DATA SHEET

NEC

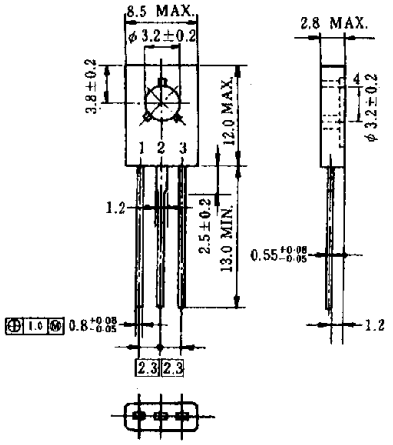
SILICON POWER TRANSISTOR
2SB548, 549/2SD414, 415

PNP/NPN SILICON EPITAXIAL TRANSISTOR FOR LOW-FREQUENCY POWER AMPLIFIERS

FEATURES

- Ideal for audio amplifier drivers with 30 W to 50 W output
- High voltage
- Available for small mount spaces due to small and thin package
- Easy to be attached to radiators

PACKAGE DRAWING (UNIT: mm)



Electrode Connection
1. Emitter
2. Collector connected to mounting plane
3. Base
4. Fin (Collector)

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	2SB548/ 2SD414	2SB549/ 2SD415	Unit
Collector to base voltage	V_{CBO}	−100/120		V
Collector to emitter voltage	V_{CEO}	−80/80	−100/100	V
Emitter to base voltage	V_{EBO}	−5.0/5.0		V
Collector current	$I_{C(DC)}$	−0.8/0.8		A
Collector current	$I_{C(pulse)}$*	−1.5/1.5		A
Total power dissipation	P_T (Ta = 25°C)	1.0		W
Total power dissipation	P_T (Tc = 25°C)	10		W
Junction temperature	T_j	150		°C
Storage temperature	T_{stg}	−55 to +150		°C

* PW ≤ 10 ms, duty cycle ≤ 50%

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	V_{CB} = −80/80 V, I_E = 0			−1.0/1.0	μA
Emitter cutoff current	I_{EBO}	V_{EB} = −3.0/3.0 V, I_C = 0			−1.0/1.0	μA
DC current gain	h_{FE1}	V_{CE} = −5.0/5.0 V, I_C = −2.0/2.0 mA*	20			
DC current gain	h_{FE2}	V_{CE} = −5.0/5.0 V, I_C = −200/200 mA*	40	90	320	
Collector saturation voltage	$V_{CE(sat)}$	I_C = −500/500 mA, I_B = −50/50 mA*		−0.4/0.3	−2.0/2.0	V
Base saturation voltage	$V_{BE(sat)}$	I_C = −500/500 mA, I_B = −50/50 mA*		−0.9/0.9	−1.5/1.5	V
Gain bandwidth product	f_T	V_{CE} = −5.0/5.0 V, I_C = −100/100 mA		70/45		MHz
Collector capacitance	C_{ob}	V_{CB} = −10/10 V, I_E = 0, f = 1.0 MHz		25/15		pF

* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

h_{FE2} CLASSIFICATION

Marking	S	R	Q	P
h_{FE2}	40 to 80	60 to 120	100 to 200	160 to 320

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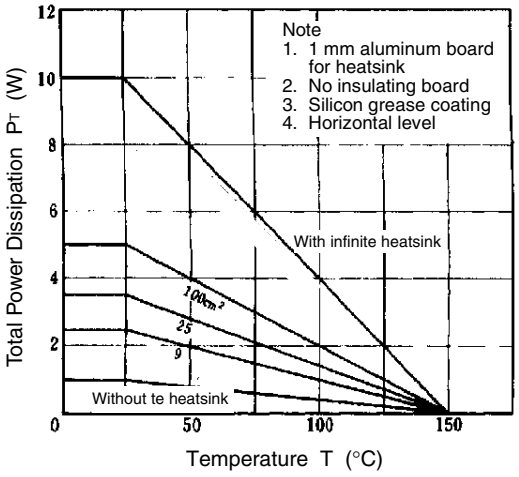
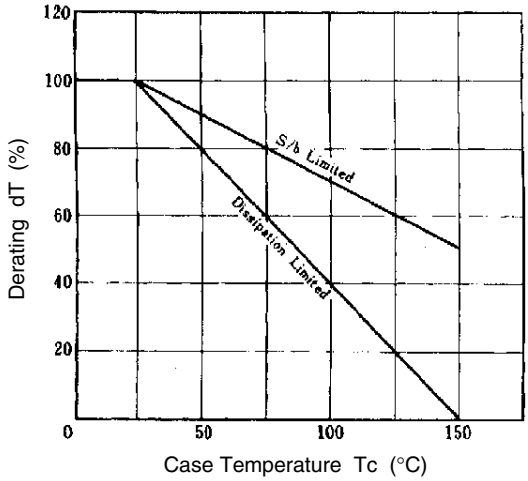
TYPICAL CHARACTERISTICS (Ta = 25°C)

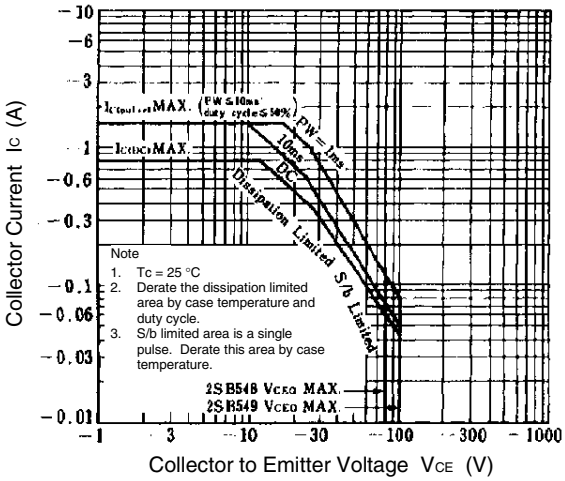
TOTAL POWER DISSIPATION vs. TEMPERATURE



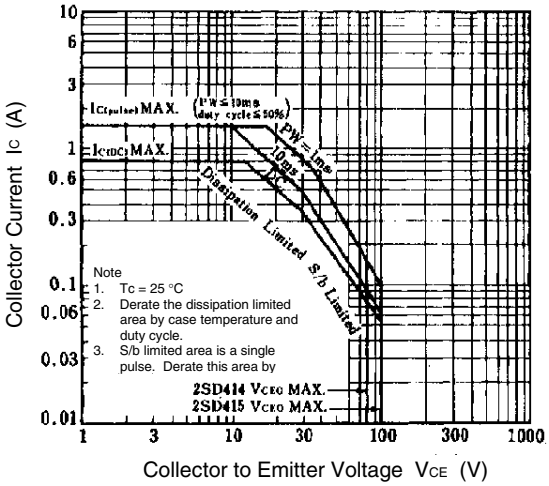
DERATING CURVE OF SAFE OPERATING AREA



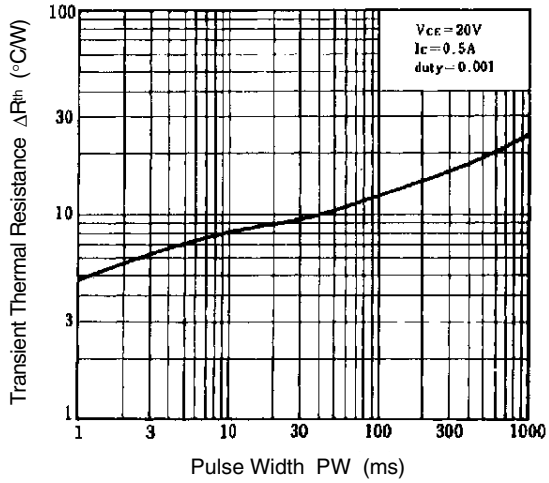
2SB548, 2SB549
FORWARD BIAS SAFE OPERATING AREA



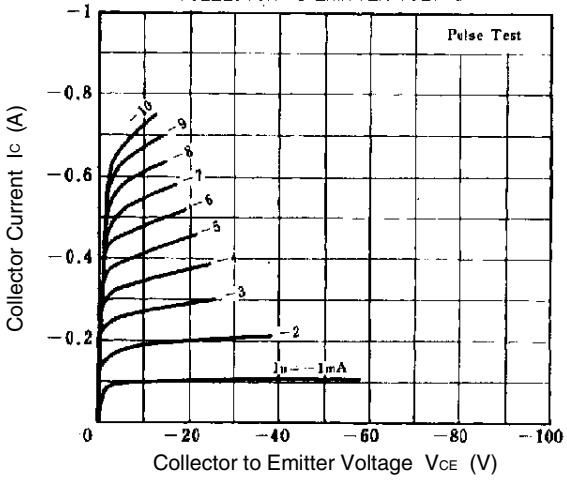
2SD414, 2SD415
FORWARD BIAS SAFE OPERATING AREA



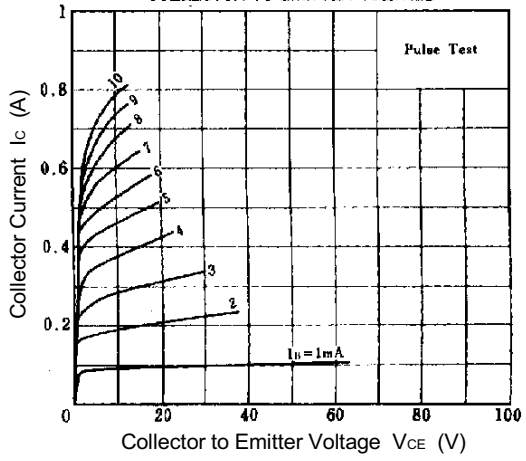
TRANSIENT THERMAL RESISTANCE



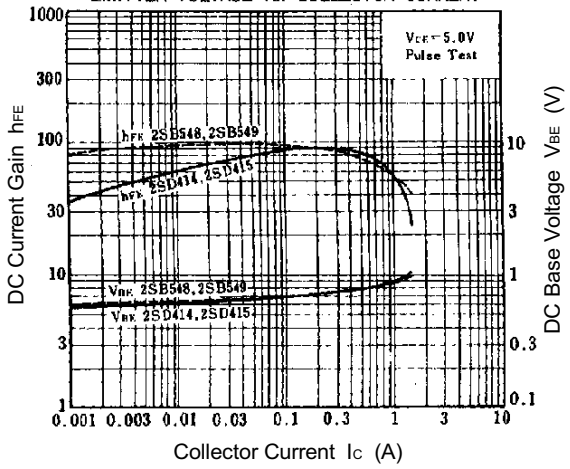
2SB548, 2SB549
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



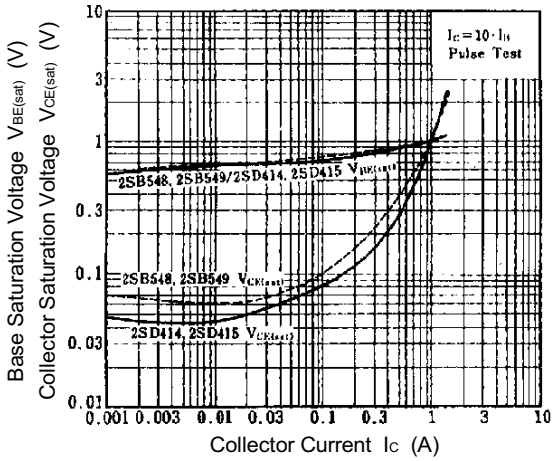
2SD414, 2SD415
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



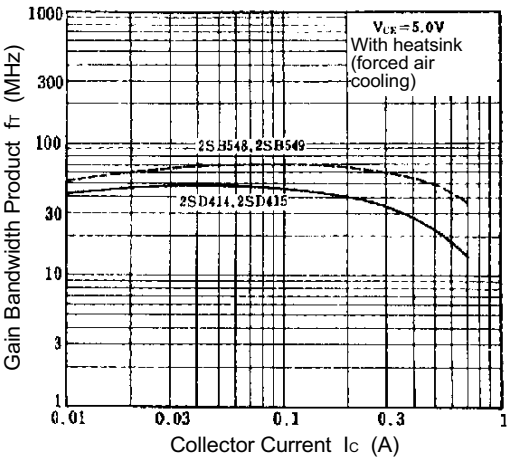
DC CURRENT GAIN AND BASE TO
EMITTER VOLTAGE vs. COLLECTOR CURRENT



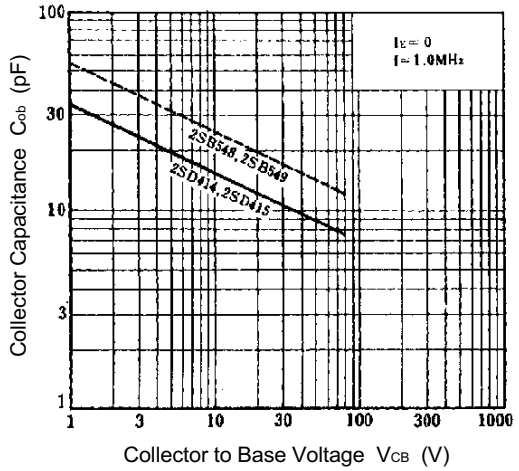
BASE AND COLLECTOR SATURATION
VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs.
COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR
TO BASE VOLTAGE



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