NEC

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SILICON TRANSISTOR
2SB1658

AUDIO FREQUENCY AMPLIFIER, SWITCHING
PNP SILICON EPITAXIAL TRANSISTORS

FEATURES

- Low $V_{CE(sat)}$
  $V_{CE(sat)}$ = –0.15 V Max (@I_C/I_B = 1.0 A/50 mA)
- High DC Current Gain
  h_{EF} = 150 to 600 (@V_{CE} = –2.0 V, I_C = –1.0 A)

ABSOLUTE MAXIMUM RATINGS

Maximum Voltage and Current (T_A = 25 °C)

Collector to Base Voltage	V_{CB0}	–30 V
Collector to Emitter Voltage	V_{CE0}	–30 V
Emitter to Base Voltage	V_{EB0}	–6.0 V
Collector Current (DC)	$I_{C(DC)}$	–5.0 A
Collector Current (Pulse)*	$I_{C(Pulse)}$	–10 A
Base Current (DC)	$I_{B(DC)}$	–2.0 A

* PW ≤ 10ms, Duty Cycle ≤ 10 %

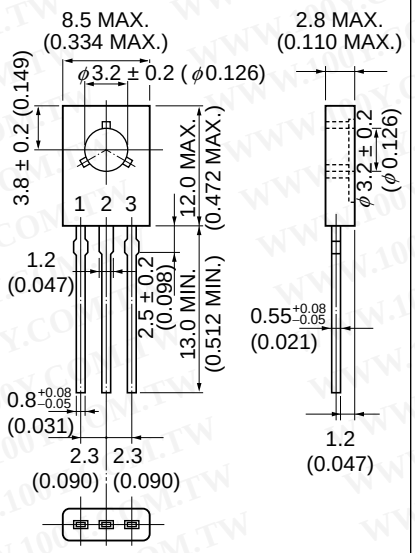
Maximum Power Dissipation

Total Power Dissipation (T_C = 25 °C)	P_T	10 W
Total Power Dissipation (T_A = 25 °C)	P_T	1.0 W

Maximum Temperature

Junction Temperature	T_j	150 °C
Storage Temperature	T_{stg}	–55 to 150 °C

PACKAGE DIMENSIONS
in millimeters (inches)



1. Emitter
2. Collector connected to mounting plane
3. Base

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Currnet	I_{CB0}	V_{CB} = –30 V, I_E = 0			–100	nA
Emitter Cutoff Current	I_{EB0}	V_{EB} = –6.0 V, I_C = 0			–100	nA
DC Current Gain	h_{FE1}	V_{CE} = –2.0 V, I_C = –1.0 A	150		600	—
DC Current Gain	h_{FE2}	V_{CE} = –2.0 V, I_C = –4.0 A	50			—
Collector Saturation Voltage	$V_{CE(sat)1}$	I_C = –1.0 A, I_B = –50 mA		–0.09	–0.15	V
Collector Saturation Voltage	$V_{CE(sat)2}$	I_C = –2.0 A, I_B = –0.1 A		–0.17	–0.25	V
Collector Saturation Voltage	$V_{CE(sat)3}$	I_C = –4.0 A, I_B = –0.2 A		–0.32	–0.50	V
Base Saturation Voltage	$V_{BE(sat)}$	I_C = –1.0 A, I_B = –0.1 A		–0.87	–1.50	V
Gain Bandwidth Product	f_T	V_{CE} = –10 V, I_E = –50 mA		95		MHz
Output Capacitance	C_{ob}	V_{CB} = –10 V, I_E = 0, f = 1 MHz		100		pF

The information in this document is subject to change without notice.

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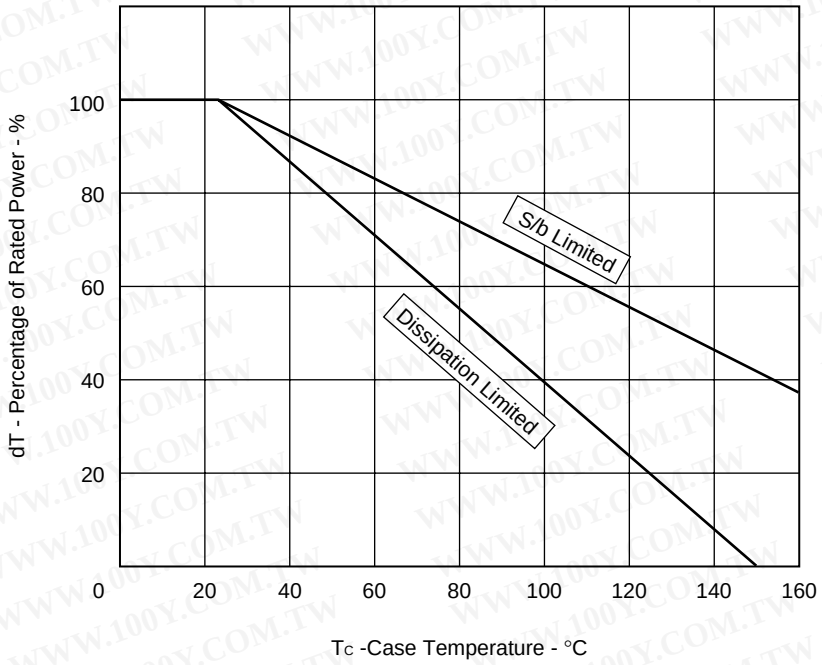
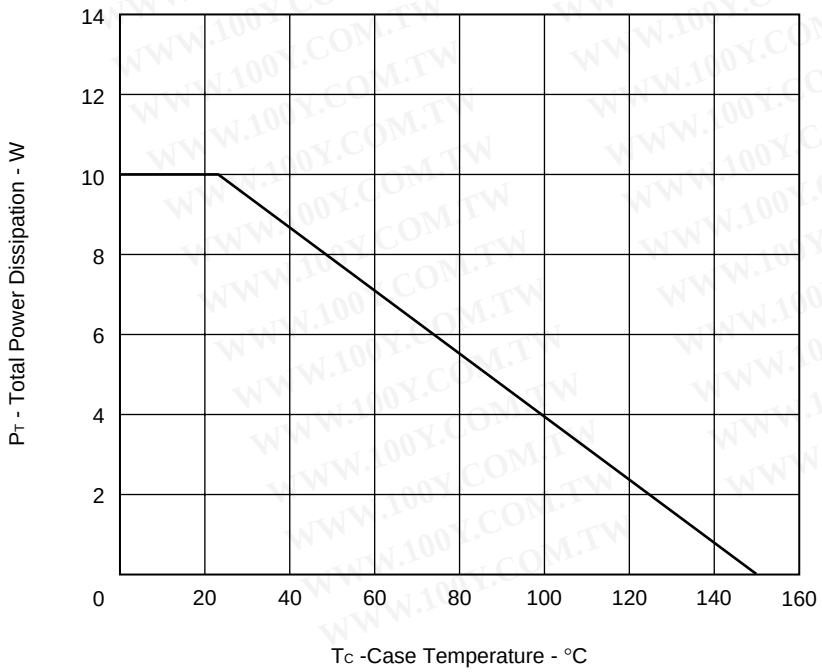
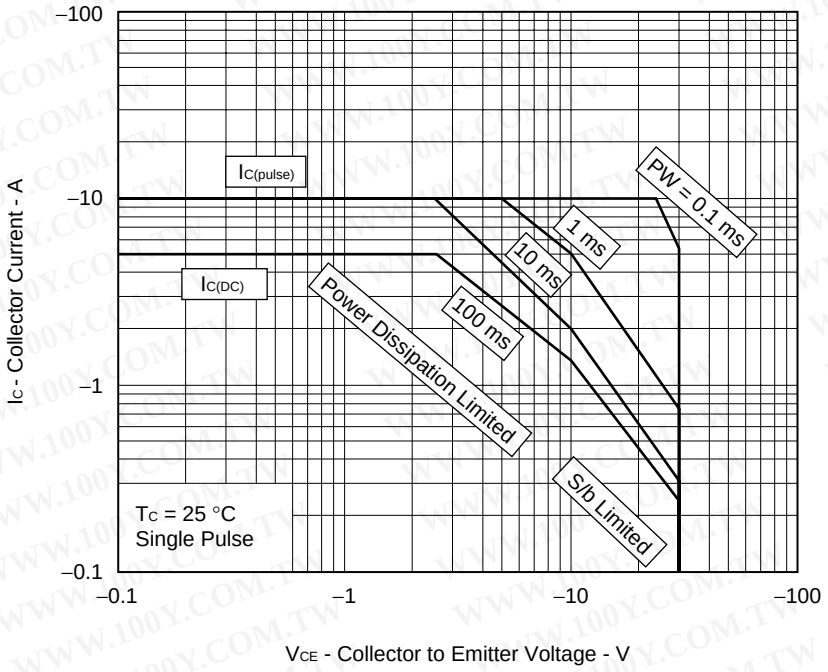
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



TOTAL POWER DISSIPATION vs. CASE TENPERATURE



FORWARD BIAS SAFE OPERATING AREA



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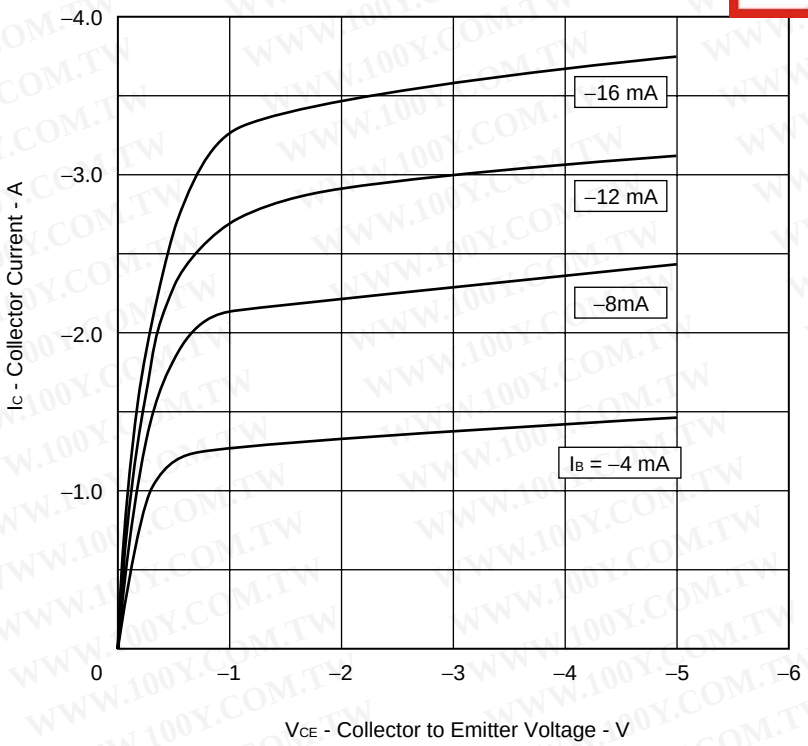
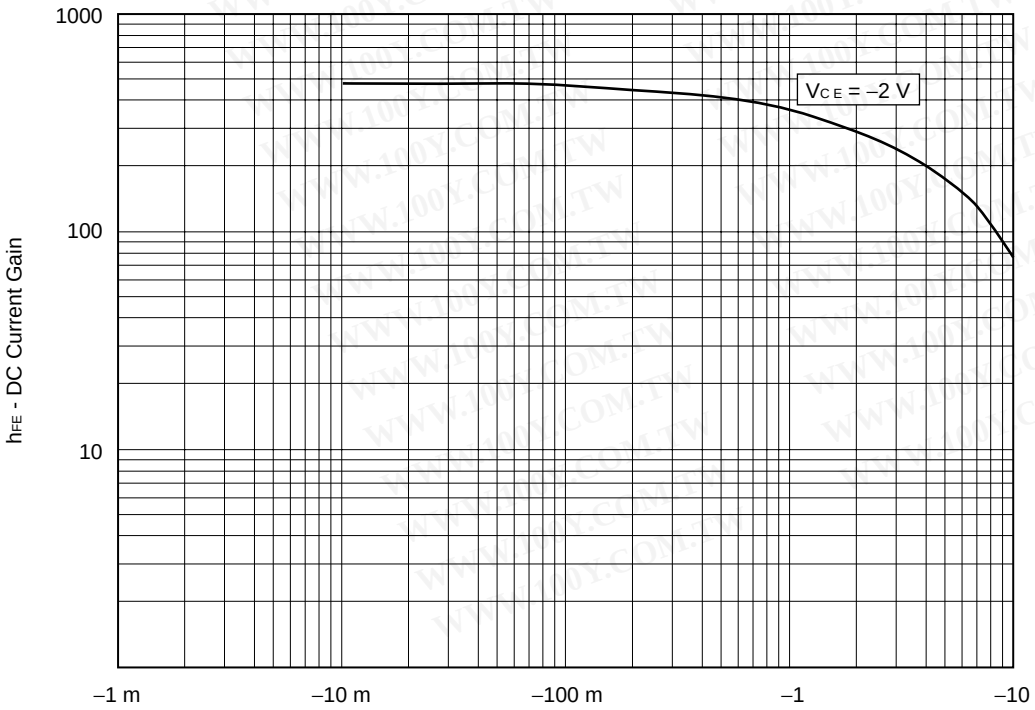
Collector to Emitter Voltage vs Collector Current



DC Current Gain vs Collector Current



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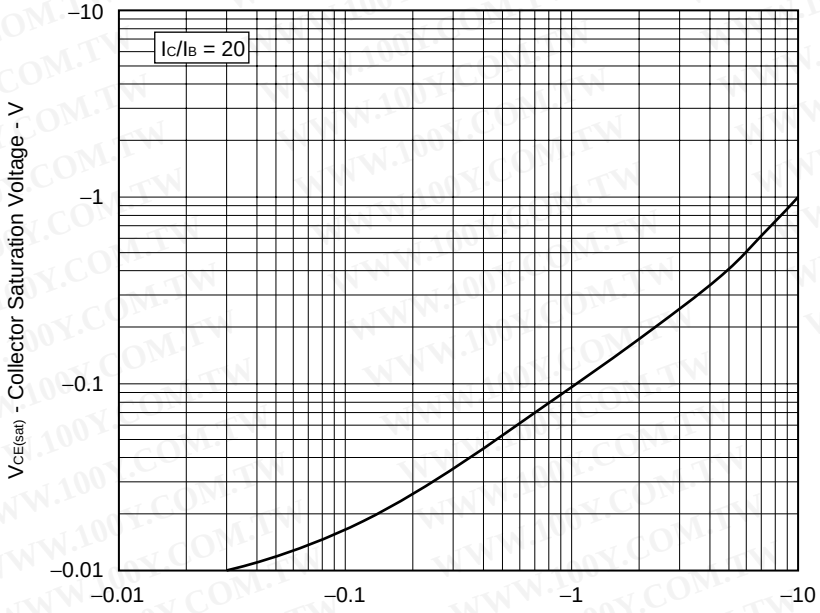
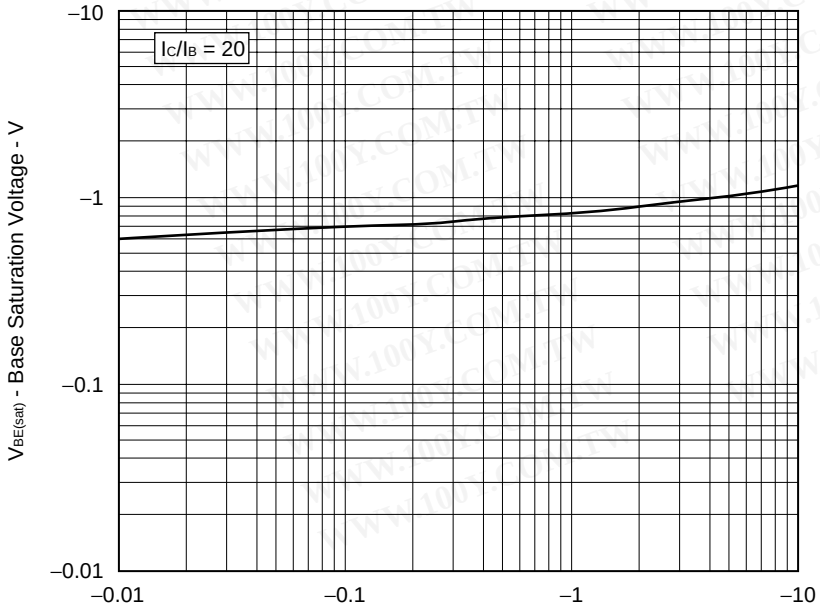
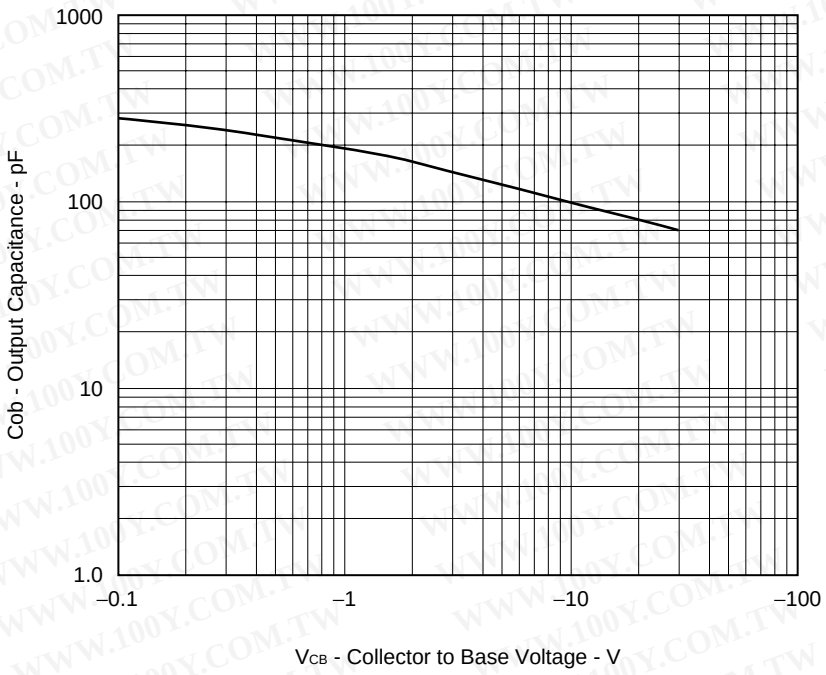
COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT



BASE SATURATION VOLTAGE vs COLLECTOR CURRENT



OUTPUT CAPACITANCE vs COLLECTOR TO BASE VOLTAGE



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REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system	TEI-1202
Quality grade on NEC semiconductor devices	IEI-1209
Semiconductor device mounting technology manual	C10535E
Semiconductor device package manual	C10943X
Guide to quality assurance for semiconductor devices	MEI-1202
Semiconductor selection guide	X10679E

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Anti-radioactive design is not implemented in this product.

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