



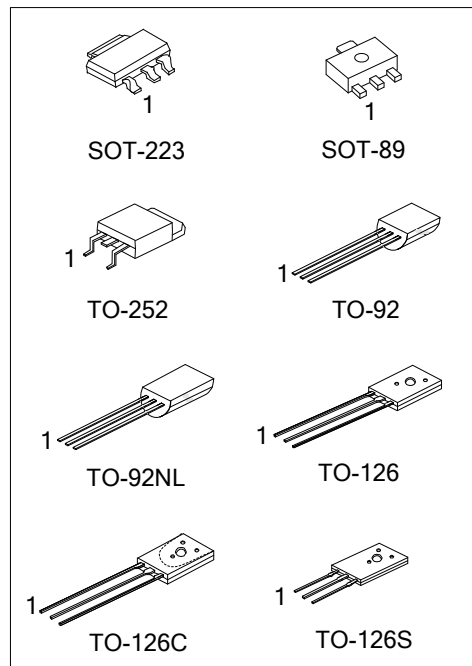
# 2SB649/A

## PNP SILICON TRANSISTOR

### BIPOLAR POWER GENERAL PURPOSE TRANSISTOR

■ APPLICATIONS

\* Low frequency power amplifier complementary pair with UTC 2SD669/A



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	2SB649xG-x-AA3-R	SOT-223	B	C	E	Tape Reel
-	2SB649xG-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SB649xL-x-TN3-R	2SB649xG-x-TN3-R	TO-252	B	C	E	Tape Reel
2SB649xL-x-T60-K	2SB649xG-x-T60-K	TO-126	E	C	B	Bulk
2SB649xL-x-T6C-K	2SB649xG-x-T6C-K	TO-126C	E	C	B	Bulk
2SB649xL-x-T6S-K	2SB649xG-x-T6S-K	TO-126S	E	C	B	Bulk
2SB649xL-x-T92-B	2SB649xG-x-T92-B	TO-92	E	C	B	Tape Box
2SB649xL-x-T92-K	2SB649xG-x-T92-K	TO-92	E	C	B	Bulk
2SB649xL-x-T9N-B	2SB649xG-x-T9N-B	TO-92NL	E	C	B	Tape Box
2SB649xL-x-T9N-K	2SB649xG-x-T9N-K	TO-92NL	E	C	B	Bulk

Note: Pin Assignment: C: Collector B: Base E: Emitter

<p>2SB649xG-x-AA3-R</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel                  (2) AA3: SOT-223, AB3: SOT-89, TN3: TO-252, T60: TO-126, T6C: TO-126C, T6S: TO-126S, T92: TO-92, T9N: TO-92NL                  (3) x: refer to Classification of <math>h_{FE1}</math>                  (4) G: Halogen Free and Lead Free, L: Lead Free                  (5) A: -160V, Blank: -120V</p>
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## MARKING

PACKAGE	MARKING	
	2SB649	2SB649A
SOT-223		
SOT-89		
TO-252		
TO-92		
TO-92NL		
TO-126 TO-126C TO-126S		

■ ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATING	UNIT
Collector-Base Voltage		V <sub>CB0</sub>	-180	V
Collector-Emitter Voltage	2SB649	V <sub>CEO</sub>	-120	V
	2SB649A		-160	V
Emitter-Base Voltage		V <sub>EBO</sub>	-5	V
Collector Current		I <sub>C</sub>	-1.5	A
Collector Peak Current		I <sub>C(PEAK)</sub>	-3	A
Power Dissipation	SOT-89	P <sub>D</sub>	0.5	W
	SOT-223		1	W
	TO-92/TO-92NL		0.6	W
	TO-126		1	W
	TO-126C/TO-126S		1.3	
	TO-252		2	W
Junction Temperature		T <sub>J</sub>	+150	°C
Storage Temperature		T <sub>STG</sub>	-40 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Case	SOT-89	θ <sub>JC</sub>	38	°C/W
	SOT-223		15	
	TO-92/ TO-92NL		80	
	TO-126		6.25	
	TO-126C/TO-126S		10	
	TO-252		4.5	

■ ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C, unless otherwise specified)

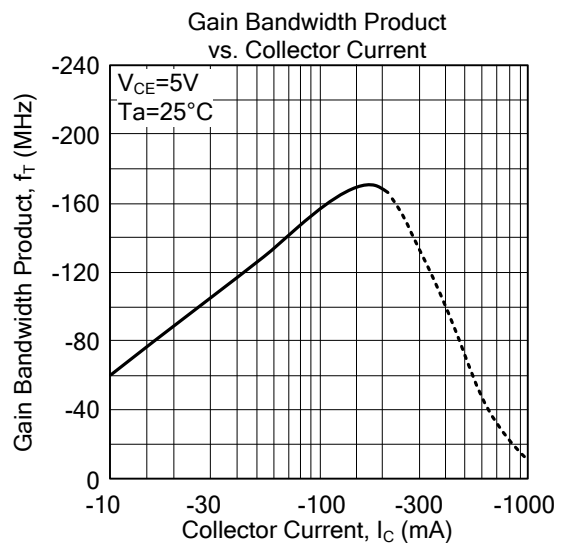
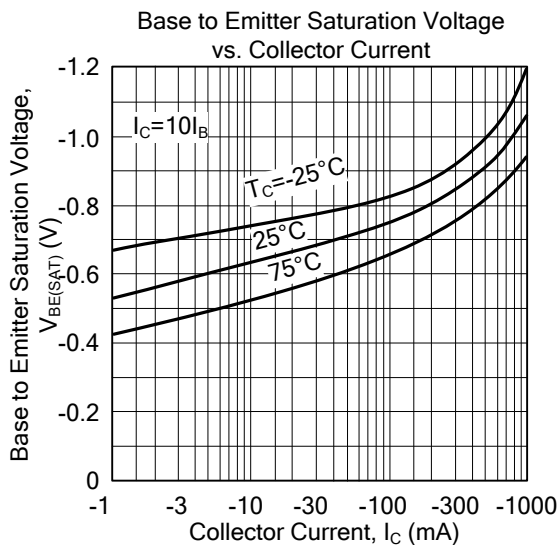
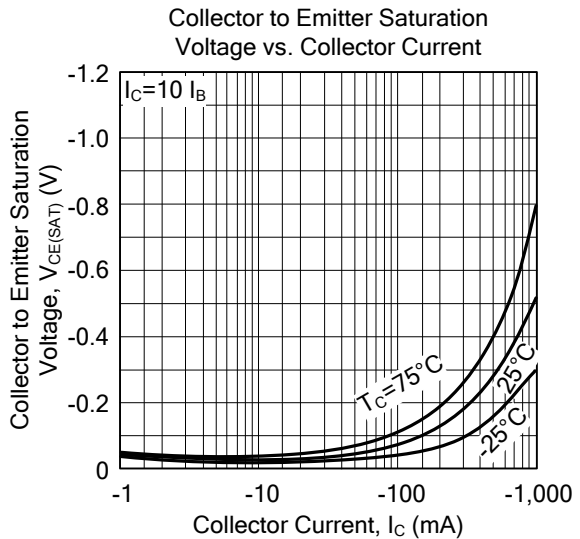
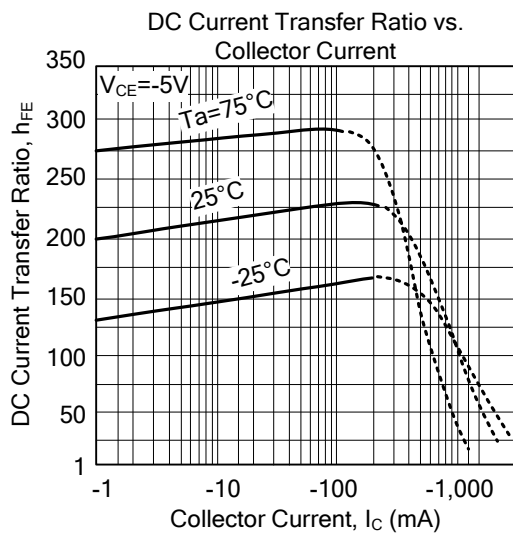
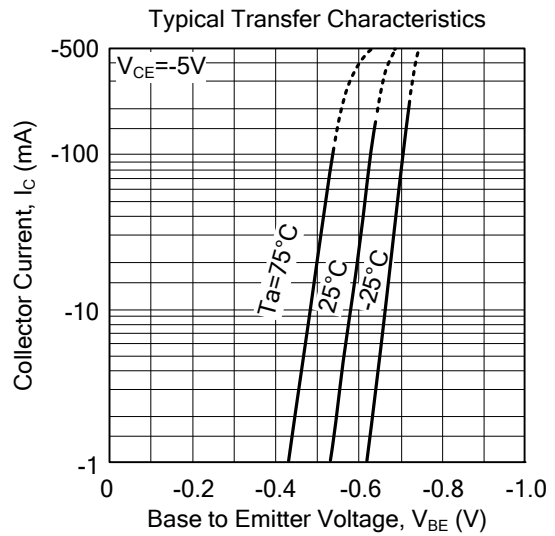
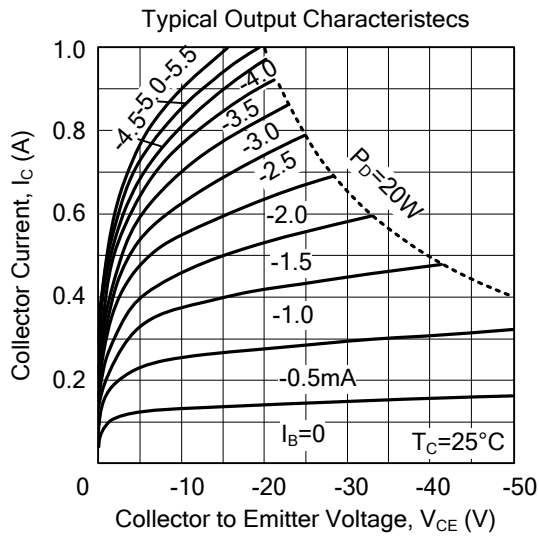
PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector to Base Breakdown Voltage		BV <sub>CB0</sub>	I <sub>C</sub> =-1mA, I <sub>E</sub> =0	-180			V
Collector to Emitter Breakdown Voltage	2SB649	BV <sub>CEO</sub>	I <sub>C</sub> =-10mA, R <sub>BE</sub> =∞	-120			V
	2SB649A			-160			
Emitter to Base Breakdown Voltage		BV <sub>EBO</sub>	I <sub>E</sub> =-1mA, I <sub>C</sub> =0	-5			V
Collector Cut-off Current		I <sub>CB0</sub>	V <sub>CB</sub> =-160V, I <sub>E</sub> =0			-10	μA
DC Current Gain	2SB649	h <sub>FE1</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-150mA (note)	60		320	
		h <sub>FE2</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-500mA (note)	30			
	2SB649A	h <sub>FE1</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-150mA (note)	60		200	
		h <sub>FE2</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-500mA (note)	30			
Collector-Emitter Saturation Voltage		V <sub>CE(SAT)</sub>	I <sub>C</sub> =-600mA, I <sub>B</sub> =-50mA			-1	V
Base-Emitter Voltage		V <sub>BE</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-150mA			-1.5	V
Current Gain Bandwidth Product		f <sub>T</sub>	V <sub>CE</sub> =-5V, I <sub>C</sub> =-150mA		140		MHZ
Output Capacitance		C <sub>ob</sub>	V <sub>CB</sub> =-10V, I <sub>E</sub> =0, f=1MHZ		27		pF

Note: Pulse test.

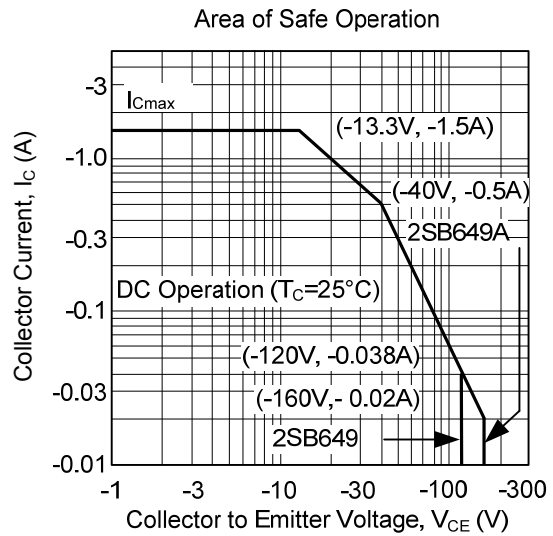
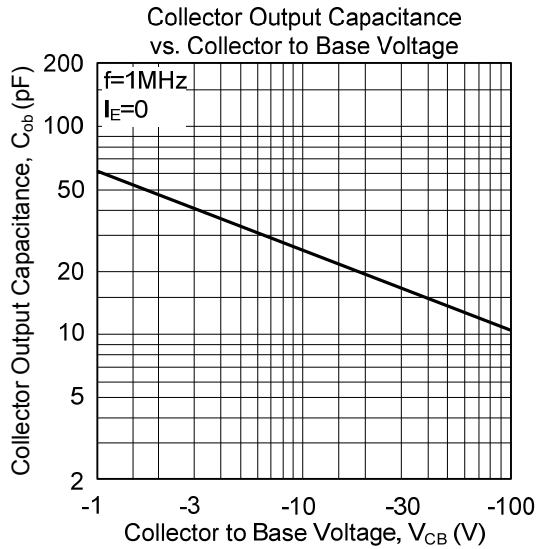
■ CLASSIFICATION OF h<sub>FE1</sub>

RANGE	RANK		
	B	C	D
2SB649	60-120	100-200	160-320
2SB649A	60-120	100-200	-

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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