

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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NPN SILICON TRANSISTOR 2SC2719

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

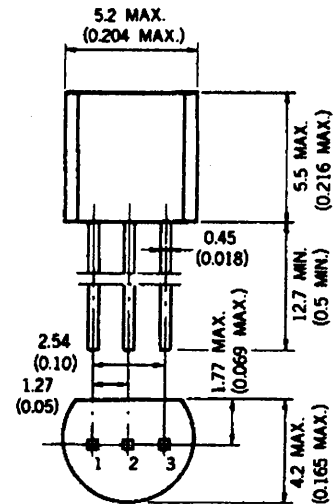
- FEATURES**
- Large Maximum Power Dissipation: $P_T = 600$ mW
 - High Breakdown Voltage: $V_{CEO} = 80$ V
 - Complementary to the NEC 2SA1162 PNP transistor.

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

PACKAGE DIMENSIONS

in millimeters (inches)



- | | | |
|--------------|-------|----------|
| 1. EMITTER | EIAJ | : SC-43B |
| 2. COLLECTOR | JEDEC | : TO-92 |
| 3. BASE | IEC | : PA33 |

ELECTRICAL CHARACTERISTICS ($T_a = 25$ °C)

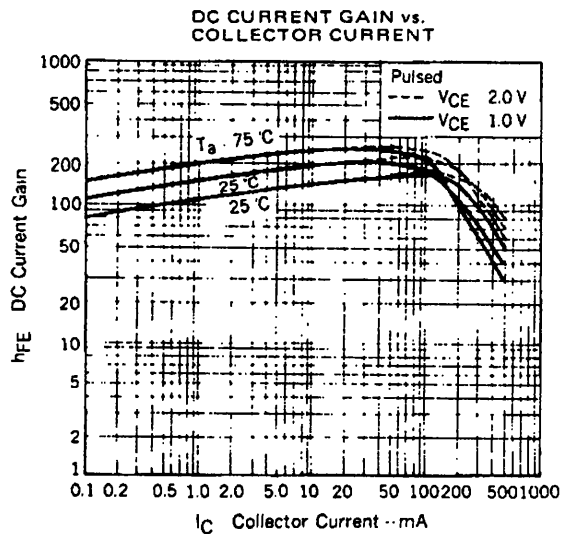
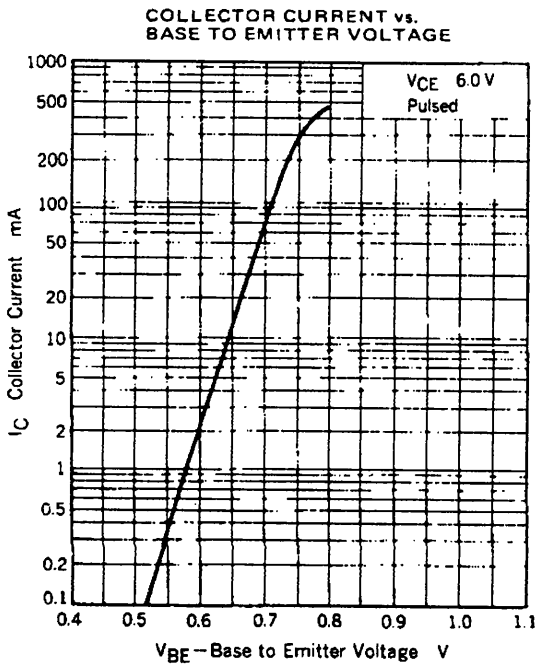
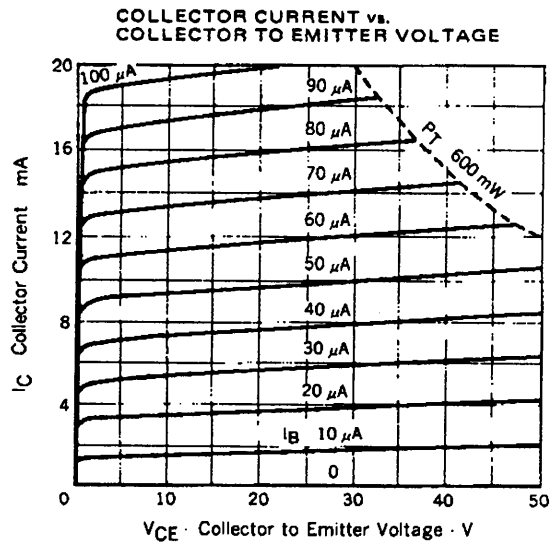
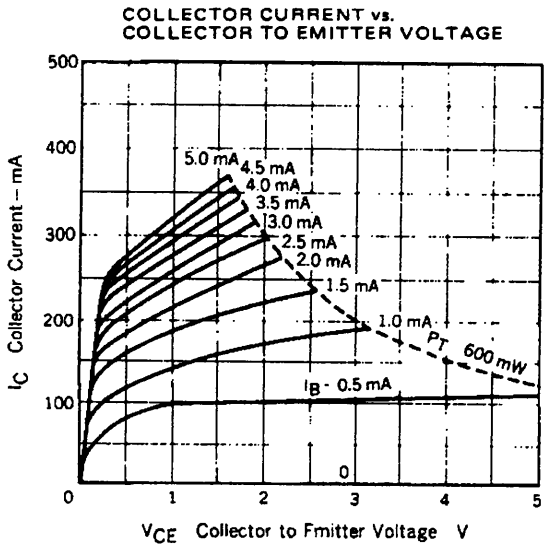
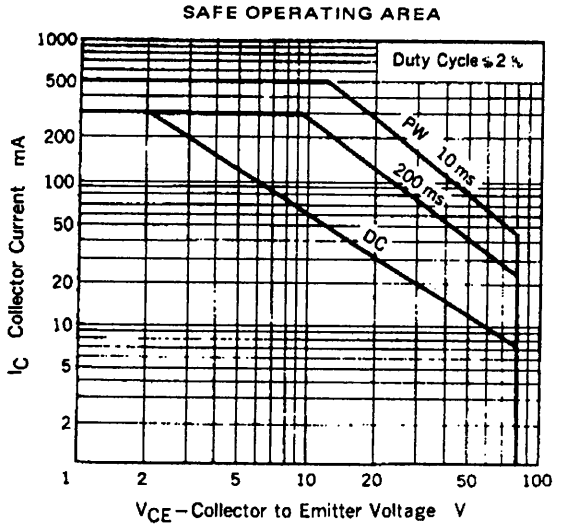
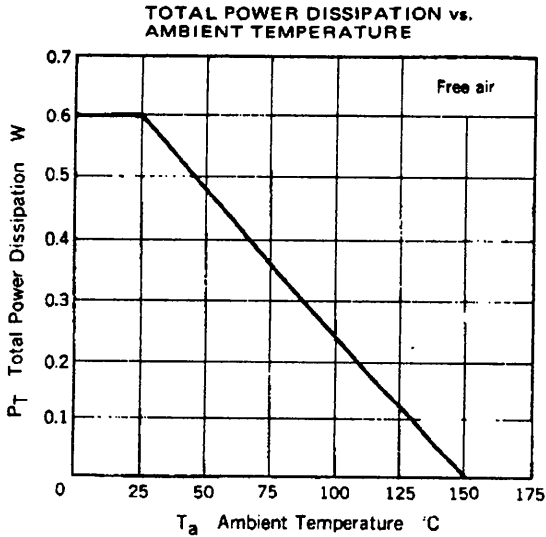
SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
t_{on}	Turn-on Time		50		ns	See Test Circuit
t_{off}	Turn-off Time		480		ns	See Test Circuit
t_{stg}	Storage Time		560		ns	See Test Circuit
f_T	Gain Bandwidth Product	50	140		MHz	$V_{CE} = 6$ V, $I_E = -10$ mA
C_{ob}	Output Capacitance		7.0	15	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	μ A	$V_{CB} = 80$ V, $I_E = 0$
I_{EBO}	Emitter Cutoff Current			0.1	μ A	$V_{EB} = 5.0$ V, $I_C = 0$

* Pulsed PW ≤ 350 μ s, Duty Cycle ≤ 2 %

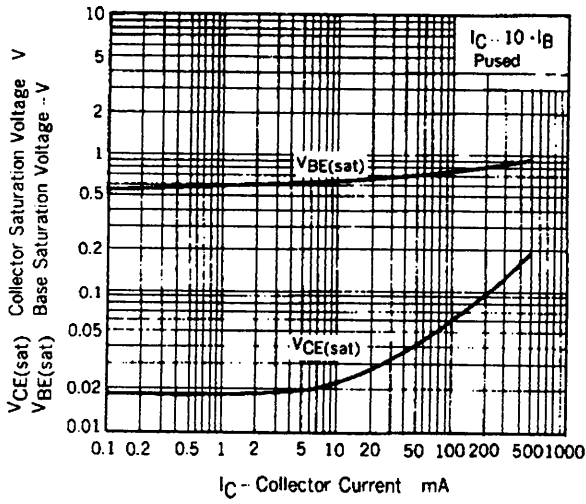
Classification of h_{FE1}

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

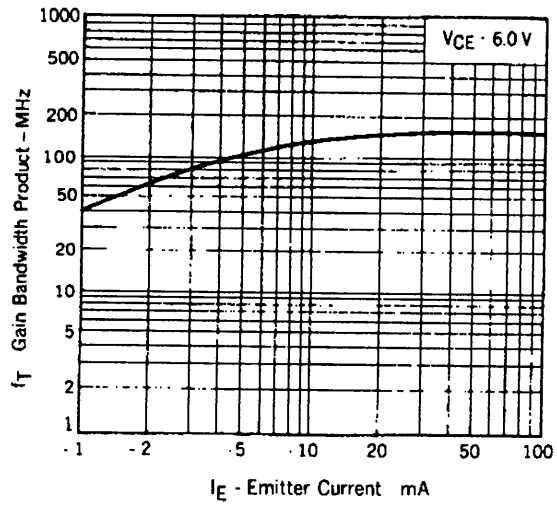
TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)



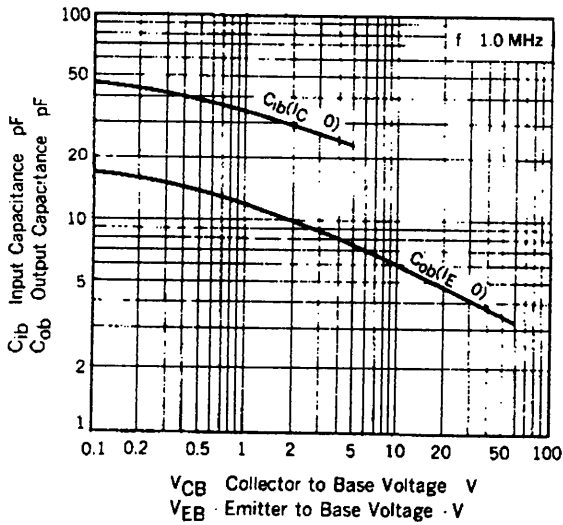
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



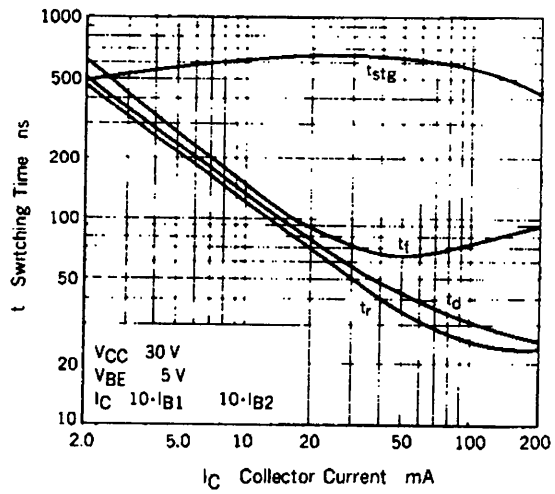
GAIN BANDWIDTH PRODUCT vs. EMITTER CURRENT



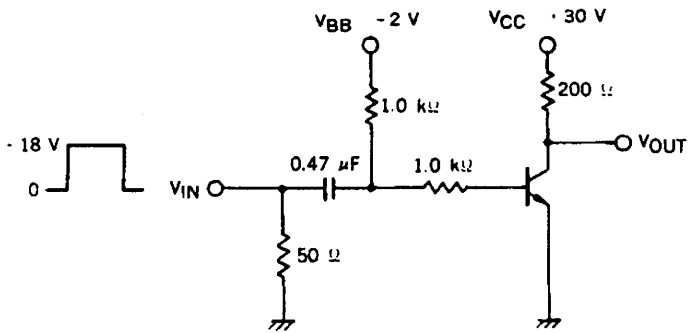
INPUT AND OUTPUT CAPACITANCE vs. REVERSE VOLTAGE



SWITCHING TIME vs. COLLECTOR CURRENT

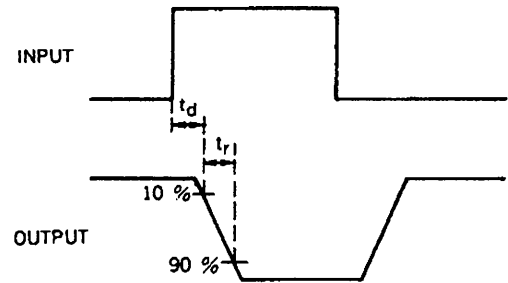


SWITCHING TIME TEST CIRCUIT



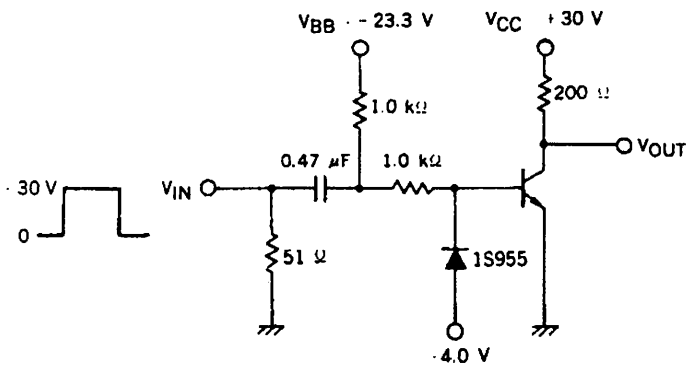
$t_r < 2.0$ ns
 PW = 1.0 μ s
 DC = 2 %

t_{on} SWITCHING



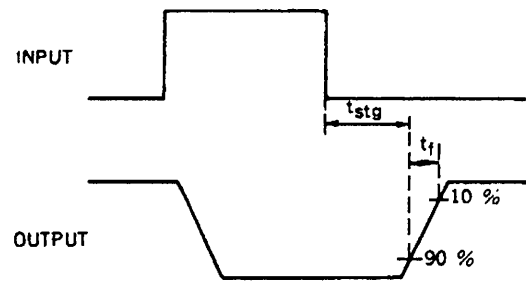
$$t_{on} = t_d + t_r$$

VOLTAGE WAVEFORMS



$t_r < 2.0$ ns
 PW = 1.0 μ s
 DC = 2 %

t_{off} SWITCHING



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

VOLTAGE WAVEFORMS





[MEMO]

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