DATA SHEET

NEC

SILICON POWER TRANSISTOR
2SB1094

PNP SILICON EPITAXIAL TRANSISTOR FOR LOW-FREQUENCY POWER AMPLIFIER

FEATURES

- The 2SB1094 features ratings covering a wide range of applications and is ideal for power supplies or a variety of drives in audio and other equipment.:
  $V_{CEO} \geq -60$ V, $V_{EBO} \geq -7.0$ V, $I_{C(DC)} \leq -3.0$ A
- Mold package that does not require an insulating board or insulation bushing
- Complementary transistor with 2SD1585

QUALITY GRADES

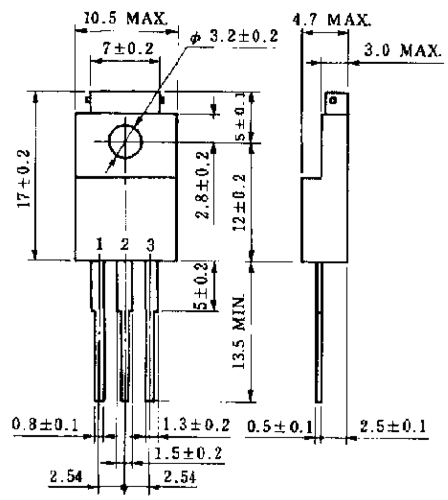
- Standard
  Please refer to “Quality Grades on NEC Semiconductor Devices” (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

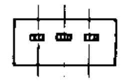
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Ratings	Unit
Collector to base voltage	V_{CBO}	–60	V
Collector to emitter voltage	V_{CEO}	–60	V
Emitter to base voltage	V_{EBO}	–7.0	V
Collector current (DC)	$I_{C(DC)}$	–3.0	A
Collector current (pulse)	$I_{C(pulse)}$*	–5.0	A
Base current (DC)	$I_{B(DC)}$	–0.6	A
Total power dissipation	P_T (Tc = 25°C)	15	W
Total power dissipation	P_T (Ta = 25°C)	2.0	W
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	–55 to +150	°C

* PW ≤ 10 ms, duty cycle ≤ 50%

PACKAGE DRAWING (UNIT: mm)





Electrode Connection
1. Base
2. Collector
3. Emitter

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Not all devices/types available in every country. Please check with local NEC representative for availability and additional information.

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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

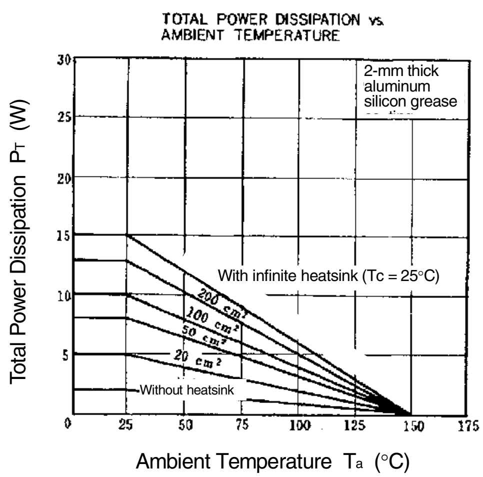
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = –60 V, I_E = 0			–10	μA
Emitter cutoff current	I_{EBO}	V_{EB} = –7.0 V, I_C = 0			–10	μA
DC current gain	h_{FE1}**	V_{CE} = –5.0 V, I_C = –50 mA	20			
DC current gain	h_{FE2}**	V_{CE} = –5.0 V, I_C = –0.5 A	40	100	200	
Collector saturation voltage	$V_{CE(sat)}$**	I_C = –2.0 A, I_B = –0.2 A		–0.5	–1.5	V
Base saturation voltage	$V_{BE(sat)}$**	I_C = –2.0 A, I_B = –0.2 A		–1.1	–2.0	V
Collector capacitance	C_{ob}	V_{CB} = –10 V, I_E = 0, f = 1.0 MHz		70		pF
Gain bandwidth product	f_T	V_{CE} = –5.0 V, I_C = –0.1 A		20		MHz

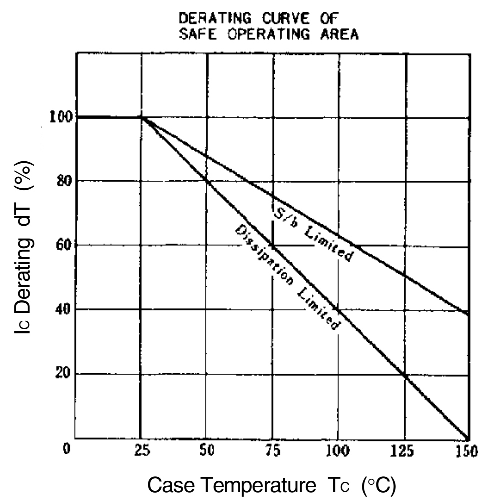
** Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

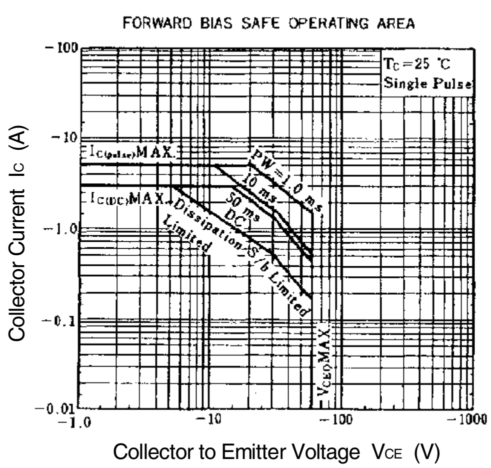
h_{FE} CLASSIFICATION

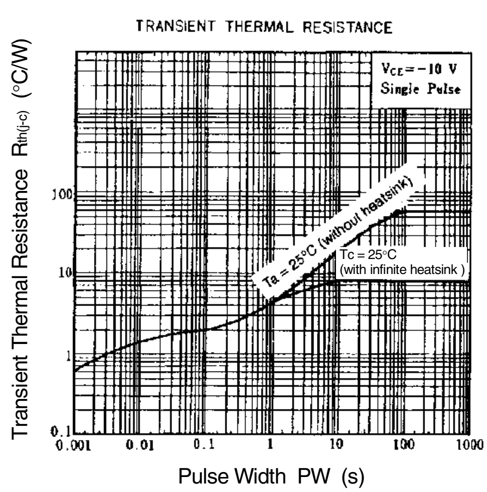
Marking	M	L	K
h_{FE2}	40 to 80	60 to 120	100 to 200

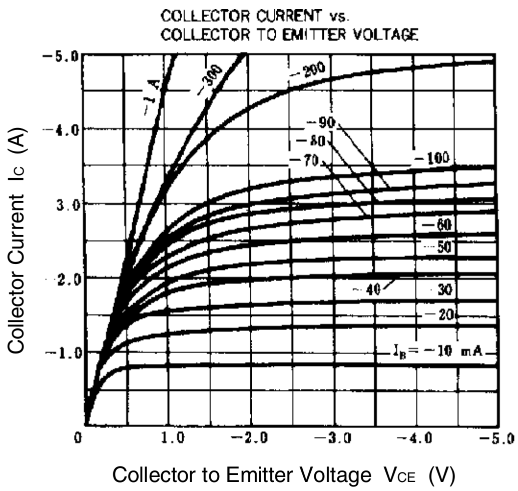
TYPICAL CHARACTERISTICS (Ta = 25°C)

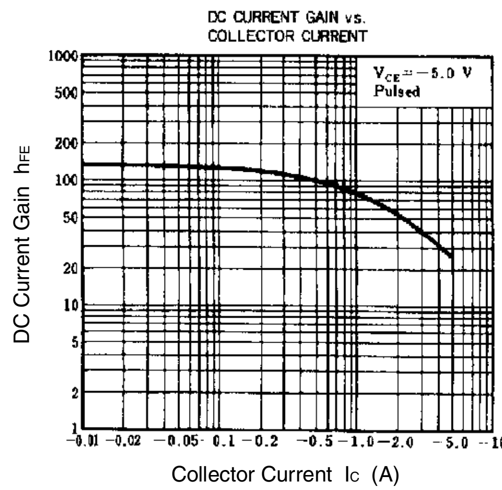


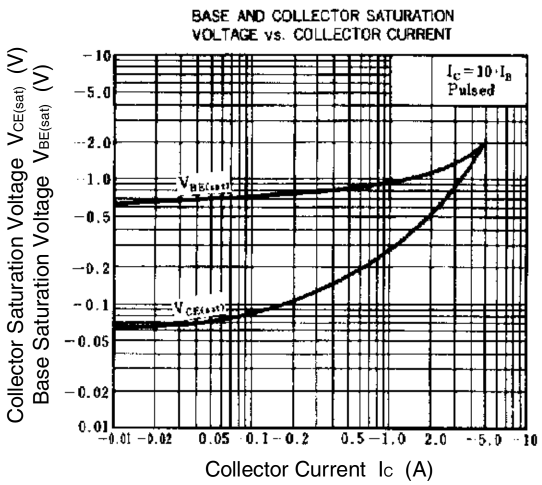


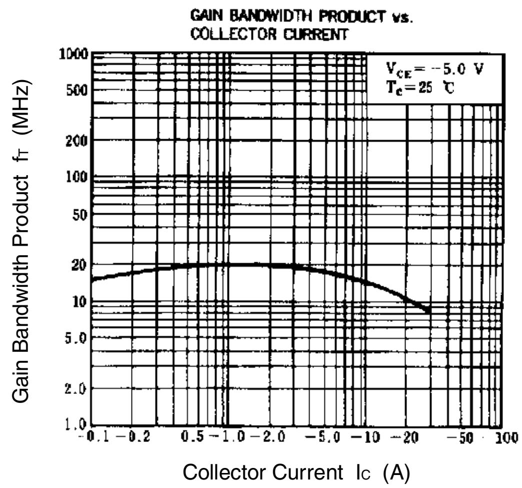


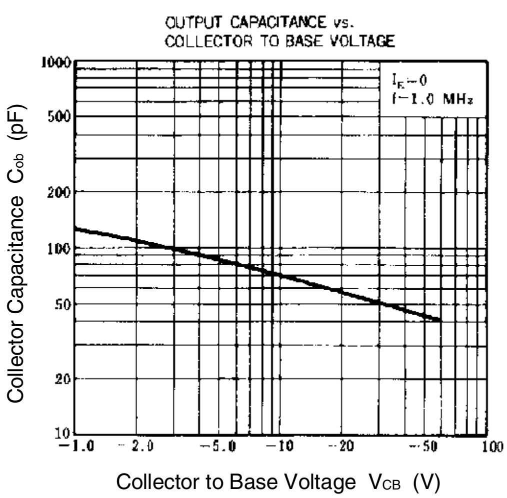



COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE
Collector Current Ic (A)
Collector to Emitter Voltage VCE (V)
IB = −10 mA


DC CURRENT GAIN vs.
COLLECTOR CURRENT
VCE = −5.0 V
Pulsed
DC Current Gain hFE
Collector Current Ic (A)


BASE AND COLLECTOR SATURATION
VOLTAGE vs. COLLECTOR CURRENT
IC = 10·IB
Pulsed
Collector Saturation Voltage VCE(sat) (V)
Base Saturation Voltage VBE(sat) (V)
Collector Current Ic (A)


GAIN BANDWIDTH PRODUCT vs.
COLLECTOR CURRENT
VCE = −5.0 V
Tc = 25 °C
Gain Bandwidth Product fT (MHz)
Collector Current Ic (A)


OUTPUT CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE
IE = 0
f = 1.0 MHz
Collector Capacitance Cob (pF)
Collector to Base Voltage VCB (V)