

**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**

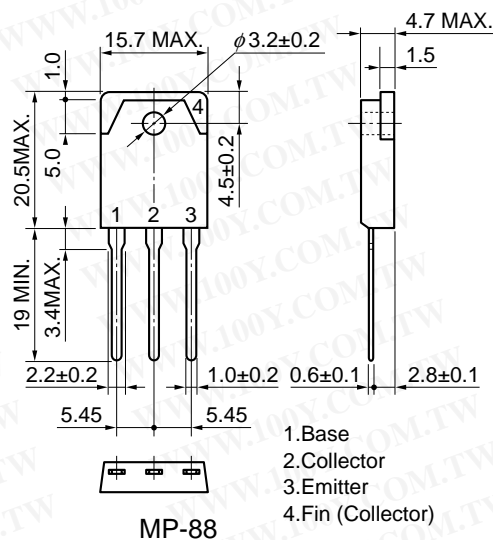
Type Number	Package
2SA1988	MP-88

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °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	°C
Storage Temperature	$T_{stg}$	-55 to +150	°C

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

**PACKAGE DIMENSIONS**



**ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25 °C)**

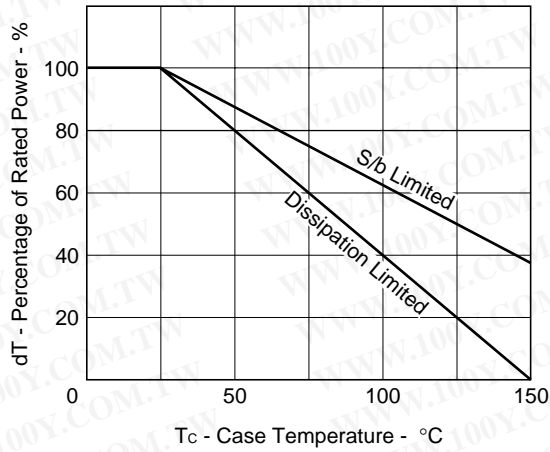
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CB0}$			-50	$\mu A$	$V_{CB} = -200$ V, $I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			-50	$\mu A$	$V_{EB} = -3.0$ V, $I_C = 0$
DC Current Gain	$h_{FE1}$	70		200	-	$V_{CE} = -5.0$ V, $I_C = -1.0$ A *
DC Current Gain	$h_{FE2}$	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  $PW \leq 350 \mu s$ , Duty Cycle  $\leq 2 \%$

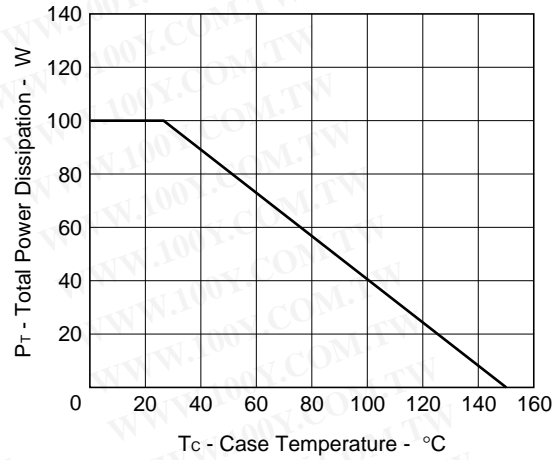
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CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

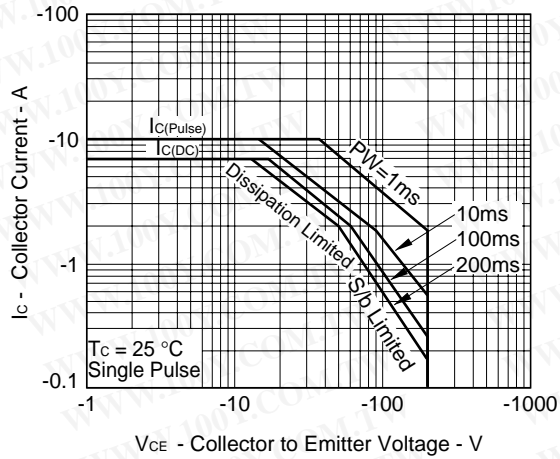
DERATING FACTOR OF FORWARD BIAS SAFE OPERATING AREA



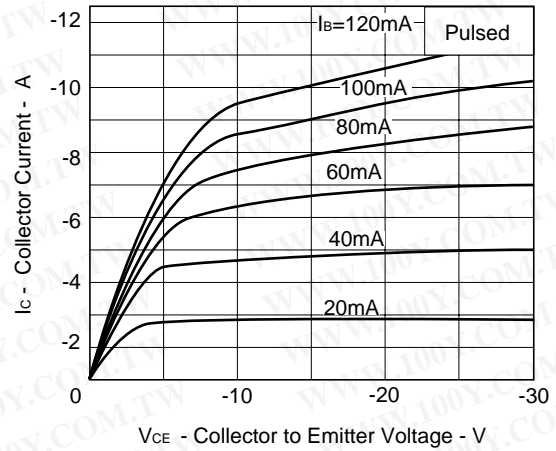
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



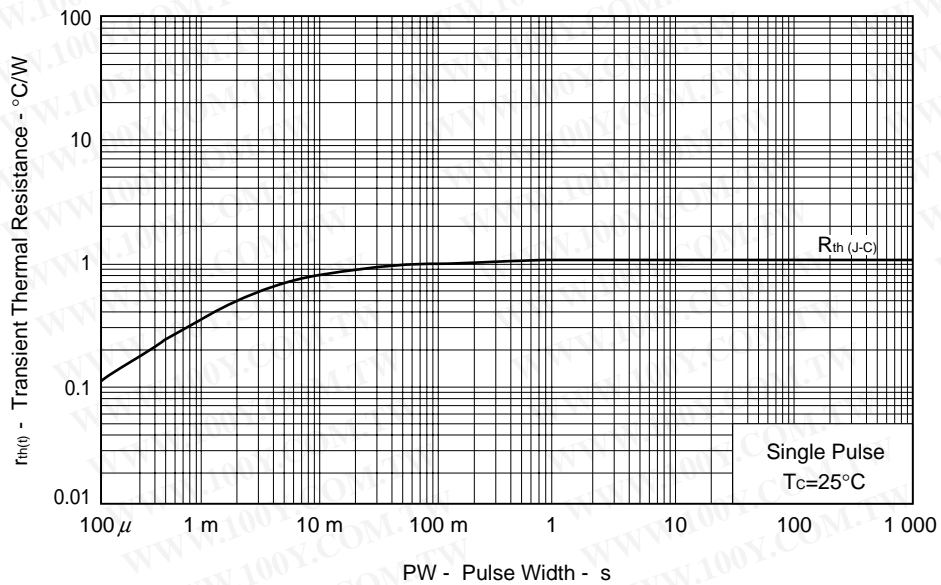
FORWARD BIAS SAFE OPERATING AREA



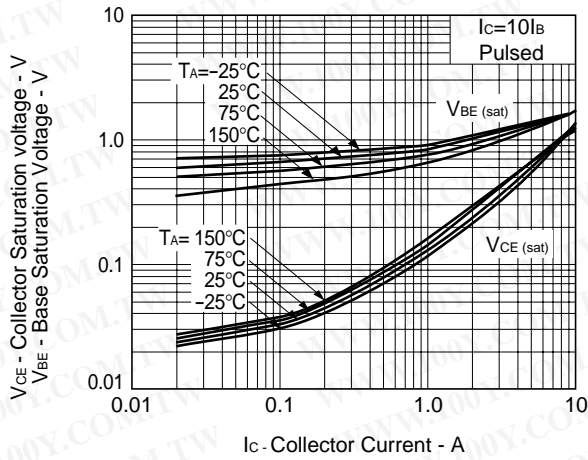
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



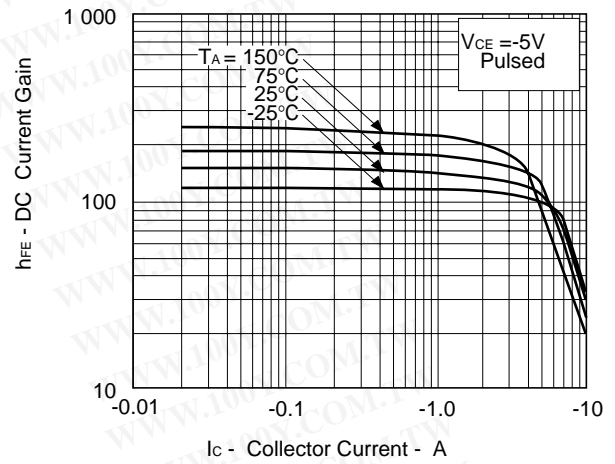
TRANSIENT THERMAL RESISTANCE vs. PULSE WIDTH



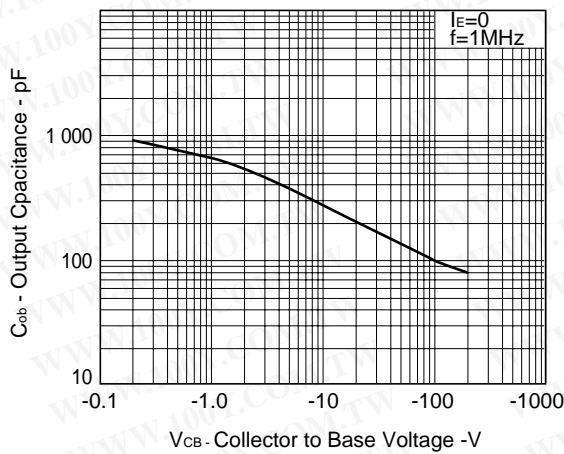
COLLECTOR SATURATION VOLTAGE AND  
BASE SATURATION VOLTAGE  
vs COLLECTOR CURRENT



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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Anti-radioactive design is not implemented in this product.

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