

AUDIO FREQUENCY AMPLIFIER, SWITCHING  
NPN SILICON EPITAXIAL TRANSISTORS

FEATURES

- Low  $V_{CE(sat)}$   
 $V_{CE(sat)} = 0.15 \text{ V Max (@} I_c/I_B = 0.5 \text{ A/25 mA)}$
- High DC Current Gain  
 $h_{FE} = 150 \text{ to } 600 (@V_{CE} = 2.0 \text{ V, } I_c = 0.5 \text{ A)}$

ABSOLUTE MAXIMUM RATINGS

Maximum Voltage and Current ( $T_A = 25 \text{ }^\circ\text{C}$ )

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)*	$I_{C(Pulse)}$	8.0 A
Base Current (DC)	$I_B$	1.0 A

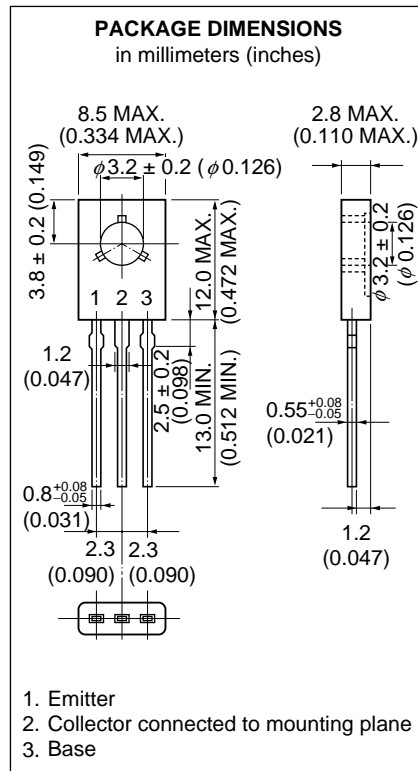
\*  $PW \leq 10\text{ms}$ , Duty Cycle  $\leq 10 \%$

Maximum Power Dissipation

Total Power Dissipation ( $T_C = 25 \text{ }^\circ\text{C}$ )	$P_T$	10 W
Total Power Dissipation ( $T_A = 25 \text{ }^\circ\text{C}$ )	$P_T$	1.0 W

Maximum Temperature

Junction Temperature	$T_j$	150 $^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55 to 150 $^\circ\text{C}$

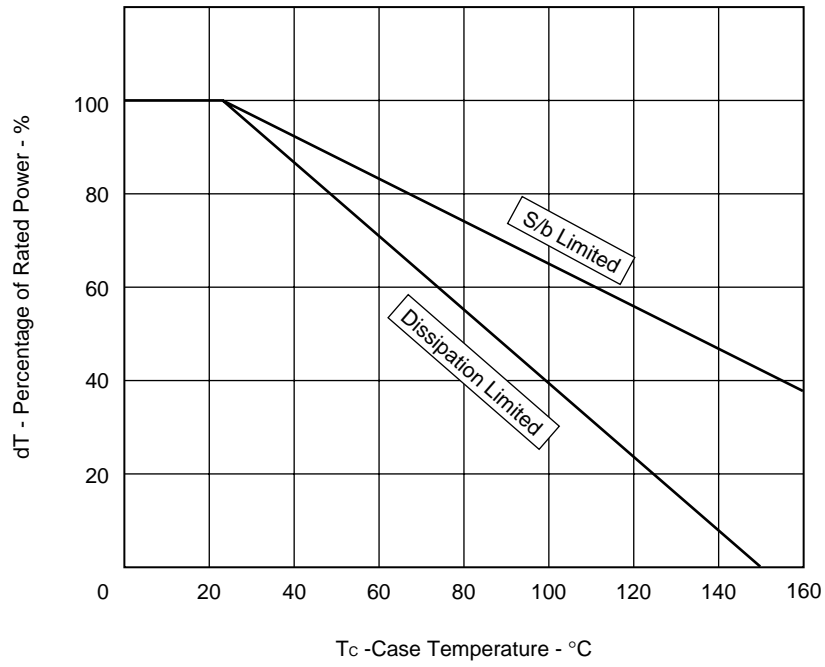


ELECTRICAL CHARACTERISTICS ( $T_A = 25 \text{ }^\circ\text{C}$ )

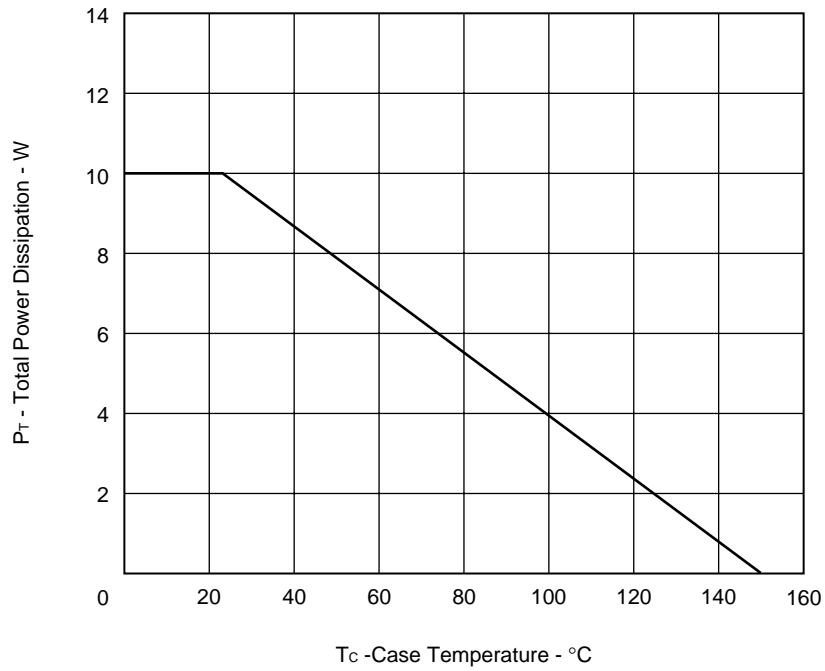
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = 30 \text{ V, } I_E = 0$			100	nA
Emitter Cutoff Current	$I_{EB0}$	$V_{EB} = 6.0 \text{ V, } I_C = 0$			100	nA
DC Current Gain	$h_{FE1}$	$V_{CE} = 2.0 \text{ V, } I_c = 0.5 \text{ A}$	150		600	—
DC Current Gain	$h_{FE2}$	$V_{CE} = 2.0 \text{ V, } I_c = 3.0 \text{ A}$	70			—
Collector Saturation Voltage	$V_{CE(sat)1}$	$I_c = 0.5 \text{ A, } I_B = 25 \text{ mA}$		0.05	0.15	V
Collector Saturation Voltage	$V_{CE(sat)2}$	$I_c = 1.0 \text{ A, } I_B = 50 \text{ mA}$		0.09	0.25	V
Collector Saturation Voltage	$V_{CE(sat)3}$	$I_c = 2.0 \text{ A, } I_B = 100 \text{ mA}$		0.16	0.40	V
Collector Saturation Voltage	$V_{CE(sat)4}$	$I_c = 3.0 \text{ A, } I_B = 75 \text{ mA}$		0.27	1.0	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_c = 1.0 \text{ A, } I_B = 50 \text{ mA}$		0.83	1.50	V
Gain Bandwidth Product	$f_r$	$V_{CE} = 10 \text{ V, } I_E = 50 \text{ mA}$		100		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10 \text{ V, } I_E = 0, f = 1 \text{ MHz}$		46		pF

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

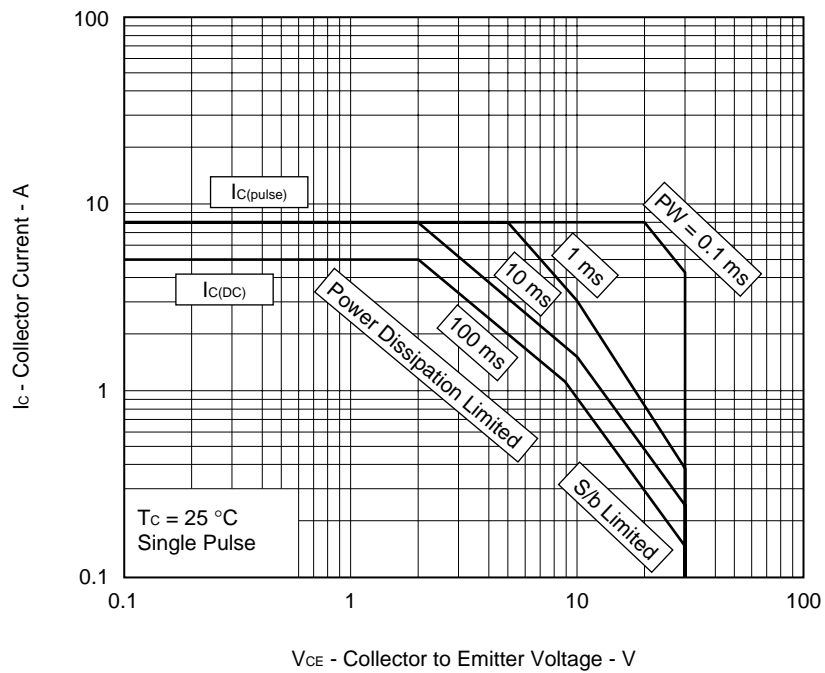
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



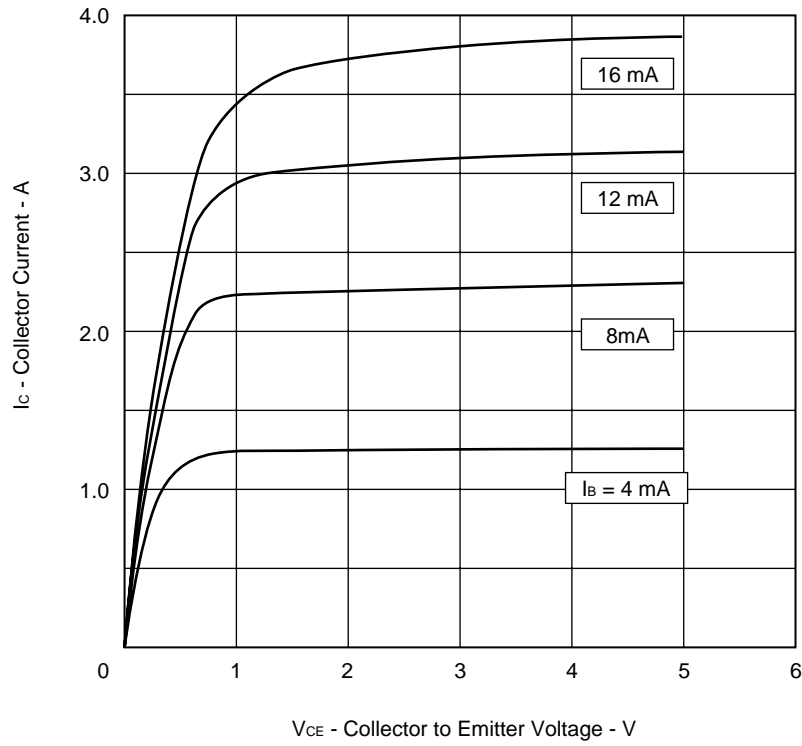
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



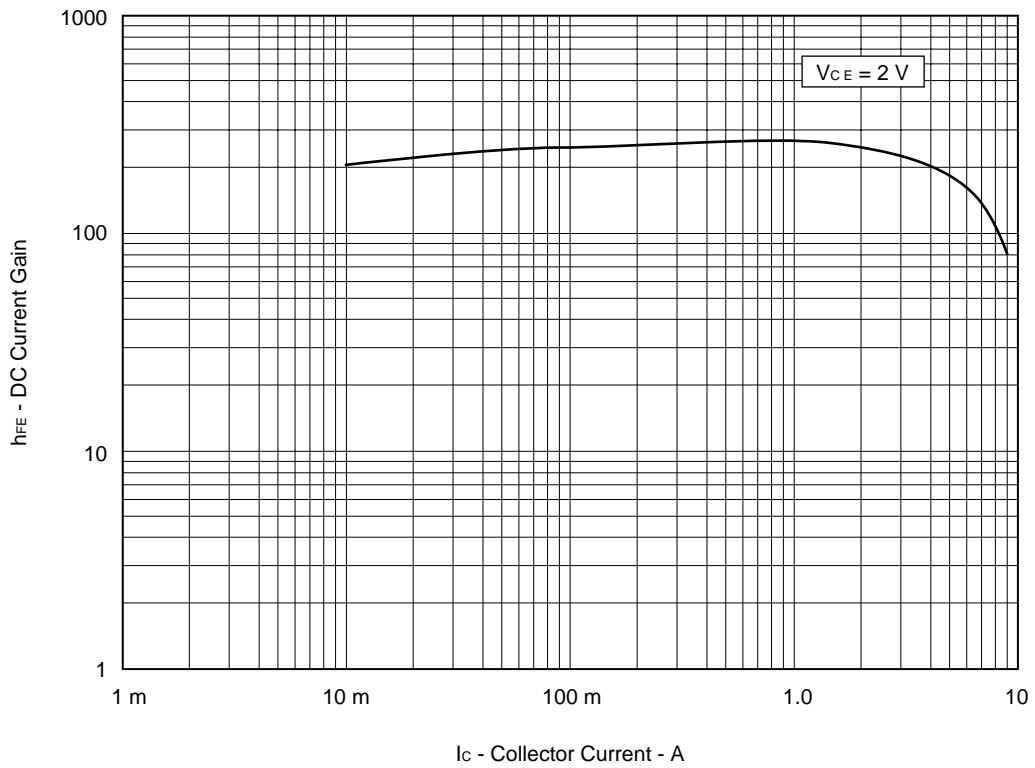
FORWARD BIAS SAFE OPERATING AREA



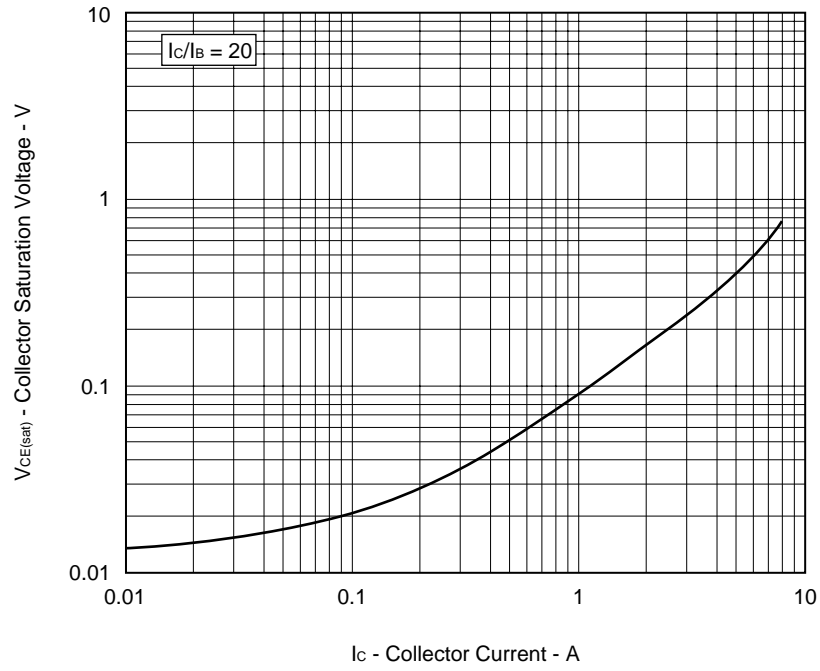
Collector to Emitter Voltage vs Collector Current



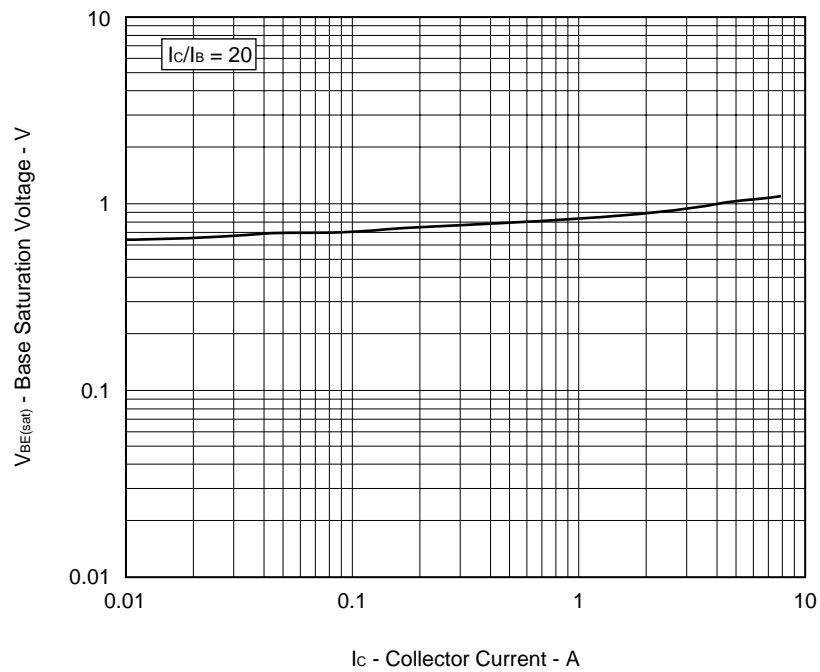
DC Current Gain vs Collector Current



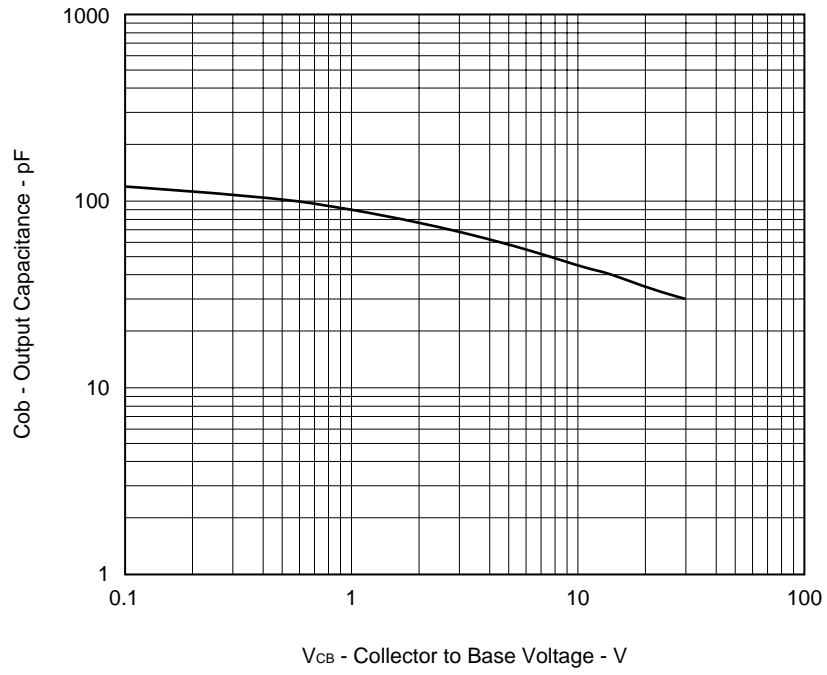
COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT



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

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Anti-radioactive design is not implemented in this product.