

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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**Phase-out/Discontinued**

### PNP SILICON TRANSISTOR

#### DESCRIPTION

The 2SA733 is designed for use in driver stage of AF amplifier.

#### FEATURES

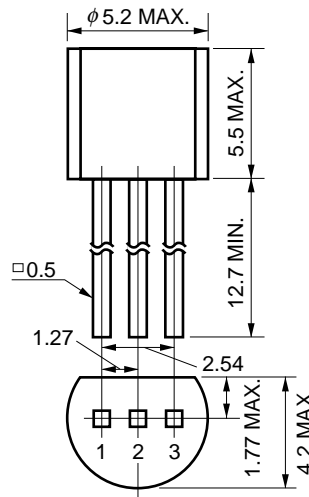
- High  $h_{FE}$  and Excellent Linearity: 200 TYP.  
 $h_{FE}$  ( $V_{CE} = -6.0$  V,  $I_C = -1.0$  mA)

#### ABSOLUTE MAXIMUM RATINGS

Maximum Temperature	
Storage Temperature	-55 to +150°C
Junction Temperature	+150°C Maximum
Maximum Power Dissipations ( $T_A = 25^\circ\text{C}$ )	
Total Power Dissipation	250 mW
Maximum Voltages and Currents ( $T_A = 25^\circ\text{C}$ )	
$V_{CBO}$ Collector to Base Voltage	-60 V
$V_{CEO}$ Collector to Emitter Voltage	-50 V
$V_{EBO}$ Emitter to Base Voltage	-5.0 V
$I_C$ Collector Current	-100 mA
$I_B$ Base Current	-20 mA

**Note** Pulse Test  $PW \leq 350 \mu\text{s}$ , Duty Cycle  $\leq 2\%$

#### ★ PACKAGE DRAWING (Unit: mm)



1: Emitter	EIAJ: SC-43B
2: Collector	JEDEC: TO-92
3: Base	IEC: PA33

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
DC Current Gain	$h_{FE}$	$V_{CE} = -6.0$ V, $I_C = -1.0$ mA	90	200	600	
Gain Bandwidth Product	$f_T$	$V_{CE} = -6.0$ V, $I_E = 10$ mA		180		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = -10$ V, $I_E = 0$ , $f = 1.0$ MHz		4.5		pF
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -60$ V, $I_E = 0$ A			-0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -5.0$ V, $I_C = 0$ A			-0.1	$\mu\text{A}$
Base to Emitter Voltage	$V_{BE}$	$I_{CE} = -6.0$ A, $I_C = -1.0$ mA	-0.58	-0.62	-0.68	V
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = -100$ mA, $I_B = -10$ mA		-0.18	-0.3	V

#### CLASSIFICATION OF $h_{FE}$

Rank	R	Q	P	E
Range	90 to 180	135 to 270	200 to 400	300 to 600

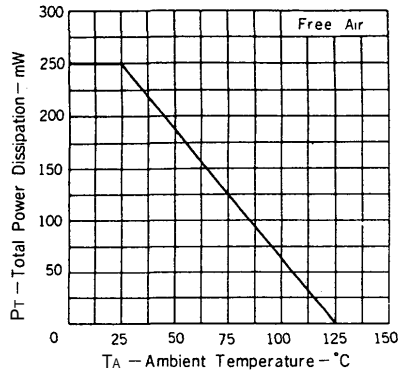
**Remark**  $h_{FE}$  Test Conditions:  $V_{CE} = -6.0$  V,  $I_C = -1.0$  mA

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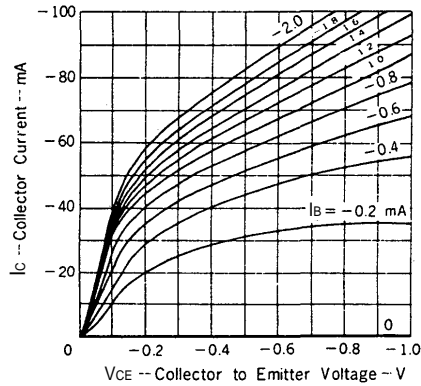
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TYPICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , otherwise noted.)

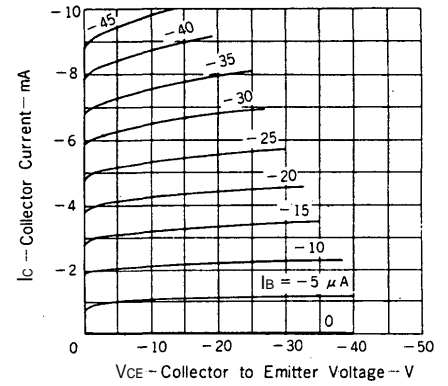
TOTAL POWER DISSIPATION  
vs. AMBIENT TEMPERATURE



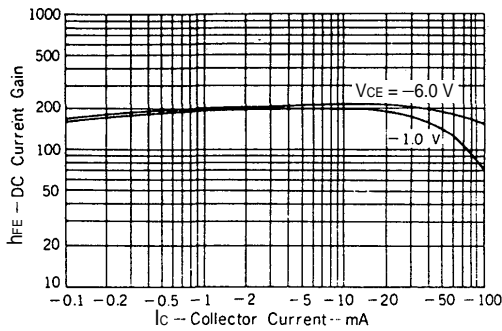
COLLECTOR CURRENT vs.  
COLLECTOR TO EMITTER VOLTAGE



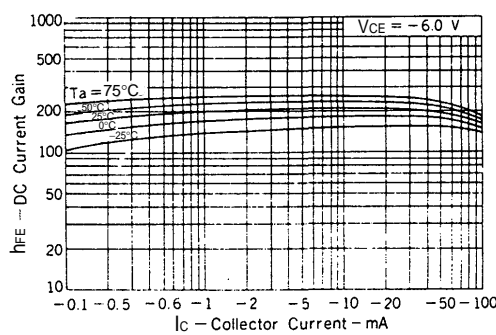
COLLECTOR CURRENT vs.  
COLLECTOR TO EMITTER VOLTAGE



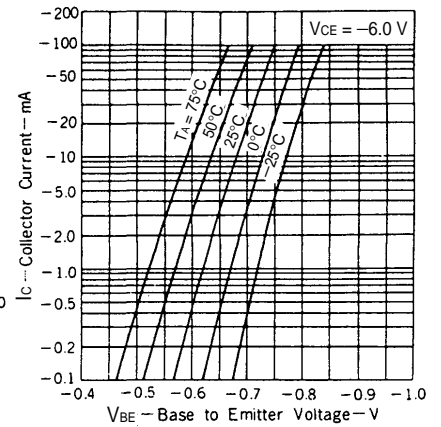
DC CURRENT GAIN  
vs. COLLECTOR CURRENT



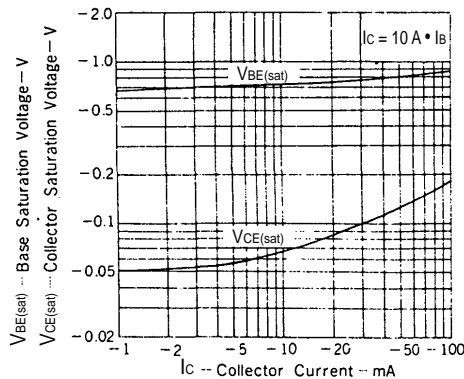
DC CURRENT GAIN  
vs. COLLECTOR CURRENT



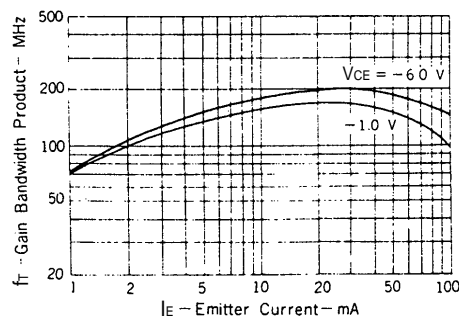
COLLECTOR CURRENT vs.  
BASE TO EMITTER VOLTAGE



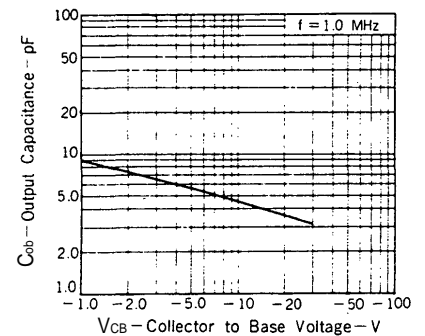
COLLECTOR AND BASE SATURATION  
VOLTAGE vs. COLLECTOR CURRENT



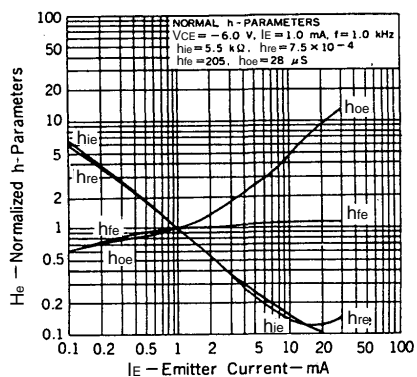
GAIN BANDWIDTH PRODUCT  
vs. EMITTER CURRENT



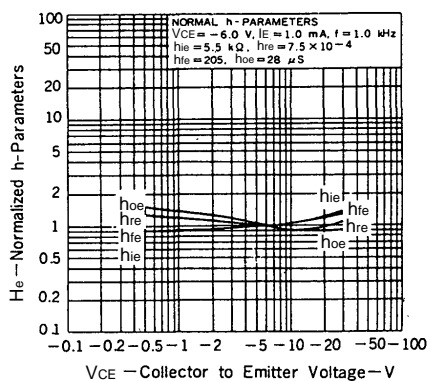
OUTPUT CAPACITANCE  
vs. REVERSE VOLTAGE



NORMALIZED h-PARAMETERS  
vs. EMITTER CURRENT



NORMALIZED h-PARAMETERS vs.  
COLLECTOR TO EMITTER VOLTAGE



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