

To our customers,

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## Old Company Name in Catalogs and Other Documents

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Renesas Electronics website: <http://www.renesas.com>

April 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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

**Phase-out/Discontinued**

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

**FEATURES**

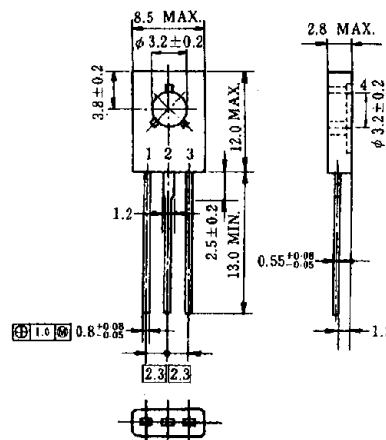
- Ideal for audio amplifier drivers with 30 W to 50 W output
- High voltage
- Available for small mount spaces due to small and thin package
- Easy to be attached to radiators

**ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)**

Parameter	Symbol	2SB548/ 2SD414	2SB549/ 2SD415	Unit
Collector to base voltage	V <sub>CB0</sub>	-100/120		V
Collector to emitter voltage	V <sub>CE0</sub>	-80/80	-100/100	V
Emitter to base voltage	V <sub>EBO</sub>	-5.0/5.0		V
Collector current	I <sub>C(DC)</sub>	-0.8/0.8		A
Collector current	I <sub>C(pulse)*</sub>	-1.5/1.5		A
Total power dissipation	P <sub>T</sub> (Ta = 25°C)	1.0		W
Total power dissipation	P <sub>T</sub> (Tc = 25°C)	10		W
Junction temperature	T <sub>J</sub>	150		°C
Storage temperature	T <sub>stg</sub>	-55 to +150		°C

\* PW ≤ 10 ms, duty cycle ≤ 50%

**PACKAGE DRAWING (UNIT: mm)**



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

**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I <sub>CB0</sub>	V <sub>CB</sub> = -80/80 V, I <sub>E</sub> = 0			-1.0/1.0	μA
Emitter cutoff current	I <sub>EBO</sub>	V <sub>EB</sub> = -3.0/3.0 V, I <sub>C</sub> = 0			-1.0/1.0	μA
DC current gain	h <sub>FE1</sub>	V <sub>CE</sub> = -5.0/5.0 V, I <sub>C</sub> = -2.0/2.0 mA*	20			
DC current gain	h <sub>FE2</sub>	V <sub>CE</sub> = -5.0/5.0 V, I <sub>C</sub> = -200/200 mA*	40	90	320	
Collector saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = -500/500 mA, I <sub>B</sub> = -50/50 mA*		-0.4/0.3	-2.0/2.0	V
Base saturation voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> = -500/500 mA, I <sub>B</sub> = -50/50 mA*		-0.9/0.9	-1.5/1.5	V
Gain bandwidth product	f <sub>T</sub>	V <sub>CE</sub> = -5.0/5.0 V, I <sub>C</sub> = -100/100 mA		70/45		MHz
Collector capacitance	C <sub>ob</sub>	V <sub>CB</sub> = -10/10 V, I <sub>E</sub> = 0, f = 1.0 MHz		25/15		pF

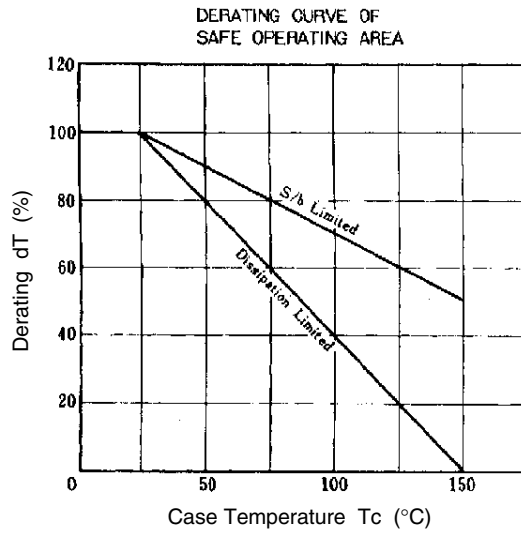
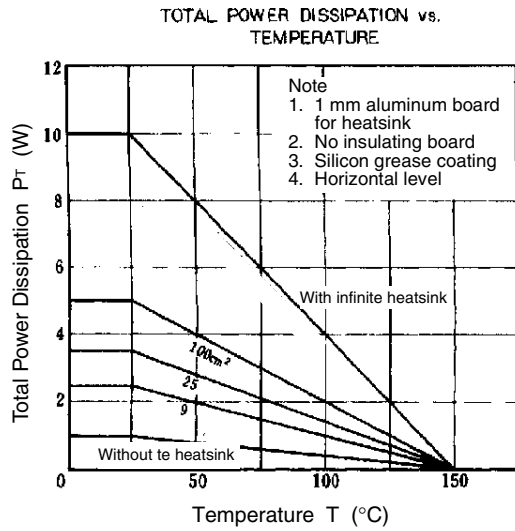
\* Pulse test PW ≤ 350 μs, duty cycle ≤ 2%

**h<sub>FE2</sub> CLASSIFICATION**

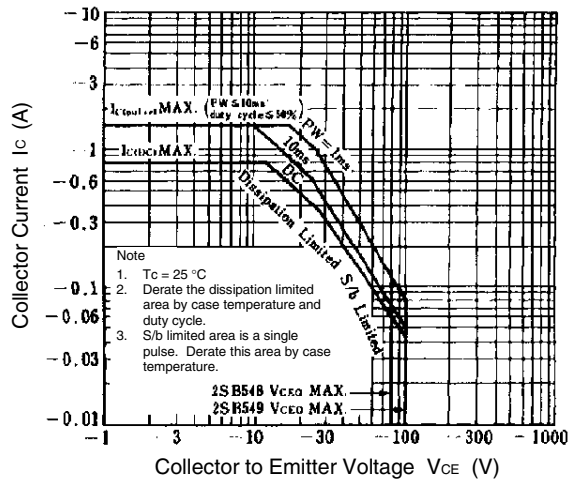
Marking	S	R	Q	P
h <sub>FE2</sub>	40 to 80	60 to 120	100 to 200	160 to 320

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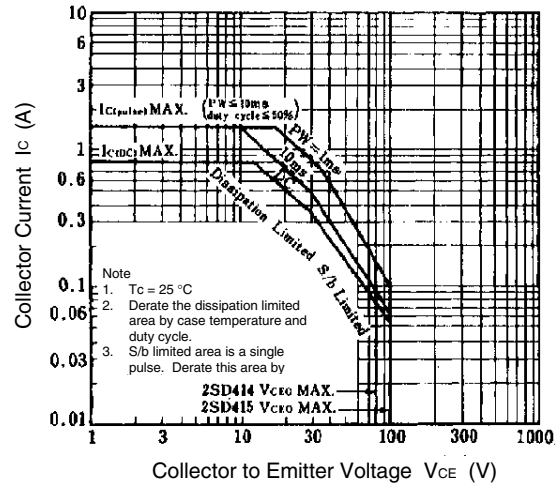
TYPICAL CHARACTERISTICS (Ta = 25°C)



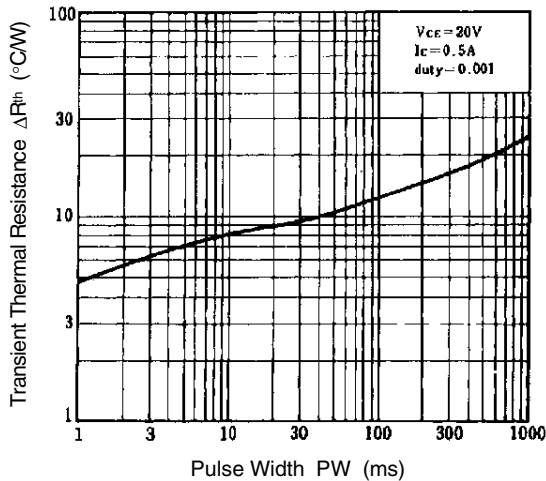
2SB548, 2SB549  
FORWARD BIAS SAFE OPERATING AREA



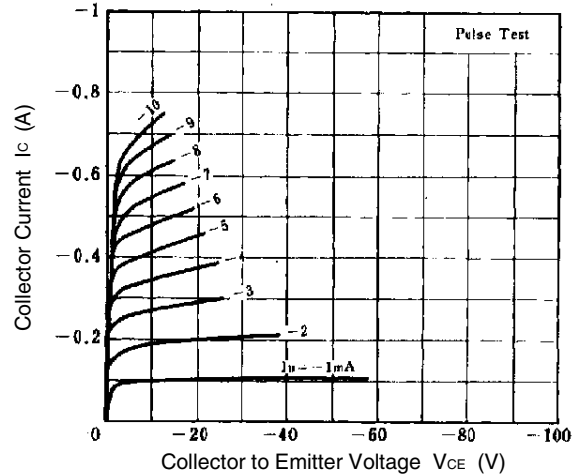
2SD414, 2SD415  
FORWARD BIAS SAFE OPERATING AREA

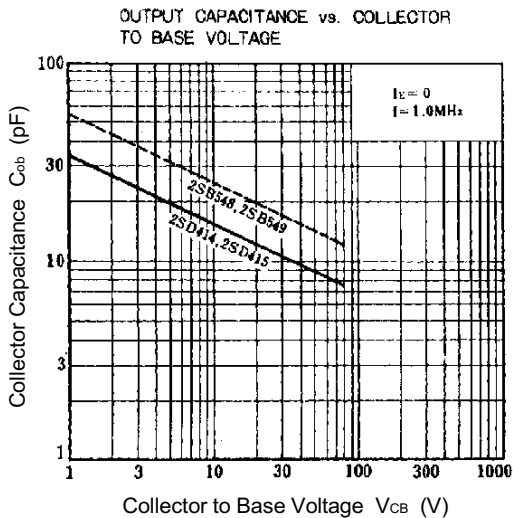
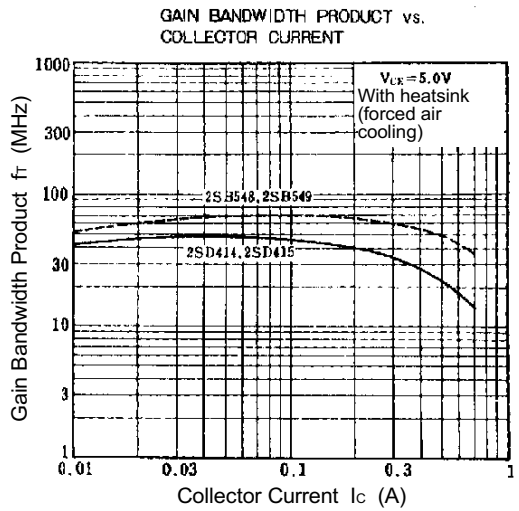
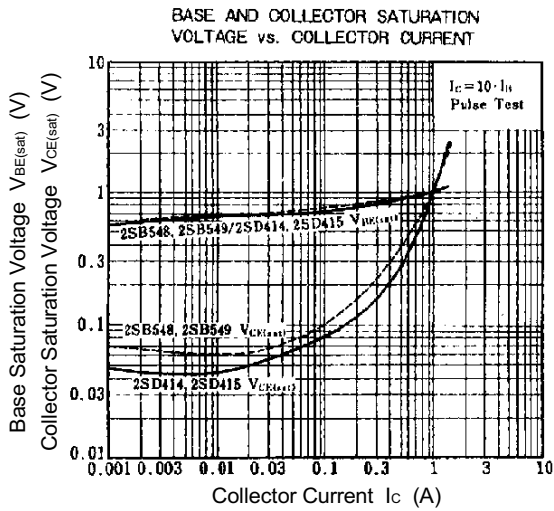
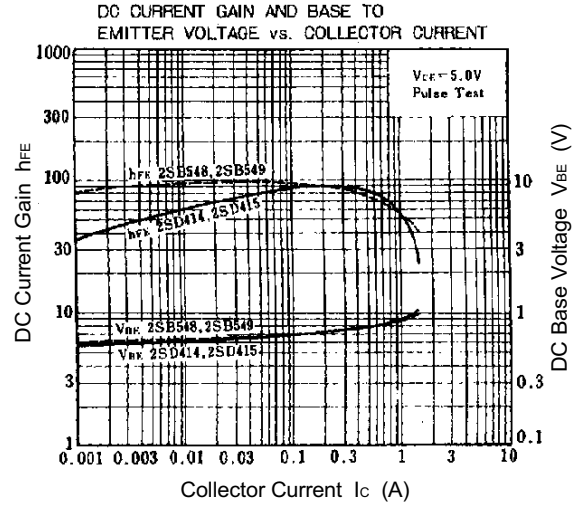
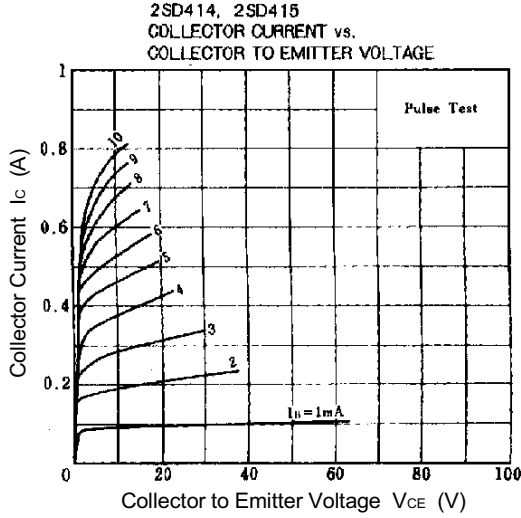


TRANSIENT THERMAL RESISTANCE



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





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