

Ordering number : ENN8029



SANYO Semiconductors

# DATA SHEET

## 2SC5999 — NPN Epitaxial Planar Silicon Transistors High-Current Switching Applications

### Applications

- Relay drivers, lamp drivers, motor drivers, inverters.

### Features

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

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		120	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		120	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		6	V
Collector Current	I <sub>C</sub>		25	A
Collector Current (Pulse)	I <sub>CP</sub>		40	A
Base Current	I <sub>B</sub>		2	A
Collector Dissipation	P <sub>C</sub>	T <sub>c</sub> =25°C	1.65	W
			40	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =100V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			10	μA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =1A	200		560	
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =15A	150			

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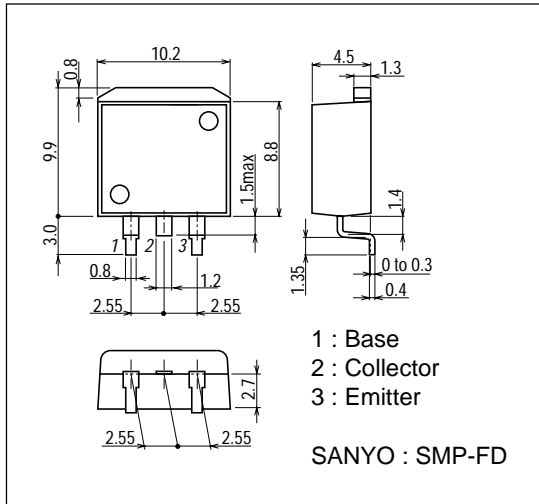
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	$V_{CB}=10V, f=1MHz$		170		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10A, I_B=500mA$		150	300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10A, I_B=500mA$		0.93	1.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0$	120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=0$	120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0$	6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		230		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		1300		ns
Fall Time	$t_f$	See specified Test Circuit.		40		ns

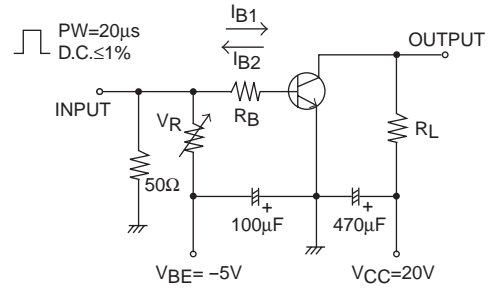
## Package Dimensions

unit : mm

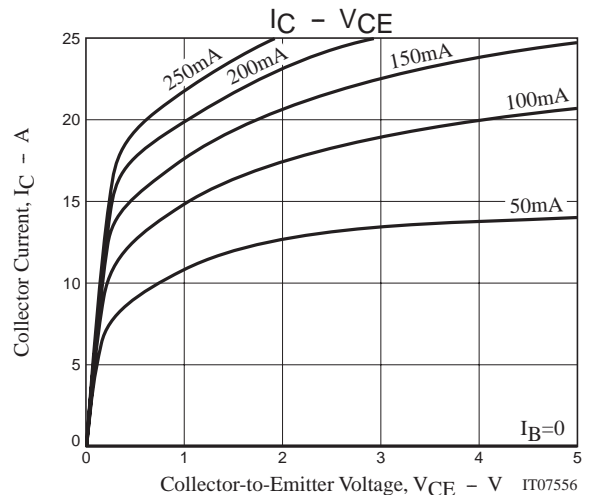
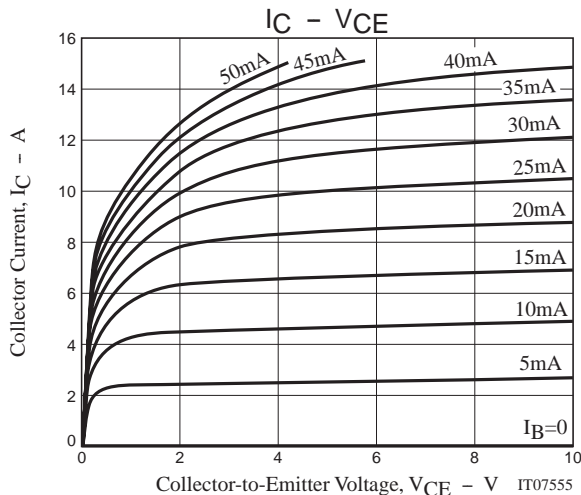
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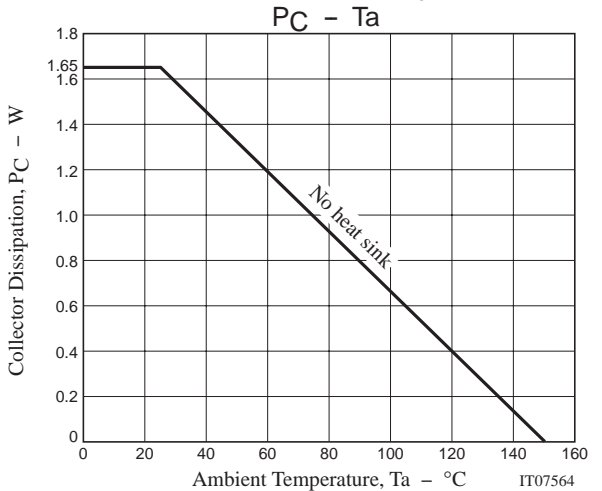
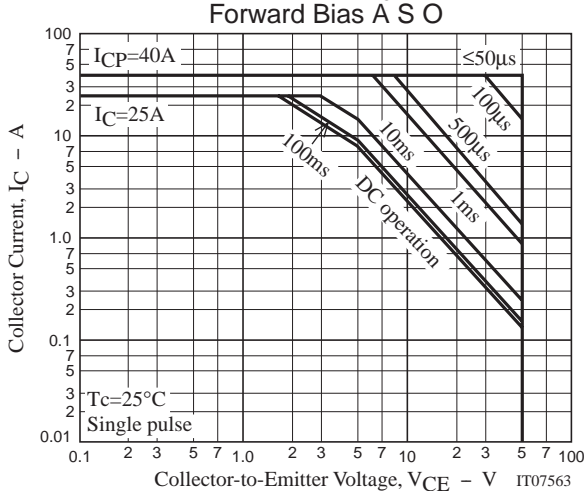
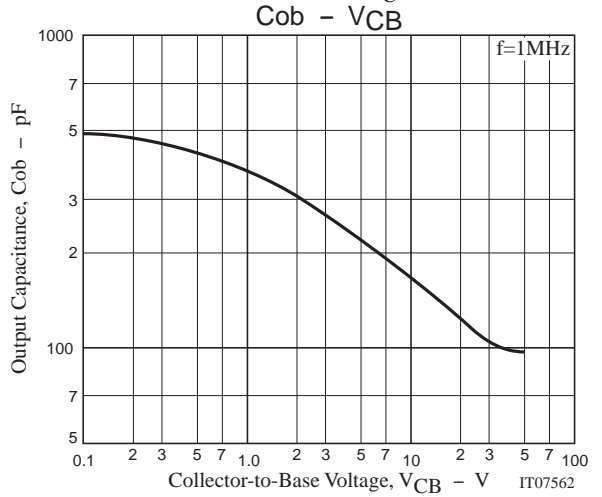
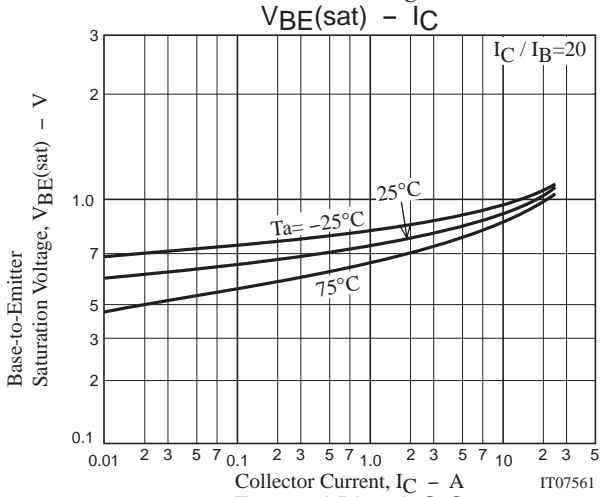
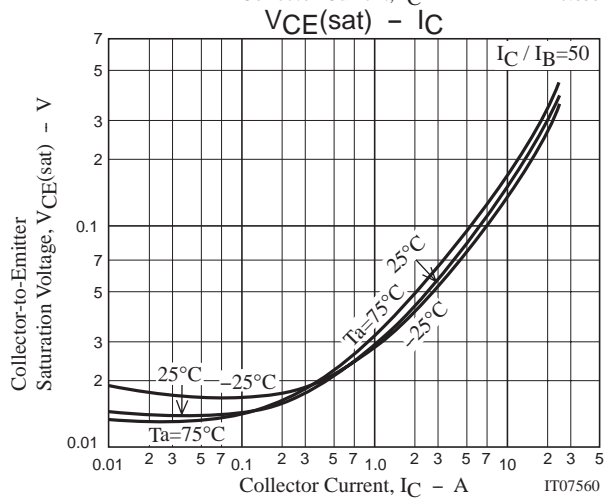
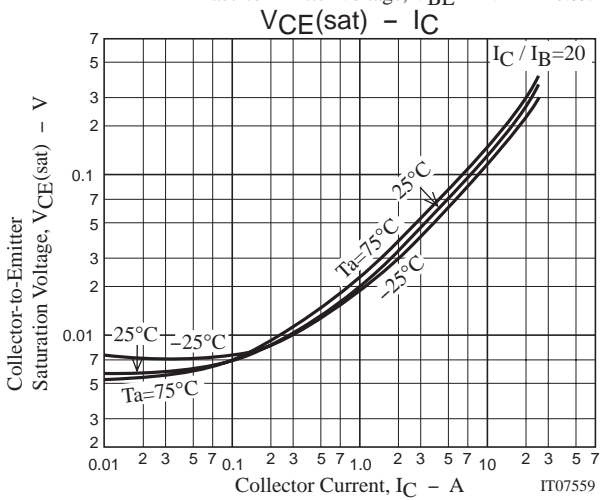
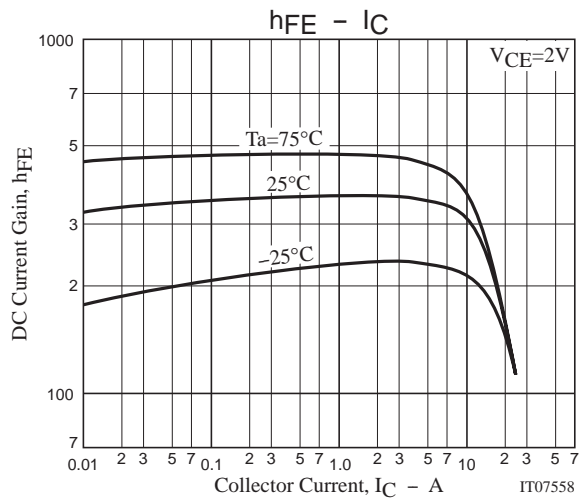
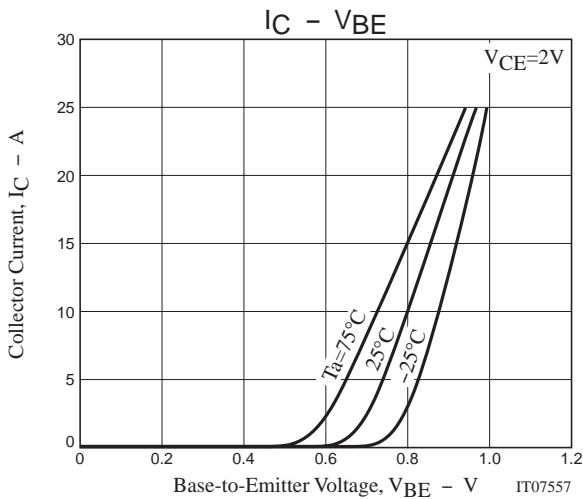
## Switching Time Test Circuit



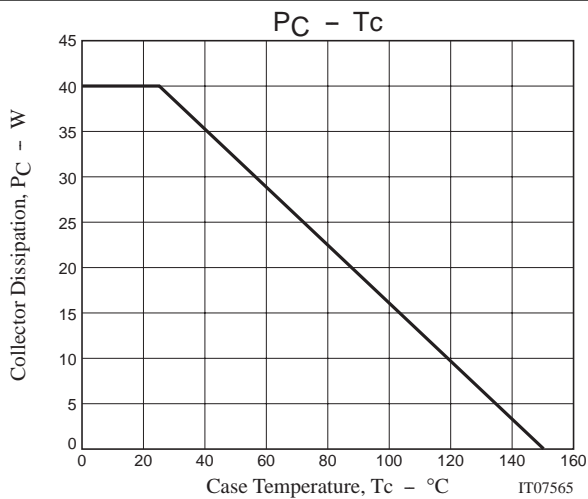
$$I_C=20I_{B1}=-20I_{B2}=4A$$



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