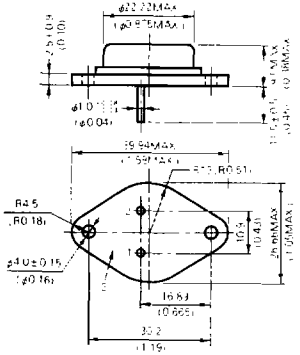
NEC
ELECTRON DEVICE

SILICON POWER TRANSISTORS
2SA1007,2SA1007A/2SC2337,2SC2337A

AUDIO FREQUENCY POWER AMPLIFIER,HIGH FREQUENCY POWER AMPLIFIER AND HIGH CURRENT SWITCHING
PNP/NPN SILICON EPITAXIAL TRANSISTOR
(BUILT IN EMITTER BALLAST RESISTORS)

PACKAGE DIMENSIONS
in millimeters (inches)



1. Base
2. Emitter
3. Collector (Case)

EIAJ :TC-3, TB-3
JEDEC:TO-204MA(TO-3)
IEC :C14A, B18

DESCRIPTION

The 2SA1007, 2SA1007A/2SC2337, 2SC2337A are epitaxial high power transistors designed for use in high power high fidelity audio amplifier applications.

FEATURES

- Wide safe operating area (SOA) because of buit in emitter ballast resistors structure: 80V, 1A, 1 sec.
- High f_T: PNP type, 60MHz, NPN type, 100MHz (at 5V, 1A)
- Excellent h_{FE} linearity
- Suitable for high fidelity stereo amplifiers, ultra sonic equipments, DC-AC inverters, switching regulators.

ABSOLUTE MAXIMUM RATINGS

		2SA1007/ 2SA1007A	2SC2337/ 2SC2337A	
Maximum Voltages and Currents (Ta=25°C)				
Collector to Base Voltage	V_{CBO}	−150	150	V
Collector to Emitter Voltage	V_{CEO}	−130/−150	130/150	V
Emitter to Base Voltage	V_{EBO}	−4.5	4.5	V
Collector Current	I_C (DC)	−10	10	A
Collector Current *	I_C (pulse)	−15	15	A
Maximum Power Dissipation				
Total Power Dissipation	P_T (T_C=25°C)	100		W
Maximum Temperatures				
Junction Temperature	T_j	150		°C
Storage Temperature	T_{stg}	−65 to +150		°C

*PW ≦ 10 ms, duty cycle ≦ 50%

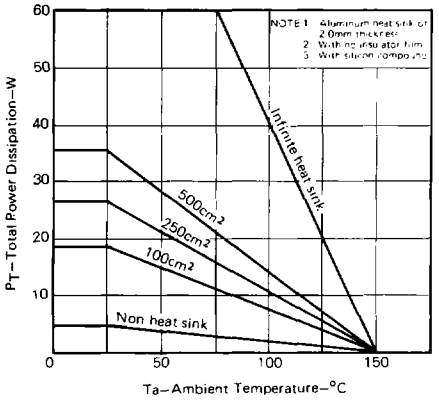
ELECTRICAL CHARACTERISTICS (Ta = 25°C) 2SA1007, 2SA1007A/2SC2337, 2SC2337A

CHARACTERISTIC	SYMBOL	MIN.	TYP	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			−50/50	μA	V_{CB}=−150/150V, I_E=0
Emitter Cutoff Current	I_{EBO}			−100/100	μA	V_{EB}=−3.0/3.0V, I_C=0
DC Current Gain	h_{FE1}		165			V_{CE}=−5.0/5.0V, I_C=−50/50mA*
	h_{FE2}	40	150	320		V_{CE}=−5.0/5.0V, I_C=−2.0/2.0A*
Collector Saturation Voltage	$V_{CE(sat)}$		−1.4/0.7	−2.0/2.0	V	I_C=−6.0/6.0A, I_B=−0.6/0.6A*
Base Saturation Voltage	$V_{BE(sat)}$		−1.5/1.5	−2.0/2.0	V	I_C=−6.0/6.0A, I_B=−0.6/0.6A*
Gain Bandwidth Product	f_T		50/70		MHz	V_{CE}=−5.0/5.0V, I_C=−0.2/0.2A
Output Capacitance	C_{ob}		250/150		pF	V_{CB}=−10/10V, I_E=0, f=1.0MHz
Turn On Time	t_{on}		0.2		μs	I_C=−5/5A, I_{B1}=−I_{B2}=−0.5/0.5A R_L=10Ω
Storage Time	t_{stg}		0.7/1.5		μs	
Turn Off Time	t_{off}		1.0/1.8		μs	

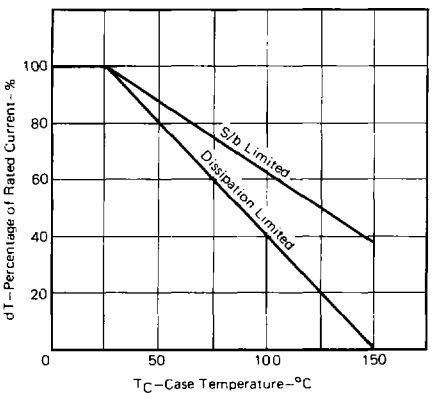
* Pulse Test PW ≦ 350μs, duty cycle ≦ 2% h_{FE2} Classification / S: 40 to 80, R: 60 to 120, Q: 100 to 200, P: 160 to 320

TYPICAL CHARACTERISTICS (Ta = 25°C)

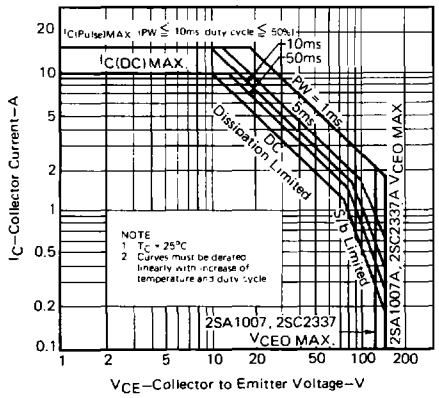
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



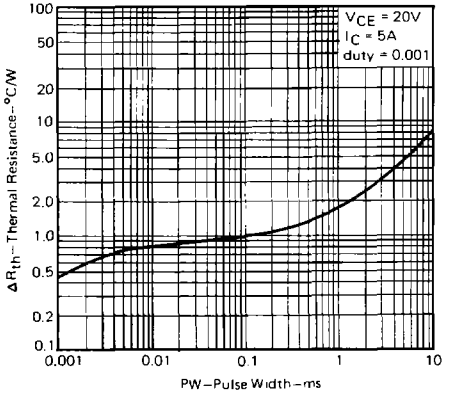
DERATING CURVE OF SAFE OPERATING AREAS



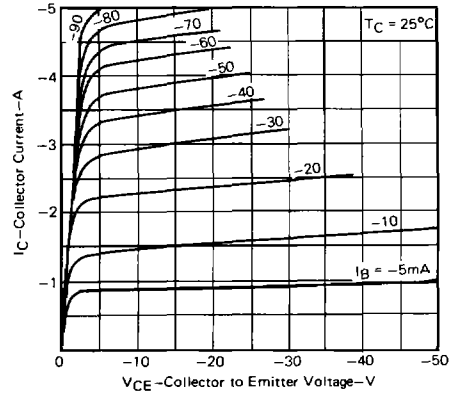
SAFE OPERATING AREAS



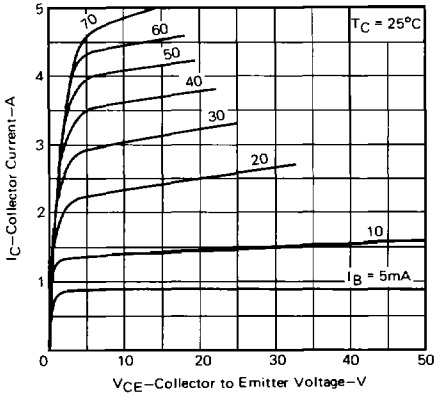
TRANSIENT THERMAL RESISTANCE



2SA1007, 2SA1007A COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



2SC2337, 2SC2337A COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



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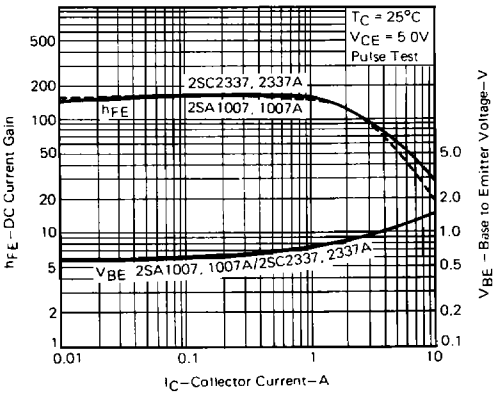
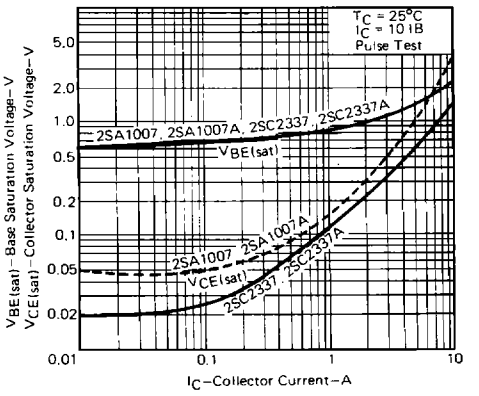
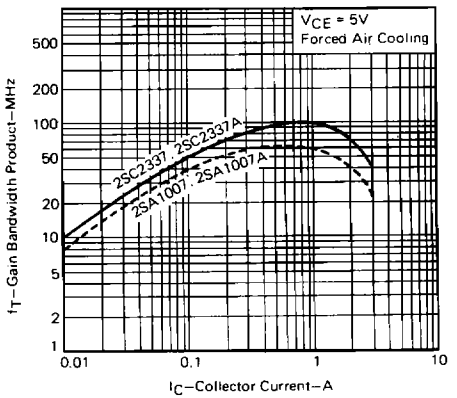
DC CURRENT GAIN AND BASE TO EMITTER VOLTAGE vs. COLLECTOR CURRENT



BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE