

PNP SILICON TRANSISTOR
POWER AMPLIFIER
INDUSTRIAL USE

DESCRIPTION

The 2SA1988 is PNP Silicon Power Transistor that designed for audio frequency power amplifier.

FEATURES

- High Voltage $V_{CE0} = -200$ V
- DC Current Gain $h_{FE} = 70$ to 200
- TO-3P Package

ORDERING INFORMATION

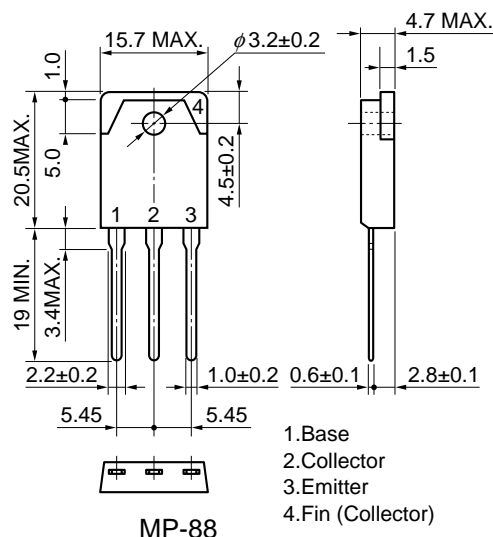
Type Number	Package
2SA1988	MP-88

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$)

Collector to Base Voltage	V_{CB0}	-200	V
Collector to Emitter Voltage	V_{CE0}	-200	V
Emitter to Base Voltage	V_{EBO}	-5.0	V
Collector Current (DC)	I_C (DC)	-7.0	A
Collector Current (pulse)	I_C (pulse) *1	-10	A
Total Power Dissipation	P_2 *2	100	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-55 to +150	$^\circ\text{C}$

*1 $PW \leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 10\%$ *2 $T_C = 25\text{ }^\circ\text{C}$

PACKAGE DIMENSIONS



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

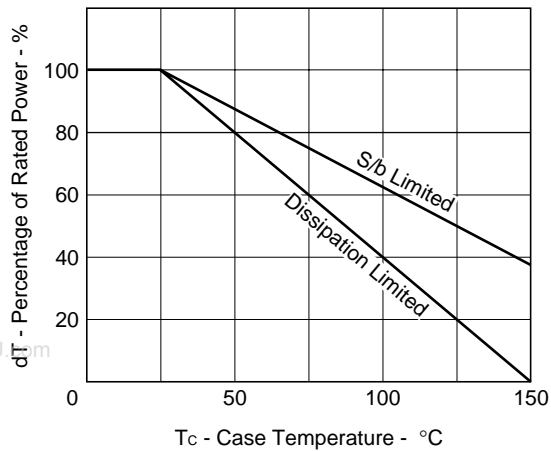
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CB0}			-50	μA	$V_{CB} = -200$ V, $I_E = 0$
Emitter Cutoff Current	I_{EBO}			-50	μA	$V_{EB} = -3.0$ V, $I_C = 0$
DC Current Gain	h_{FE1}	70		200	-	$V_{CE} = -5.0$ V, $I_C = -1.0$ A *
DC Current Gain	h_{FE2}	20			-	$V_{CE} = -5.0$ V, $I_C = -3.5$ A *
Collector Saturation Voltage	$V_{CE(sat)}$		-0.6	-2.0	V	$I_C = -5.0$ V, $I_E = -0.5$ V *
Base Saturation Voltage	$V_{BE(sat)}$		-1.3	-2.0	V	$I_C = -5.0$ V, $I_E = -0.5$ V *
Gain Band width Product	f_T		40		MHz	$V_{CE} = -5.0$ V, $I_C = 1.0$ mA
Output Capacitance	C_{ob}		270		pF	$V_{CB} = -10$ V, $I_C = 0$, $f = 1.0$ MHz

* Pulse Test $PW \leq 350\text{ }\mu\text{s}$, Duty Cycle $\leq 2\%$

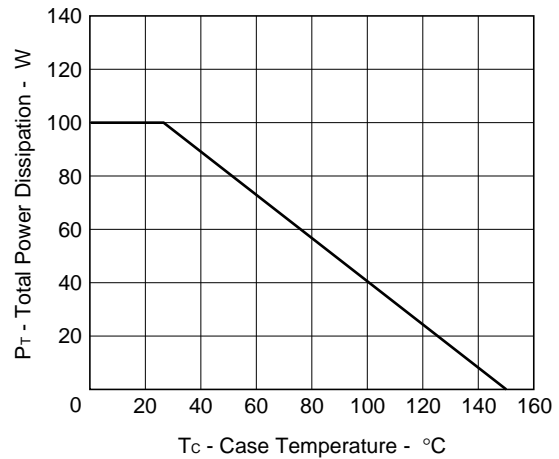
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CHARACTERISTICS (T_A = 25 °C)

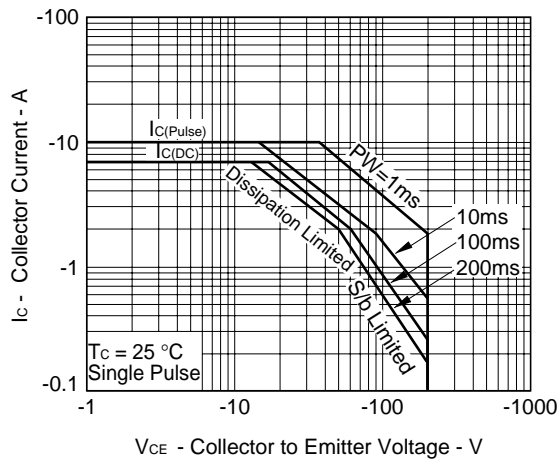
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



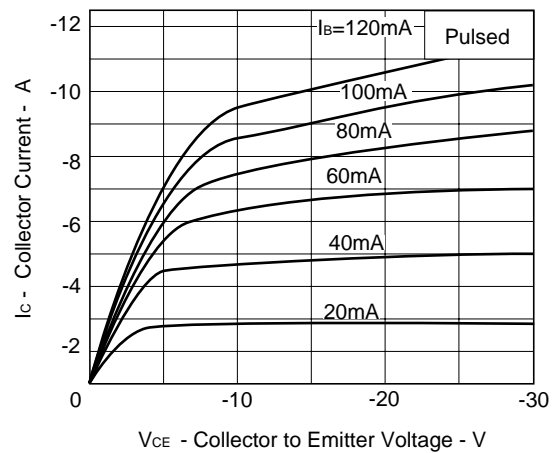
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



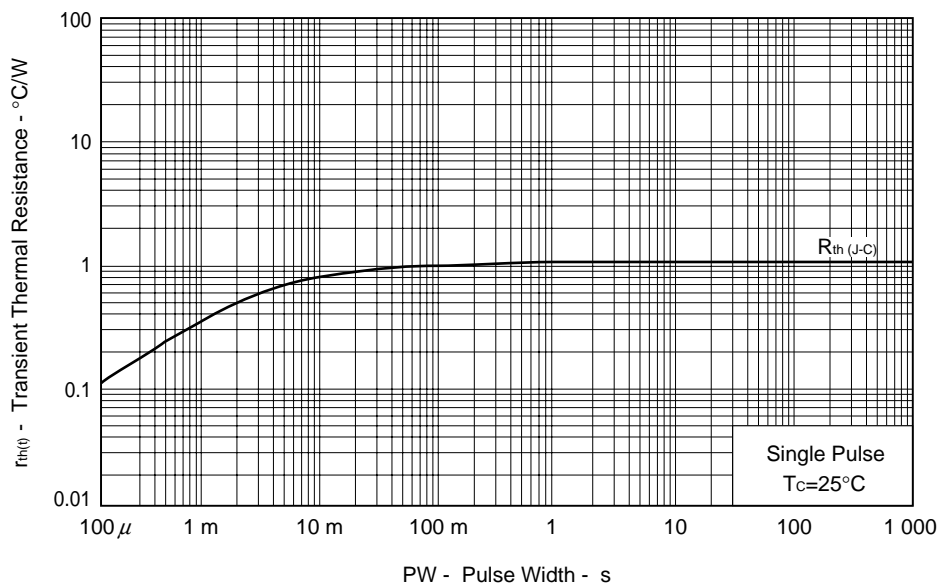
FORWARD BIAS SAFE OPERATING AREA



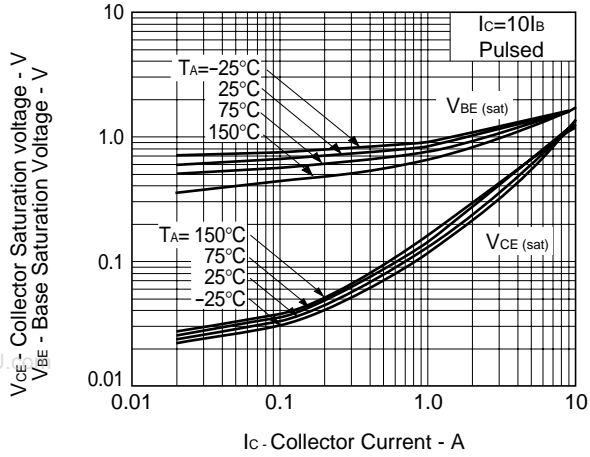
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



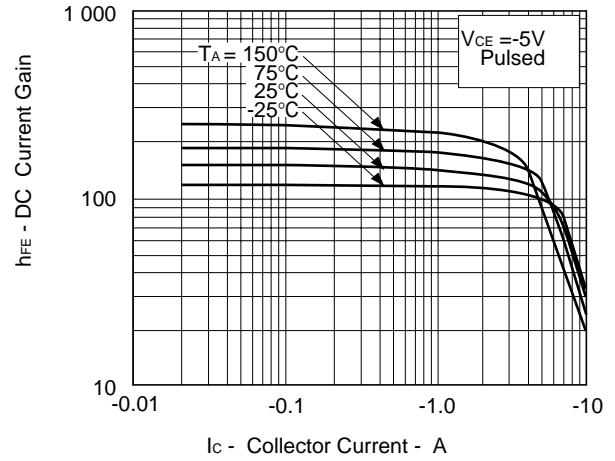
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



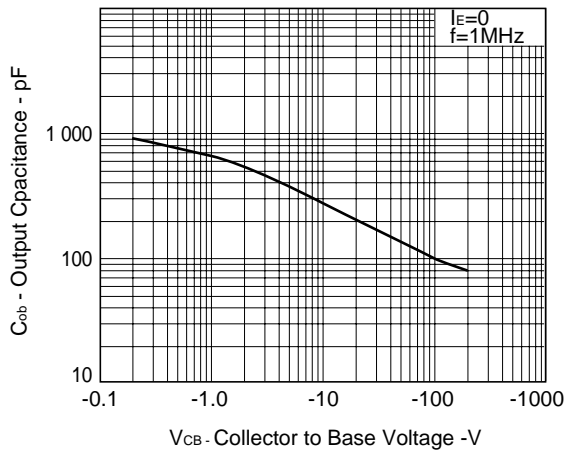
COLLECTOR SATURATION VOLTAGE AND
BASE SATURATION VOLTAGE
vs COLLECTOR CURRENT



DC CURRENT GAIN vs
COLLECTOR CURRENT



OUTOPUT CAPASITANCE 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.