Ordering number : ENN8070

SANYO Semiconductors
DATA SHEET

2SC5979 — NPN Epitaxial Planar Silicon Transistor
High-Current Switching Applications

Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of FBET, MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- Narrow h_{FE} width.
- High allowable power dissipation.

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		5	A
Collector Current (Pulse)	I_{CP}		7.5	A
Base Current	I_B		1.2	A
Collector Dissipation	P_C		0.8	W
		Tc=25°C	15	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}=40V, I_E=0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0			0.1	μA
DC Current Gain	h_{FE}	V_{CE}=2V, I_C=500mA	250		400	

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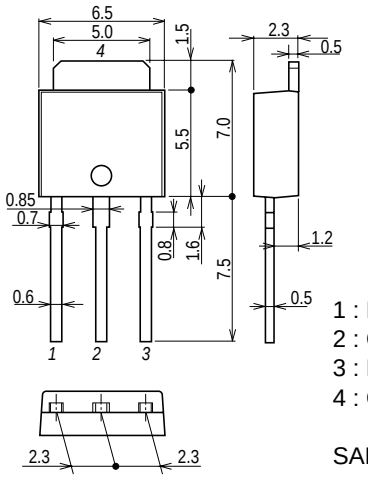
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=500mA		400		MHz
Output Capacitance	Cob	V_{CB}=10V, f=1MHz		15		pF
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=1A, I_B=50mA		70	105	mV
		I_C=2A, I_B=100mA		120	180	mV
Base-to-Emitter Saturation Voltage	V_{BE}(sat)	I_C=2A, I_B=100mA		0.88	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.		35		ns
Storage Time	t_{stg}	See specified Test Circuit.		300		ns
Fall Time	t_f	See specified Test Circuit.		20		ns

Package Dimensions

unit : mm

2045B



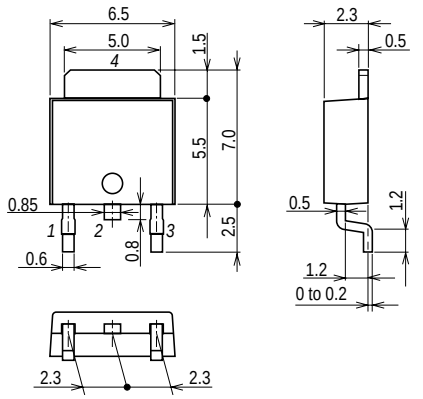
1 : Base
2 : Collector
3 : Emitter
4 : Collector

SANYO : TP

Package Dimensions

unit : mm

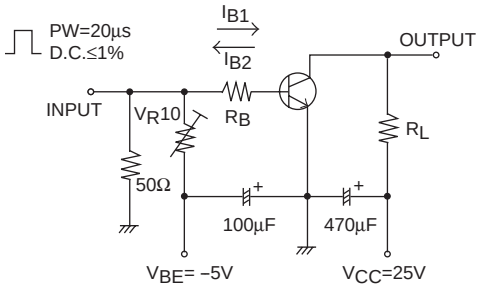
2044B



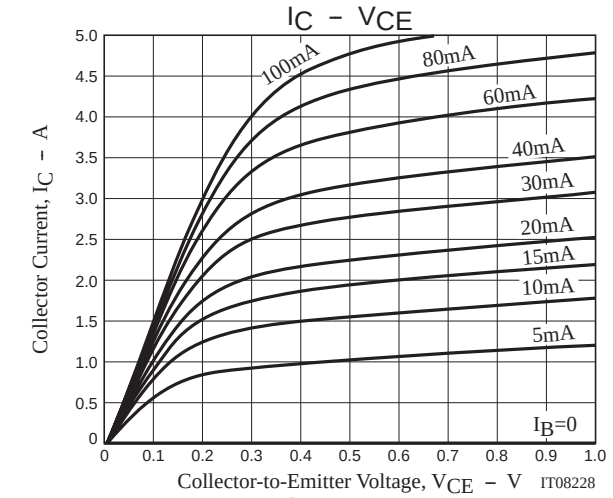
1 : Base
2 : Collector
3 : Emitter
4 : Collector

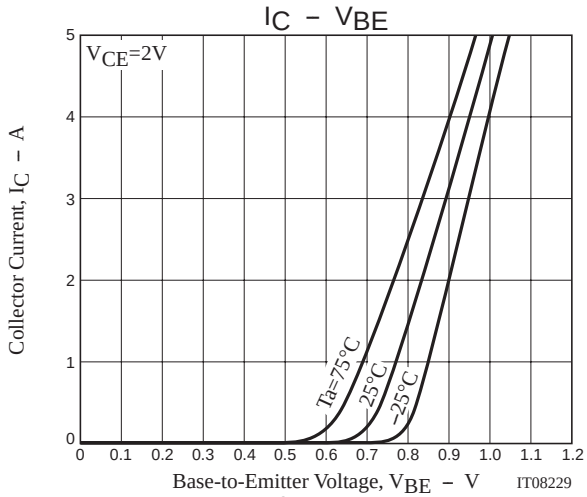
SANYO : TP-FA

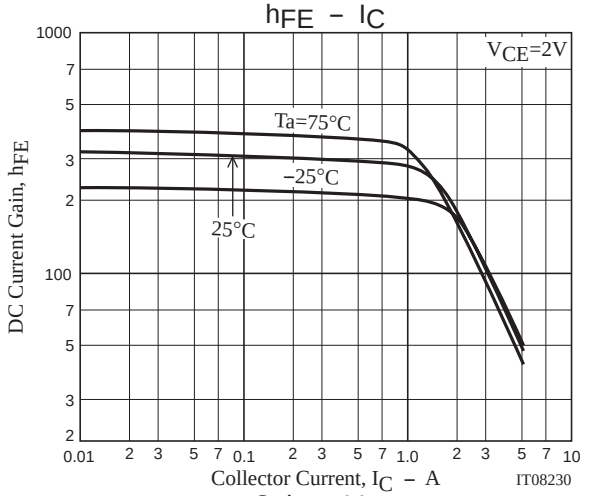
Switching Time Test Circuit

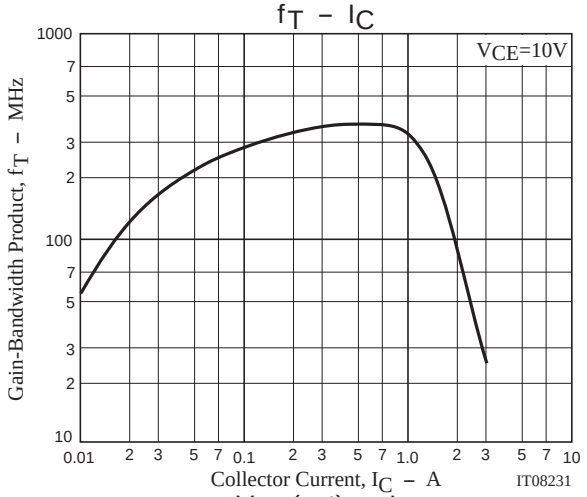


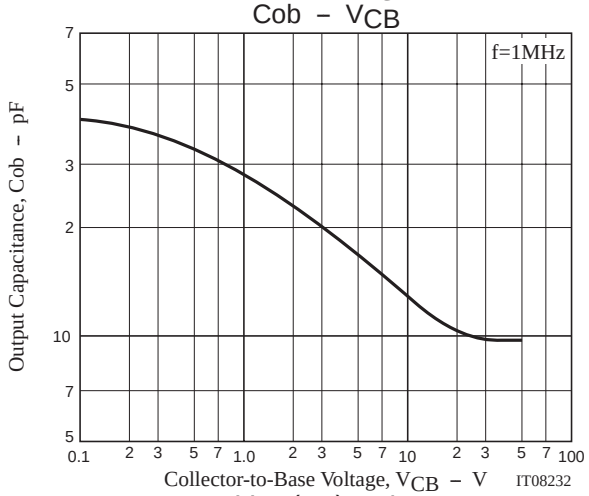
I_C=10I_{B1}= −10I_{B2}=1A

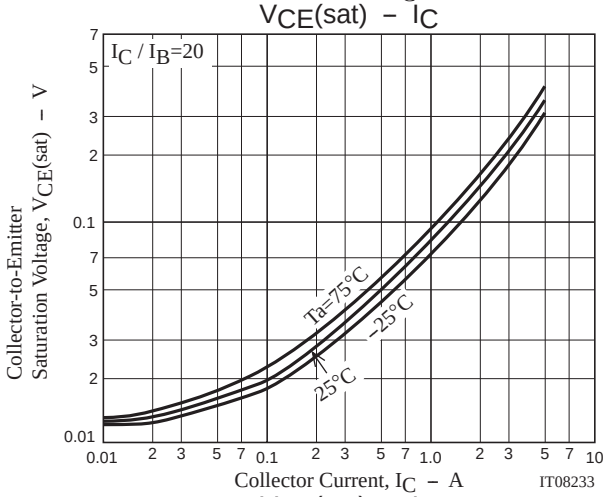

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT08228
100mA
80mA
60mA
40mA
30mA
20mA
15mA
10mA
5mA
IB=0

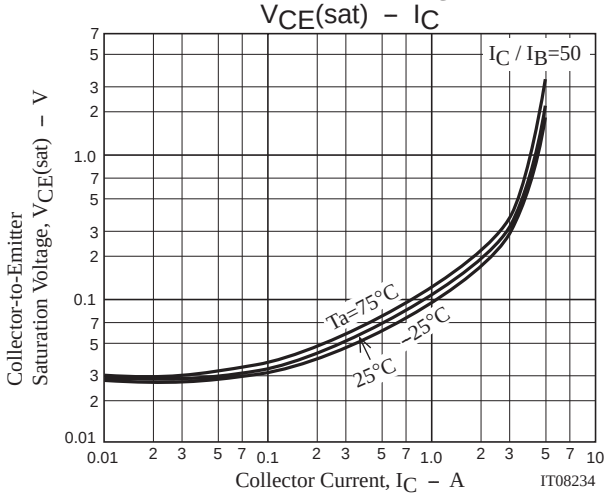

IC – VBE
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT08229
VCE=2V
Ta=75°C
25°C
–25°C

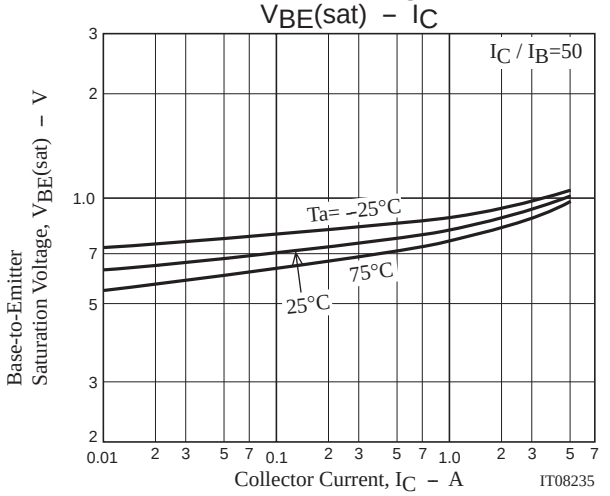

hFE – IC
DC Current Gain, hFE
Collector Current, IC – A
IT08230
VCE=2V
Ta=75°C
–25°C
25°C

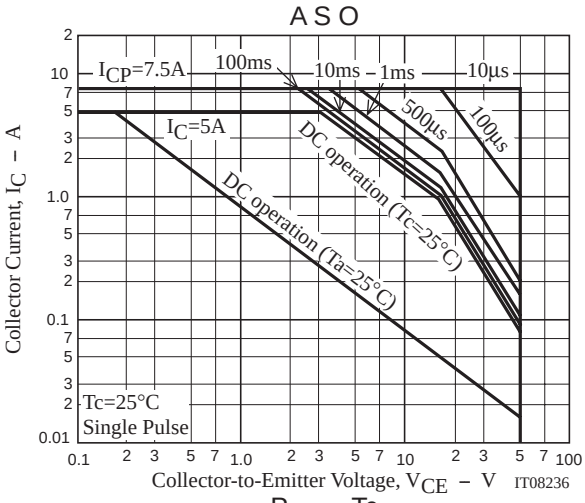

fT – IC
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT08231
VCE=10V

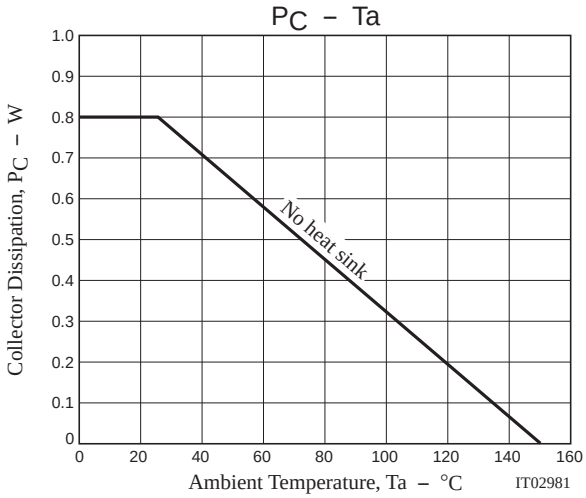

Cob – VCB
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT08232
f=1MHz

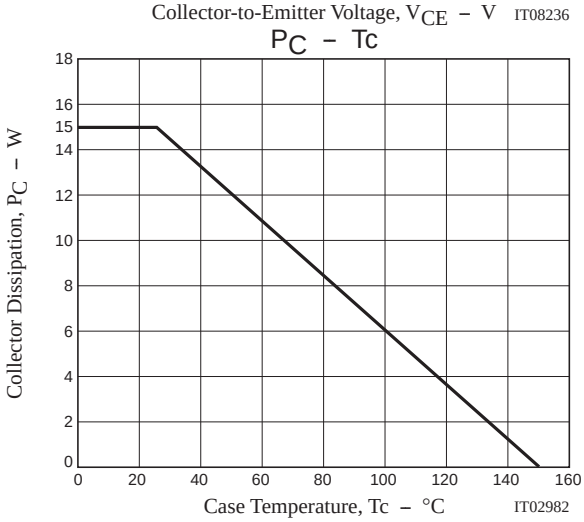

VCE(sat) – IC
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08233
IC / IB=20
Ta=75°C
–25°C
25°C


VCE(sat) – IC
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT08234
IC / IB=50
Ta=75°C
–25°C
25°C


VBE(sat) – IC
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT08235
IC / IB=50
Ta= –25°C
75°C
25°C







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