NEC

SILICON TRANSISTOR
2SD2583

AUDIO FREQUENCY AMPLIFIER, SWITCHING
NOPN 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 Volteage	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)	$I_{B(DC)}$	2.0A

* PW ≤ 10ms, Duty Cycle ≤ 10 %

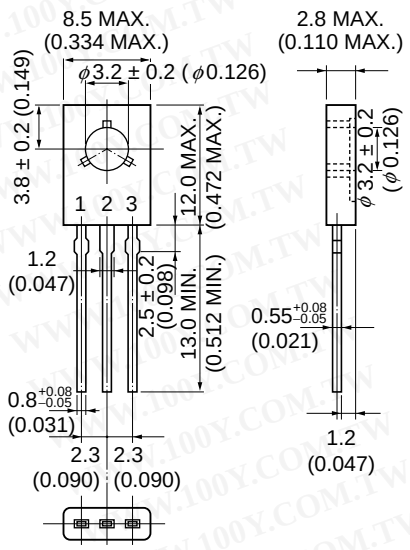
Maximum Power Dissipation

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

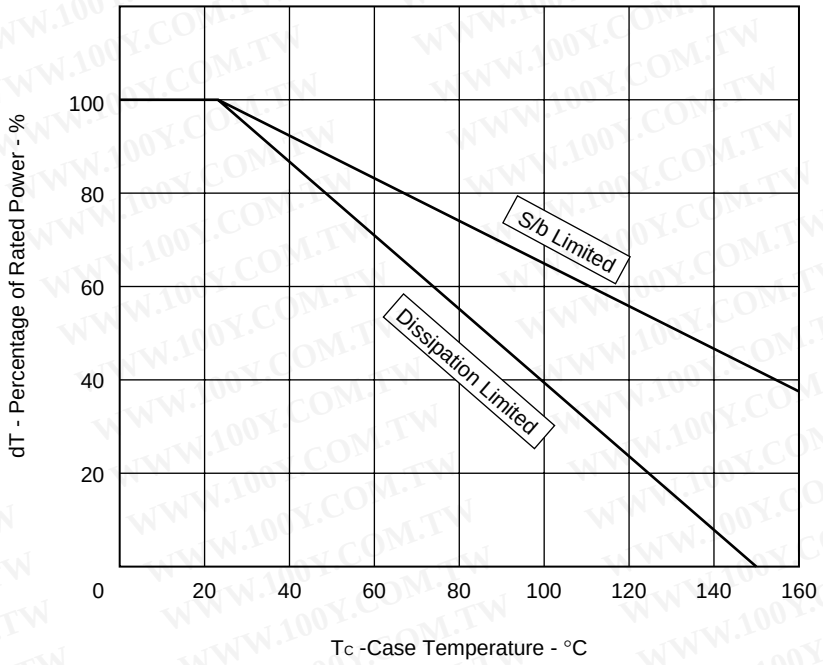
ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTICS	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		0.07	0.15	V
Collector Saturation Voltage	$V_{CE(sat)2}$	I_C = 2.0 A, I_B = 0.1 A		0.13	0.25	V
Collector Saturation Voltage	$V_{CE(sat)3}$	I_C = 4.0 A, I_B = 0.2 A		0.24	0.50	V
Base Saturation Voltage	$V_{BE(sat)}$	I_C = 2.0 A, I_B = 0.1 A		0.86	1.50	V
Gain Bandwidth Product	f_T	V_{CE} = 10 V, I_E = 50 mA		120		MHz
Output Capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz		77		pF

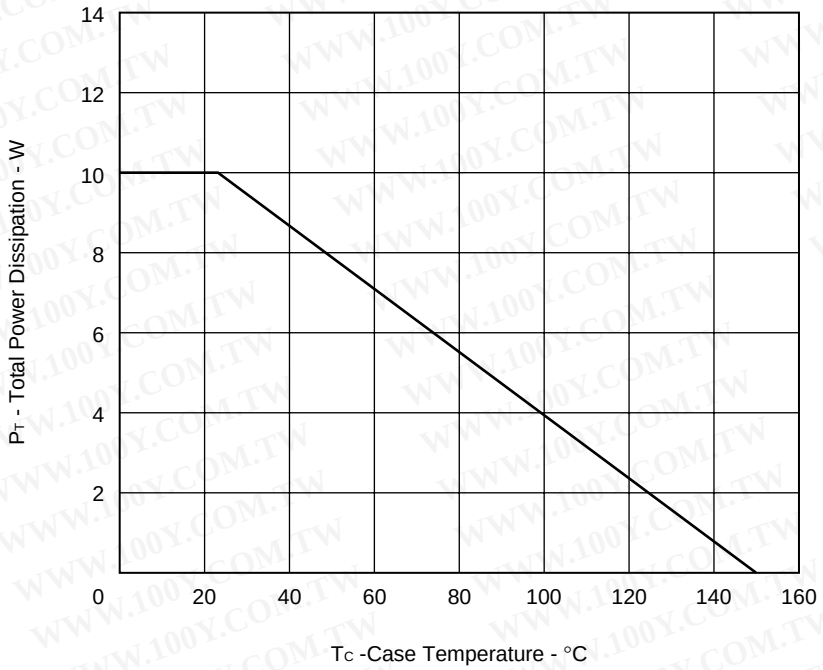
The information in this document is subject to change without notice.

Document No. D10628EJ1V0DS00 (1st edition)
Date Published June 1996 P
Printed in Japan

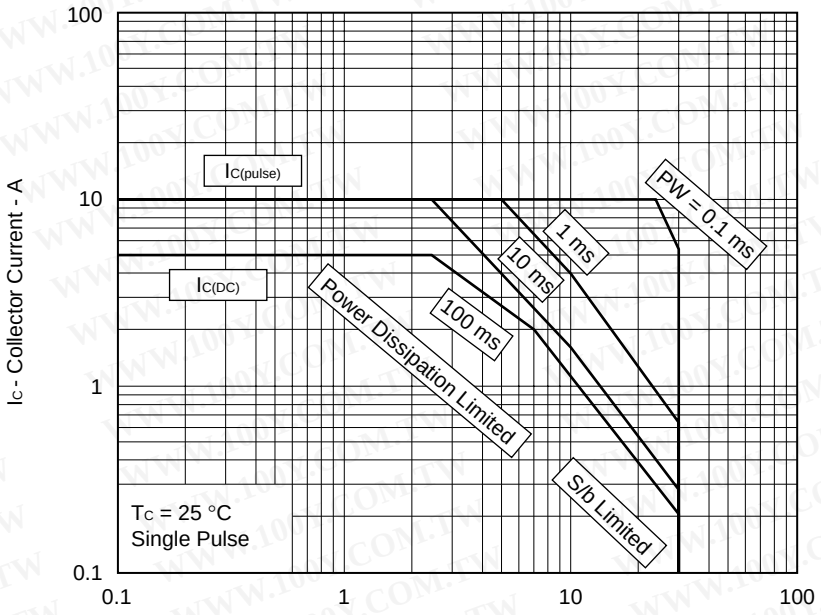
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



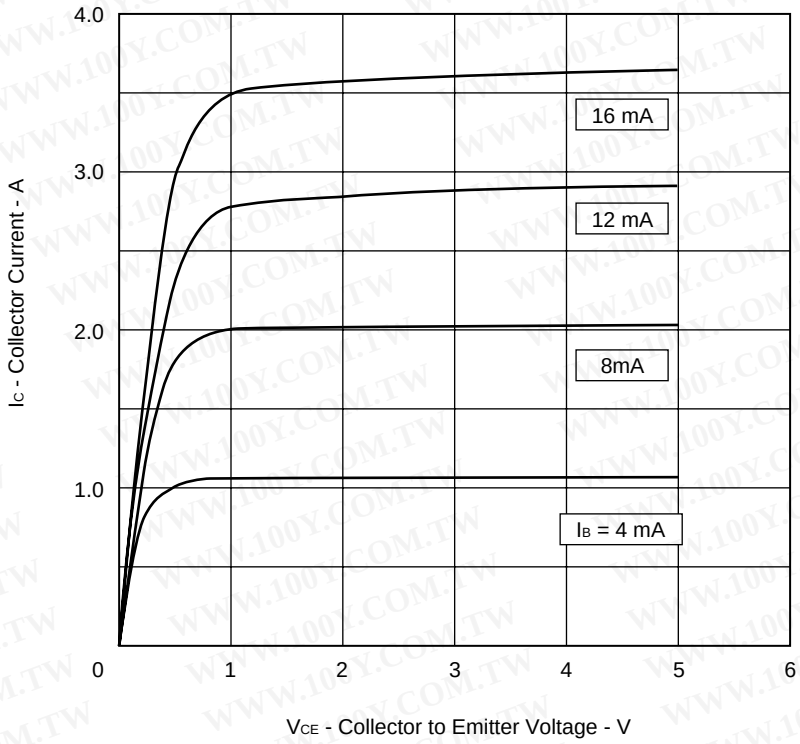
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



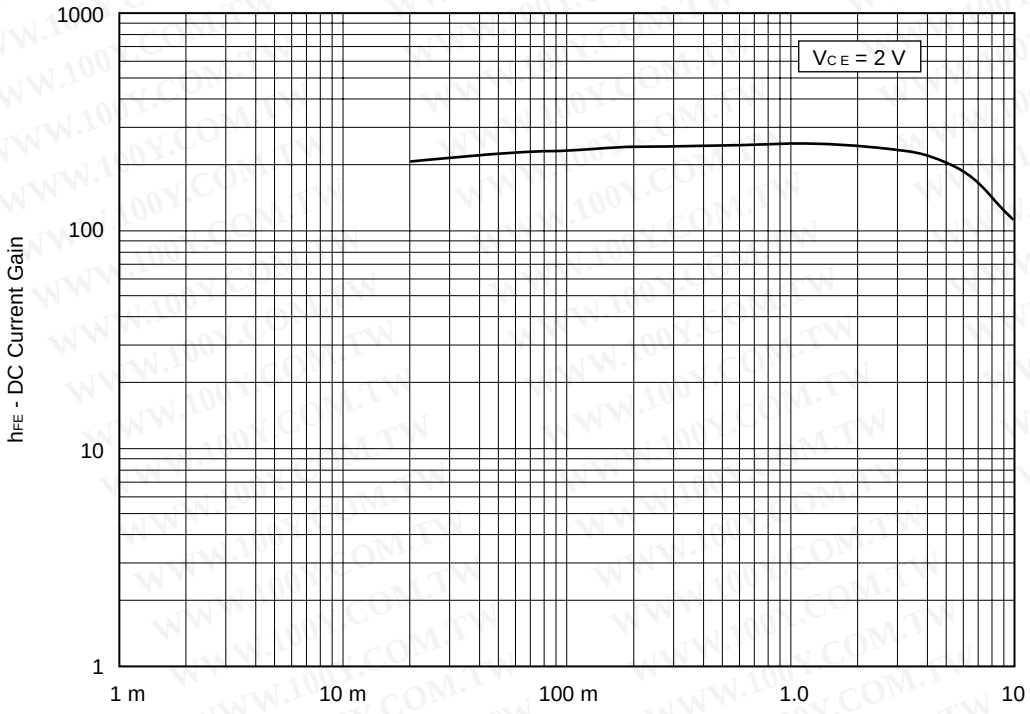
FORWARD BIAS SAFE OPERATING AREA



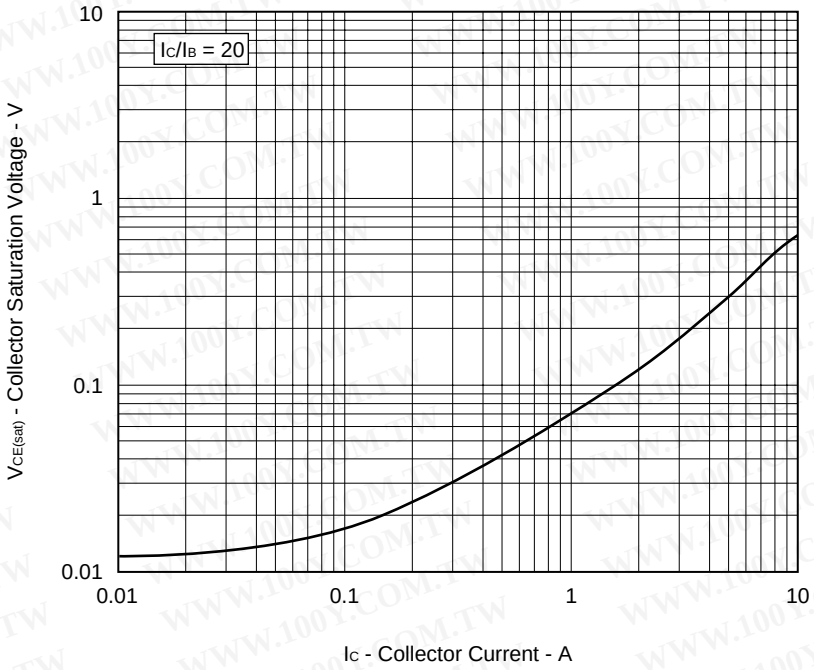
Collector to Emitter Voltage vs Collector Current



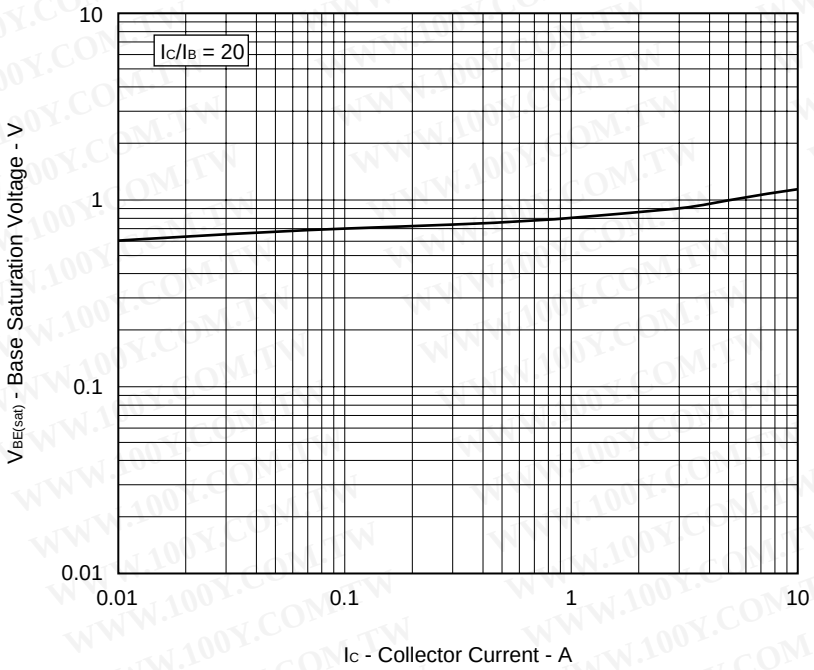
DC Current Gain vs Collector Current



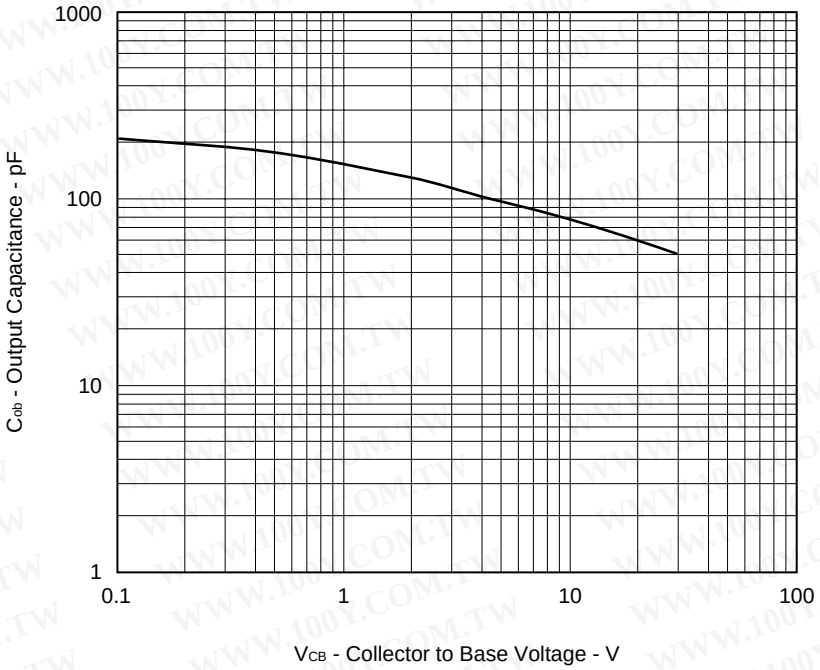
COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT



BASE SATURATION VOLTAGE vs COLLECTOR CURRENT



OUTPUT CAPACITANCE vs COLLECTOR TO BASE VOLTAGE



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

No part of this document may be copied or reproduced in any form or by any means without the prior written consent of NEC Corporation. NEC Corporation assumes no responsibility for any errors which may appear in this document.

NEC Corporation does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a device described herein or any other liability arising from use of such device. No license, either express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of NEC Corporation or others.

While NEC Corporation has been making continuous effort to enhance the reliability of its semiconductor devices, the possibility of defects cannot be eliminated entirely. To minimize risks of damage or injury to persons or property arising from a defect in an NEC semiconductor device, customers must incorporate sufficient safety measures in its design, such as redundancy, fire-containment, and anti-failure features.

NEC devices are classified into the following three quality grades:

"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

- Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots
- Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)
- Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.

M4 96.5