Ordering number : ENN8035

SANYO Semiconductors
DATA SHEET

2SC5994 — NPN Epitaxial Planar Silicon Transistor
High-Current Switching Applications

Applications

- Voltage regulators, relay drivers, lamp drivers, electrical equipment.

Features

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

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		100	V
Collector-to-Emitter Voltage	V_{CES}		100	V
Collector-to-Emitter Voltage	V_{CEO}		50	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		2	A
Collector Current (Pulse)	I_{CP}		4	A
Base Current	I_B		400	mA
Collector Dissipation	P_C	Mounted on a ceramic board (450mm²×0.8m)	1.3	W
		Tc=25°C	3.5	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=50V, I_E=0			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0			1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=2V, I_C=100mA	200		560	
	$h_{FE}2$	V_{CE}=2V, I_C=1.5A	40			

Marking : FJ

Continued on next page.

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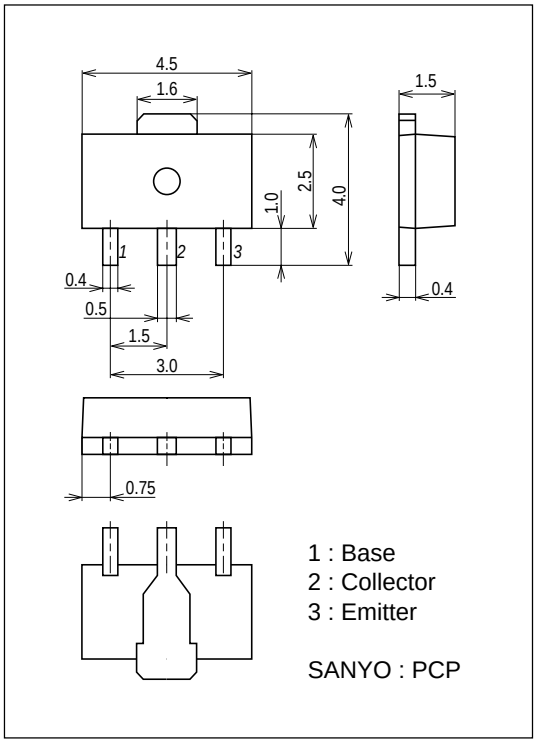
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=300mA		420		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		9		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=1A, I_B=50mA		135	300	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=1A, I_B=50mA		0.9	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=100μA, R_{BE}=0	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		30		ns
Storage Time	t_{stg}	See specified Test Circuit.		330		ns
Fall Time	t_f	See specified Test Circuit.		40		ns

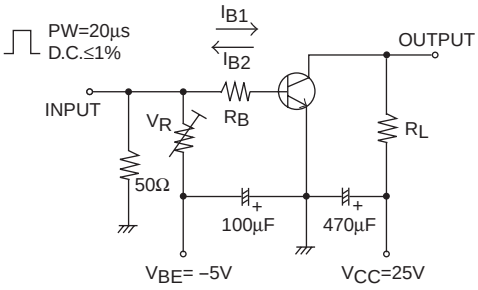
Package Dimensions

unit : mm

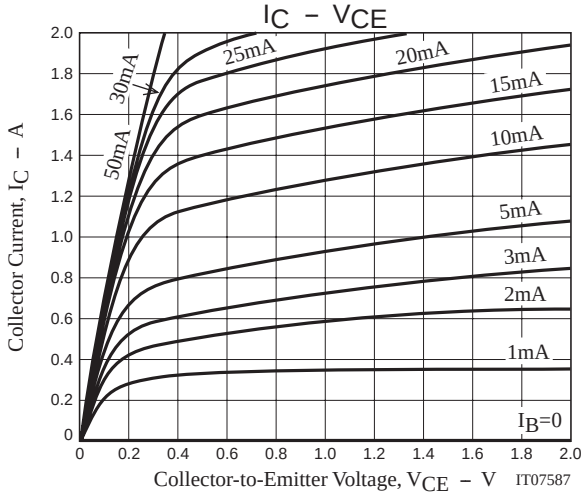
2038B

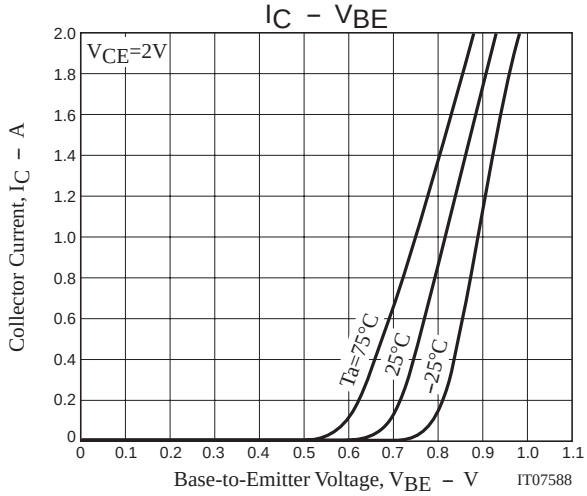


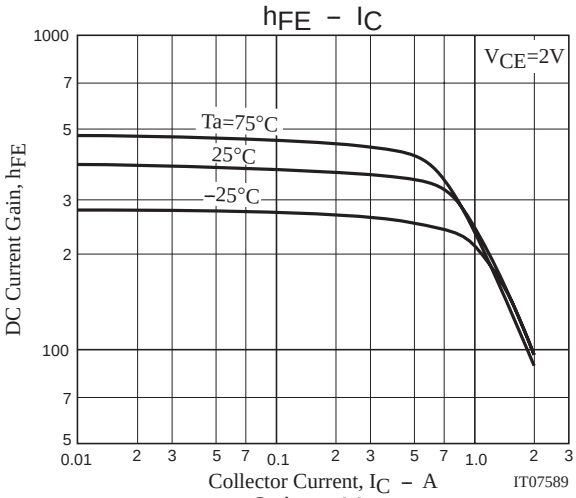
Switching Time Test Circuit

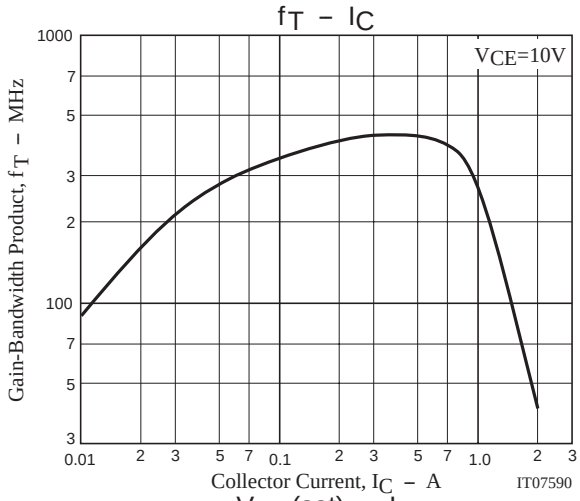


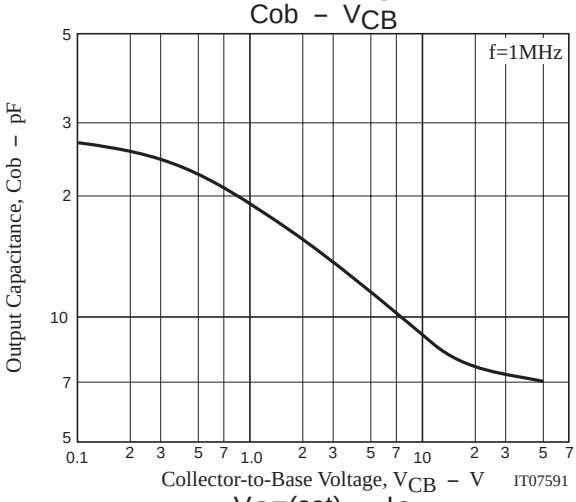
I_C=10I_{B1}= −10I_{B2}=700mA

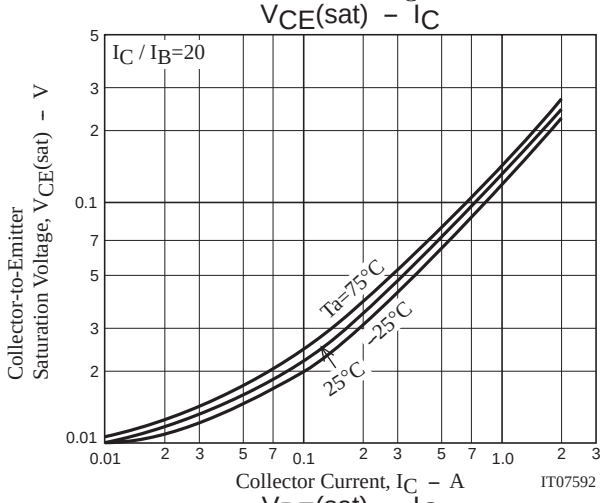


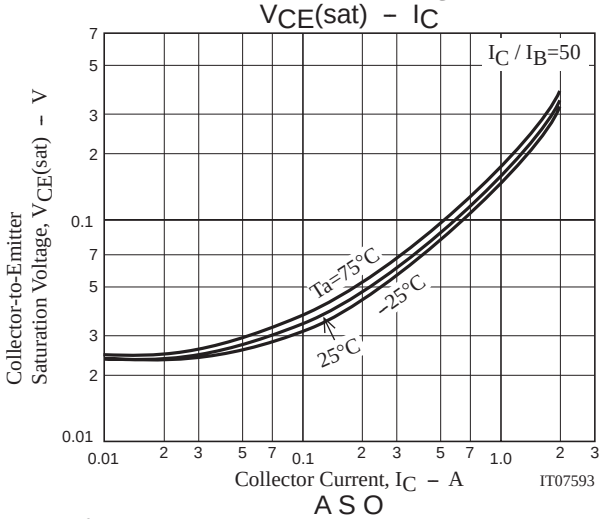


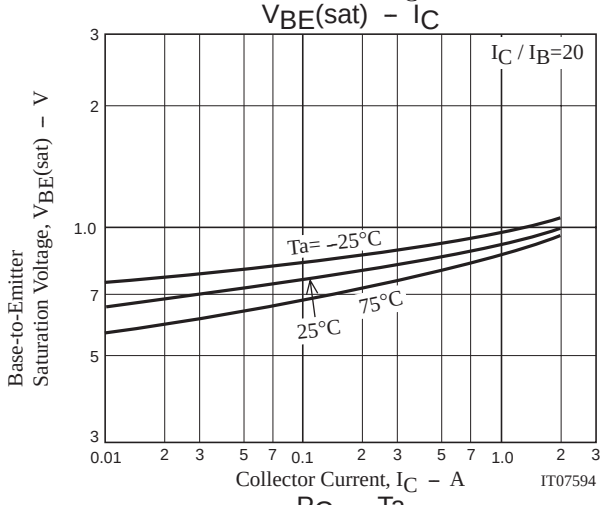

hFE – IC
VCE=2V
Ta=75°C
25°C
–25°C
DC Current Gain, hFE
Collector Current, IC – A
IT07589

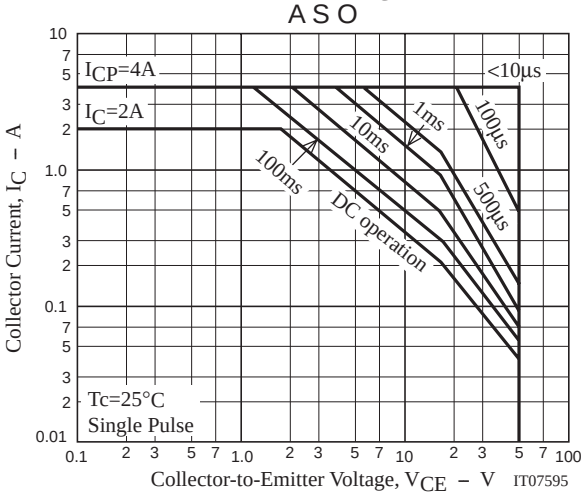

fT – IC
VCE=10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT07590

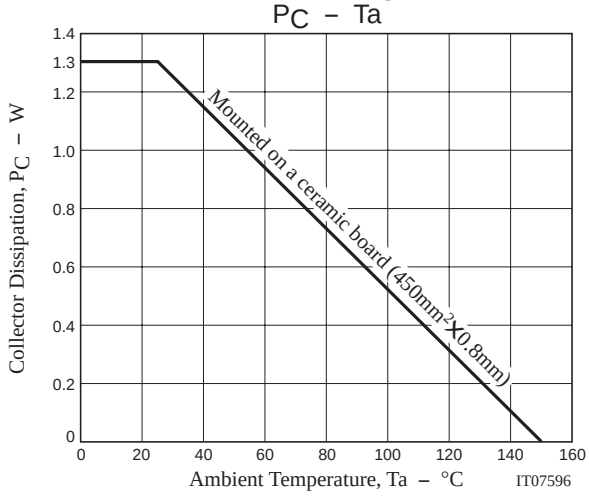

Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT07591

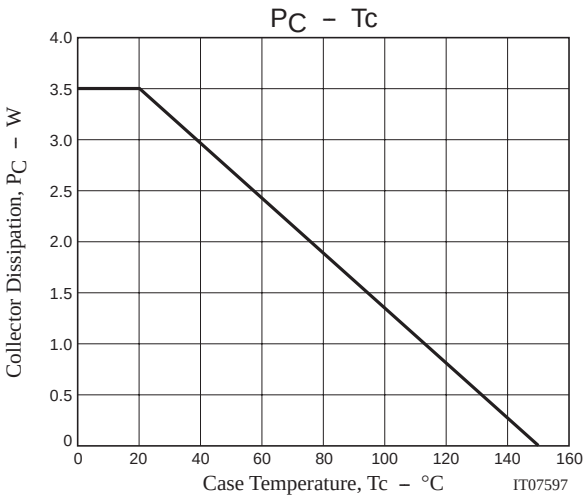

VCE(sat) – IC
IC / IB=20
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT07592


VCE(sat) – IC
IC / IB=50
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Ta=75°C
–25°C
25°C
Collector Current, IC – A
IT07593


VBE(sat) – IC
IC / IB=20
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Ta= –25°C
25°C
75°C
Collector Current, IC – A
IT07594


A S O
ICP=4A
IC=2A
<10µs
1ms
10ms
100µs
100ms
DC operation
500µs
Tc=25°C
Single Pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT07595


PC – Ta
Mounted on a ceramic board (450mm2×0.8mm)
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
IT07596



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