



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 $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		120	V
Collector-to-Emitter Voltage	V_{CES}		120	V
Collector-to-Emitter Voltage	V_{CEO}		50	V
Emitter-to-Base Voltage	V_{EBO}		6	V
Collector Current	I_C		25	A
Collector Current (Pulse)	I_{CP}		40	A
Base Current	I_B		2	A
Collector Dissipation	P_C		1.65	W
		$T_c=25^\circ\text{C}$	40	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}	$V_{CB}=100\text{V}, I_E=0$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0$			10	μA
DC Current Gain	h_{FE1}	$V_{CE}=2\text{V}, I_C=1\text{A}$	200		560	
	h_{FE2}	$V_{CE}=2\text{V}, I_C=15\text{A}$	150			

Continued on next page.

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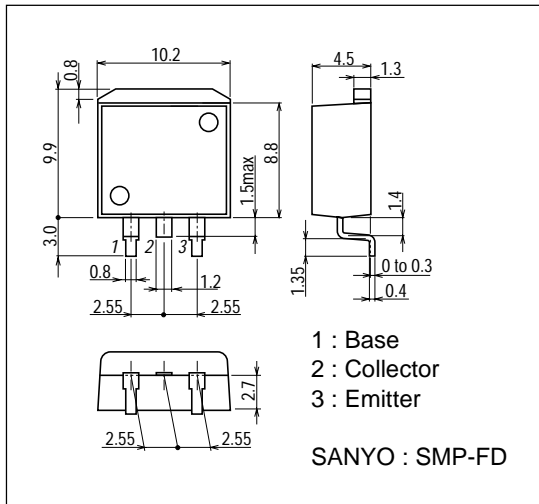
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V _{CB} =10V, f=1MHz		170		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =10A, I _B =500mA		150	300	mV
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =10A, I _B =500mA		0.93	1.4	V
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}	I _C =100μA, I _E =0	120			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CES}	I _C =100μA, R _{BE} =0	120			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 =100μA, 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

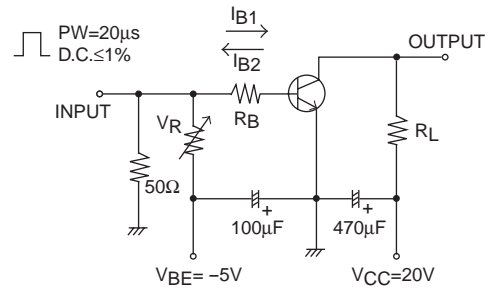
Package Dimensions

unit : mm

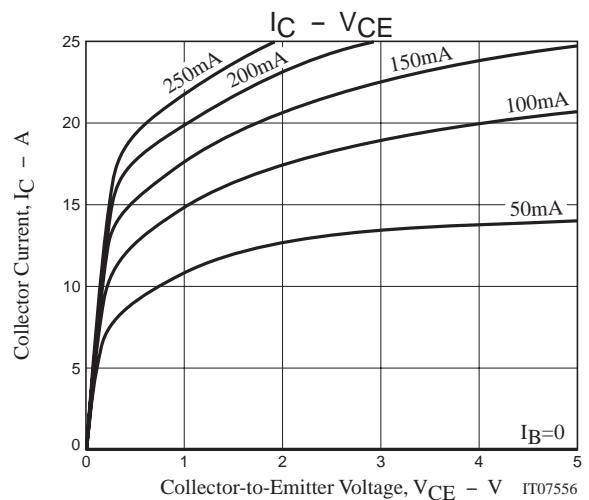
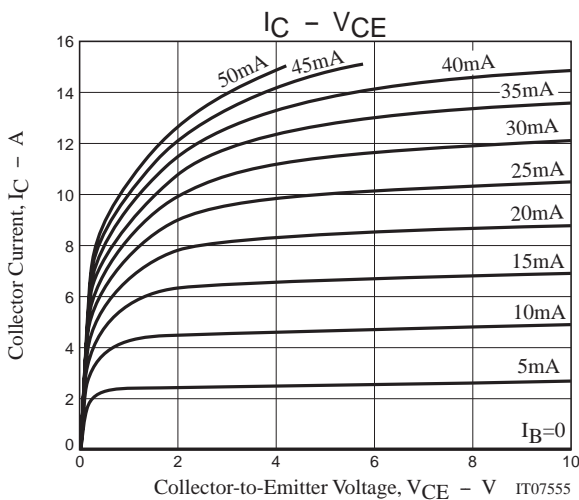
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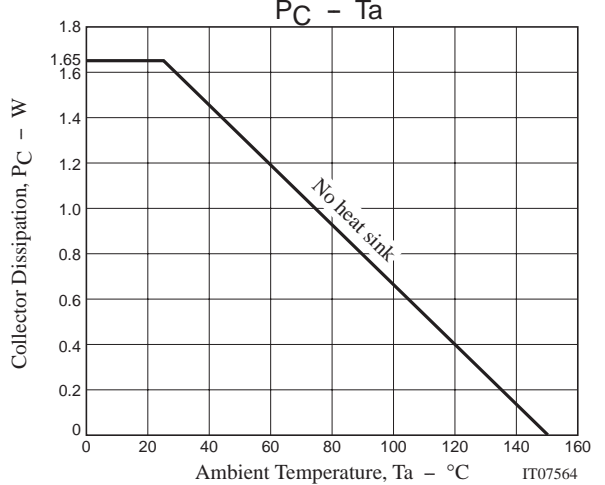
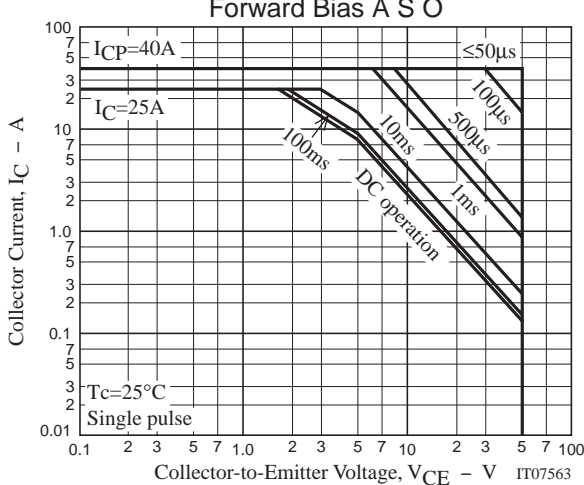
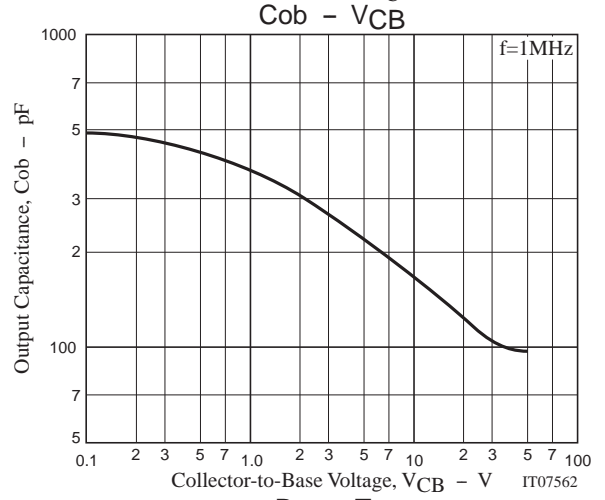
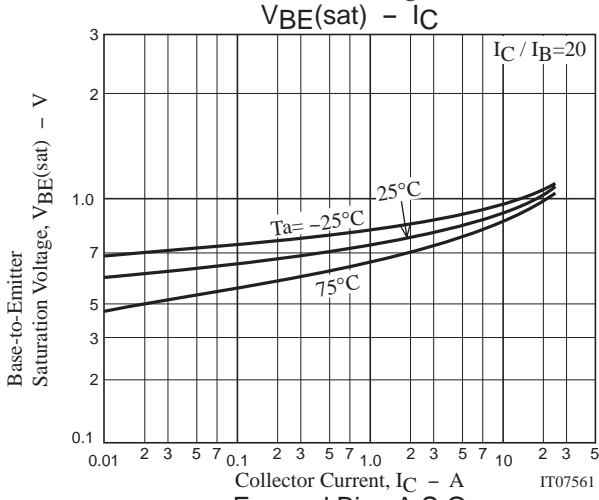
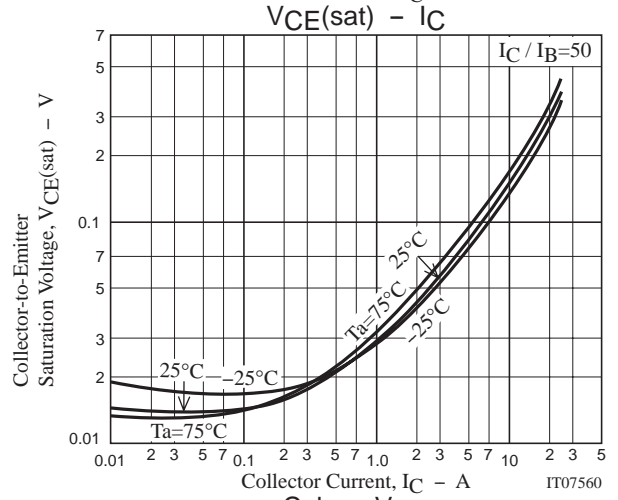
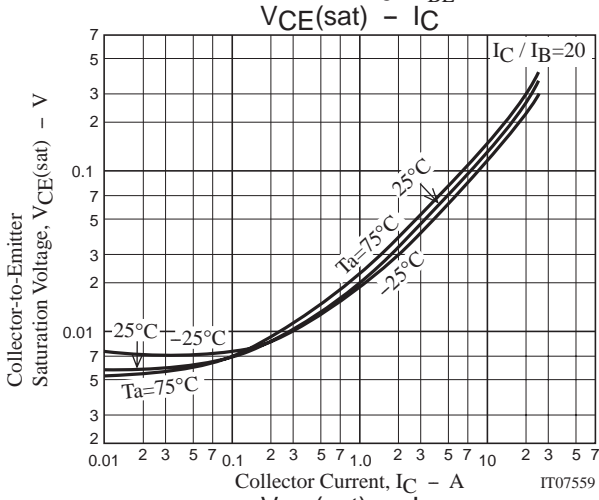
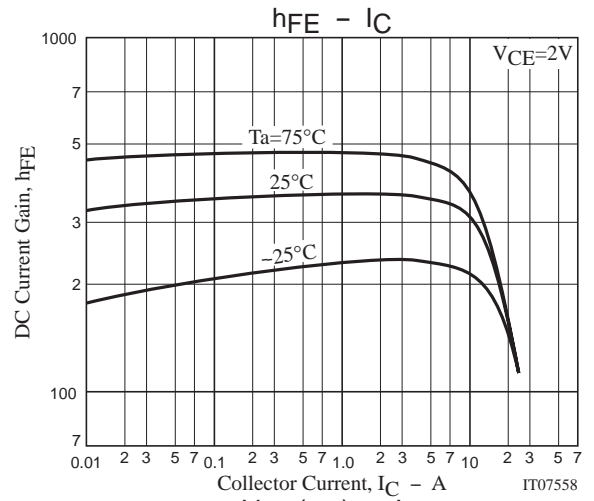
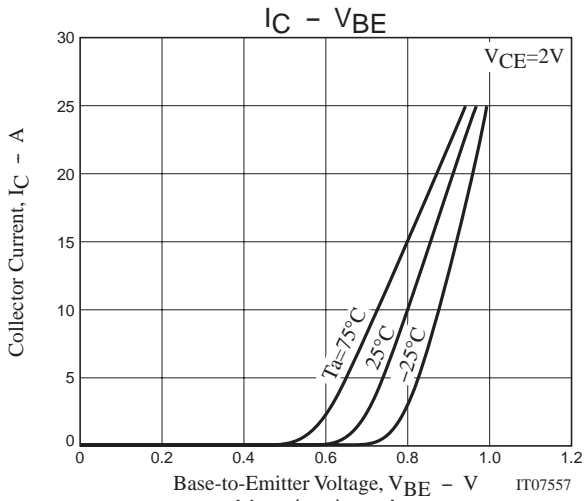
Switching Time Test Circuit

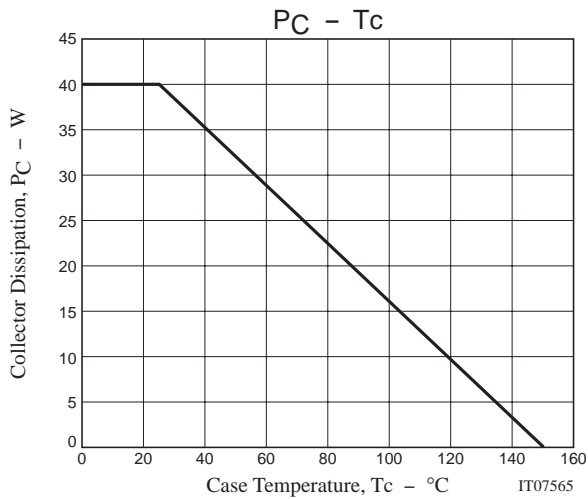


$$I_C = 20I_{B1} = -20I_{B2} = 4A$$



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