

To our customers,

Old Company Name in Catalogs and Other Documents

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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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Phase-out/Discontinued

NPN SILICON TRANSISTOR

DESCRIPTION

The 2SC945A is designed for use in driver stage of AF amplifier and low speed switching.

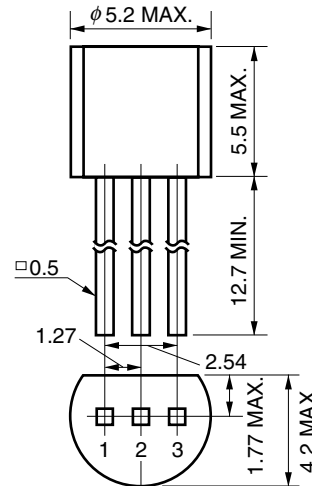
FEATURES

- High voltage
LV_{CEO} = 50 V MIN.
- Excellent h_{FE} linearity
h_{FE1} = (0.1 mA)/h_{FE2} (1.0 mA) = 0.92 TYP.

ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------------|
| Maximum Temperature | |
| Storage Temperature | -55 to +150°C |
| Junction Temperature | +150°C Maximum |
| Maximum Power Dissipation (T _A = 25°C) | |
| Total Power Dissipation | 250 mW |
| Maximum Voltages and Currents (T _A = 25°C) | |
| V _{CB0} 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 |

PACKAGE DRAWING (Unit: mm)



- | | | |
|--------------|--------|-------|
| 1. Emitter | EIAJ: | SC43B |
| 2. Collector | JEDEC: | TO92 |
| 3. Base | IEC: | PA33 |

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

| CHARACTERISTIC | SYMBOL | TEST CONDITIONS | MIN. | TYP. | MAX. | UNIT |
|-------------------------------|----------------------|--|------|------|------|------|
| DC Current Gain | h _{FE1} | V _{CE} = 6.0 V, I _C = 0.1 mA | 50 | 185 | | |
| DC Current Gain | h _{FE2} | 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 | | 250 | | MHz |
| Collector to Base Capacitance | C _{ob} | V _{CB} = 6.0 V, I _E = 0, f = 1.0 MHz | | 3.0 | | pF |
| Collector Cutoff Current | I _{CBO} | V _{CB} = 60 V, I _E = 0 A | | | 100 | nA |
| Emitter Cutoff Current | I _{EBO} | V _{EB} = 5.0 V, I _C = 0 A | | | 100 | nA |
| Base to Emitter Voltage | V _{BE} | V _{CE} = 6.0 V, I _C = 1.0 mA | 0.55 | 0.62 | 0.65 | V |
| Collector Saturation Voltage | V _{CE(sat)} | I _C = 100 mA, I _B = 10 mA | | 0.15 | 0.3 | V |
| Base Saturation Voltage | V _{BE(sat)} | I _C = 100 mA, I _B = 10 mA | | 0.86 | 1.0 | V |

CLASSIFICATION OF h_{FE2}

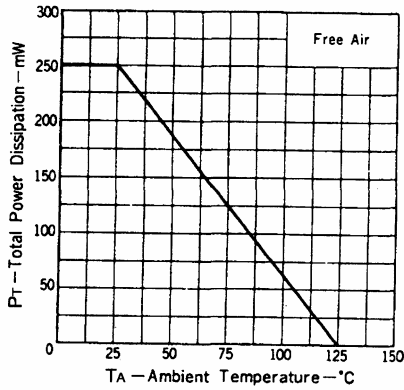
| Rank | R | Q | P | K |
|-------|-----------|------------|------------|------------|
| Range | 90 to 180 | 135 to 270 | 200 to 400 | 300 to 600 |

Remark h_{FE2} Test Conditions: V_{CE} = 6.0 V, I_C = 1.0 mA

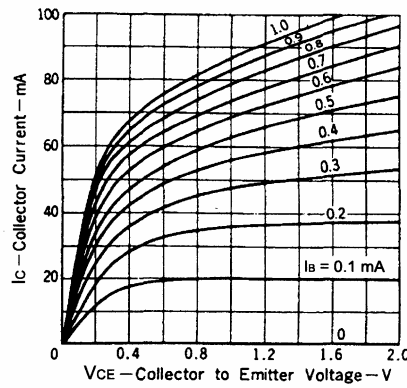
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TYPICAL CHARACTERISTICS (TA = 25°C, unless otherwise noted.)

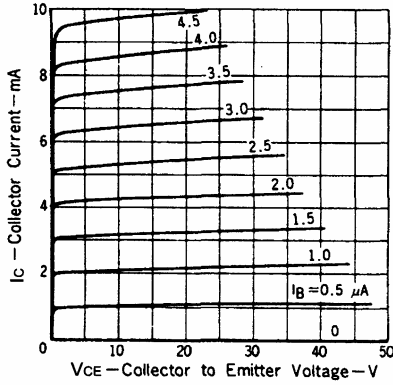
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



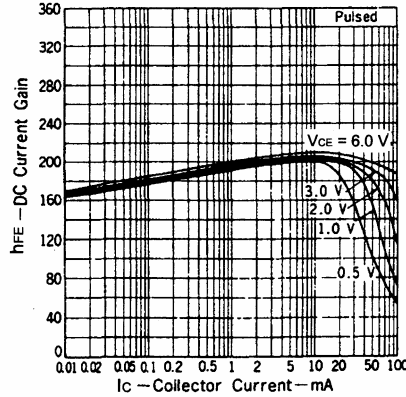
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



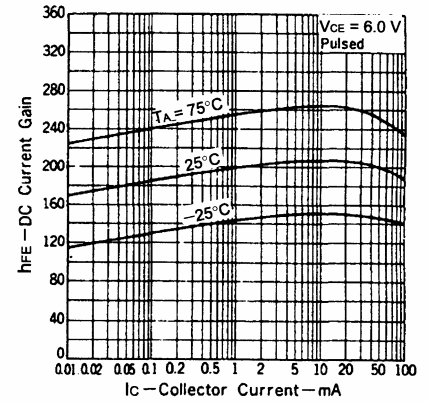
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



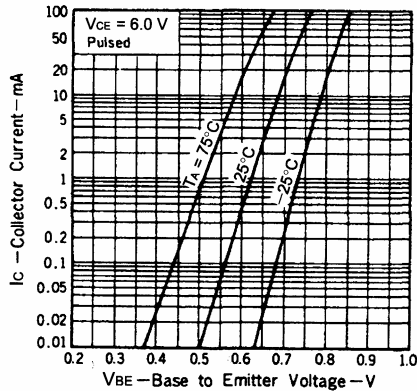
DC CURRENT GAIN vs. COLLECTOR CURRENT



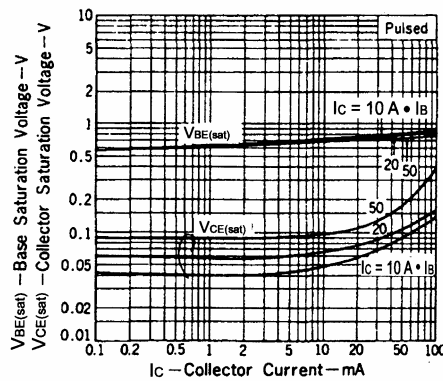
DC CURRENT GAIN vs. COLLECTOR CURRENT



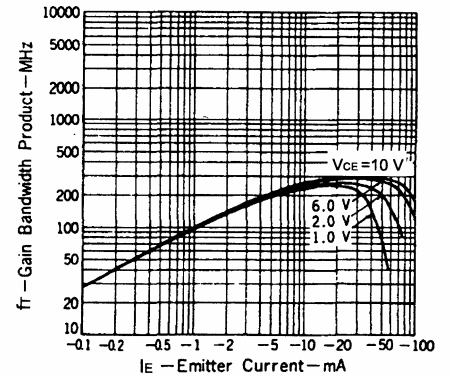
COLLECTOR CURRENT vs. BASE TO EMITTER VOLTAGE



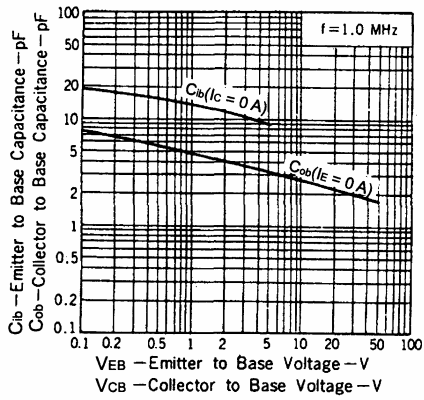
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



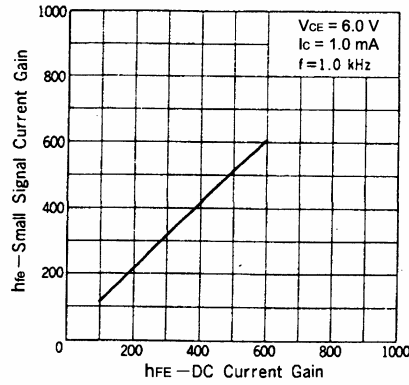
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



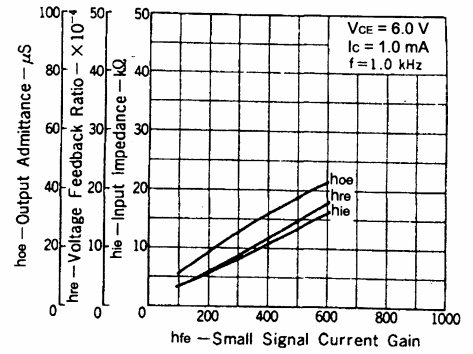
EMITTER TO BASE AND COLLECTOR TO BASE CAPACITANCE vs. REVERSE VOLTAGE



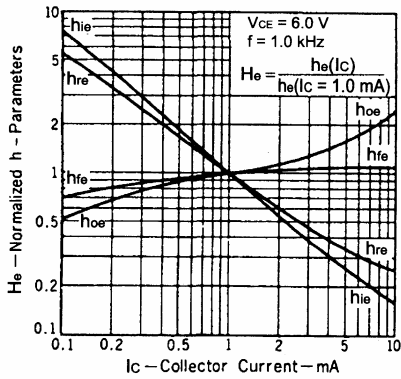
SMALL SIGNAL CURRENT GAIN vs. DC CURRENT GAIN



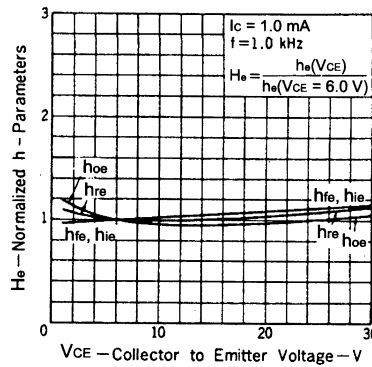
INPUT IMPEDANCE, VOLTAGE FEEDBACK RATIO AND OUTPUT ADMITTANCE vs. SMALL SIGNAL CURRENT GAIN



NORMALIZED h-PARAMETERS vs. COLLECTOR CURRENT



NORMALIZED h-PARAMETERS vs. COLLECTOR TO EMITTER VOLTAGE



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