

AUDIO FREQUENCY AMPLIFIER, SWITCHING
NPN SILICON EPITAXIAL TRANSISTORS

FEATURES

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

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)*	$I_{C(Pulse)}$	10 A
Base Current (DC)	$I_{B(DC)}$	2.0A

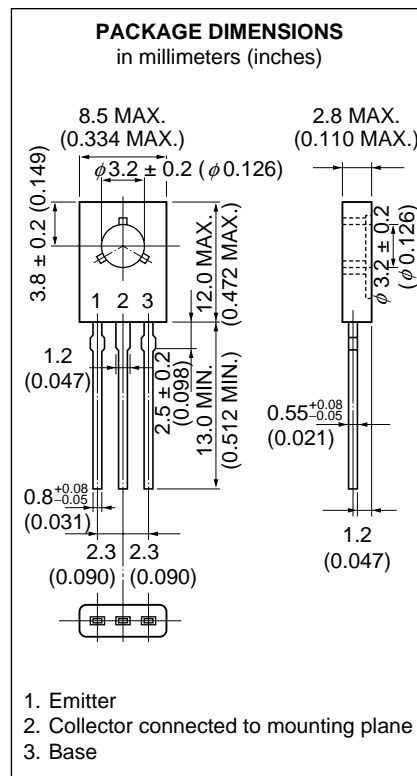
* $PW \leq 10\text{ms}$, Duty Cycle $\leq 10 \%$

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 $^\circ\text{C}$

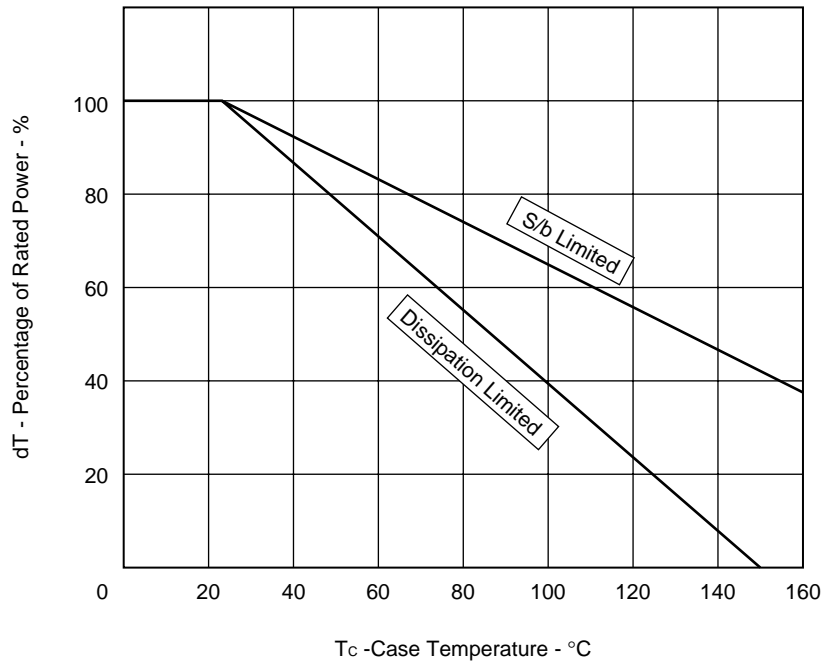


ELECTRICAL CHARACTERISTICS ($T_A = 25 \text{ }^\circ\text{C}$)

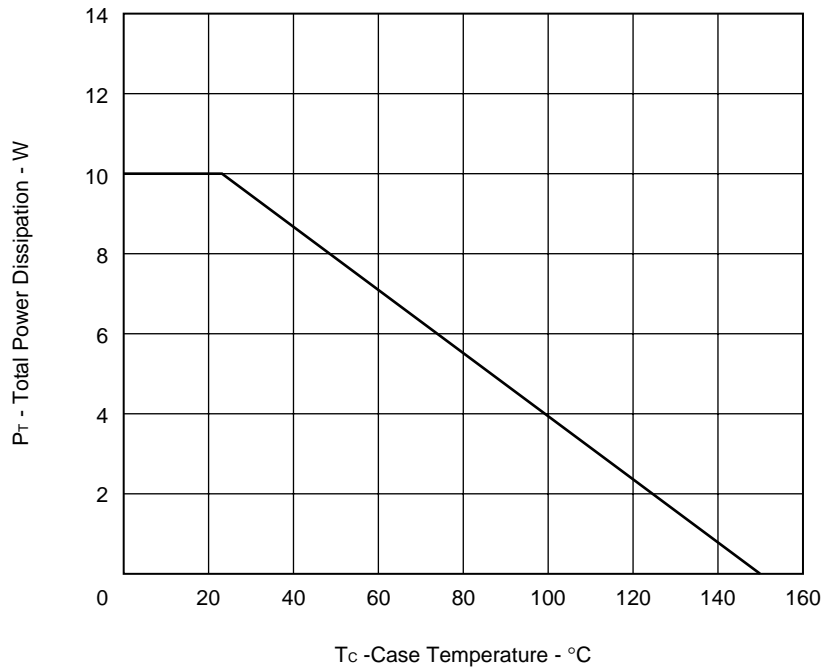
CHARACTERISTICS	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Collector Cutoff Current	I_{CB0}	$V_{CB} = 30 \text{ V, } I_E = 0$			100	nA
Emitter Cutoff Current	I_{EB0}	$V_{EB} = 6.0 \text{ V, } I_C = 0$			100	nA
DC Current Gain	h_{FE1}	$V_{CE} = 2.0 \text{ V, } I_c = 1.0 \text{ A}$	150		600	—
DC Current Gain	h_{FE2}	$V_{CE} = 2.0 \text{ V, } I_c = 4.0 \text{ A}$	50			—
Collector Saturation Voltage	$V_{CE(sat)1}$	$I_c = 1.0 \text{ A, } I_B = 50 \text{ mA}$		0.07	0.15	V
Collector Saturation Voltage	$V_{CE(sat)2}$	$I_c = 2.0 \text{ A, } I_B = 0.1 \text{ A}$		0.13	0.25	V
Collector Saturation Voltage	$V_{CE(sat)3}$	$I_c = 4.0 \text{ A, } I_B = 0.2 \text{ A}$		0.24	0.50	V
Base Saturation Voltage	$V_{BE(sat)}$	$I_c = 2.0 \text{ A, } I_B = 0.1 \text{ A}$		0.86	1.50	V
Gain Bandwidth Product	f_T	$V_{CE} = 10 \text{ V, } I_E = 50 \text{ mA}$		120		MHz
Output Capacitance	C_{ob}	$V_{CB} = 10 \text{ V, } I_E = 0, f = 1 \text{ MHz}$		77		pF

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

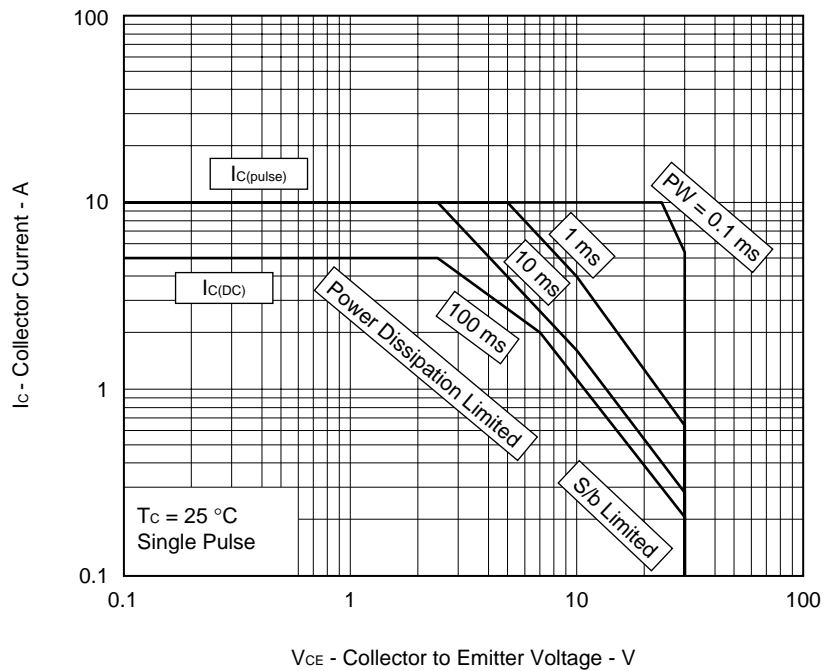
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



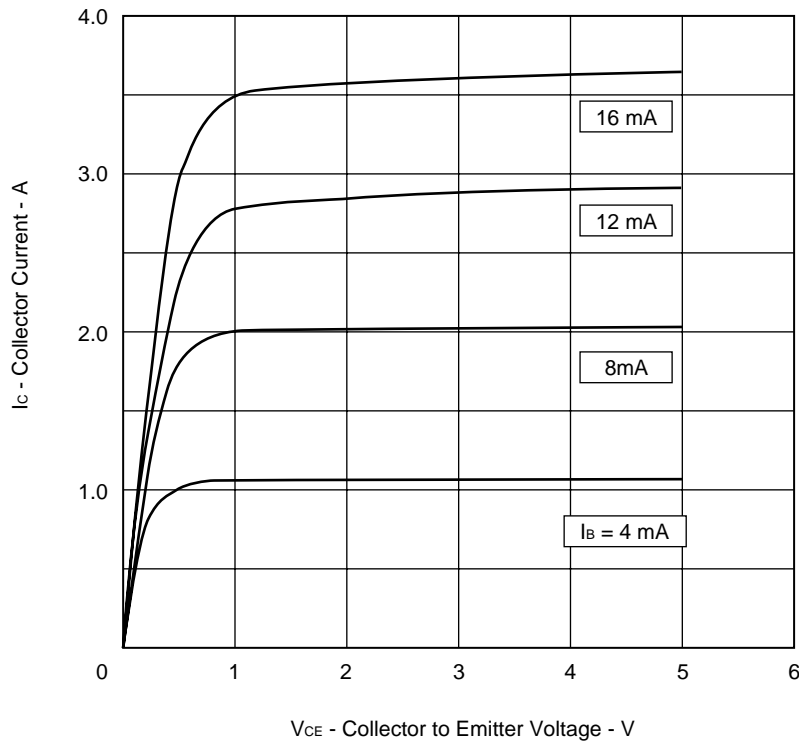
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



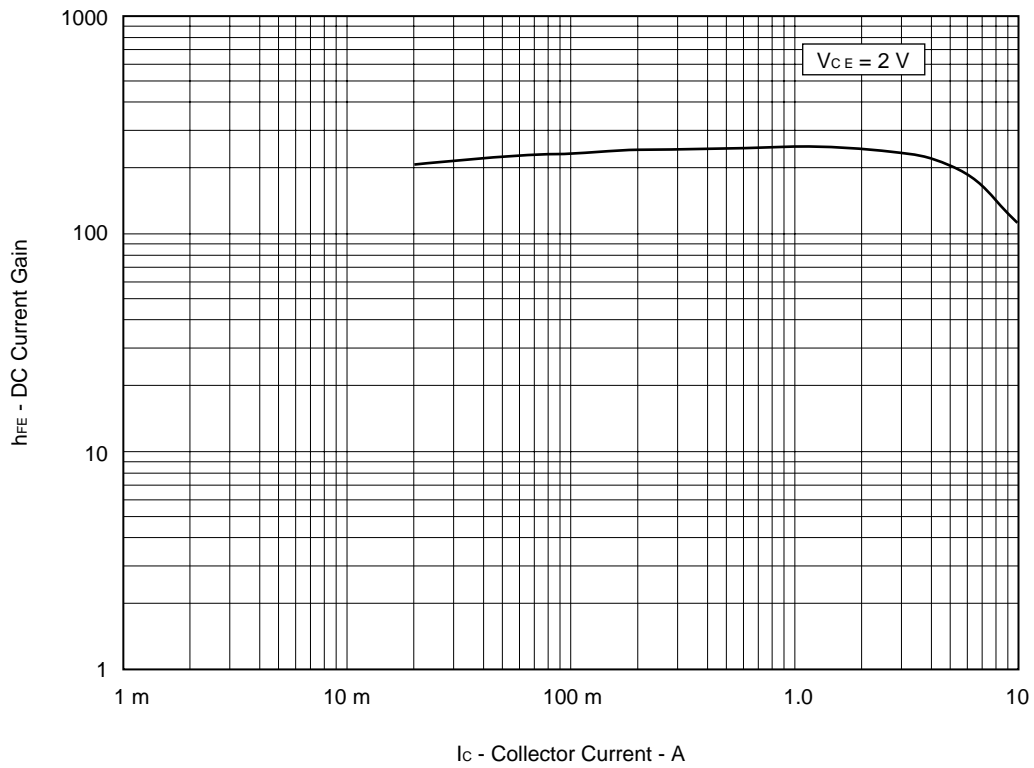
FORWARD BIAS SAFE OPERATING AREA



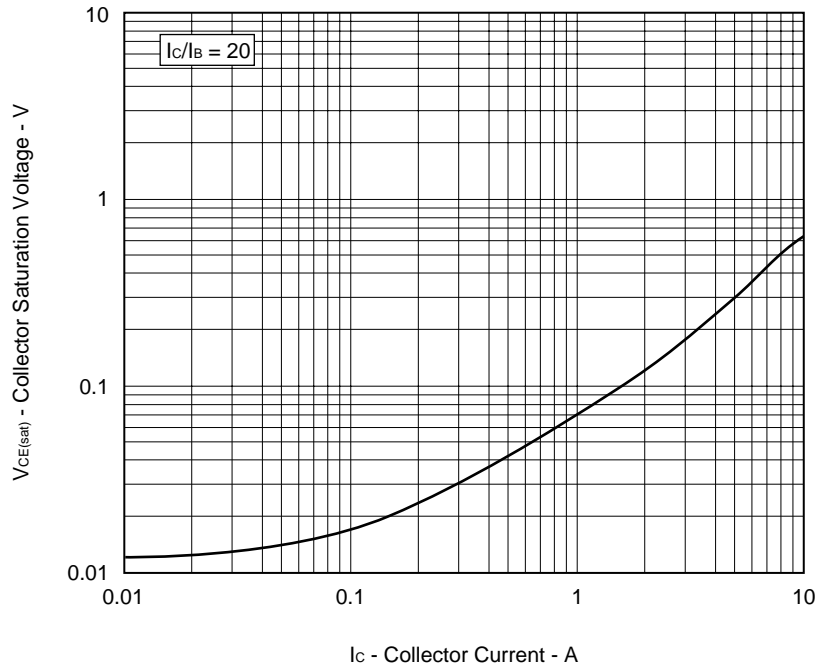
Collector to Emitter Voltage vs Collector Current



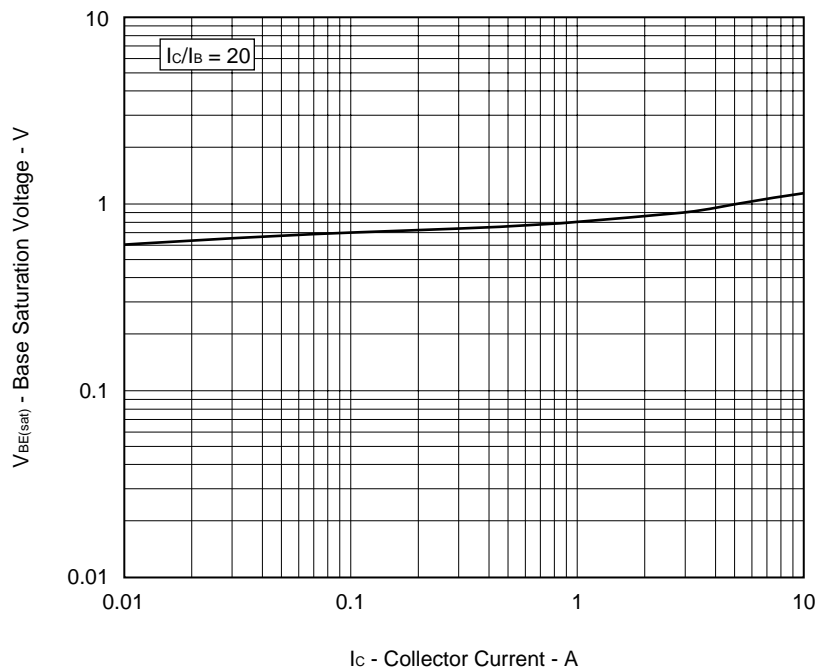
DC Current Gain vs Collector Current



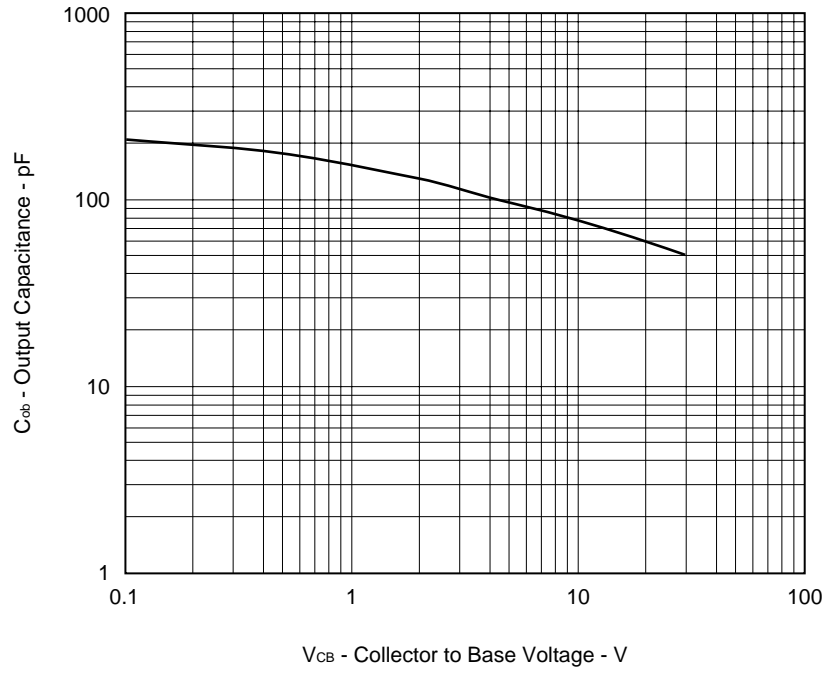
COLLECTOR SATURATION VOLTAGE vs COLLECTOR CURRENT



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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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)

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Anti-radioactive design is not implemented in this product.