



SANYO Semiconductors

DATA SHEET

TT3031NP — 50V / 3A High-Speed Switching Applications

PNP Epitaxial Planar Silicon Transistor

Applications

- High-speed switching applications (switching regulator, driver circuit).

Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.

Specifications

Absolute Maximum Ratings at $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		-50	V
Collector-to-Emitter Voltage	V_{CE0}		-50	V
Emitter-to-Base Voltage	V_{EB0}		-6	V
Collector Current	I_C		-3	A
Collector Current (Pulse)	I_{CP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 10\%$	-5	A
Base Current	I_B		-1	A
Collector Dissipation	P_C		0.8	W
Junction Temperature	T_J		150	$^{\circ}\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^{\circ}\text{C}$

Electrical Characteristics at $T_a=25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-40\text{V}$, $I_E=0\text{A}$			-10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}$, $I_C=0\text{A}$			-10	μA
DC Current Gain	h_{FE}	$V_{CE}=-2\text{V}$, $I_C=-125\text{mA}$	200		500	
Gain-Bandwidth Product	f_T	$V_{CE}=-10\text{V}$, $I_C=-300\text{mA}$		130		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}$, $f=1\text{MHz}$		55		pF

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TT3031NP

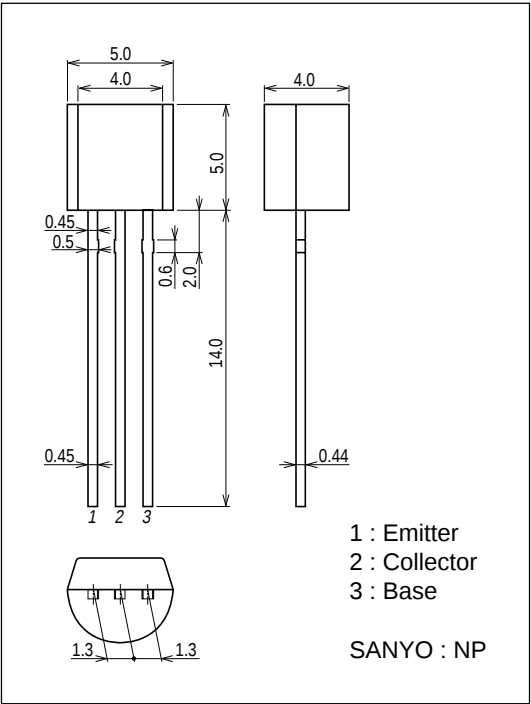
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -2.5A, I_B = -125mA$		-250	-500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -2.5A, I_B = -125mA$			-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu A, I_E = 0A$	-50			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1mA, R_{BE} = \infty$	-50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -100\mu A, I_C = 0A$	-6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		46		ns
Storage Time	t_{stg}	See specified Test Circuit.		280		ns
Fall Time	t_f	See specified Test Circuit.		23		ns

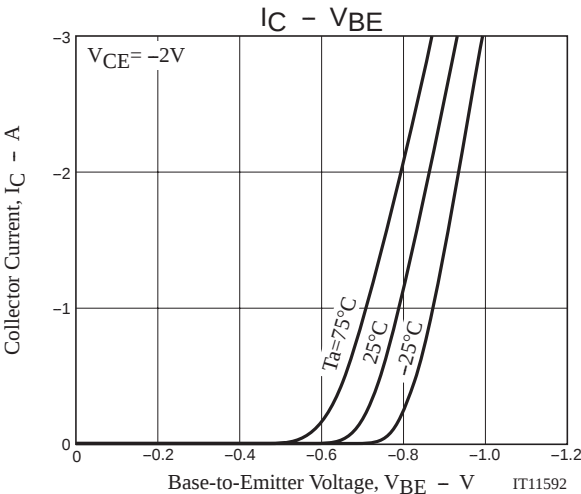
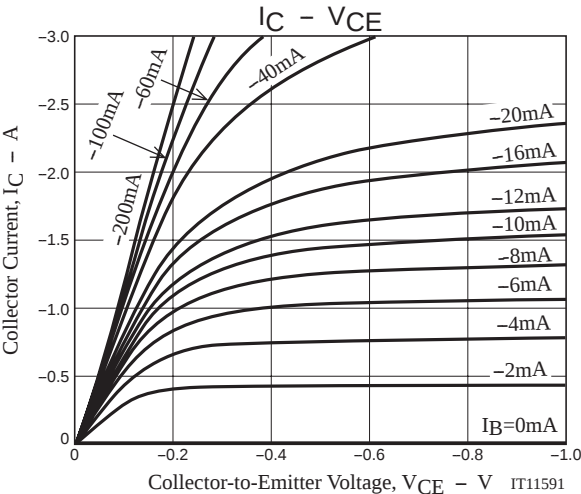
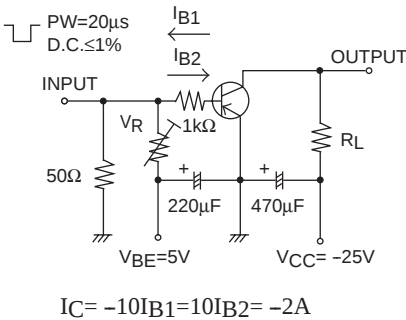
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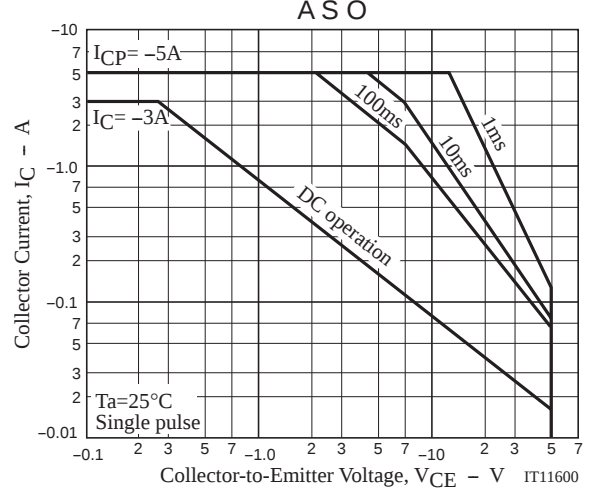
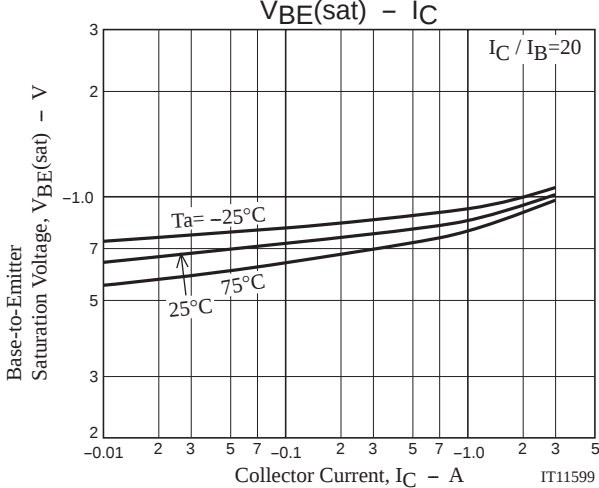
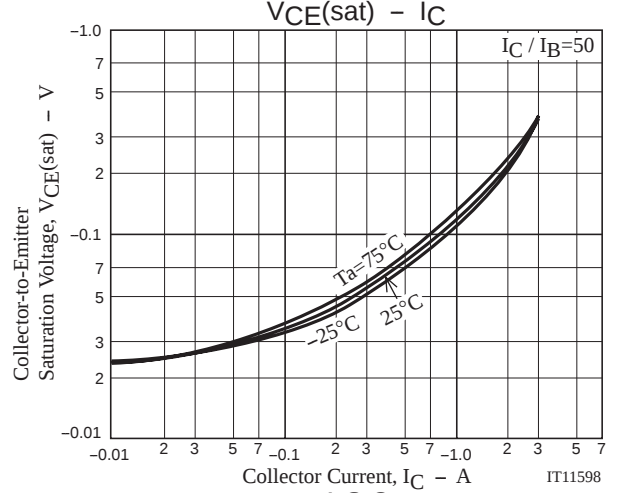
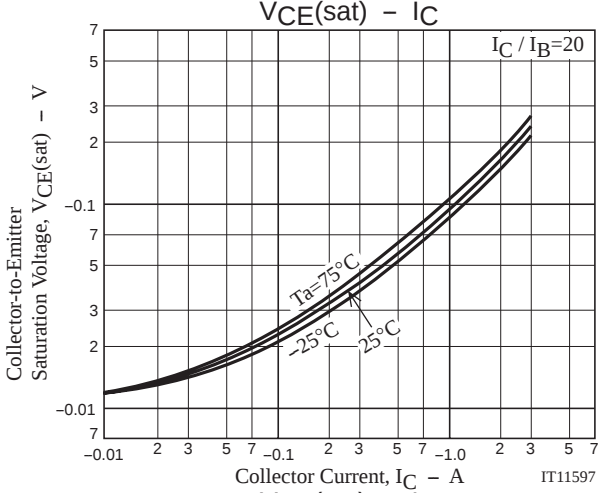
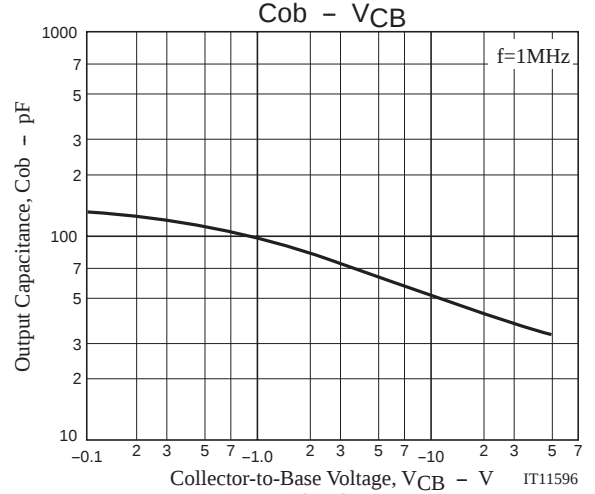
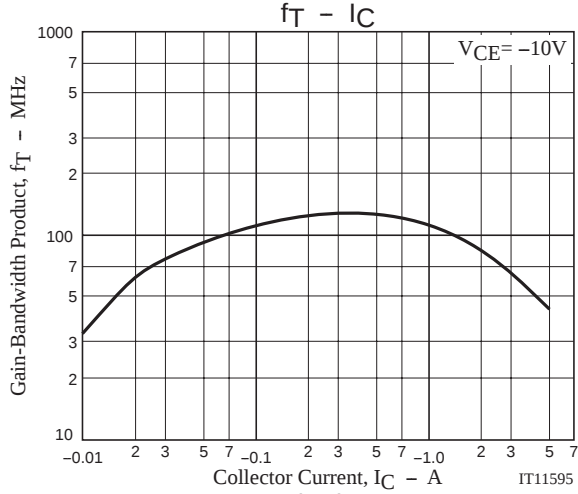
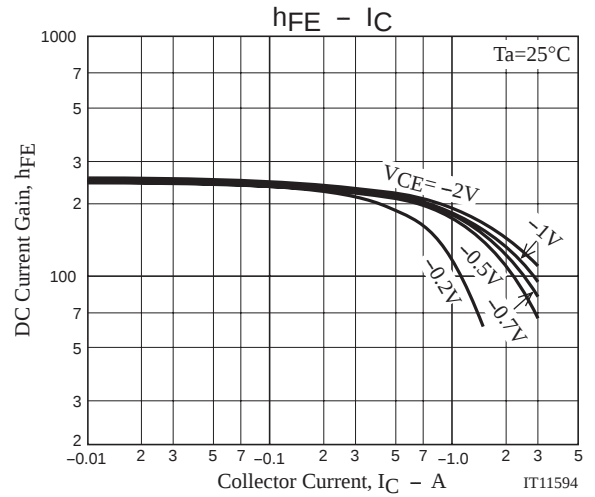
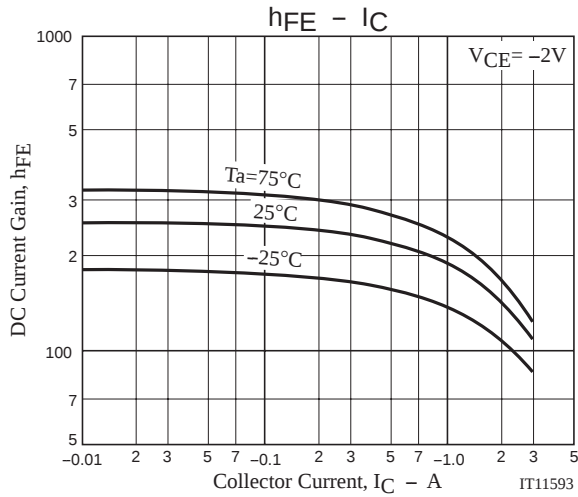
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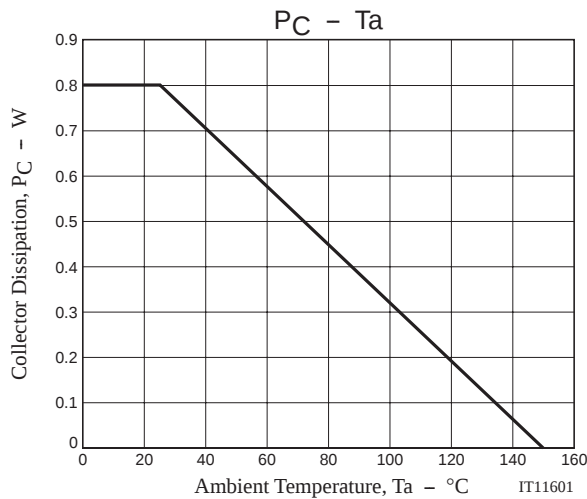
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Switching Time Test Circuit







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