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

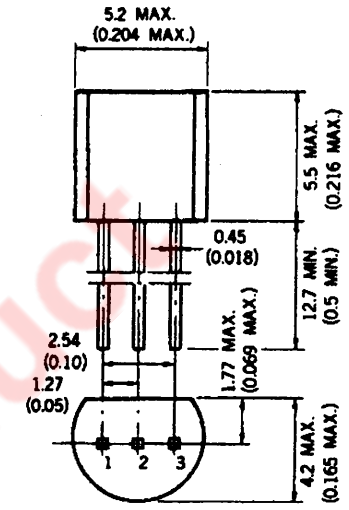
NPN SILICON TRANSISTOR
2SC2719

DESCRIPTION The 2SC2719 is designed for high frequency amplifier and medium-speed switching applications.

FEATURES

- Large Maximum Power Dissipation: P_T = 600 mW
- High Breakdown Voltage: V_{CEO} = 80 V
- Complementary to the NEC 2SA1152 PNP transistor.

PACKAGE DIMENSIONS
in millimeters (inches)



1. EMITTER
2. COLLECTOR
3. BASE

EIAJ : SC-43B
JEDEC : TO-92
IEC : PA33

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures
- Storage Temperature . . . . . −55 to +150 °C
- Junction Temperature . . . . . 150 °C Maximum

Maximum Power Dissipation (T_a = 25 °C)
- Total Power Dissipation . . . . . 600 mW

Maximum Voltages and Current (T_a = 25 °C)
- V_{CBO} Collector to Base Voltage . . . . . 80 V
- V_{CEO} Collector to Emitter Voltage . . . . . 80 V
- V_{EBO} Emitter to Base Voltage . . . . . 5.0 V
- I_C Collector Current . . . . . 300 mA

ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
t_{on}	Turn-on Time		50		ns	See Test Circuit
t_{off}	Turn-off Time		480		ns	See Test Circuit
t_{stg}	Storage Time		560		ns	See Test Circuit
f_T	Gain Bandwidth Product	50	140		MHz	V_{CE} = 6 V, I_E = −10 mA
C_{ob}	Output Capacitance		7.0	15	pF	V_{CB} = 6 V, I_E = 0, f = 1 MHz
h_{FE1}*	DC Current Gain	90	200	400	–	V_{CE} = 1.0 V, I_C = 50 mA
h_{FE2}*	DC Current Gain	30	80		–	V_{CE} = 2.0 V, I_C = 300 mA
V_{BE}	Base to Emitter Voltage	600	645	700	mV	V_{CE} = 6 V, I_C = 10 mA
$V_{CE(sat)}$*	Collector Saturation Voltage		0.15	0.60	V	I_C = 300 mA, I_B = 30 mA
$V_{BE(sat)}$*	Base Saturation Voltage		0.86	1.20	V	I_C = 300 mA, I_B = 30 mA
I_{CBO}	Collector Cutoff Current			0.1	μA	V_{CB} = 80 V, I_E = 0
I_{EBO}	Emitter Cutoff Current			0.1	μA	V_{EB} = 5.0 V, I_C = 0

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

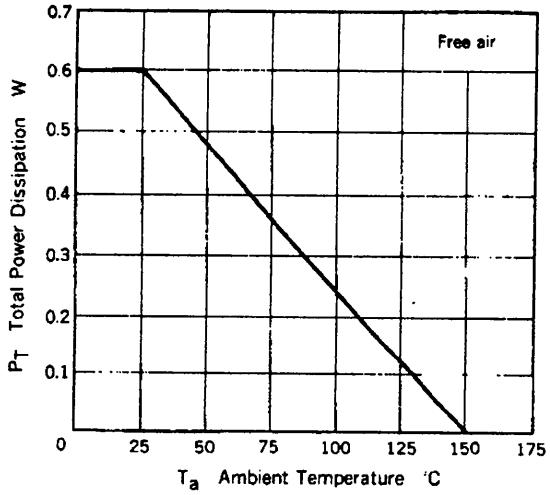
Classification of h_{FE1}

Rank	M	L	K
Range	90 to 180	135 to 270	200 to 400

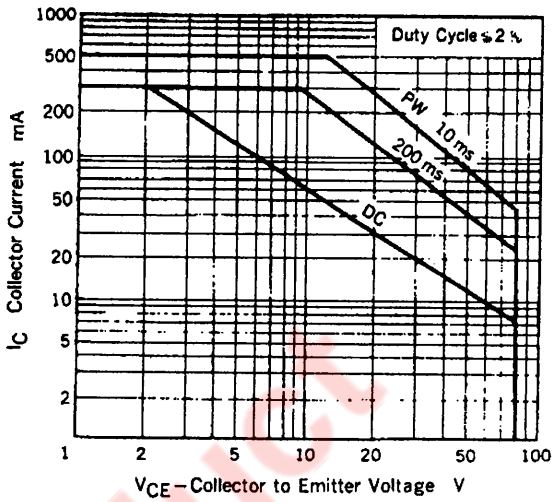
nt No. TC 4025
.D.No. TC 5454A)
ublished January 1990 M
in Japan

TYPICAL CHARACTERISTICS (T_a = 25 °C)

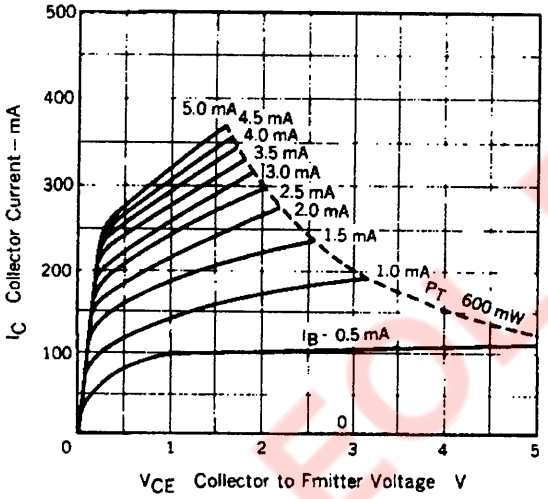
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



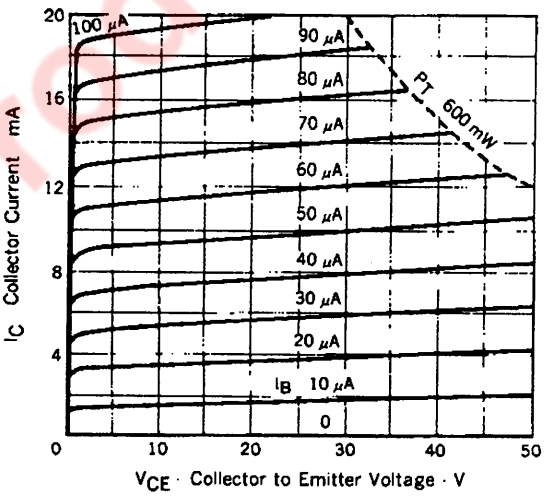
SAFE OPERATING AREA



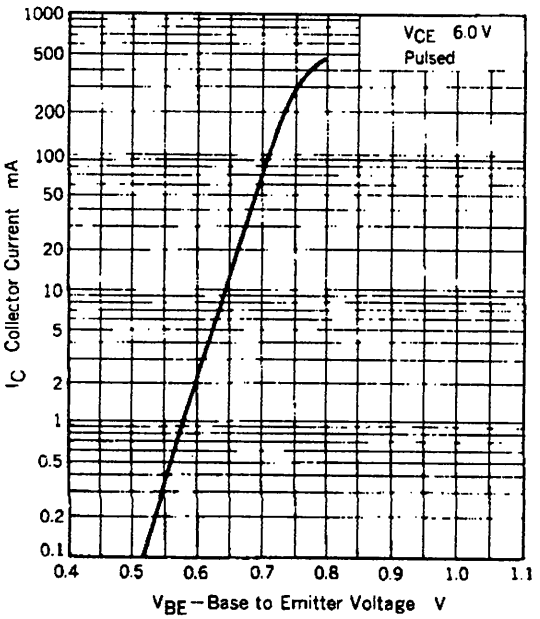
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



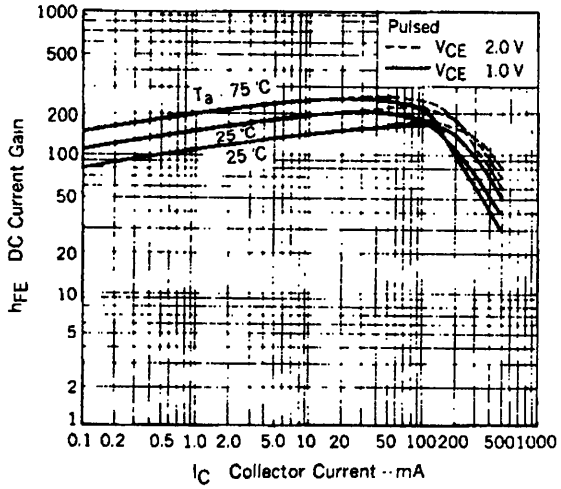
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



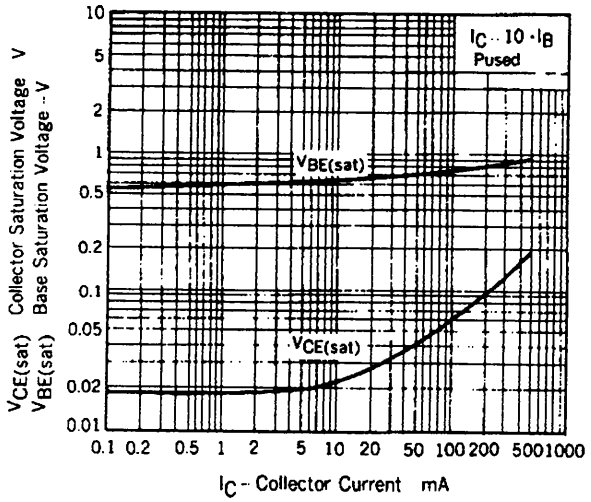
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



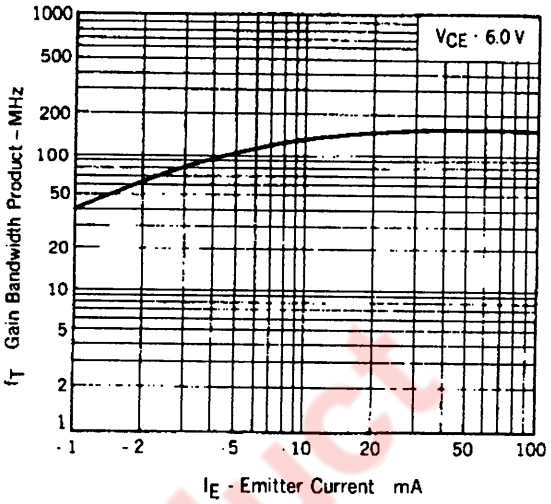
DC CURRENT GAIN vs.
COLLECTOR CURRENT



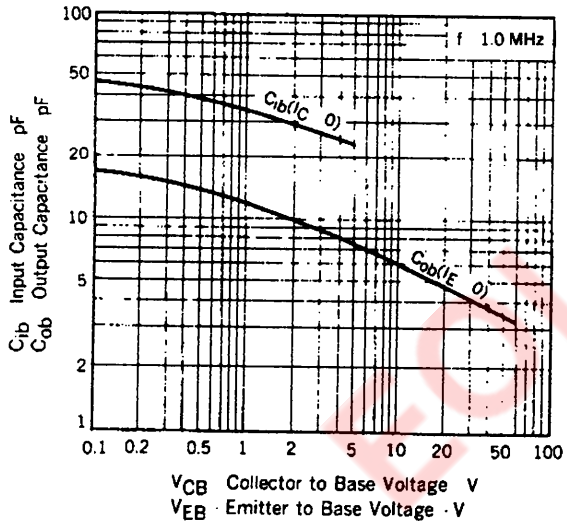
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



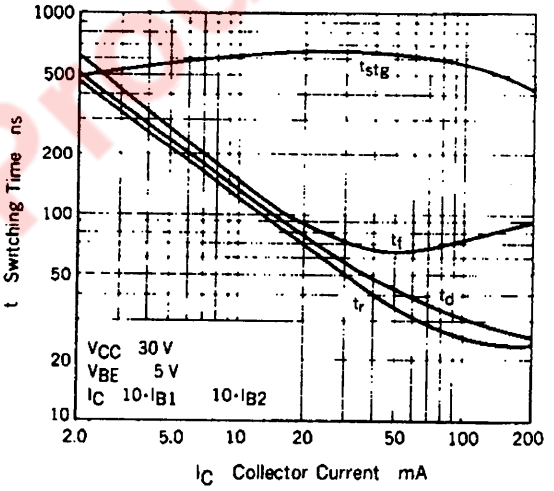
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



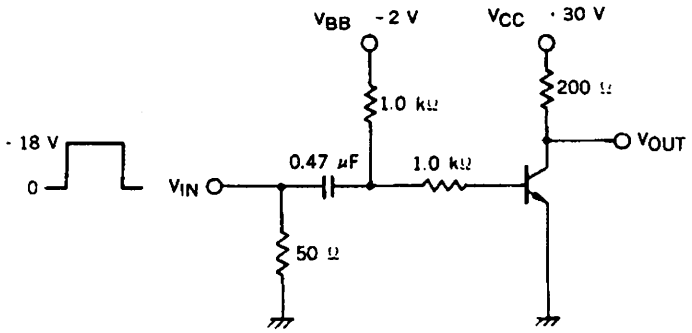
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT

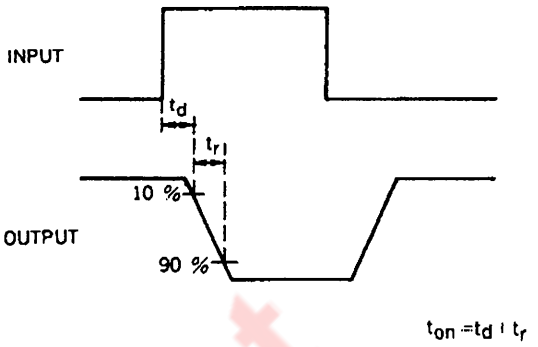


SWITCHING TIME TEST CIRCUIT



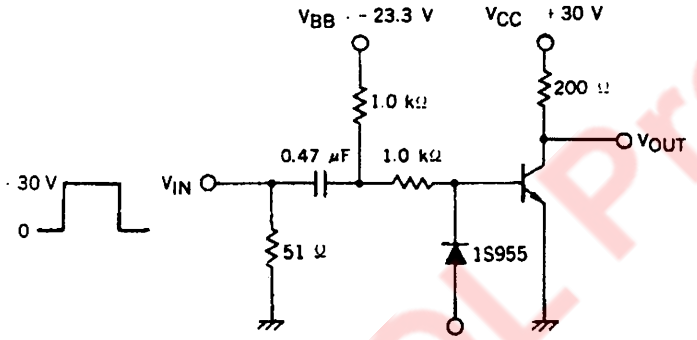
$t_r < 2.0$ ns
PW = 1.0 μs
DC = 2 %

t_{on} SWITCHING



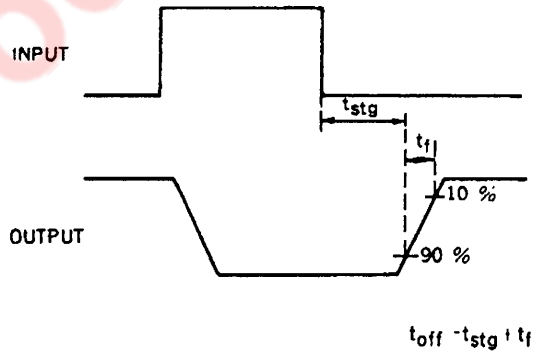
$t_{on} = t_d + t_r$

VOLTAGE WAVEFORMS



$t_r \leq 2.0$ ns
PW 1.0 μs
DC = 2 %

t_{off} SWITCHING



$t_{off} = t_{stg} + t_f$

VOLTAGE WAVEFORMS

[MEMO]