

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>)

Send any inquiries to <http://www.renesas.com/inquiry>.

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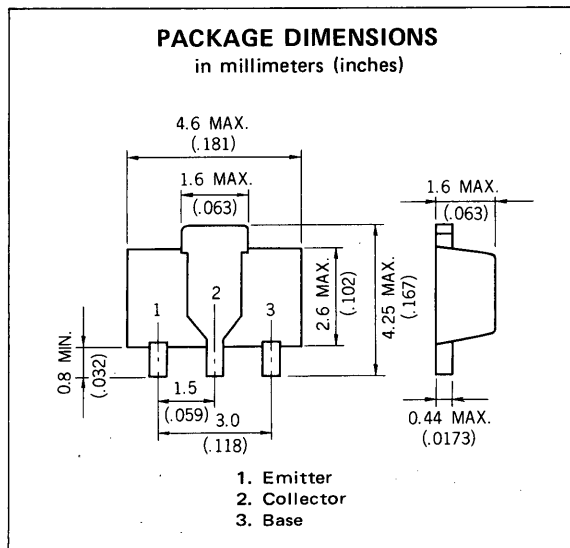
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NPN SILICON EPITAXIAL TRANSISTOR

POWER MINI MOLD

DESCRIPTION

The 2SC2780 is designed for audio frequency preamplifier application, especially in Hybrid Integrated Circuits.



FEATURES

- World Standard Miniature Package
: SOT-89
- High Collector to Emitter Voltage
: $V_{CE0} > 140$ V
- Complements to PNP type 2SA1173

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

Maximum Voltages and Currents

Collector to Base Voltage	V_{CBO}	140	V
Collector to Emitter Voltage	V_{CEO}	140	V
Emitter to Base Voltage	V_{EBO}	5.0	V
Collector Current (DC)	I_C	50	mA
Collector Current (Pulse)*	I_C	100	mA

Maximum Power Dissipation

Total Power Dissipation at 25°C Ambient Temperature**	P_T	2.0	W
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Maximum Temperatures

Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

*PW ≤ 10 ms, duty cycle ≤ 50 %

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

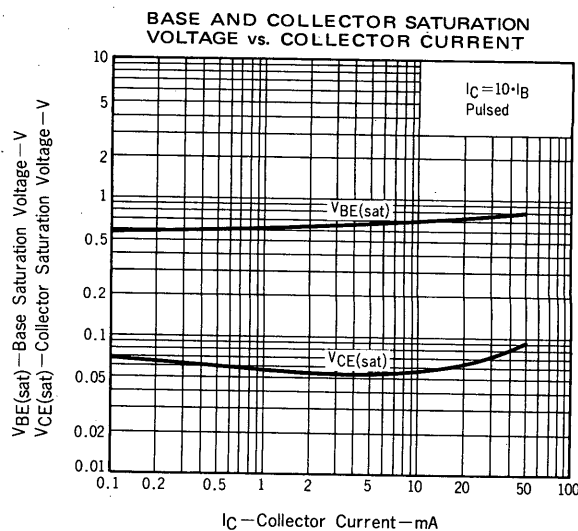
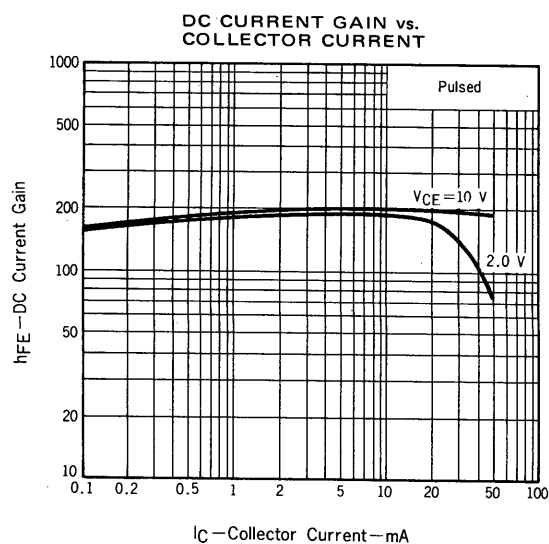
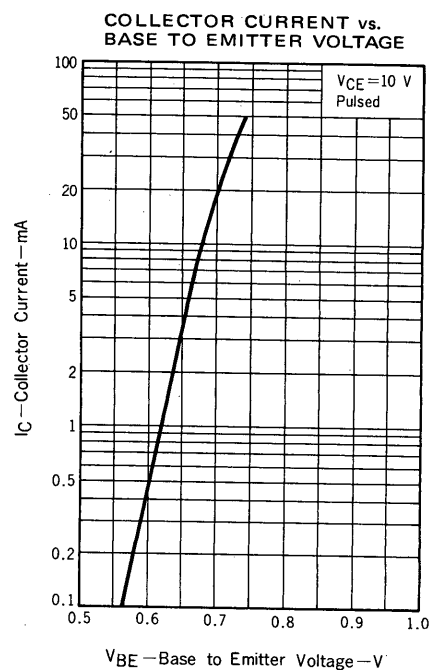
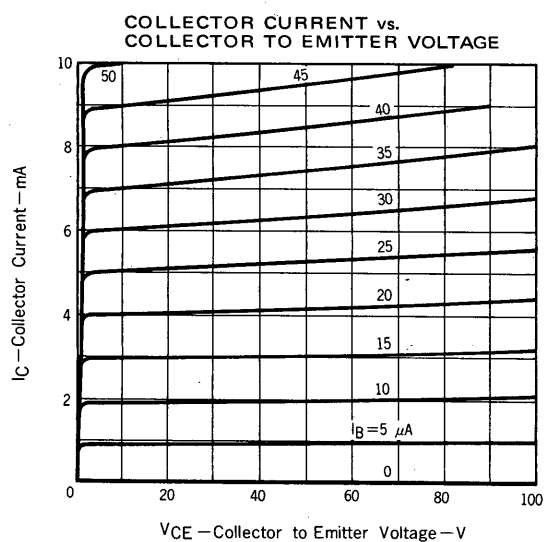
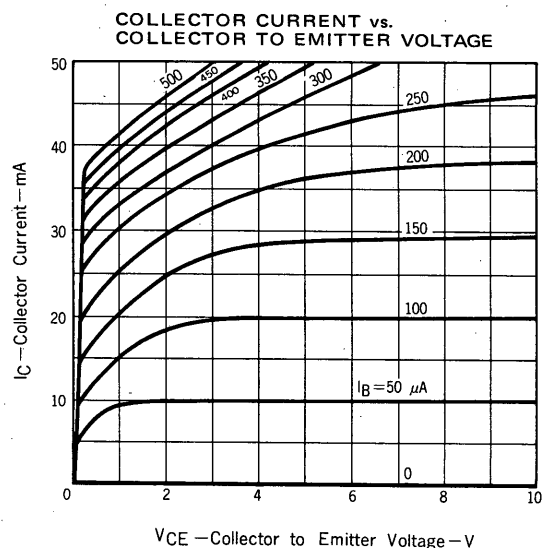
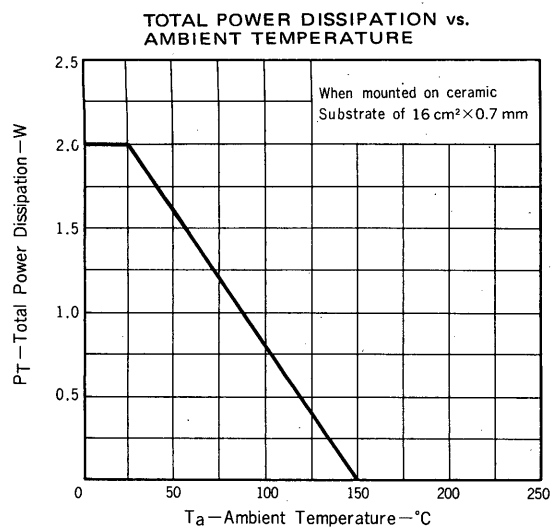
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

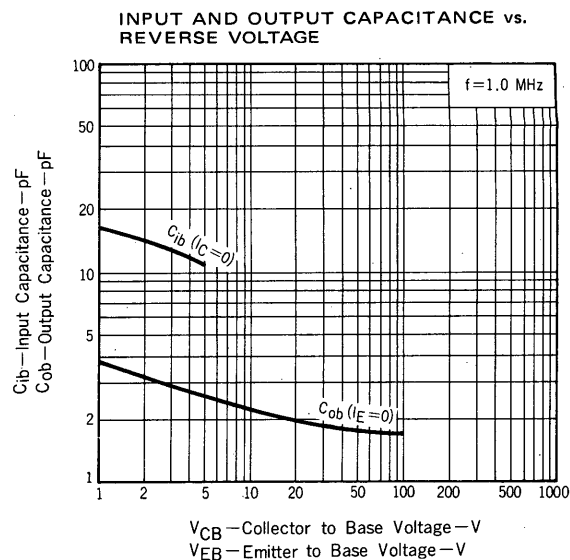
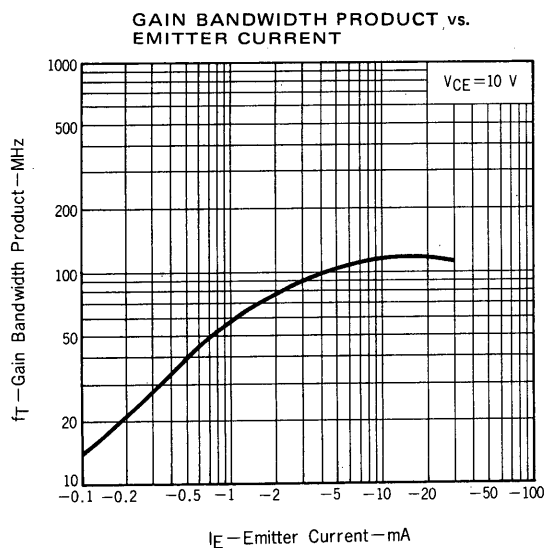
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	I_{CBO}			100	nA	$V_{CB} = 140\text{ V}, I_E = 0$
Emitter Cutoff Current	I_{EBO}			100	nA	$V_{EB} = 5.0\text{ V}, I_C = 0$
DC Current Gain	h_{FE1}	50	180			$V_{CE} = 10\text{ V}, I_C = 1.0\text{ mA}$ ***
DC Current Gain	h_{FE2}	90	200	400		$V_{CE} = 10\text{ V}, I_C = 10\text{ mA}$ ***
Collector Saturation Voltage	$V_{CE(sat)}$		0.07	0.60	V	$I_C = 20\text{ mA}, I_B = 2.0\text{ mA}$ ***
Base Saturation Voltage	$V_{BE(sat)}$		0.75	1.0	V	$I_C = 20\text{ mA}, I_B = 2.0\text{ mA}$ ***
Base to Emitter Voltage	V_{BE}	650	685	750	mV	$V_{CE} = 10\text{ V}, I_C = 10\text{ mA}$ ***
Gain Bandwidth Product	f_T		120		MHz	$V_{CE} = 10\text{ V}, I_E = -10\text{ mA}$
Output Capacitance	C_{ob}		2.3		pF	$V_{CB} = 10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$

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

h_{FE} Classification

MARKING	NM	NL	NK
h_{FE2}	90 - 180	135 - 270	200 - 400

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



REFERENCE

Document Name	Document No.
NEC semiconductor device reliability/quality control system.	TEI-1202
Quality grade on NEC semiconductor devices.	IEI-1209
Semiconductor device mounting technology manual.	IEI-1207
Semiconductor device package manual.	IEI-1213
Guide to quality assurance for semiconductor devices.	MEI-1202
Semiconductor selection guide.	MF-1134

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