



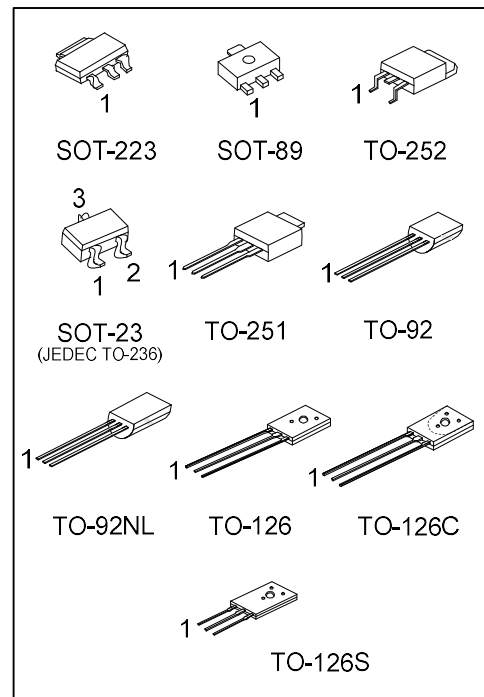
2SD669/A

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	
2SD669xL-x-AA3-R	2SD669xG-x-AA3-R	SOT-223	B	C	E	Tape Reel
2SD669xL-x-AB3-R	2SD669xG-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD669xL-x-AE3-R	2SD669xG-x-AE3-R	SOT-23	E	B	C	Tape Reel
2SD669xL-x-AE3-6-R	2SD669xG-x-AE3-6-R	SOT-23	B	E	C	Tape Reel
2SD669xL-x-T60-K	2SD669xG-x-T60-K	TO-126	E	C	B	Bulk
2SD669xL-x-T60-T	2SD669xG-x-T60-T	TO-126	E	C	B	Tube
2SD669xL-x-T6C-K	2SD669xG-x-T6C-K	TO-126C	E	C	B	Bulk
2SD669xL-x-T6C-T	2SD669xG-x-T6C-T	TO-126C	E	C	B	Tube
2SD669xL-x-T6S-K	2SD669xG-x-T6S-K	TO-126S	E	C	B	Bulk
2SD669xL-x-T6S-T	2SD669xG-x-T6S-T	TO-126S	E	C	B	Tube
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

2SD669xG-x-AE3-6-R (1) Packing Type (2) Pin Assignment (3) Package Type (4) Rank (5) Green Package (6) Collector-Emitter Voltage	(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 h_{FE1} (5) G: Halogen Free and Lead Free, L: Lead Free (6) A: 160V, Blank: 120V
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MARKINL INFORMATION

PACKAGE	MARKINL	
	2SD669	2SD669A
SOT-223	2SD669 □□□□ → L: Lead Free → G: Halogen Free → Date Code 1	2SD669A □□□□ → L: Lead Free → G: Halogen Free → Date Code 1
SOT-89	□□□□ 2SD669 → Date Code → L: Lead Free → G: Halogen Free 1	□□□□ 2SD669A → Date Code → L: Lead Free → G: Halogen Free 1
SOT-23	D66 → L: Lead Free → G: Halogen Free 1	D66A → L: Lead Free → G: Halogen Free 1
TO-126 TO-126C TO-126S	UTC 2SD669 □□□□ → Date Code → L: Lead Free → G: Halogen Free 1	UTC 2SD669A □□□□ → Date Code → L: Lead Free → G: Halogen Free 1
TO-92	UTC 2SD669 □□□ → L: Lead Free → G: Halogen Free → Date Code 1	UTC 2SD669A □□□ → L: Lead Free → G: Halogen Free → Date Code 1
TO-92NL	UTC 2SD669 □□□ → L: Lead Free → G: Halogen Free → Date Code 1	UTC 2SD669A □□□ → L: Lead Free → G: Halogen Free → Date Code 1
TO-251 TO-252	UTC 2SD669 □□□□□ → L: Lead Free → G: Halogen Free → Date Code Lot Code 1	UTC 2SD669A □□□□□ → L: Lead Free → G: Halogen Free → Date Code Lot Code 1

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Base Voltage		V _{CBO}	180	V
Collector-Emitter Voltage	2SD669	V _{CEO}	120	V
	2SD669A		160	
Emitter-Base Voltage		V _{EBO}	5	V
Collector Current		I _C	1.5	A
Collector Peak Current		I _{C(PEAK)}	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	°C
Storage Temperature		T _{STL}	-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 _{JC}	38	°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)

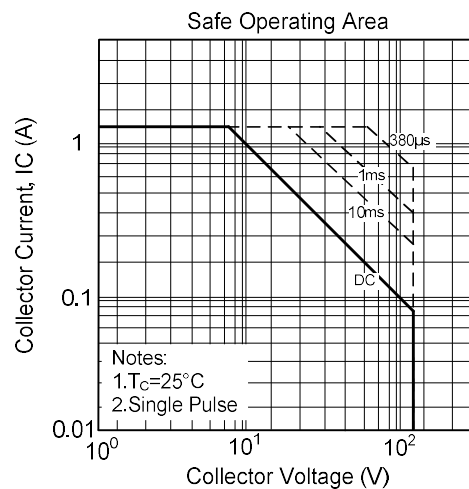
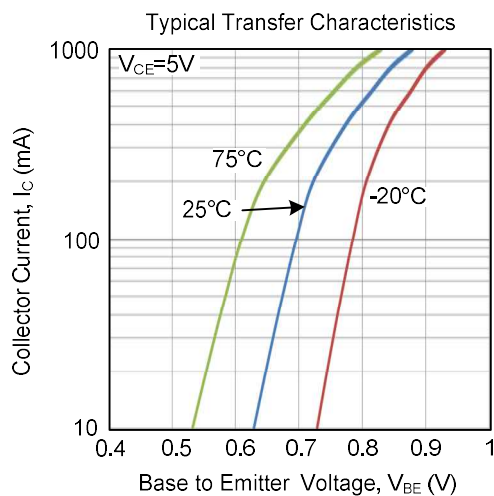
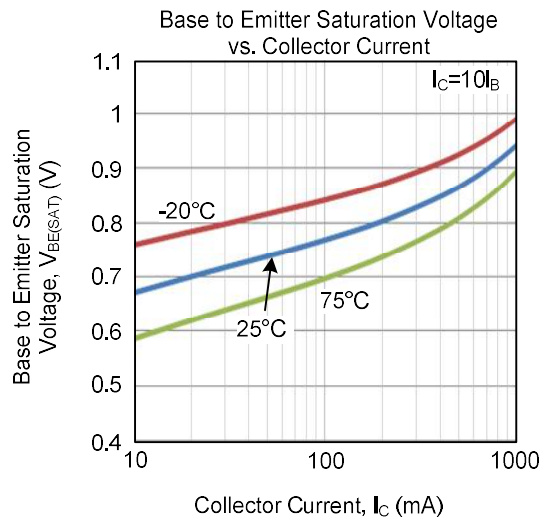
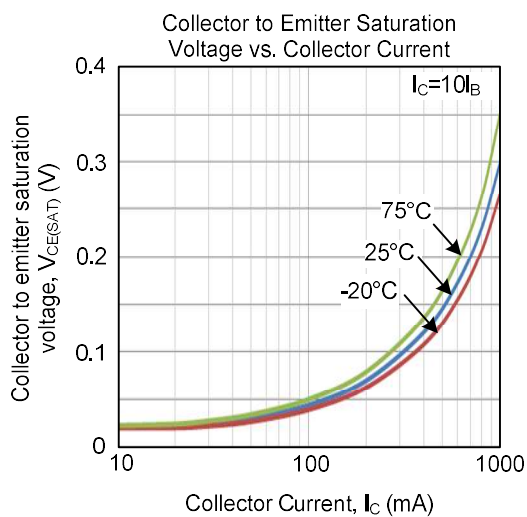
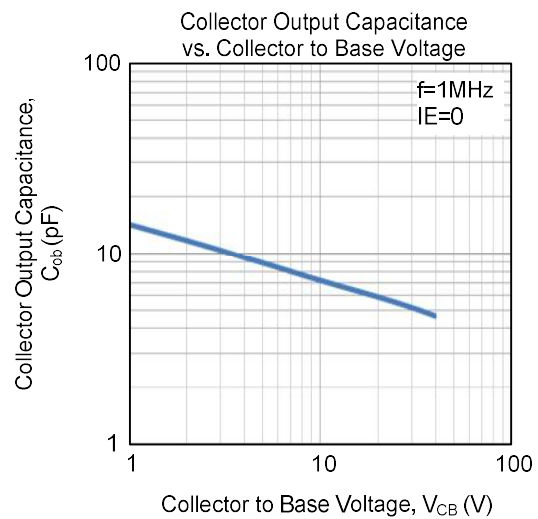
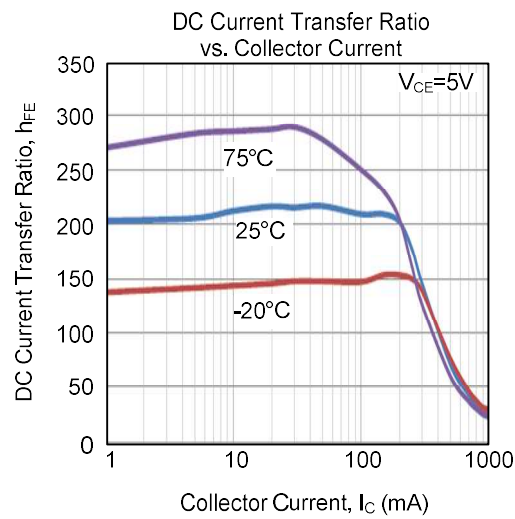
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector to Base Breakdown Voltage	BV_{CBO}	$I_C=1\text{mA}$, $I_E=0$	180			V
Collector to Emitter Breakdown Voltage	2SD669	$I_C=10\text{mA}$, $R_{BE}=\infty$	120			V
	2SD669A		160			
Collector to Emitter Breakdown Voltage ($V_{BE}=0\text{V}$)	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	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}$, $I_C=0$			10	μA
ON CHARACTERISTICS						
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
DYNAMIC CHARACTERISTICS						
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
SWITCHING CHARACTERISTICS						
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 Cycle $\leq 1\%$		0.5		μs
Storage time	t_S			1.5		μs
Fall Time	t_F			0.7		μs

Note: Pulse test.

■ **CLASSIFICATION OF h_{FE1}**

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

■ TYPICAL CHARACTERISTICS



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