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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RENESAS

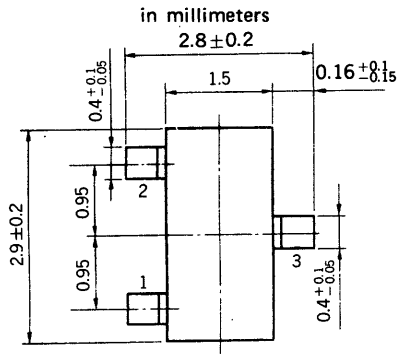
SILICON TRANSISTORS

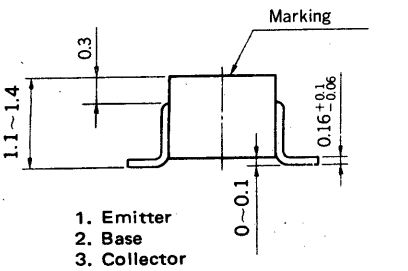
2SD780,2SD780A

AUDIO FREQUENCY POWER AMPLIFIER
NPN SILICON EPITAXIAL TRANSISTOR
MINI MOLD

PACKAGE DIMENSIONS

in millimeters





1. Emitter
2. Base
3. Collector

DESCRIPTION

The 2SD780, 2SD780A are designed for use in small type equipments especially recommended for hybrid integrated circuit and other applications.

FEATURES

- Micro package.
- High DC current gain. h_{FE} : 200 TYP. (V_{CE} = 1.0 V, I_C = 50 mA)
- Complimentary to NEC 2SB736, 2SB736A PNP Transistor.

ABSOLUTE MAXIMUM RATINGS

		2SD780	2SD780A	
Maximum Voltages and Current (T_a = 25 °C)				
Collector to Base Voltage	V_{CBO}	60	80	V
Collector to Emitter Voltage	V_{CEO}	60	80	V
Emitter to Base Voltage	V_{EBO}	5.0		V
Collector Current (DC)	I_C	300		mA
Maximum Power Dissipation				
Total Power Dissipation at 25 °C Ambient Temperature	P_T	200		mW
Maximum Temperatures				
Storage Temperature Range	T_{stg}	−55 to +150		°C
Operating Junction Temperature	T_j	150		°C

ELECTRICAL CHARACTERISTICS (T_a = 25 °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} = 5.0 V, I_C = 0
DC Current Gain	h_{FE1}	110	200	400		V_{CE} = 1.0 V, I_C = 50 mA *
DC Current Gain	h_{FE2}	30				V_{CE} = 2.0 V, I_C = 300 mA *
Base to Emitter Voltage	V_{BE}	600	645	700	mV	V_{CE} = 6.0 V, I_C = 10 mA *
Collector Saturation Voltage	$V_{CE(sat)}$		0.15	0.6	V	I_C = 300 mA, I_B = 30 mA *
Output Capacitance	C_{ob}		7.0		pF	V_{CB} = 6.0 V, I_E = 0, f = 1.0 MHz
Gain Bandwidth Product	f_T		140		MHz	V_{CE} = 6.0 V, I_E = −10 mA

* Pulsed PW ≦ 350 μs, Duty Cycle ≦ 2 %

h_{FE1} Classification

Marking.	2SD780	DW1	DW2	DW3	DW4	DW5
	2SD780A	D51	D52	D53	D54	D55
h_{FE}		110 to 180	135 to 220	170 to 270	200 to 320	250 to 400

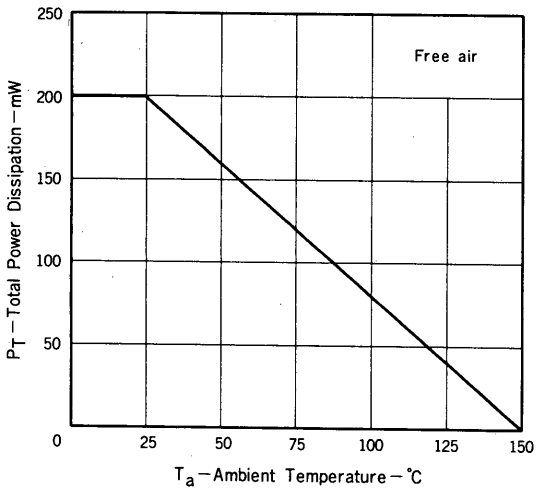
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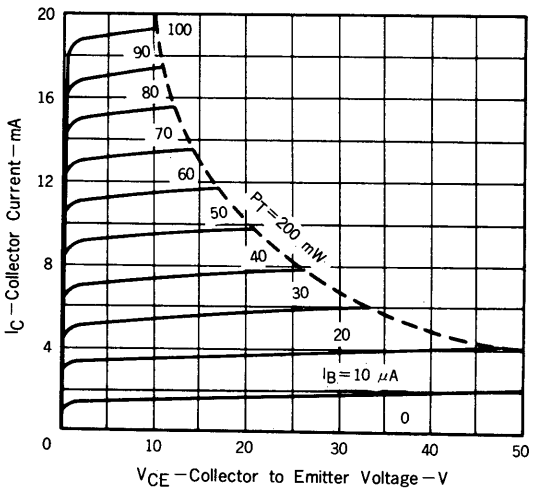
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TYPICAL CHARACTERISTICS (T_a = 25 °C)

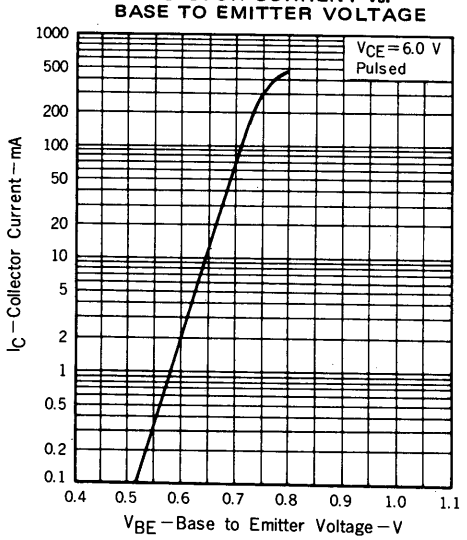
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



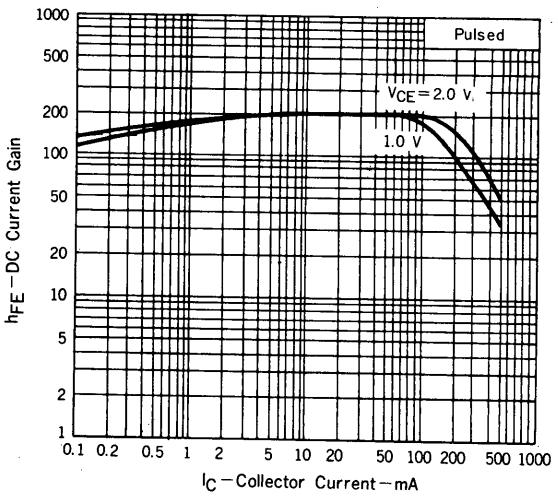
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



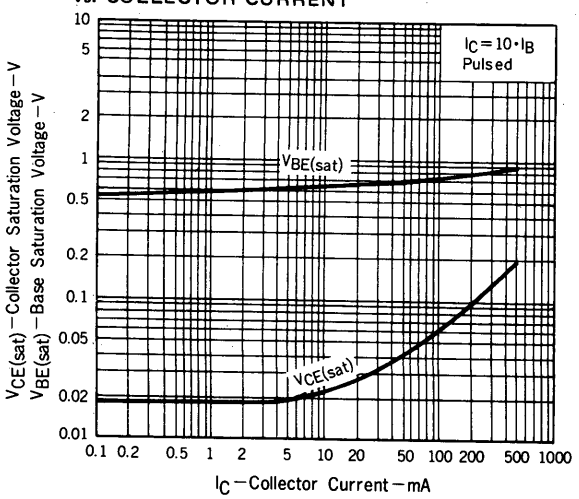
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



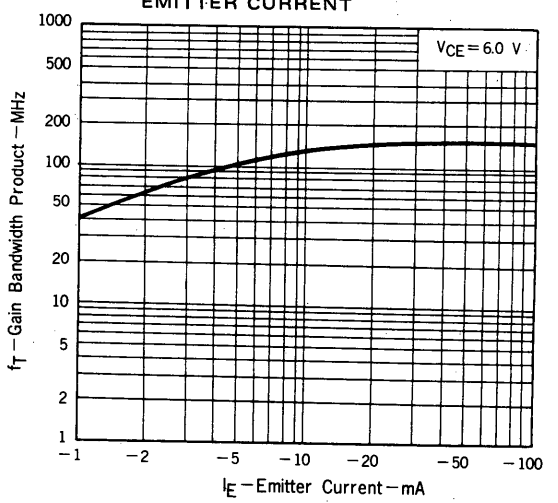
DC CURRENT GAIN vs. COLLECTOR CURRENT



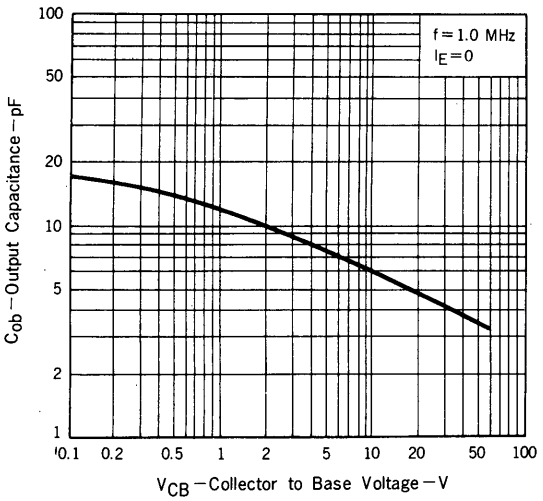
BASE AND COLLECTOR SATURATION VOLTAGE vs. COLLECTOR CURRENT



GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



OUTPUT CAPACITANCE vs.
COLLECTOR TO BASE VOLTAGE



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