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

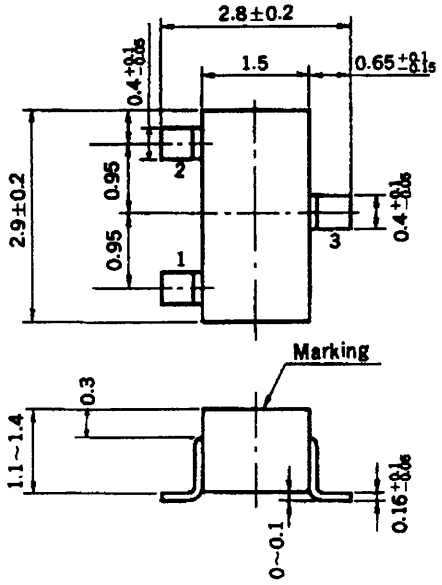
SILICON TRANSISTOR
NTM2907A

GENERAL PURPOSE AMPLIFIER, HIGH SPEED SWITCHING PNP SILICON EPITAXIALTRANSISTOR MINI MOLD

DESCRIPTION

The NTM2907A is PNP Transistor, designed for general purpose amplifier and high speed switching applications for Hybrid IC.

PACKAGE DIMENSIONS
in millimeters



1. Emitter
2. Base
3. Collector

Marking: Y15

FEATURES

- High frequency current gain.
- Low collector saturation voltage.
- High speed switching.
- Electrically similar to 2N2907A.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Current (T_a = 25 °C)			
Collector to Base Voltage	V_{CBO}	−60	V
Collector to Emitter Voltage	V_{CEO}	−60	V
Emitter to Base Voltage	V_{EBO}	−5.0	V
Collector Current	I_C	−600	mA
Maximum Power Dissipation (T_a = 25 °C)			
Total Power Dissipation	P_T	200	mW
Maximum Temperatures			
Storage Temperature Range	T_{stg}	−55 to +150	°C
Junction Temperature	T_j	150	°C

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT	TEST CONDITIONS
Collector to Base Breakdown Voltage	BV_{CBO}	−60		V	I_C = −10 μA, I_B = 0
Collector to Emitter Breakdown Voltage	BV_{CEO}	−60		V	I_C = −10 mA, R_{BE} = ∞
Emitter to Base Breakdown Voltage	BV_{EBO}	−5.0		V	I_E = −10 μA, I_C = 0
Collector Cutoff Current	I_{CEX}		−50	nA	V_{CE} = −30 V, V_{BE} = −0.5 V
	I_{CBO}		−50	nA	V_{CB} = −50 V, I_E = 0
DC Current Gain	h_{FE1}	75			V_{CE} = −10 V, I_C = −100 μA
	h_{FE2}	100			V_{CE} = −10 V, I_C = −1.0 mA
	h_{FE3}	100			V_{CE} = −10 V, I_C = −10 mA
	h_{FE4}	100	300		V_{CE} = −10 V, I_C = −150 mA *1
	h_{FE5}	50			V_{CE} = −10 V, I_C = −500 mA *1
Collector Saturation Voltage	$V_{CE(sat)1}$		−0.4	V	I_C = −150 mA, I_B = −15 mA *1
	$V_{CE(sat)2}$		−1.6	V	I_C = −500 mA, I_B = −50 mA *1
Base Saturation Voltage	$V_{BE(sat)1}$		−1.3	V	I_C = −150 mA, I_B = −15 mA *1
	$V_{BE(sat)2}$		−2.6	V	I_C = −500 mA, I_B = −50 mA *1
Gain Bandwidth Product	f_T	200		MHz	I_C = −50 mA, V_{CE} = −20 V, f = 100 MHz
Output Capacitance	C_{ob}		8.0	pF	V_{CB} = −10 V, I_E = 0, f = 1.0 MHz
Input Capacitance	C_{ib}		30	pF	V_{EB} = −2.0 V, I_C = 0, f = 1.0 MHz

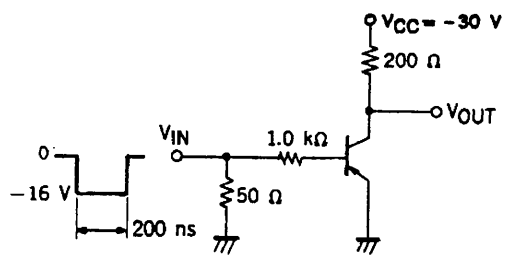
*1 These parameters must be measured using pulse techniques. PW ≦ 350 μs, Duty Cycle ≦ 2 %.

SWITCHING CHARACTERISTICS (T_a = 25 °C)

CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT	TEST CONDITIONS
Delay Time	t_d		10	ns	V_{CC} = −30 V, I_C = −150 mA, V_{BE} = 0, I_{B1} = −15 mA
Rise Time	t_r		40	ns	
Turn On Time	t_{on}		45	ns	
Storage Time	t_{stg}		80	ns	V_{CC} = −6.0 V, I_C = −150 mA, I_{B1} = −I_{B2} = −15 mA
Fall Time	t_f		30	ns	
Turn Off Time	t_{off}		100	ns	

See test circuit.

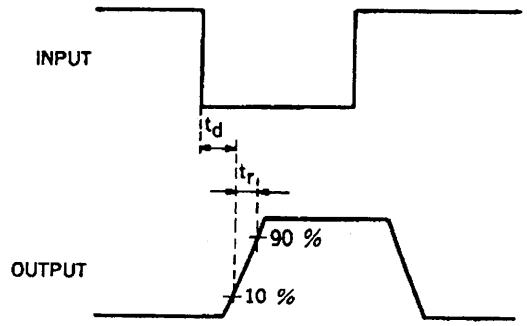
SWITCHING TIME TEST CIRCUIT



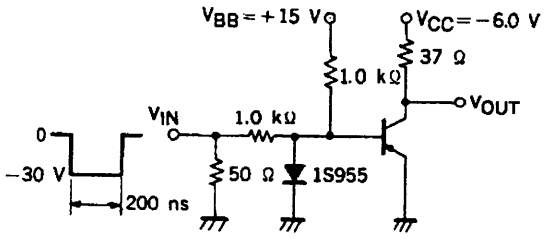
Z_O=50 Ω
PRF=150 pps
t_r≤2.0 ns

TO OSCILLOSCOPE
t_r≤5.0 ns
Z_{IN}=10 MΩ

t_{on} SWITCHING



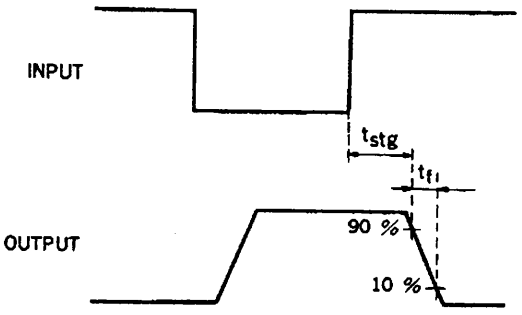
VOLTAGE WAVEFORMS



Z_O=50 Ω
PRF=150 pps
t_r≤2.0 ns

TO OSCILLOSCOPE
t_r≤5.0 ns
Z_{IN}=10 MΩ

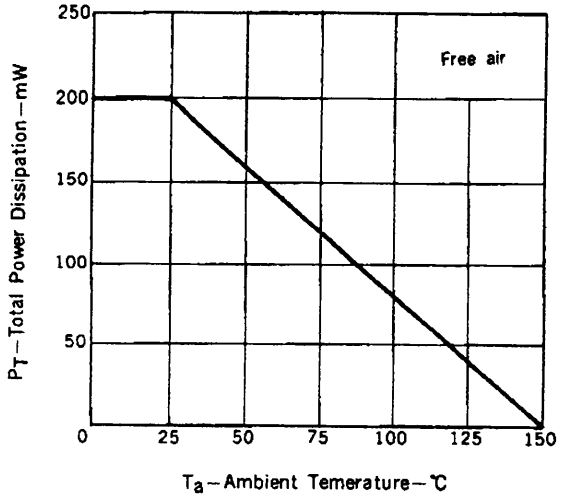
t_{off} SWITCHING



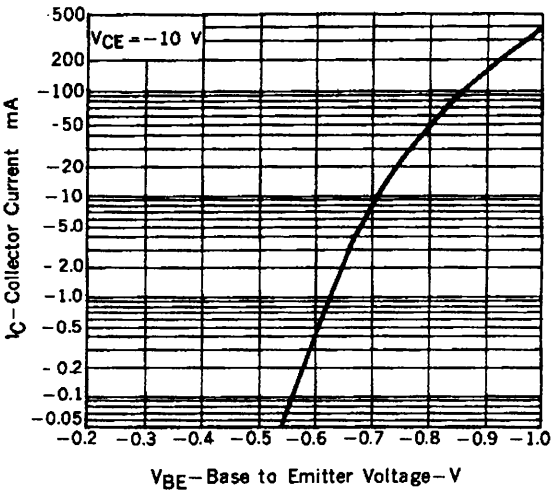
VOLTAGE WAVEFORMS

TYPICAL CHARACTERISTICS (T_a = 25 °C)

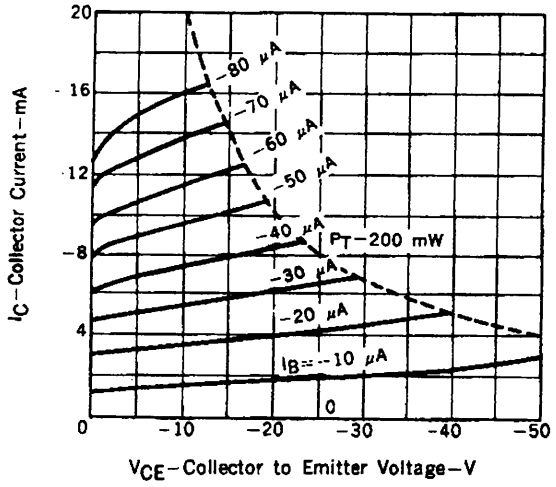
TOTAL POWER DISSIPATION vs.
AMBIENT TEMPERATURE



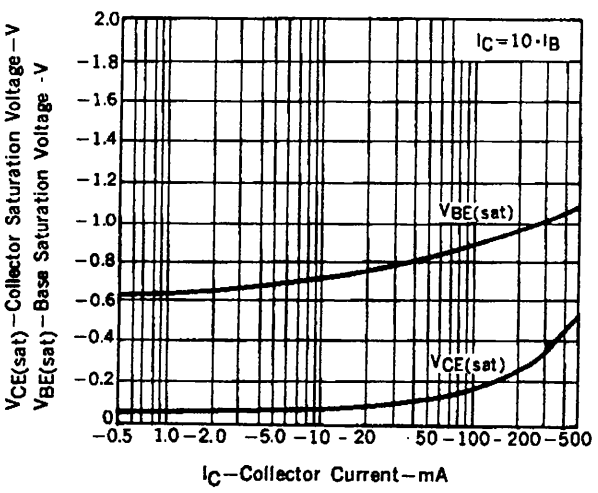
COLLECTOR CURRENT vs.
BASE TO EMITTER VOLTAGE



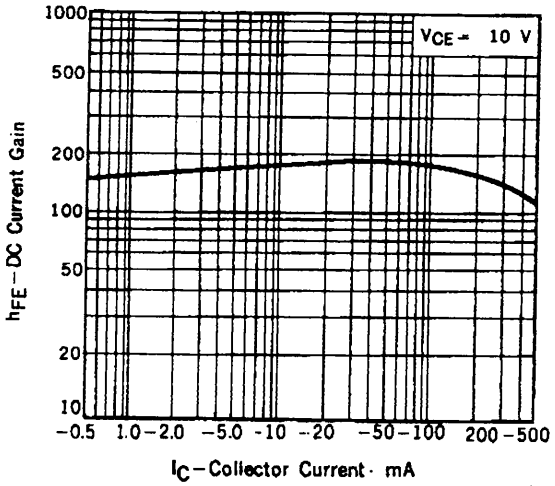
COLLECTOR CURRENT vs.
COLLECTOR TO EMITTER VOLTAGE



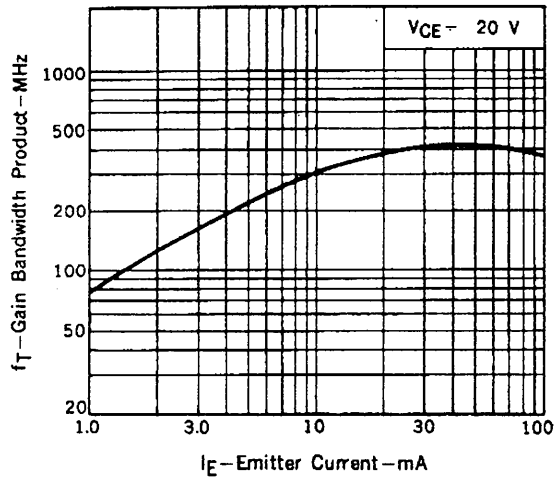
BASE AND COLLECTOR SATURATION
VOLTAGE vs. COLLECTOR CURRENT



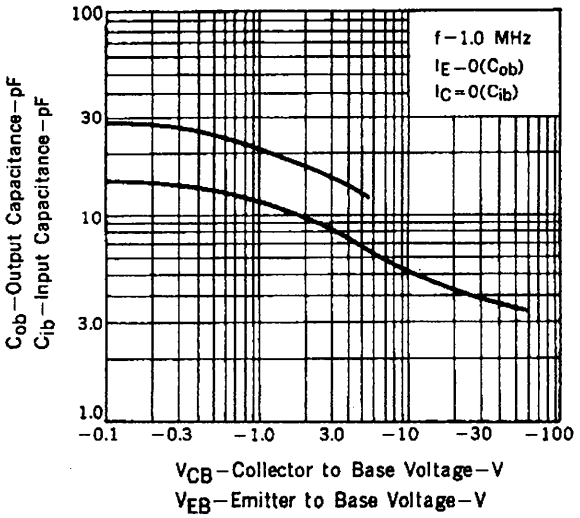
DC CURRENT GAIN vs.
COLLECTOR CURRENT



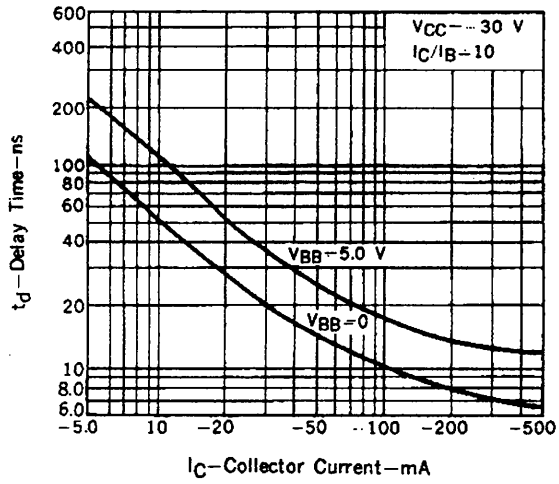
GAIN BANDWIDTH PRODUCT vs.
EMITTER CURRENT



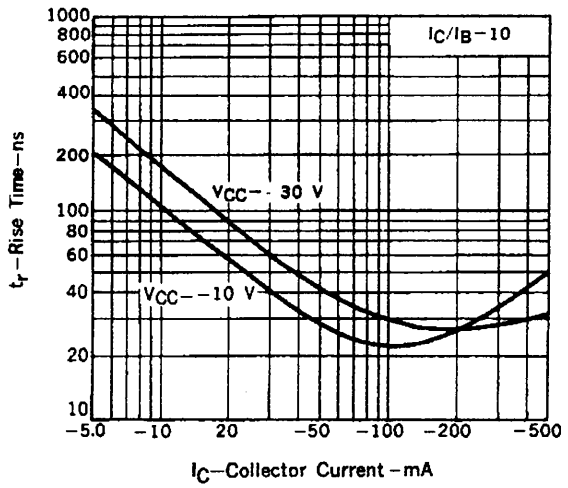
INPUT AND OUTPUT CAPACITANCE vs.
REVERSE VOLTAGE



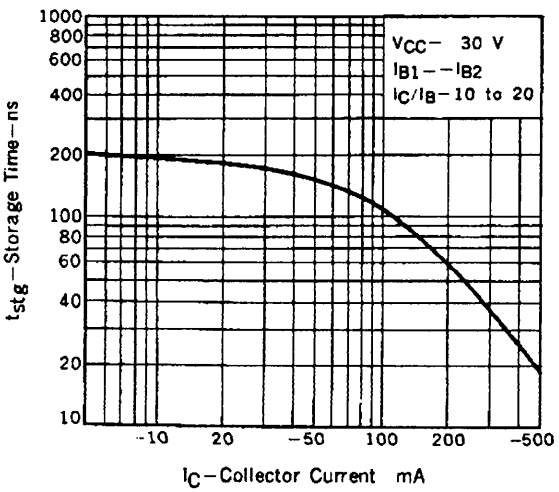
DELAY TIME vs.
COLLECTOR CURRENT



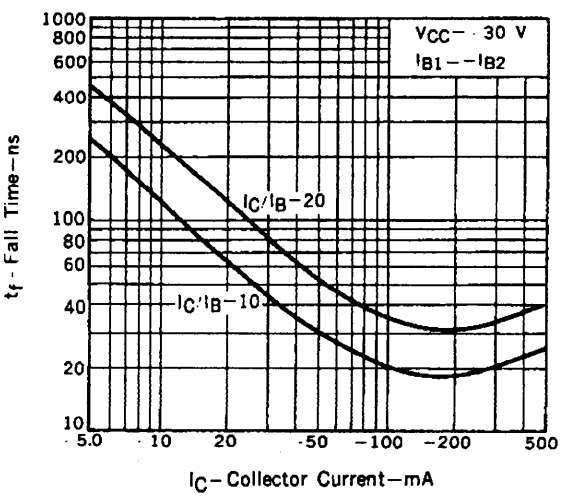
RISE TIME vs.
COLLECTOR CURRENT



STORAGE TIME vs.
COLLECTOR CURRENT



FALL TIME vs.
COLLECTOR CURRENT



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