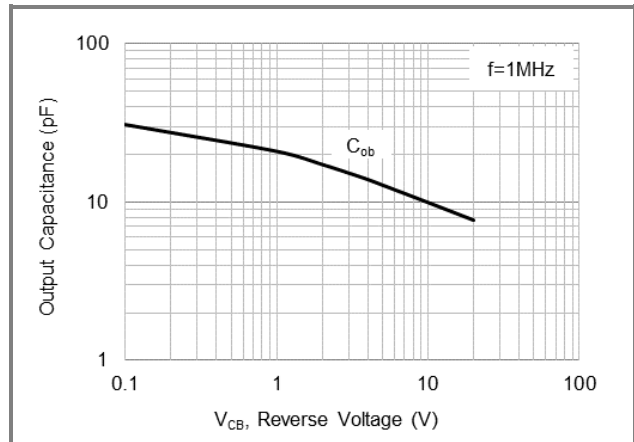


Fig.10 Output Capacitance

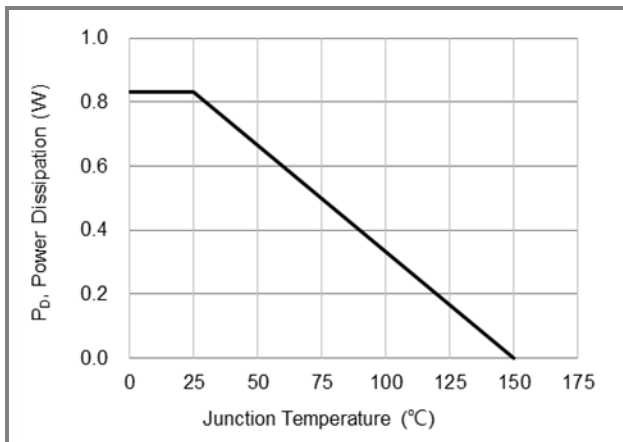


Fig.11 Power Derating Curve

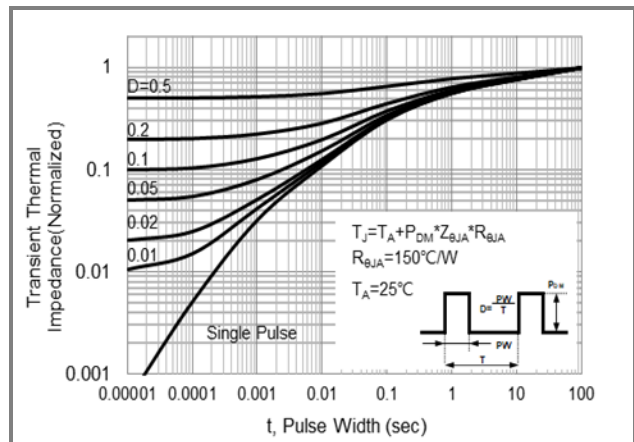


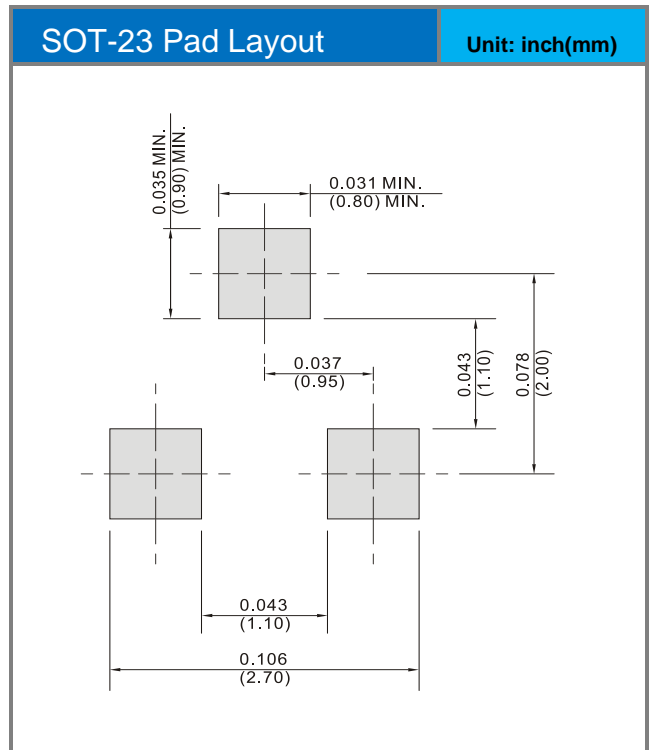
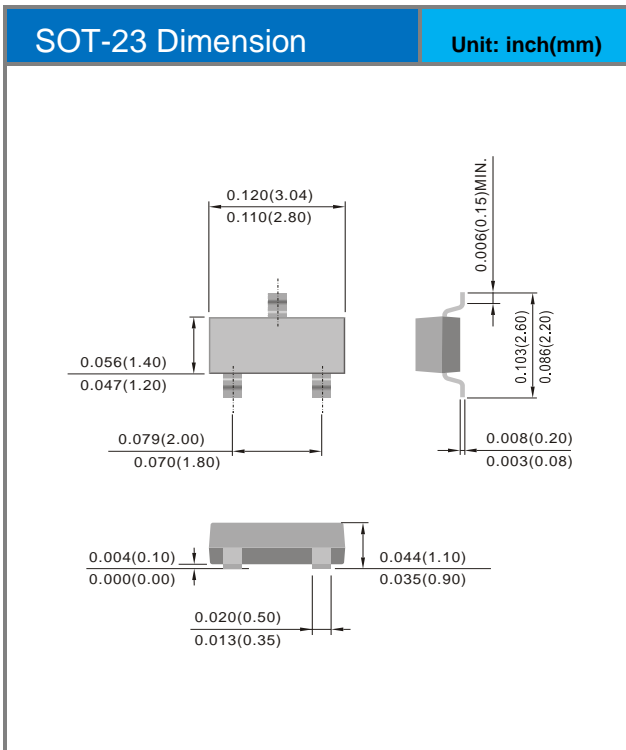
Fig.12 Normalized Transient Thermal Impedance

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## Product and Packing Information

Part No.	Package Type	Packing Type	Marking
BCA68-25-AU	SOT-23	3K pcs / 7" reel	68H

## Packaging Information & Mounting Pad Layout



## BCA68-25-AU

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