

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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PNP SILICON EPITAXIAL TRANSISTOR  
FOR LOW-FREQUENCY POWER AMPLIFIERS AND MID-SPEED SWITCHING

The 2SB1578 features high current capacity in small dimension and is ideal for DC/DC converters and motor drivers.

FEATURES

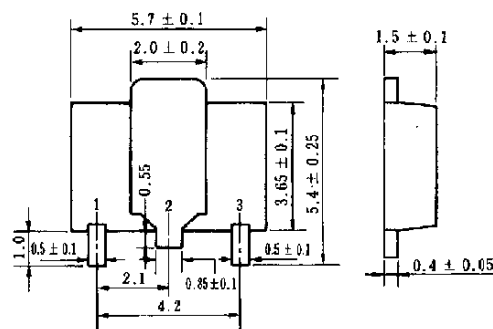
- New package with dimensions in between those of small signal and power signal package
- High current capacitance
- Low collector saturation voltage
- Complementary transistor with 2SD2425

QUALITY GRADES

- Standard

Please refer to "Quality Grades on NEC Semiconductor Devices" (Document No. C11531E) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

PACKAGE DRAWING (UNIT: mm)



Electrode connection

- 1: Emitter
- 2: Collector
- 3: Base

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	$V_{CBO}$		-60	V
Collector to emitter voltage	$V_{CEO}$		-60	V
Emitter to base voltage	$V_{EBO}$		-6.0	V
Collector current (DC)	$I_{C(DC)}$		-5.0	A
Collector current (pulse)	$I_{C(pulse)}$	PW ≤ 10 ms, duty cycle ≤ 50 %	-7.0	A
Base current (DC)	$I_{B(DC)}$		-1.0	A
Total power dissipation	$P_T$	7.5 cm <sup>2</sup> × 0.7 mm ceramic board used	2.0	W
Junction temperature	$T_j$		150	°C
Storage temperature	$T_{stg}$		-55 to +150	°C

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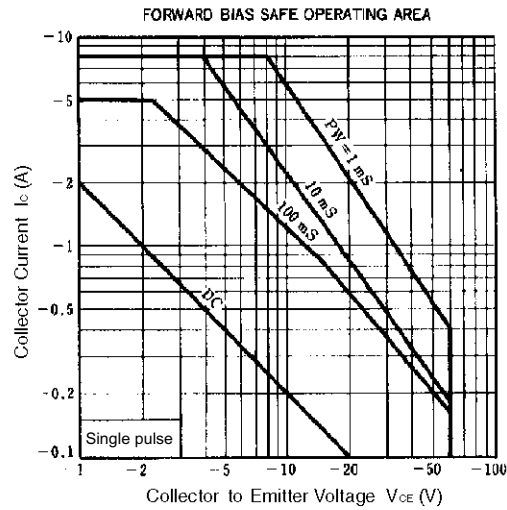
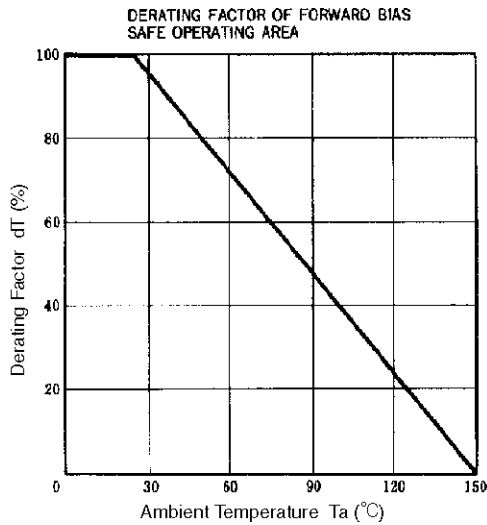
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

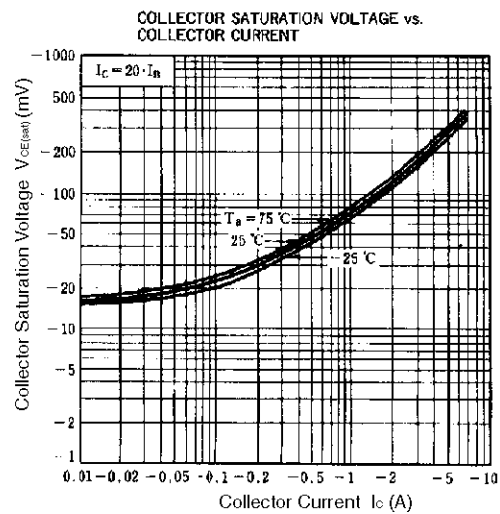
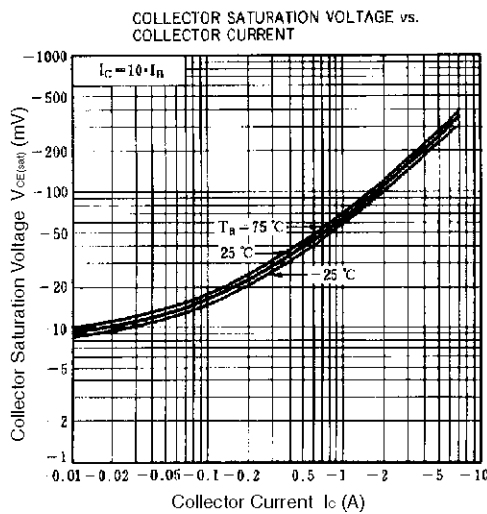
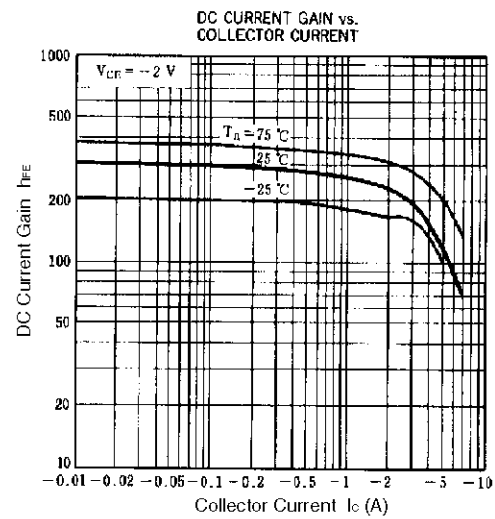
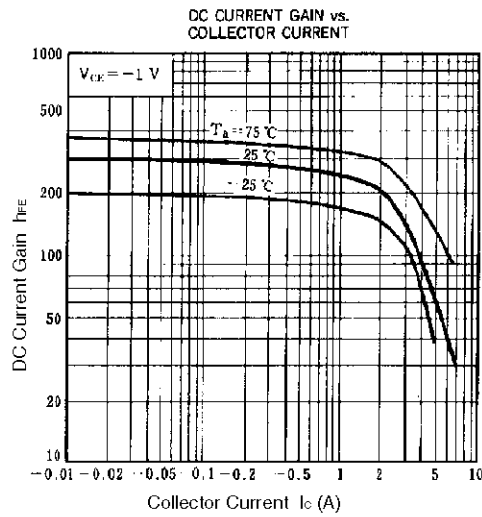
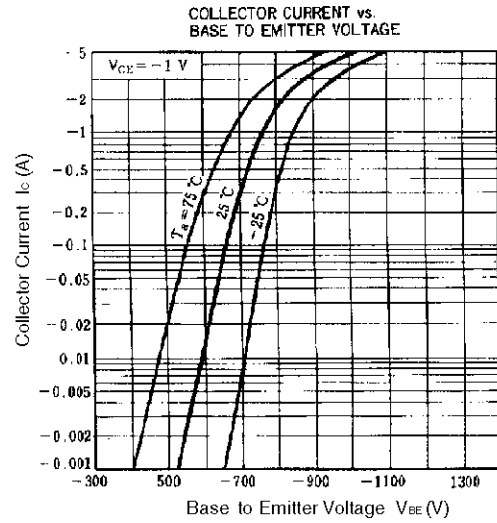
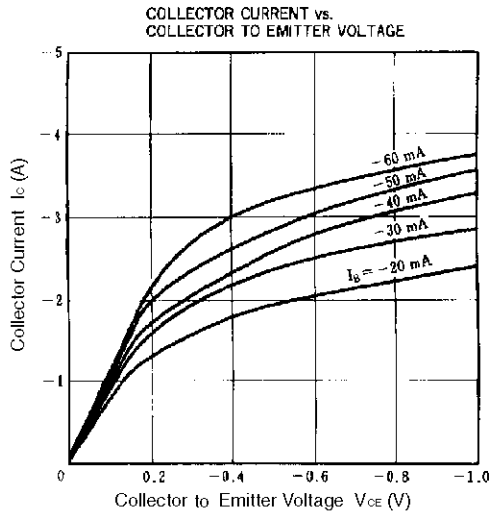
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -50\text{ V}, I_E = 0$			-10	$\mu\text{A}$
Emitter cutoff current	$I_{EBO}$	$V_{EB} = -6.0\text{ V}, I_C = 0$			-10	$\mu\text{A}$
DC current gain	$h_{FE1}$	$V_{CE} = -1.0\text{ V}, I_C = -0.1\text{ A}$	60	220		-
DC current gain	$h_{FE2}$	$V_{CE} = -1.0\text{ V}, I_C = -2.0\text{ A}$	100	200	400	-
DC current gain	$h_{FE3}$	$V_{CE} = -2.0\text{ V}, I_C = -5.0\text{ A}$	50	150		-
Collector saturation voltage	$V_{CE(sat)}$	$I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$		-180	-300	mV
Base saturation voltage	$V_{BE(sat)}$	$I_C = -2.0\text{ A}, I_B = -0.2\text{ A}$		-0.9	-1.2	V
Turn-on time	$t_{on}$	$I_C = -2.0\text{ A}, V_{CC} = -10\text{ V}$		0.6		$\mu\text{s}$
Storage time	$t_{stg}$	$I_{B1} = -I_{B2} = -0.2\text{ A}$		0.55		$\mu\text{s}$
Fall time	$t_f$	$R_L = 5.0\ \Omega$		0.05		$\mu\text{s}$

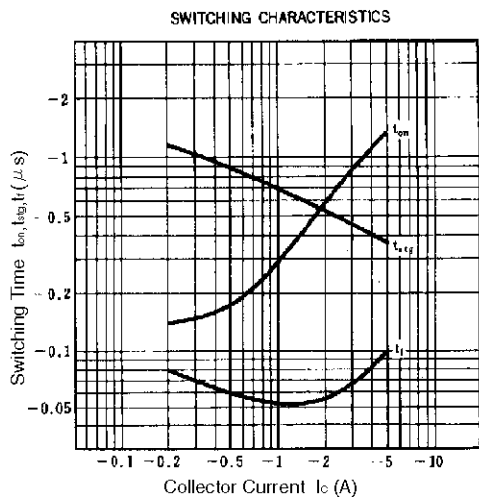
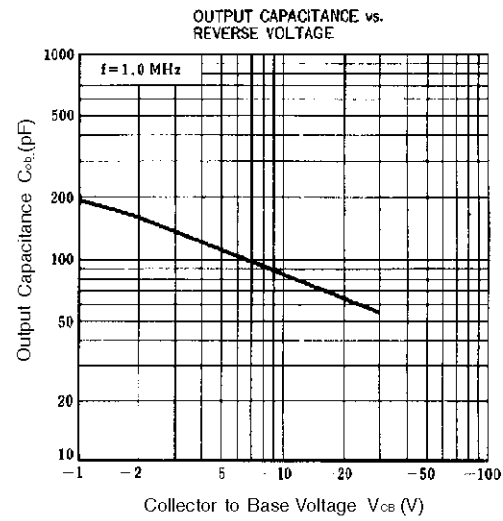
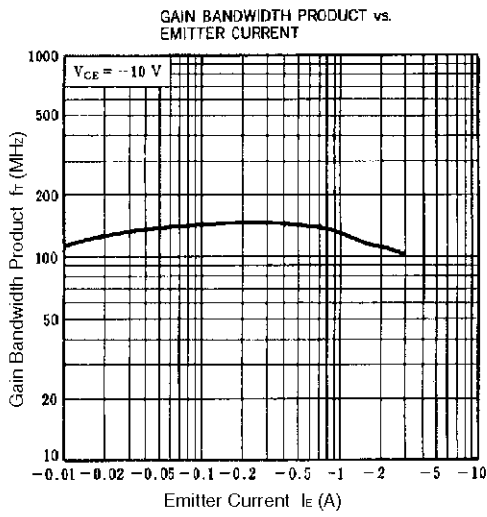
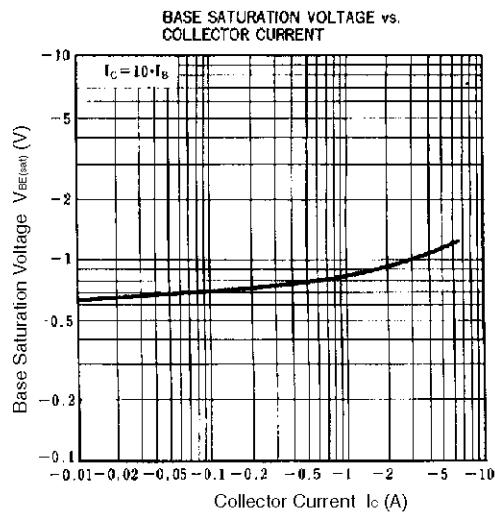
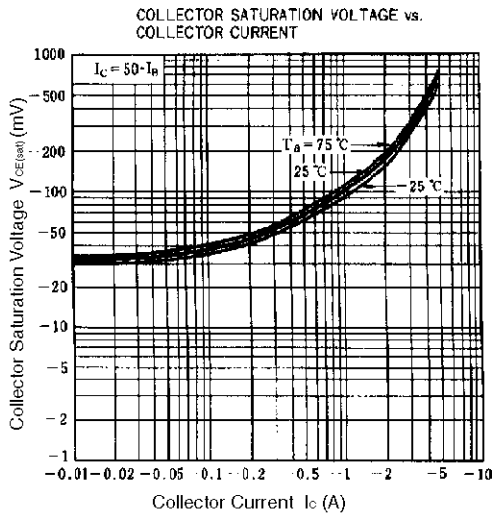
**$h_{FE}$  CLASSIFICATION**

Marking	GB1	GB2	GB3
$h_{FE2}$	100 to 200	160 to 320	200 to 400

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







[MEMO]

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