

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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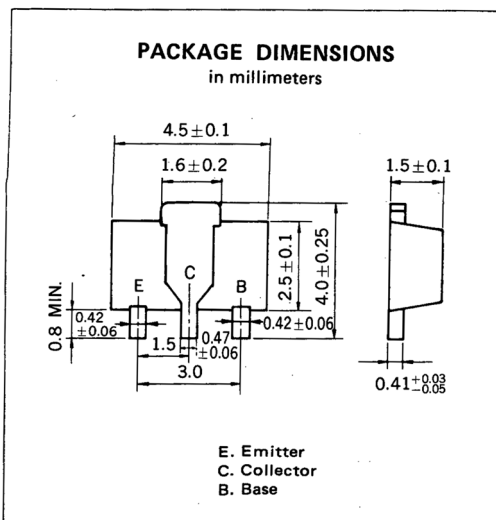
# DATA SHEET

# SILICON TRANSISTOR 2SD1006, 1007

## NPN SILICON EPITAXIAL TRANSISTOR POWER MINI MOLD

### DESCRIPTION

The 2SD1006, 1007 are designed for audio frequency power amplifier application, especially in Hybrid Integrated Circuits.



### FEATURES

- High Collector to Emitter Voltage :  $V_{CE0} > 120$  V (2SD1007)  
:  $V_{CE0} > 100$  V (2SD1006)
- Complement to PNP type 2SB805, 806 respectively.

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

	2SD1006	2SD1007	
Collector to Base Voltage	$V_{CBO}$ 100	120	V
Collector to Emitter Voltage	$V_{CEO}$ 100	120	V
Emitter to Base Voltage	$V_{EBO}$ 5.0		V
Collector Current (DC)	$I_{C(DC)}$ 0.7		A
Collector Current (Pulse)*	$I_{C(Pulse)}$ 1.2		A
Total Power Dissipation**	$P_T$ 2.0		W
Junction Temperature	$T_j$ 150		$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$ -55 to +150		$^\circ\text{C}$

\*PW  $\leq 10$  ms, duty cycle  $\leq 50$  %

\*\*When mounted on ceramic substrate of  $16\text{ cm}^2 \times 0.7\text{ mm}$

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS	
Collector Cutoff Current	$I_{CBO}$			100	nA	2SD1006	$V_{CB}=100\text{ V}, I_E=0$
				100	nA	2SD1007	$V_{CB}=120\text{ V}, I_E=0$
Emitter Cutoff Current	$I_{EBO}$			100	nA	$V_{EB}=5.0\text{ V}, I_C=0$	
DC Current Gain	$h_{FE1}$	45	200			$V_{CE}=1.0\text{ V}, I_C=5.0\text{ mA}$ ***	
DC Current Gain	$h_{FE2}$	90	200	400		$V_{CE}=1.0\text{ V}, I_C=100\text{ mA}$ ***	
Base to Emitter Voltage	$V_{BE}$	550	620	650	mV	$V_{CE}=10\text{ V}, I_C=10\text{ mA}$ ***	
Collector Saturation Voltage	$V_{CE(sat)}$		0.14	0.6	V	$I_C=500\text{ mA}, I_B=50\text{ mA}$ ***	
Base Saturation Voltage	$V_{BE(sat)}$		0.88	1.5	V	$I_C=500\text{ mA}, I_B=50\text{ mA}$ ***	
Output Capacitance	$C_{ob}$		10		pF	$V_{CB}=10\text{ V}, I_E=0, f=1.0\text{ MHz}$	
Gain Bandwidth Product	$f_T$		90		MHz	$V_{CE}=10\text{ V}, I_E=-10\text{ mA}$	

\*\*\*Pulsed: PW  $\leq 350\ \mu\text{s}$ , duty cycle  $\leq 2$  %

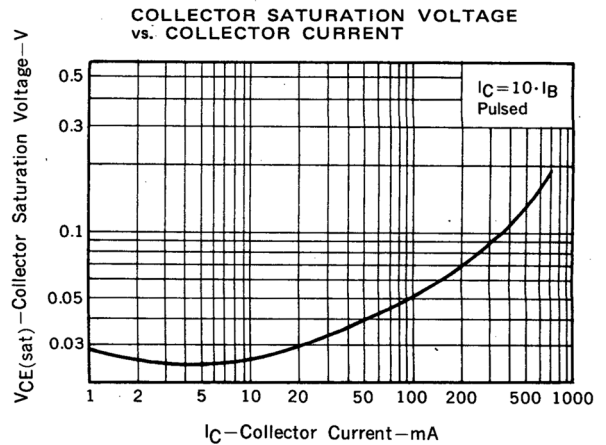
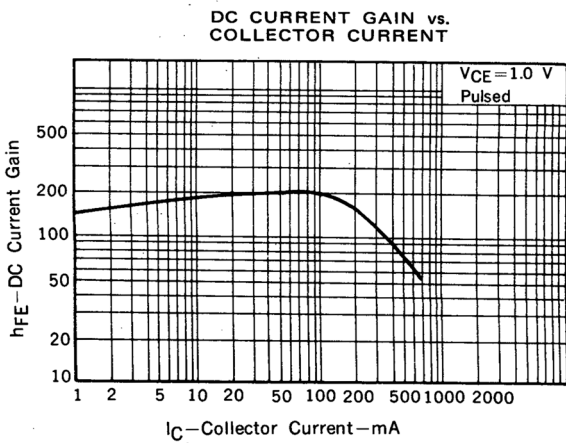
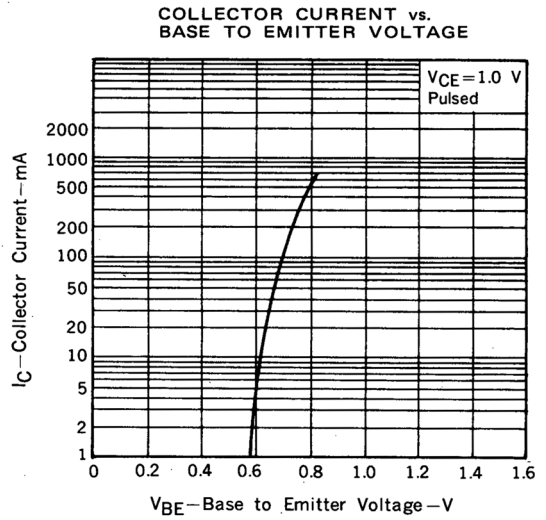
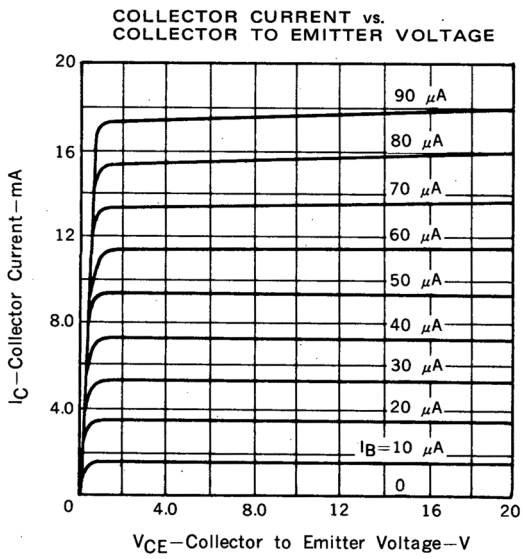
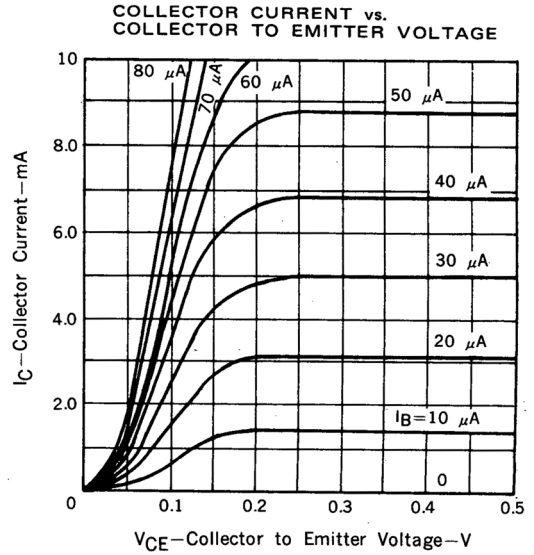
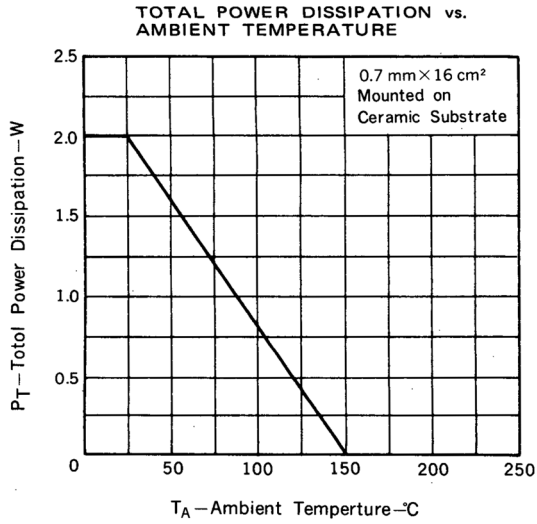
### $h_{FE}$ Classification

MARKING	2SD1006	HM	HL	HK
	2SD1007	HR	HQ	HP
$h_{FE2}$		90 - 180	135 - 270	200 - 400

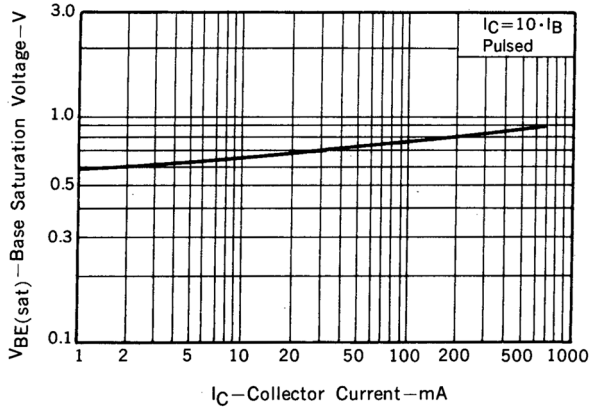
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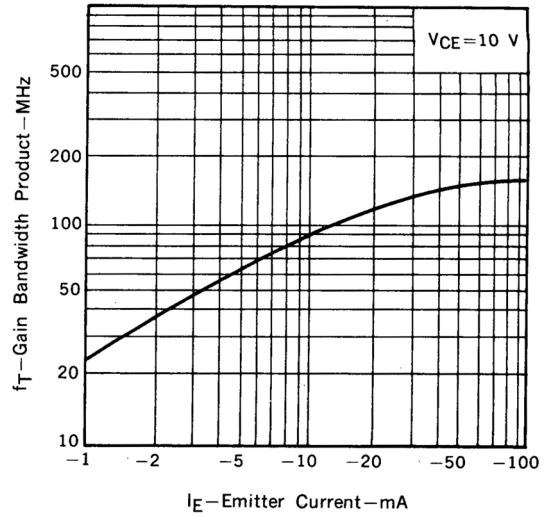
TYPICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)



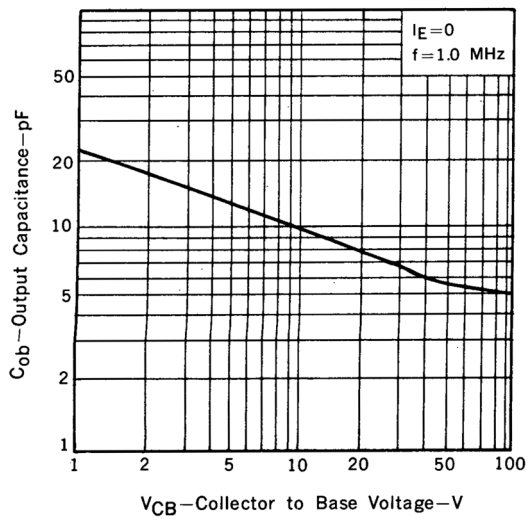
BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



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