

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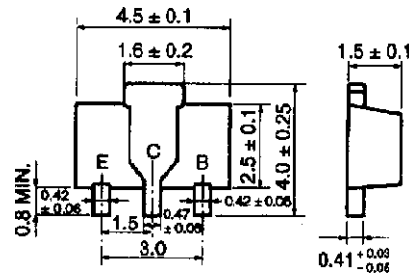
NPN SILICON EPITAXIAL TRANSISTOR  
FOR LOW-FREQUENCY POWER AMPLIFIERS AND MID-SPEED SWITCHING

The 2SD2403 is a transistor featuring high current capacitance in small dimension. This transistor is ideal for DC/DC converters and motor drivers.

FEATURES

- High current capacitance
- Low collector saturation voltage
- Complementary transistor with 2SB1572

PACKAGE DRAWING (UNIT: mm)



Electrode Connection

- E : Emitter
- C : Collector(Fin)
- B : Base

ABSOLUTE MAXIMUM RATINGS (Ta = 25°C)

Parameter	Symbol	Conditions	Ratings	Unit
Collector to base voltage	V <sub>CBO</sub>		80	V
Collector to emitter voltage	V <sub>CEO</sub>		60	V
Emitter to base voltage	V <sub>EBO</sub>		6.0	V
Collector current (DC)	I <sub>C(DC)</sub>		3.0	A
Collector current (pulse)	I <sub>C(pulse)</sub>	PW ≤ 10 ms duty cycle ≤ 50 %	5.0	A
Base current (DC)	I <sub>B(DC)</sub>		0.2	A
Base current (pulse)	I <sub>B(pulse)</sub>	PW ≤ 10 ms duty cycle ≤ 50 %	0.4	A
Total power dissipation	P <sub>T</sub>	16 cm <sup>2</sup> × 0.7 mm ceramic board mounted	2.0	W
Junction temperature	T <sub>j</sub>		150	°C
Storage temperature	T <sub>stg</sub>		-55 to +150	°C

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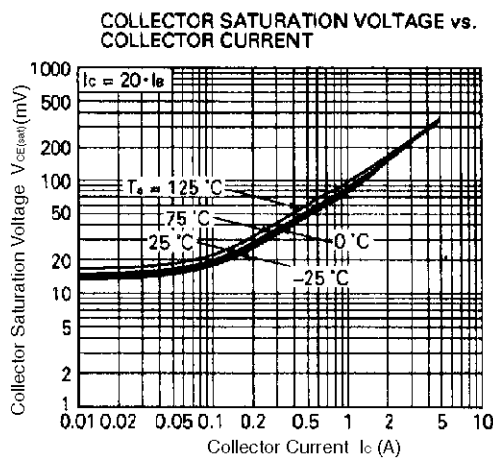
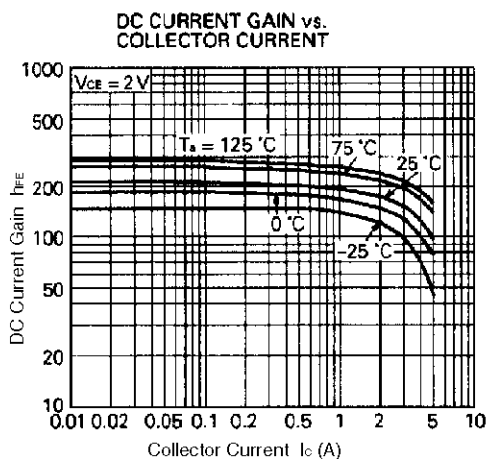
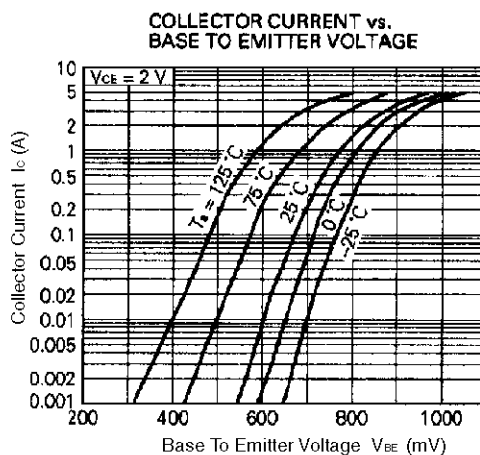
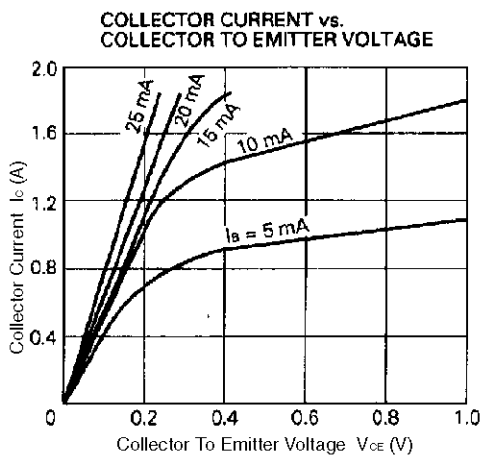
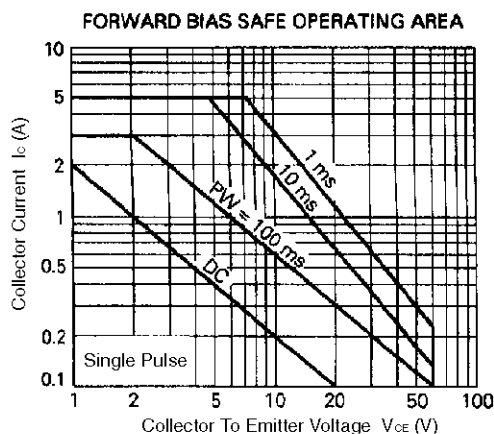
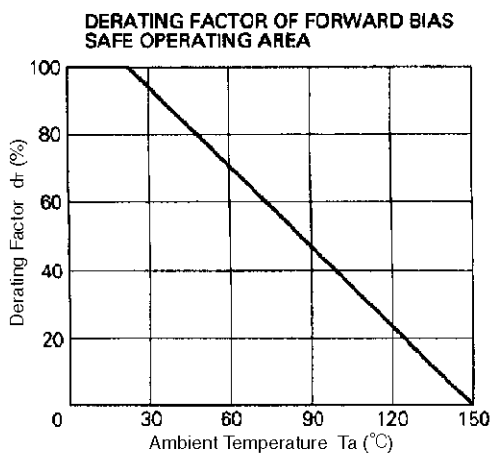
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

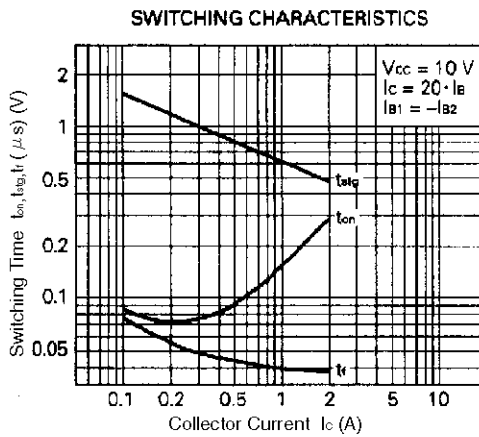
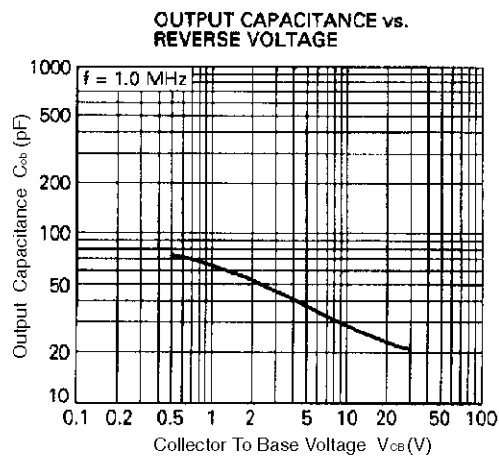
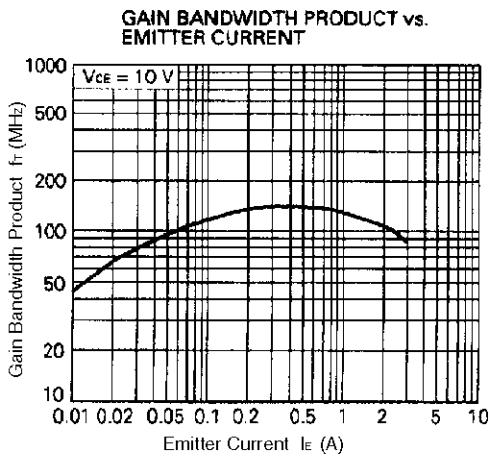
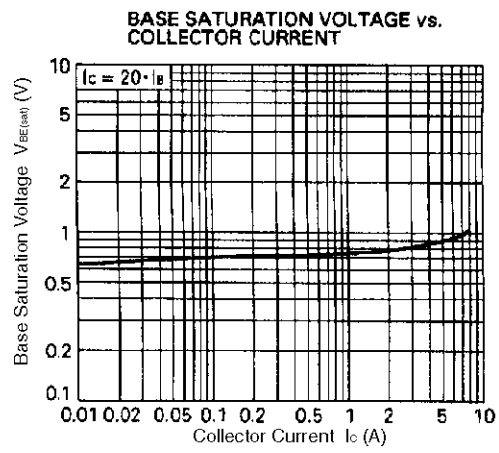
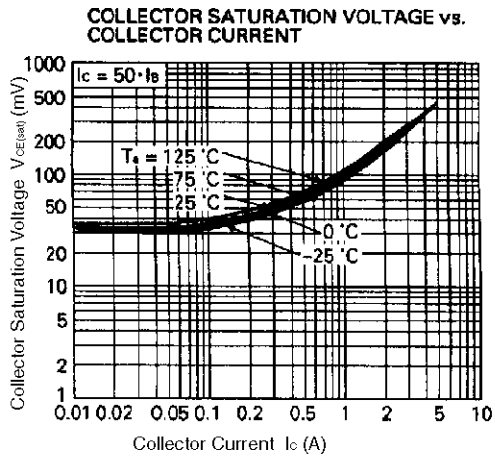
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = 80\text{ V}, I_E = 0$			100	nA
Emitter cutoff current	$I_{EBO}$	$V_{EB} = 6.0\text{ V}, I_C = 0$			100	nA
DC current gain	$h_{FE1}$	$V_{CE} = 2.0\text{ V}, I_C = 0.1\text{ A}$	80			–
DC current gain	$h_{FE2}$	$V_{CE} = 2.0\text{ V}, I_C = 1.0\text{ A}$	100	200	400	–
DC base voltage	$V_{BE}$	$V_{CE} = 2.0\text{ V}, I_C = 0.1\text{ A}$	630	670	730	mV
Collector saturation voltage	$V_{CE(sat)1}$	$I_C = 2.0\text{ A}, I_B = 0.1\text{ A}$		150	300	mV
Collector saturation voltage	$V_{CE(sat)2}$	$I_C = 3.0\text{ A}, I_B = 0.15\text{ A}$		210	500	mV
Base saturation voltage	$V_{BE(sat)}$	$I_C = 2.0\text{ A}, I_B = 0.1\text{ A}$		0.89	1.2	V
Gain bandwidth product	$f_T$	$V_{CE} = 10\text{ V}, I_E = -0.3\text{ A}$		130		MHz
Output capacitance	$C_{ob}$	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$		30		pF
Turn-on time	$t_{on}$	$I_C = 1.0\text{ A}, V_{CC} = 10\text{ V}$ $I_{B1} = -I_{B2} = 0.1\text{ A}$ $R_L = 5.0\ \Omega$		150		ns
Storage time	$t_{stg}$			652		ns
Fall time	$t_f$			40		ns

**$h_{FE}$  CLASSIFICATION**

Marking	GX	GY	GZ
$h_{FE2}$	100 to 200	160 to 320	200 to 400

TYPICAL CHARACTERISTICS (Ta = 25°C)





[MEMO]

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