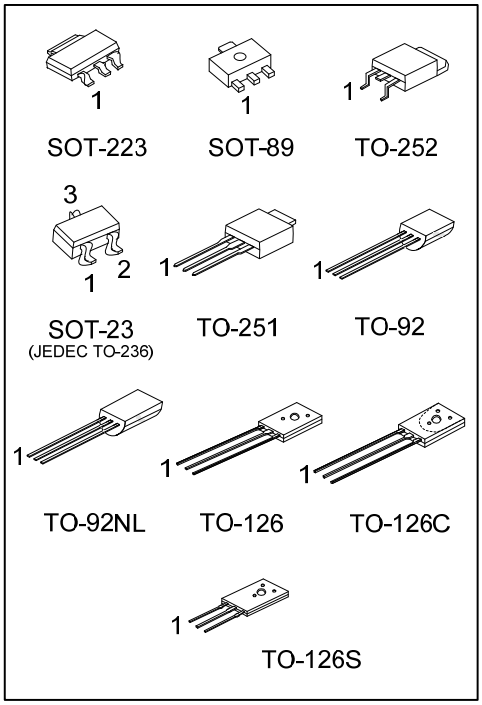
2SD669/A

NPN SILICON TRANSISTOR

BIPOLAR POWER GENERAL PURPOSE TRANSISTOR



■ APPLICATIONS

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

■ ORDERING INFORMATION

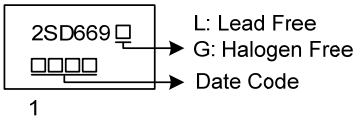
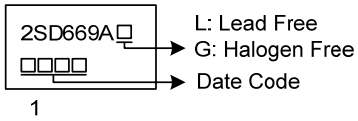
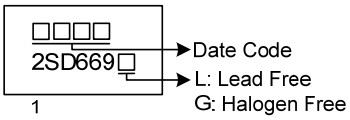
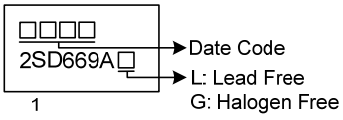
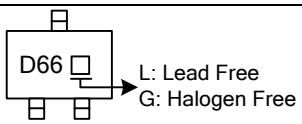
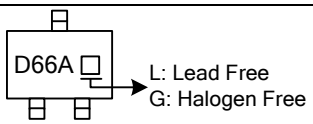
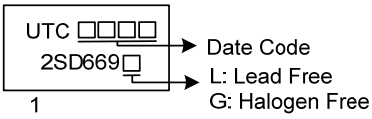
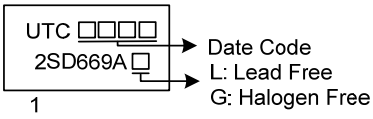
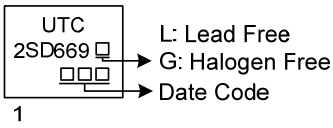
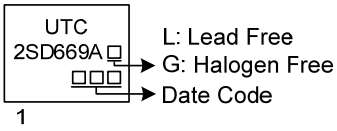
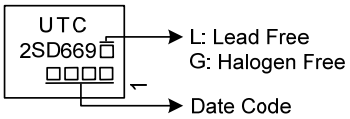
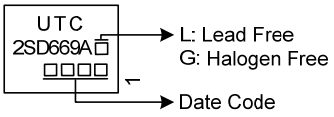
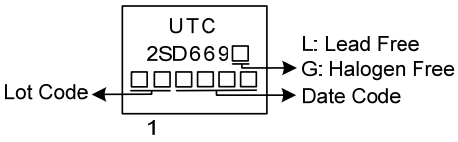
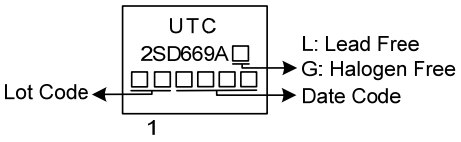
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
2SD669xL-x-AA3-R	2SD669xG-x-AA3-R	SOT-223	B	C	E	Tape Reel
2SD669xL-x-AB3-R	2SD669xG-x-AB3-R	SOT-89	B	C	E	Tape Reel
2SD669xL-x-AE3-R	2SD669xG-x-AE3-R	SOT-23	E	B	C	Tape Reel
2SD669xL-x-AE3-6-R	2SD669xG-x-AE3-6-R	SOT-23	B	E	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

■ MARKINL INFORMATION

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

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

PARAMETER		SYMBOL	RATINLS	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 (T_A=25°C)	SOT-223	P_D	1	W
	SOT-89		0.5	W
	SOT-23		0.35	W
	TO-251/TO-252		2	W
	TO-126/TO-126S		1.3	W
	TO-126C		1	W
	TO-92/TO-92NL		0.6	W
Power Dissipation (T_C=25°C)	SOT-223		8.93	W
	SOT-89		3.29	W
	SOT-23		1.14	W
	TO-251/TO-252		27.78	W
	TO-126/TO-126S		20	W
	TO-126C		12.5	W
	TO-92/TO-92NL		1.56	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.

■ HERMAL DATA

PARAMETER		SYMBOL	RATINLS	UNIT
Junction to Case	SOT-223	θ_{JC}	14	°C/W
	SOT-89		38	°C/W
	SOT-23		110	°C/W
	TO-251/TO-252		4.5	°C/W
	TO-126/TO-126S		6.25	°C/W
	TO-126C		10	°C/W
	TO-92/TO-92NL		80	°C/W

Note: Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

■ ELECTRICAL CHARACTERISTICS (T_A=25°C, unless otherwise specified)

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

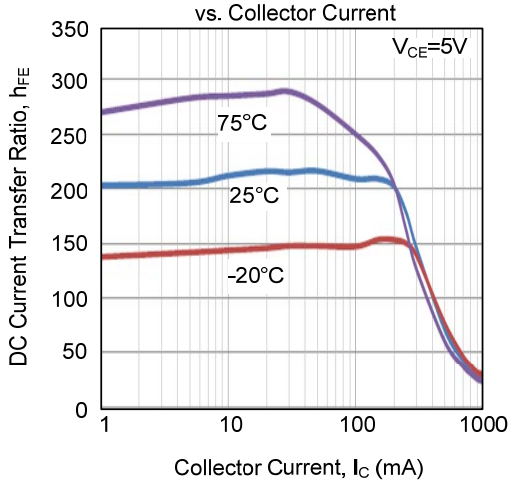
Note: Pulse test.

■ CLASSIFICATION OF h_{FE1}

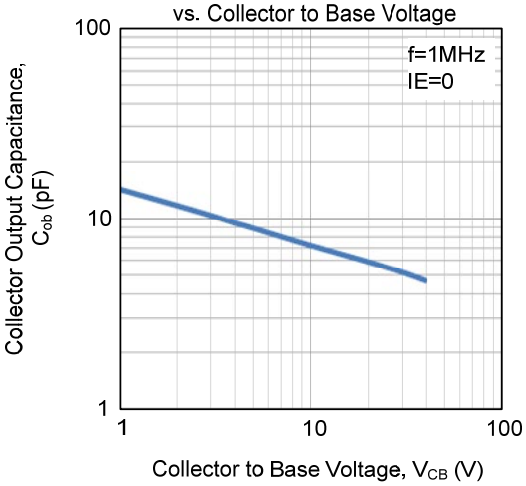
RANK	B	C	D
RANLE	60-120	100-200	160-320

■ TYPICAL CHARACTERISTICS

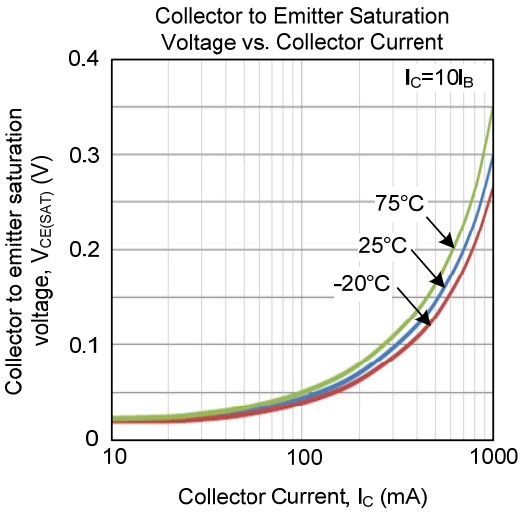
DC Current Transfer Ratio vs. Collector Current



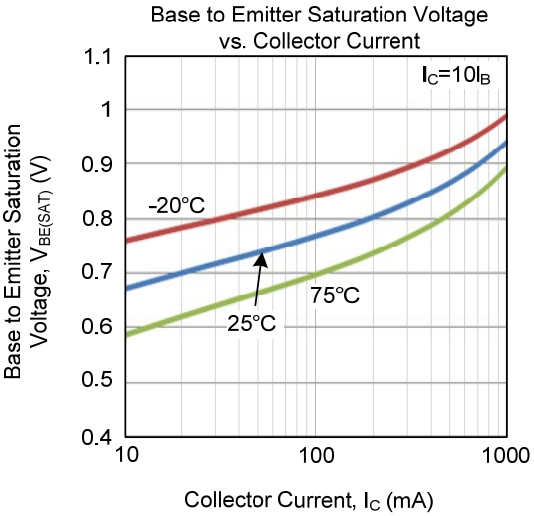
Collector Output Capacitance vs. Collector to Base Voltage



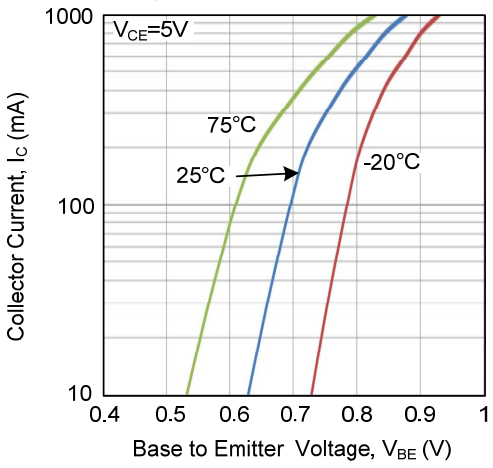
Collector to Emitter Saturation Voltage vs. Collector Current



Base to Emitter Saturation Voltage vs. Collector Current



Typical Transfer Characteristics



Safe Operating Area