

To our customers,

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## Old Company Name in Catalogs and Other Documents

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On April 1<sup>st</sup>, 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 1<sup>st</sup>, 2010  
Renesas Electronics Corporation

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

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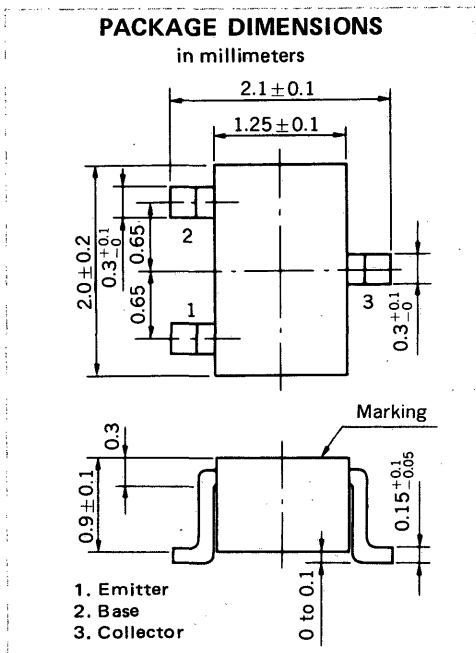
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(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

PNP SILICON EPITAXIAL TRANSISTOR  
AUDIO FREQUENCY AMPLIFIER

DESCRIPTION

2SB1475 is designed for audio frequency amplifier and switching application, especially in VCR cameras and headphone stereos.



FEATURES

- Super Miniature Package
- High DC Current  $I_{C(DC)} = -500$  mA MAX.
- Low  $V_{CE(sat)} \cdot V_{CE(sat)} = -60$  mV at  $-100$  mA

QUALITY GRADE

Standard

Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current ( $T_a = 25^\circ\text{C}$ )

Collector to Base Voltage	$V_{CBO}$	-25	V
Collector to Emitter Voltage	$V_{CEO}$	-16	V
Emitter to Base Voltage	$V_{EBO}$	-6	V
Collector Current (DC)	$I_C$	-500	mA
Maximum Power Dissipation			
Total Power Dissipation at $25^\circ\text{C}$ Ambient Temperature	$P_T$	150	mW
Maximum Temperatures			
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$

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

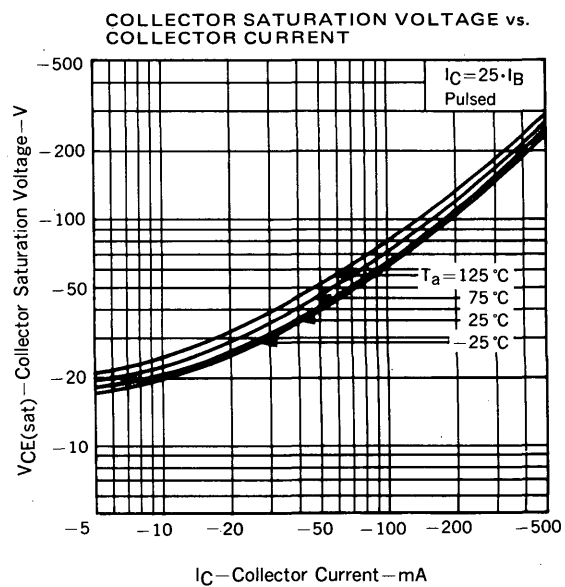
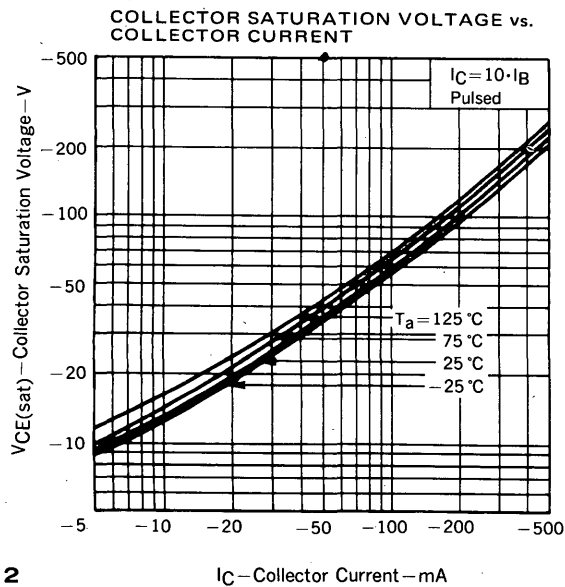
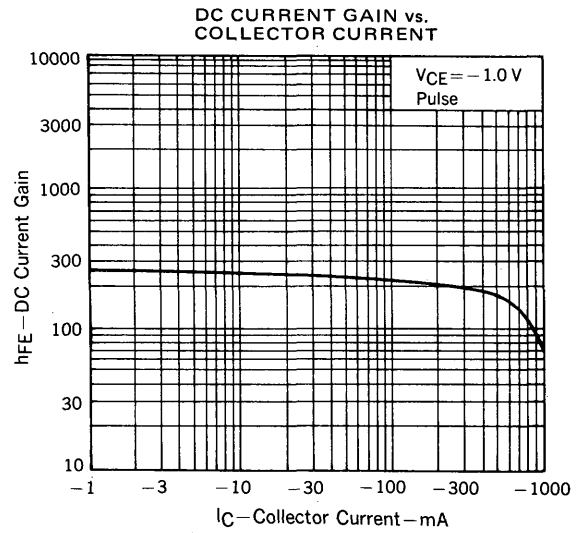
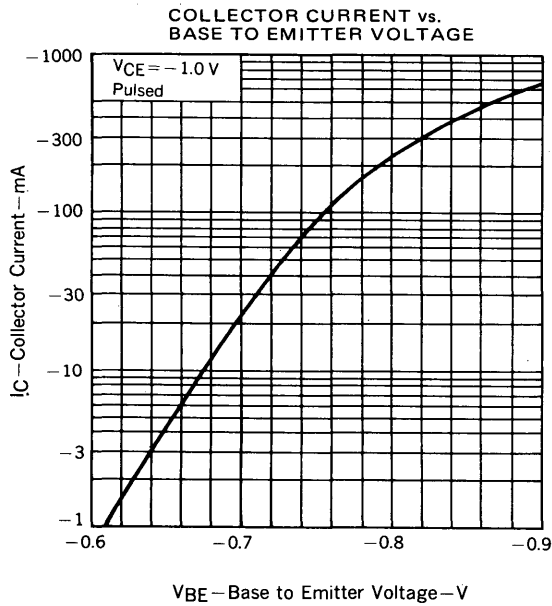
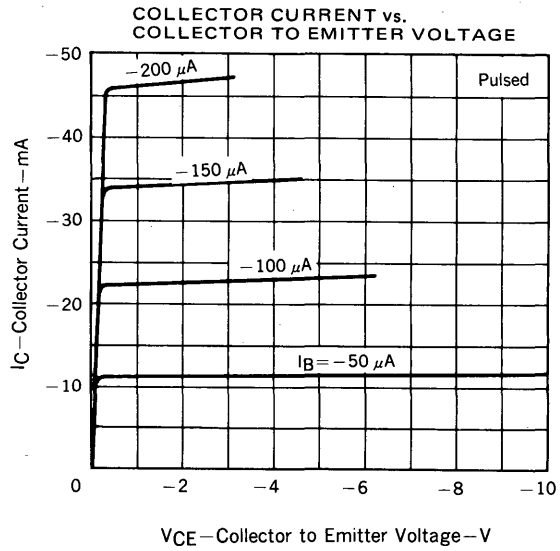
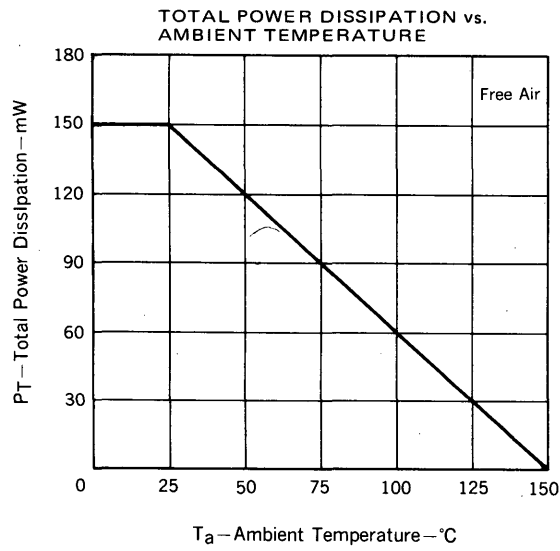
PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector Cutoff Current	$I_{CBO}$			-100	nA	$V_{CB} = -16$ V, $I_E = 0$
Emitter Cutoff Current	$I_{EBO}$			-100	nA	$V_{EB} = -6.0$ V, $I_C = 0$
DC Current Gain	$h_{FE1}^*$	110	200	400	-	$V_{CE} = -1.0$ V, $I_C = -100$ mA
DC Current Gain	$h_{FE2}^*$	100			-	$V_{CE} = -1.0$ V, $I_C = -500$ mA
Collector Saturation Voltage	$V_{CE(sat1)}^*$		-60	-120	mV	$I_C = -100$ mA, $I_B = -10$ mA
Collector Saturation Voltage	$V_{CE(sat2)}^*$		-250	-400	mV	$I_C = -500$ mA, $I_B = -20$ mA
Base Saturation Voltage	$V_{BE(sat)}^*$		-0.95	-1.2	V	$I_C = -2.0$ A, $I_B = -0.1$ A
Base to Emitter Voltage	$V_{BE}^*$	-0.6	-0.66	-0.7	V	$V_{CE} = -1.0$ V, $I_C = -10$ mA
Gain Bandwidth Product	$f_T$	50			MHz	$V_{CE} = -3.0$ V, $I_E = 100$ mA
Output Capacitance	$C_{ob}$			15	pF	$V_{CB} = -10$ V, $I_E = 0$ , $f = 1.0$ MHz

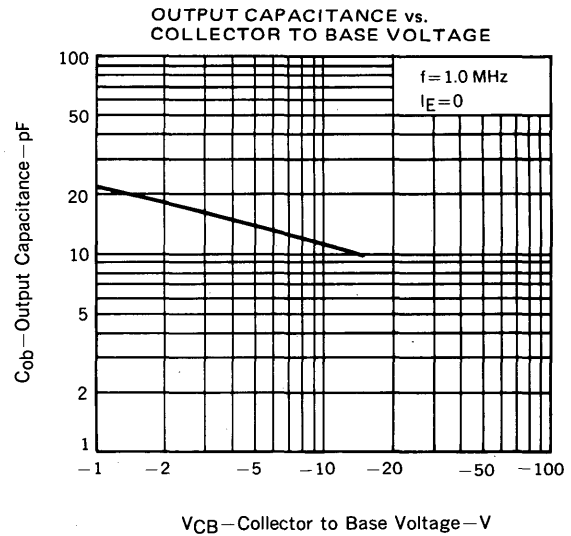
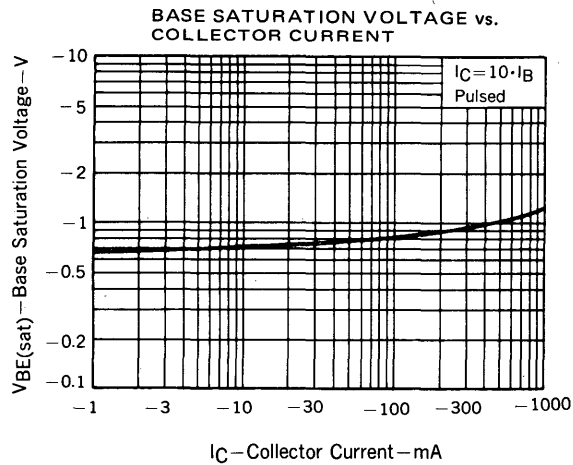
\* Pulsed:  $PW \leq 350$   $\mu$ s, Duty Cycle  $\leq 2\%$

$h_{FE}$  Classification

MARKING	B42	B43	B44
$h_{FE}$	110 to 240	190 to 320	270 to 400

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





**RECOMMENDED SOLDERING CONDITIONS**

Mounting of this product by soldering should be done under the following conditions.  
Please consult our representatives about soldering methods and conditions other than these.

**SURFACE MOUNT TYPE**

For details of the recommended soldering conditions, see the information document "SMT MANUAL" (IEI-1207).

Soldering Method	Soldering Conditions	Symbol for Recommended Conditions
Infrared Reflow	Package peak temp.: 230 °C Soldering time: within 30 sec (above 210 °C) Soldering times: 1, Days limitation: none*	IR30-00
Vapor Phase Soldering	Package peak temp.: 215 °C Soldering time: within 40 sec (above 200 °C) Soldering times: 1, Days limitation: none*	VP15-00
Wave Soldering	Soldering bath temp.: below 260 °C Soldering time: within 10 sec Soldering times: 1, Days limitation: none*	WS60-00

\*: Stored days under storage conditions at 25 °C and below 65 % R.H. after the dry-pack has been opened.

**Note 1** Combination of soldering methods should be avoided.

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**Application examples recommended by NEC Corporation**

**Standard:** Data processing and office equipment, Communication equipment (terminal, mobile), Test and Measurement equipment, Audio and Video equipment, Other consumer products, etc.

**Special:** Automotive and Transportation equipment, Communication equipment (trunk line), Train and Traffic control devices, industrial robots, Burning control systems, antidisaster systems, anticrime systems etc.