

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

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

April 1st, 2010
Renesas Electronics Corporation

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

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Notice

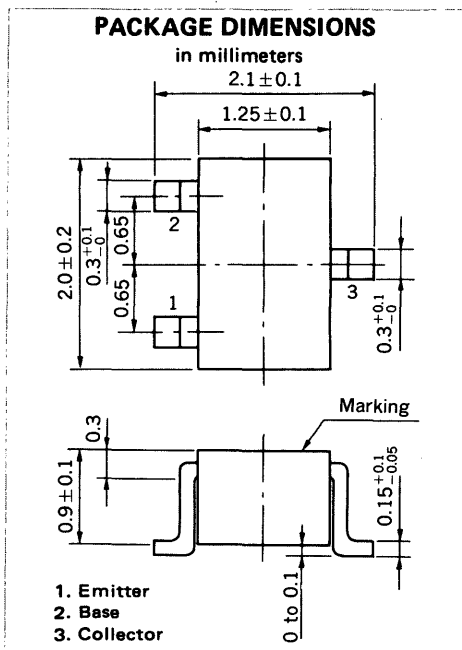
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SILICON TRANSISTORS
2SC4181, 2SC4181A

AUDIO FREQUENCY AMPLIFIER, SWITCHING
 NPN SILICON EPITAXIAL TRANSISTORS



FEATURES

- High DC Current Gain : $h_{FE} = 1\ 000$ to $3\ 200$
- Low $V_{CE(sat)}$: $V_{CE(sat)} = 0.07\ V$ TYP.
- High V_{EBO} : $V_{EBO} = 15\ V$ (2SC4181A)

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current ($T_a = 25\ ^\circ C$)		2SC4181	2SC4181A	
Collector to Base Voltage	V_{CBO}	60		V
Collector to Emitter Voltage	V_{CEO}	50		V
Emitter to Base Voltage	V_{EBO}	12	15	V
Collector Current (DC)	I_C	150		mA
Maximum Power Dissipation				
Total Power Dissipation at $25\ ^\circ C$ Ambient Temperature	P_T	150		mW
Maximum Temperatures				
Junction Temperature	T_j	150		$^\circ C$
Storage Temperature Range	T_{stg}	-55 to +150		$^\circ C$

ELECTRICAL CHARACTERISTICS ($T_a = 25\ ^\circ C$)

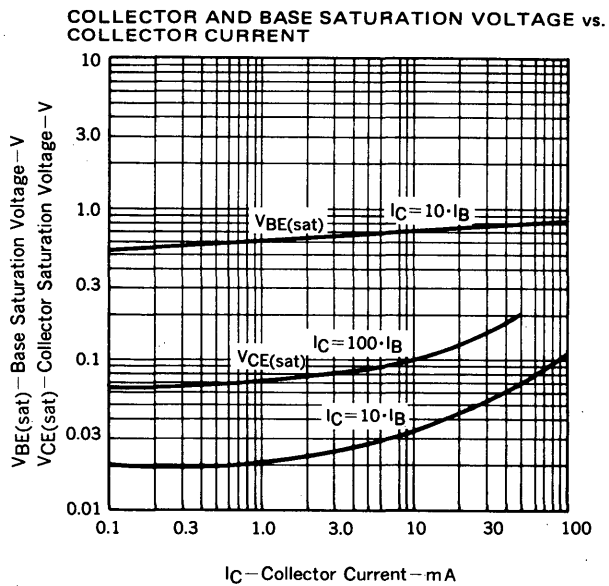
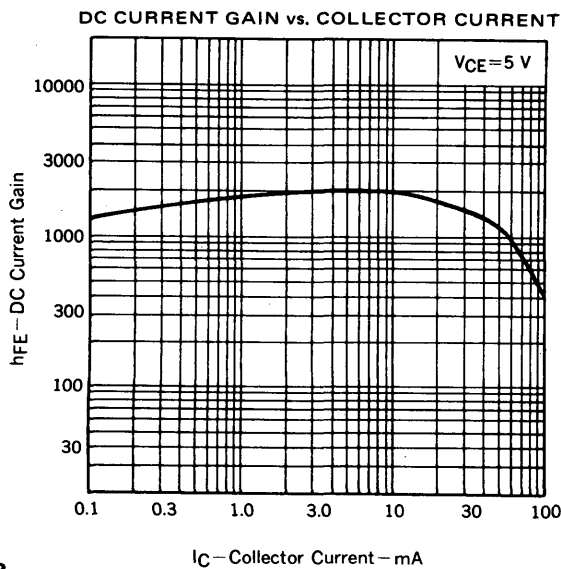
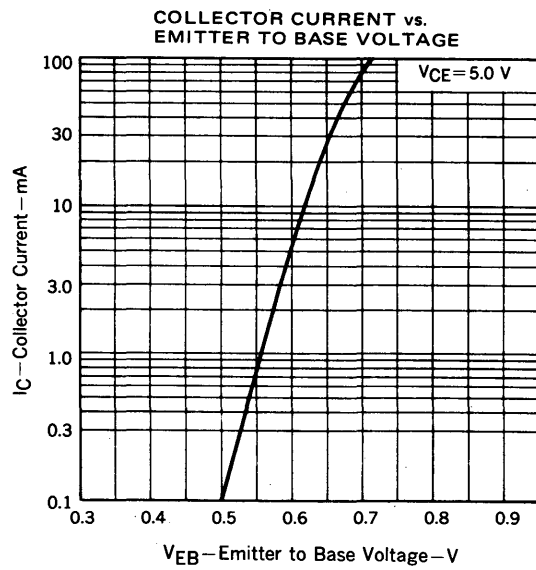
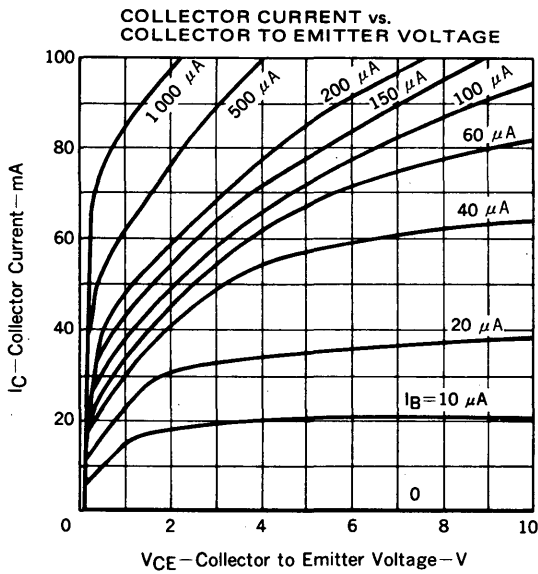
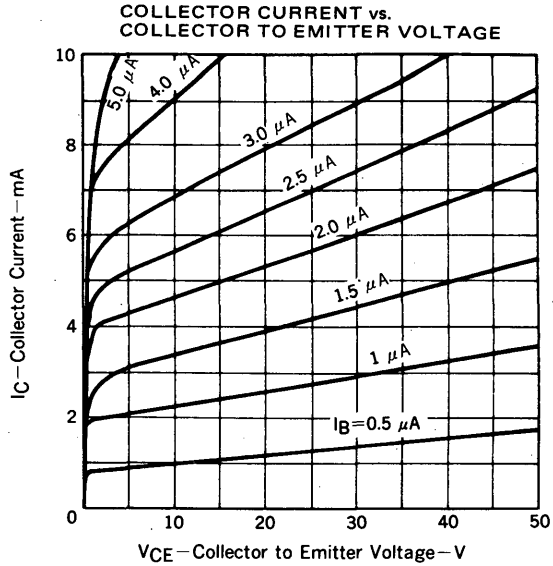
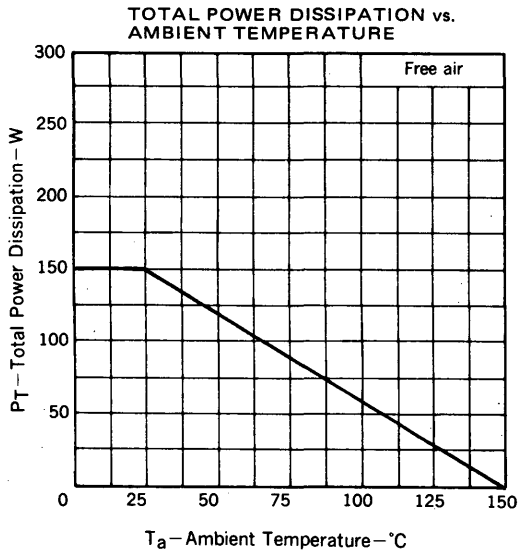
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 50\ V, I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 10\ V, I_C = 0$
DC Current Gain	h_{FE1}^*	1000	1800	3200		$V_{CE} = 5.0\ V, I_C = 1.0\ mA$
DC Current Gain	h_{FE2}^*	200	350			$V_{CE} = 5.0\ V, I_C = 100\ mA$
Base to Emitter Voltage	V_{BE}^*		0.56		V	$V_{CE} = 5.0\ V, I_C = 1.0\ mA$
Collector Saturation Voltage	$V_{CE(sat)}^*$		0.07	0.3	V	$I_C = 50\ mA, I_B = 5.0\ mA$
Base Saturation Voltage	$V_{BE(sat)}^*$		0.8	1.2	V	$I_C = 50\ mA, I_B = 5.0\ mA$
Gain Bandwidth Product	f_T		250		MHz	$V_{CE} = 5.0\ V, I_E = -10\ mA$
Output Capacitance	C_{ob}		3.0		pF	$V_{CB} = 5\ V, I_E = 0, f = 1.0\ MHz$
Turn-on Time	t_{on}		0.13		ns	$V_{CC} = 10\ V, V_{BE(off)} = -2.7\ V$
Storage Time	t_{stg}		0.72		ns	$I_C = 50\ mA$
Turn-off Time	t_{off}		1.22		ns	$I_{B1} = -I_{B2} = 1.0\ mA$

*Pulsed: $PW \leq 350\ \mu s$, Duty Cycle $\leq 2\ %$

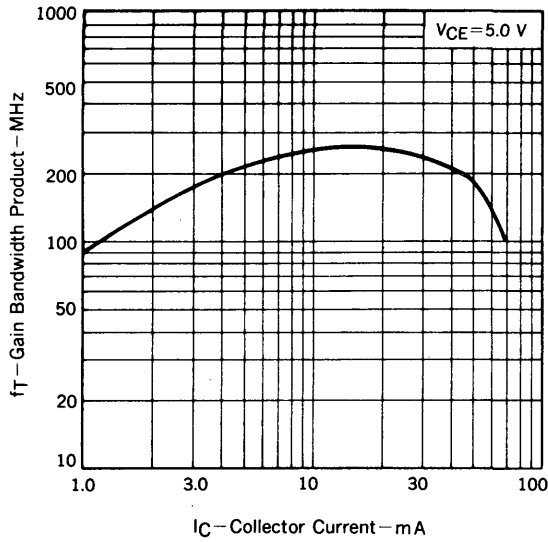
h_{FE} Classification

Marking	2SC4181	L17	L18
	2SC4181A	L15	L16
h_{FE1}	1000 to 2000	1600 to 3200	

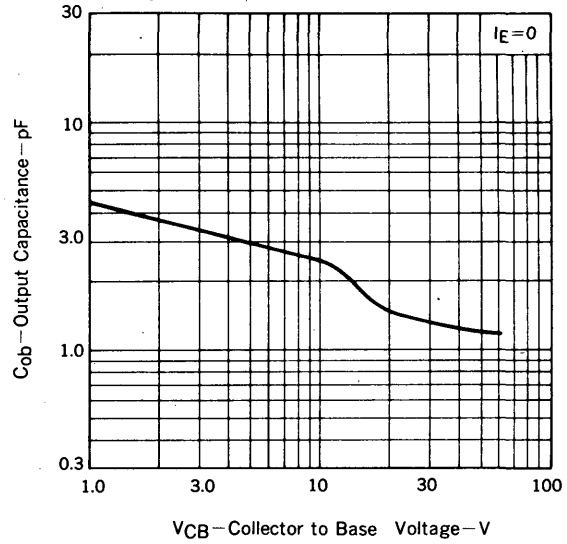
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



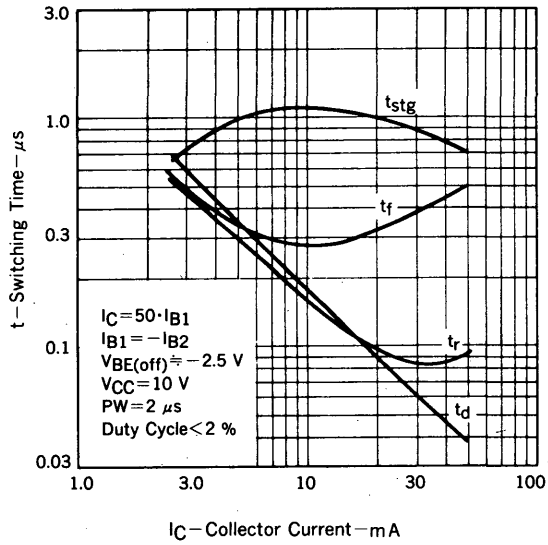
GAIN BANDWIDTH PRODUCT vs. COLLECTOR CURRENT



OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT



[MEMO]

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