



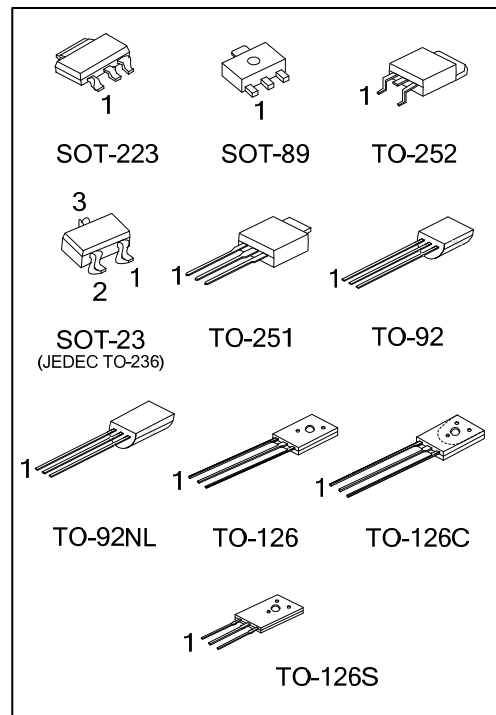
# 2SD669/A

## NPN SILICON TRANSISTOR

### BIPOLAR POWER GENERAL PURPOSE TRANSISTOR

■ APPLICATIONS

\* Low frequency power amplifier complementary pair with UTC 2SB649/A



■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
-	2SD669xG-x-AA3-R	SOT-223	B	C	E	Tape Reel
-	2SD669xG-x-AB3-R	SOT-89	B	C	E	Tape Reel
-	2SD669xG-x-AE3-R	SOT-23	B	E	C	Tape Reel
-	2SD669xG-x-AE3-6-R	SOT-23	E	B	C	Tape Reel
2SD669xL-x-T60-K	2SD669xG-x-T60-K	TO-126	E	C	B	Bulk
2SD669xL-x-T6C-K	2SD669xG-x-T6C-K	TO-126C	E	C	B	Bulk
2SD669xL-x-T6S-K	2SD669xG-x-T6S-K	TO-126S	E	C	B	Bulk
2SD669xL-x-T92-B	2SD669xG-x-T92-B	TO-92	E	C	B	Tape Box
2SD669xL-x-T92-K	2SD669xG-x-T92-K	TO-92	E	C	B	Bulk
2SD669xL-x-T9N-B	2SD669xG-x-T9N-B	TO-92NL	E	C	B	Tape Box
2SD669xL-x-T9N-K	2SD669xG-x-T9N-K	TO-92NL	E	C	B	Bulk
2SD669xL-x-TM3-T	2SD669xG-x-TM3-T	TO-251	B	C	E	Tube
2SD669xL-x-TN3-R	2SD669xG-x-TN3-R	TO-252	B	C	E	Tape Reel

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

<p>2SD669xG-x-AE3-6-R</p> <p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Rank (5) Green Package (6) Collector-Emitter Voltage</p>	<p>(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube (2) refer to Pin Assignment (3) AA3: SOT-223, AB3: SOT-89, AE3: SOT-23 T60: TO-126, T6C: TO-126C, T6S: TO-126S TM3: TO-251, TN3: TO-252, T92: TO-92 T9N: TO-92NL (4) x: refer to Classification of <math>h_{FE1}</math> (5) G: Halogen Free and Lead Free, L: Lead Free (6) A: 160V, Blank: 120V</p>
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## MARKING INFORMATION

PACKAGE	MARKING	
	2SD669	2SD669A
SOT-223		
SOT-89		
SOT-23		
TO-126 TO-126C TO-126S		
TO-92		
TO-92NL		
TO-251 TO-252		

■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$  unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		$V_{CB0}$	180	V
Collector-Emitter Voltage	2SD669	$V_{CE0}$	120	V
	2SD669A		160	
Emitter-Base Voltage		$V_{EB0}$	5	V
Collector Current		$I_C$	1.5	A
Collector Peak Current		$I_{C(PK)}$	3	A
Base Current		$I_B$	0.5	A
Power Dissipation	SOT-223/ SOT-89	$P_D$	0.5	W
	SOT-23		0.35	W
	TO-126/TO-126S		1.3	W
	TO-126C		1	W
	TO-92/TO-92NL		0.6	W
	TO-251/TO-252		2	W
Junction Temperature		$T_J$	150	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-40 ~ +150	$^{\circ}\text{C}$

Notes: 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	$\theta_{JC}$	38	$^{\circ}\text{C/W}$
	SOT-223		14	
	SOT-23		110	
	TO-92/TO-92NL		80	
	TO-126/TO-126S		6.25	
	TO-126C		10	
	TO-251/TO-252		4.5	

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

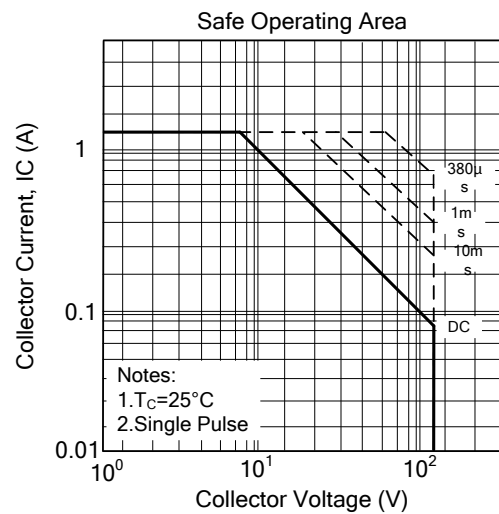
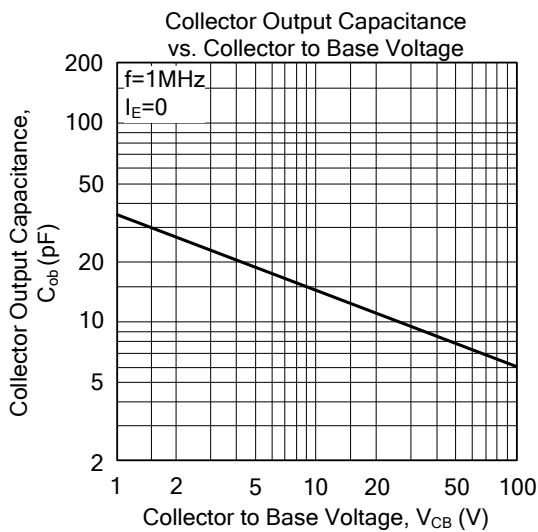
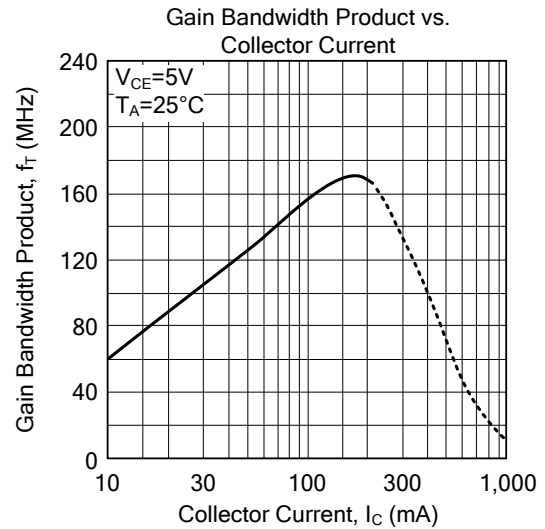
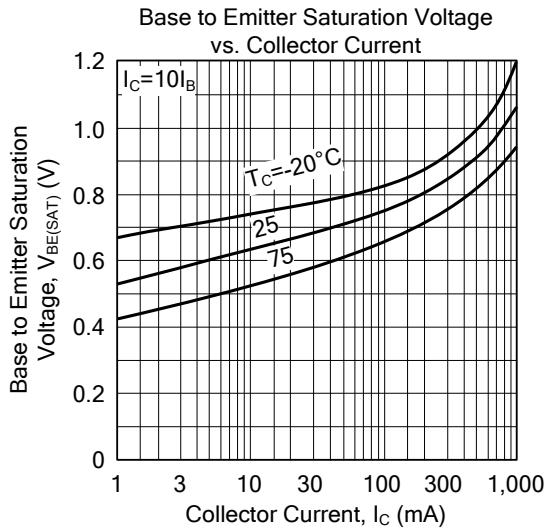
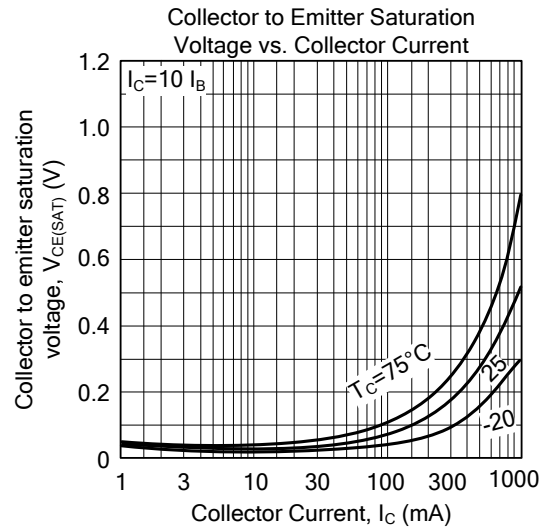
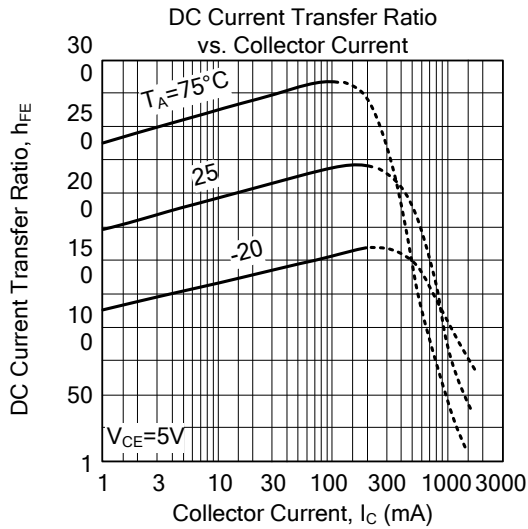
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
<b>OFF CHARACTERISTICS</b>						
Collector to Base Breakdown Voltage	$BV_{CBO}$	$I_C=1\text{mA}$ , $I_E=0$	180			V
Collector to Emitter Breakdown Voltage	2SD669	$I_C=10\text{mA}$ , $R_{BE}=\infty$	120			V
	2SD669A		160			
Collector to Emitter Breakdown Voltage ( $V_{BE}=0\text{V}$ )	2SD669	$I_C=1\text{mA}$ , $V_{BE}=0\text{V}$	120			V
	2SD669A		160			
Emitter to Base Breakdown Voltage	$BV_{EBO}$	$I_E=1\text{mA}$ , $I_C=0$	5			V
Collector Cut-off Current	$I_{CBO}$	$V_{CB}=160\text{V}$ , $I_E=0$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}$ , $I_C=0$			10	$\mu\text{A}$
<b>ON CHARACTERISTICS</b>						
DC Current Gain	$h_{FE1}$	$V_{CE}=5\text{V}$ , $I_C=150\text{mA}$ (Note)	60		320	
	$h_{FE2}$	$V_{CE}=5\text{V}$ , $I_C=500\text{mA}$ (Note)	30			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=600\text{mA}$ , $I_B=50\text{mA}$ (Note)			1	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=600\text{mA}$ , $I_B=50\text{mA}$ (Note)			1.2	V
Base-Emitter Voltage	$V_{BE}$	$V_{CE}=5\text{V}$ , $I_C=150\text{mA}$ (Note)			1.5	V
<b>DYNAMIC CHARACTERISTICS</b>						
Current Gain Bandwidth Product	$f_T$	$V_{CE}=5\text{V}$ , $I_C=150\text{mA}$ (Note)		140		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10\text{V}$ , $I_E=0$ , $f=1\text{MHz}$		14		pF
<b>SWITCHING CHARACTERISTICS</b>						
Rise Time	$t_R$	$V_{CC}=50\text{V}$ , $I_C=0.5\text{A}$ , $I_{B1}=I_{B2}=10\text{mA}$ , $t_p=25\mu\text{s}$ , Duty Cycles $\leq 1\%$		0.5		$\mu\text{s}$
Storage Time	$t_S$			1.5		
Fall Time	$t_F$			0.7		

Note: Pulse test.

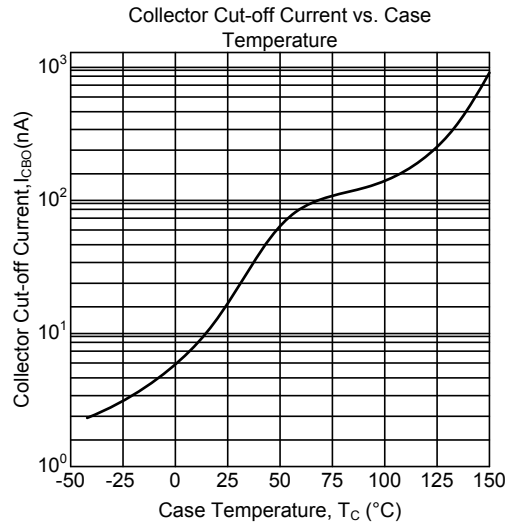
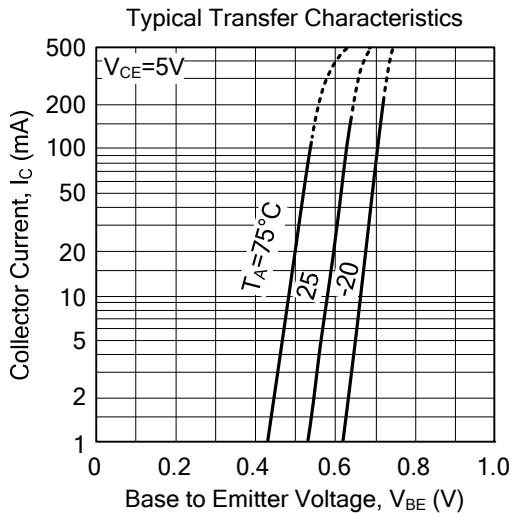
■ CLASSIFICATION OF  $h_{FE1}$

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

## TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS(Cont.)



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