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
NTM2369

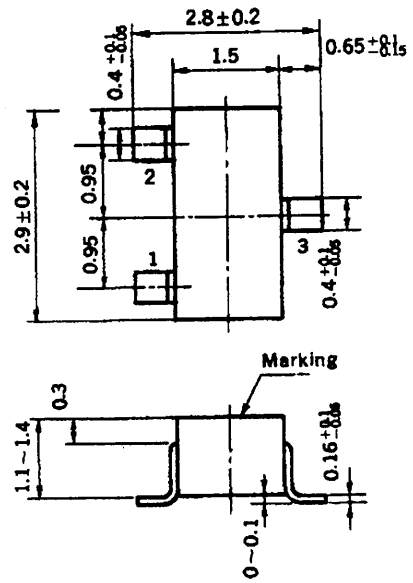
HIGH SPEED SWITCHING, GENERAL PURPOSE AMPLIFIER
NPN SILICON EPITAXIAL TRANSISTOR
MINI MOLD

DESCRIPTION

The NTM2369 is NPN 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 B32

FEATURES

- High frequency current gain.
- High speed switching.
- NTM2369 electrically similar to 2N2369.

ABSOLUTE MAXIMUM RATINGS (T_a = 25 °C)

Maximum Voltages and Current			
Collector to Base Voltage	V_{CBO}	40	V
Collector to Emitter Voltage	V_{CEO}	15	V
Emitter to Base Voltage	V_{EBO}	4.5	V
Collector Current	I_C	200	mA
Maximum Power Dissipation			
Total Power Dissipation	P_T	200	mW
Maximum Temperatures			
Storage Temperature	T_{stg}	−55 to +150	°C
Operating Junction Temperature	T_j	150	°C

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ELECTRICAL CHARACTERISTICS (T_a = 25 °C)

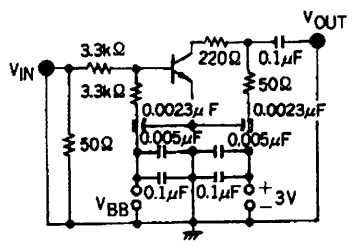
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT	TEST CONDITIONS
Collector to Base Breakdown Voltage	BV_{CBO}	40		V	I_C = 10 μA, I_E = 0
Collector to Emitter Breakdown Voltage	BV_{CEO}	15		V	I_C = 10 mA, I_B = 0
Emitter to Base Breakdown Voltage	BV_{EBO}	4.5		V	I_E = 10 μA, I_C = 0
Collector Cutoff Current	I_{CBO}		0.4	μA	V_{CB} = 20 V, I_E = 0
DC Current Gain	h_{FE1}	40	120		V_{CE} = 1.0 V, I_C = 10 mA
	h_{FE2}	20			V_{CE} = 2.0 V, I_C = 100 mA
Collector Saturation Voltage	$V_{CE(sat)}$		0.25	V	I_C = 10 mA, I_B = 1.0 mA
Base Saturation Voltage	$V_{BE(sat)}$	0.7	0.85	V	I_C = 10 mA, I_B = 1.0 mA
Gain Bandwidth Product	f_T	500		MHz	V_{CE} = 10 V, I_C = 10 mA
Output Capacitance	C_{ob}		4.0	pF	V_{CB} = 5.0 V, I_E = 0, f = 1.0 MHz

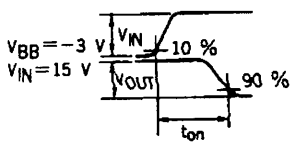
SWITCHING CHARACTERISTICS (T_a = 25 °C)

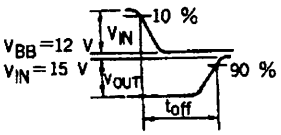
CHARACTERISTIC	SYMBOL	MIN.	MAX.	UNIT	TEST CONDITIONS
Turn on Time	t_{on}		12	ns	V_{CC} = 3.0 V, I_C = 10 mA, I_{B1} = 3.0 mA, $V_{BE(off)}$ = −1.5 V
Turn off Time	t_{off}		18	ns	V_{CC} = 3.0 V, I_C = 10 mA, I_{B1} = 3.0 mA, I_{B2} = −1.5 mA
Storage Time	t_{stg}		13	ns	I_C = 10 mA, I_{B1} = −I_{B2} = 10 mA

SWITCHING TIME TEST CIRCUIT

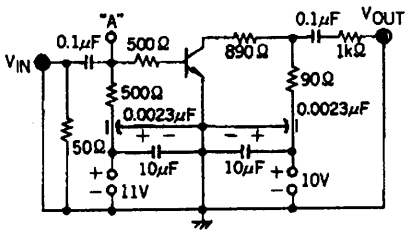
T_{on}, T_{off} TEST CIRCUIT

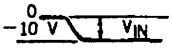


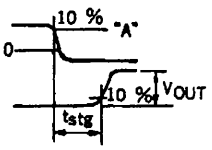




T_{stg} TEST CIRCUIT

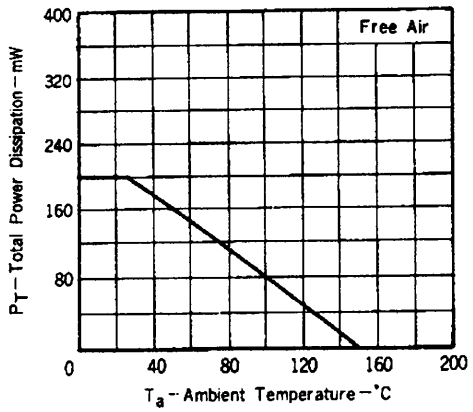




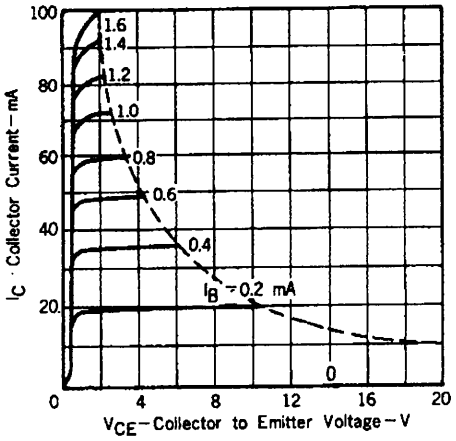


TYPICAL CHARACTERISTICS (T_a = 25 °C)

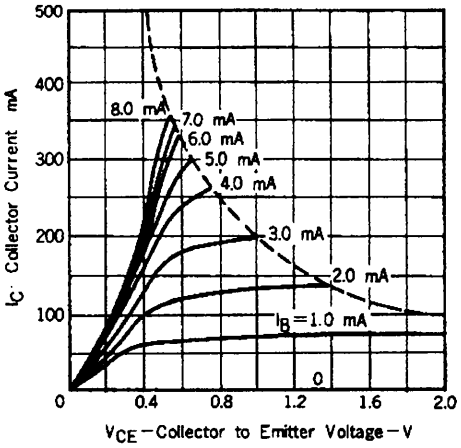
TOTAL POWER DISSIPATION vs. AMBIENT TEMPERATURE



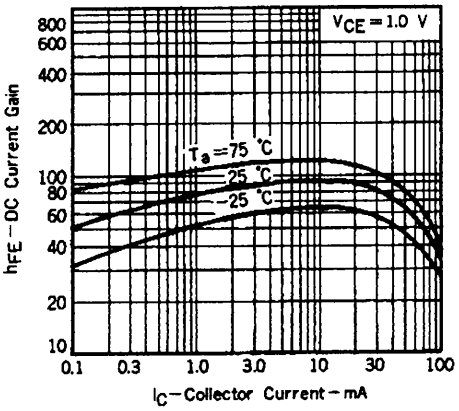
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



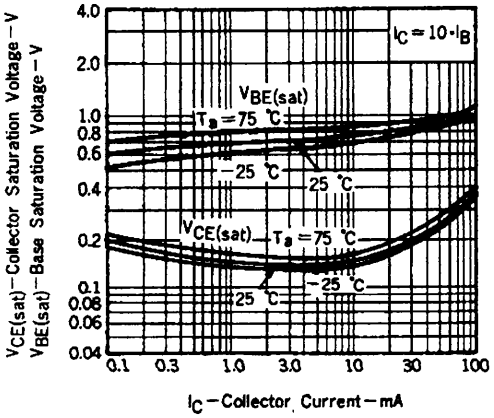
COLLECTOR CURRENT vs. COLLECTOR TO EMITTER VOLTAGE



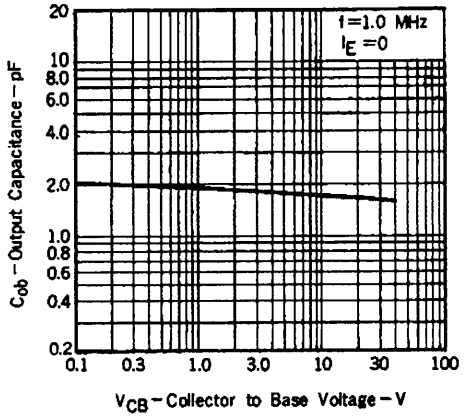
DC CURRENT GAIN vs. COLLECTOR CURRENT



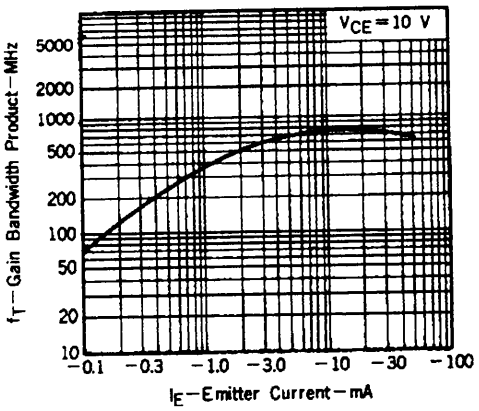
COLLECTOR AND BASE SATURATION VOLTAGE vs. COLLECTOR CURRENT



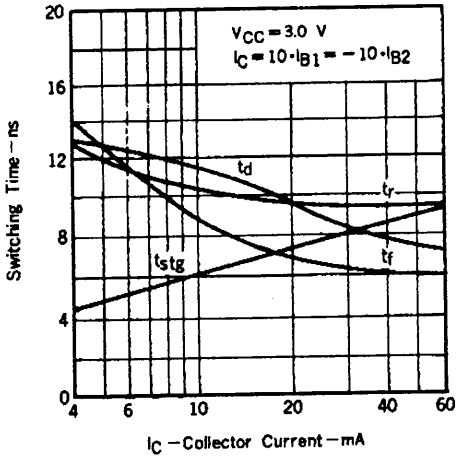
OUTPUT CAPACITANCE vs. COLLECTOR TO BASE VOLTAGE



GAIN BANDWIDTH PRODUCT
vs. EMITTER CURRENT



SWITCHING TIME
vs. COLLECTOR CURRENT



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