



2SC5990

 — NPN Epitaxial Planar Silicon Transistor

DC / DC Converter Applications

Applications

- Relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of FBET and MBIT processes.
- 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 $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		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		4	A
Collector Current (Pulse)	I_{CP}		7	A
Base Current	I_B		600	mA
Collector Dissipation	P_C	Mounted on a ceramic board (250mm ² X0.8mm)	1.3	W
		$T_c=25^\circ\text{C}$	3.5	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}	$V_{CB}=40\text{V}, I_E=0\text{A}$			0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0\text{A}$			0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=2\text{V}, I_C=500\text{mA}$	250		400	
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=500\text{mA}$		400		MHz

Marking : FH

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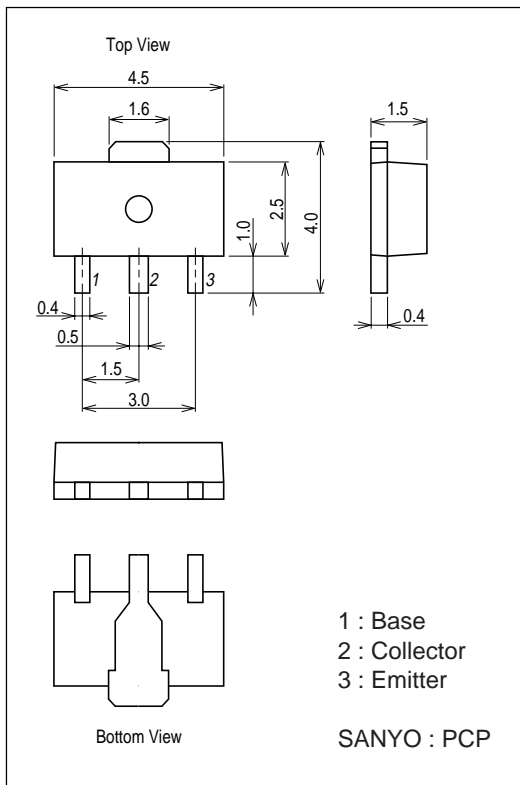
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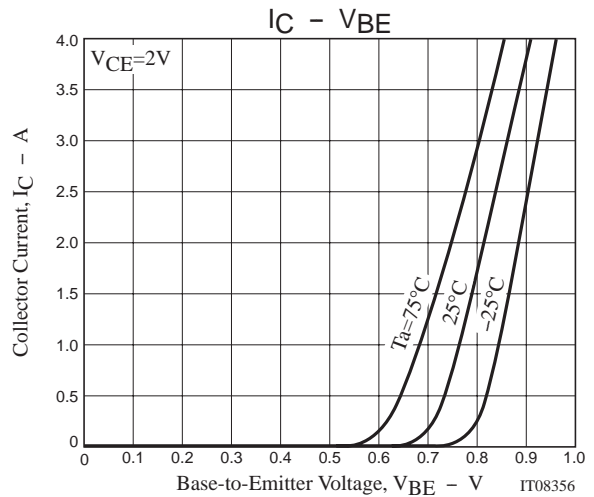
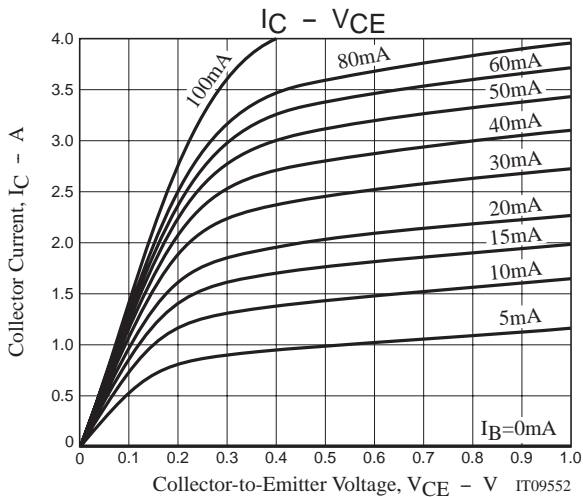
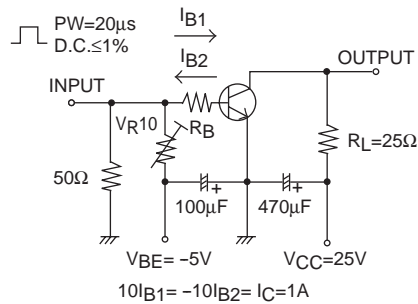
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V _{CB} =10V, f=1MHz		15		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}	I _C =1A, I _B =50mA		65	100	mV
		I _C =2A, I _B =100mA		110	165	mV
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =2A, I _B =100mA		0.88	1.3	V
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}	I _C =10μA, I _E =0A	100			V
Collector-to-Base Breakdown Voltage	V _{(BR)CES}	I _C =100μA, R _{BE} =0Ω	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 =0A	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

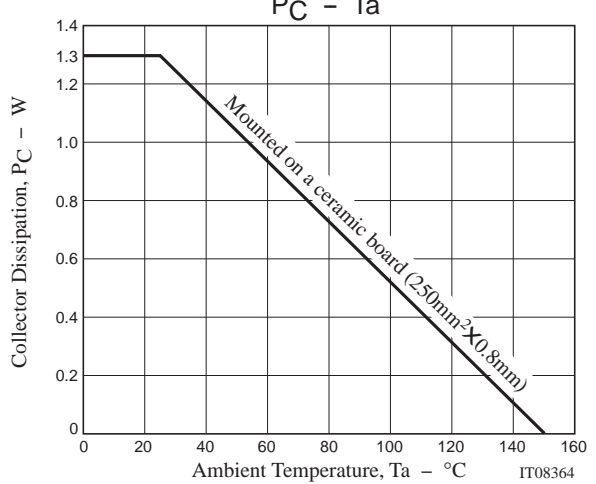
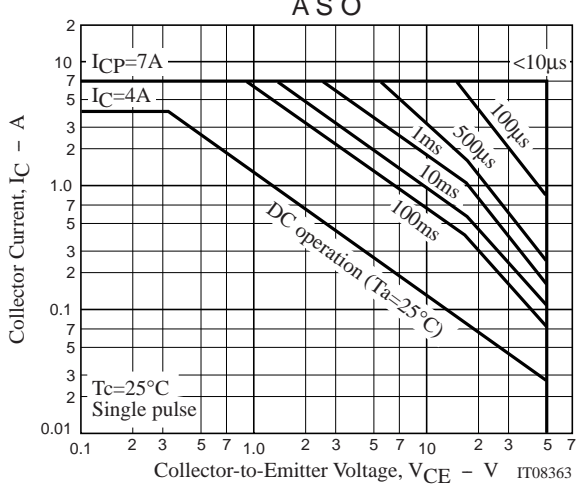
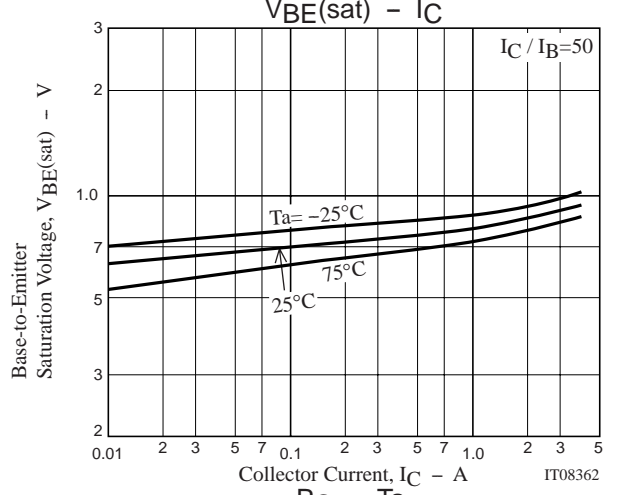
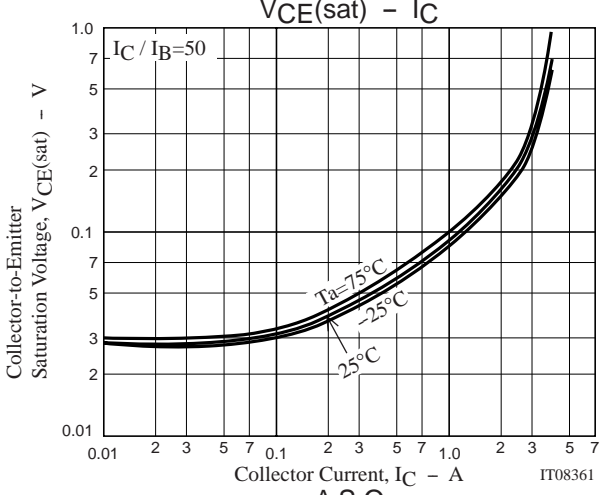
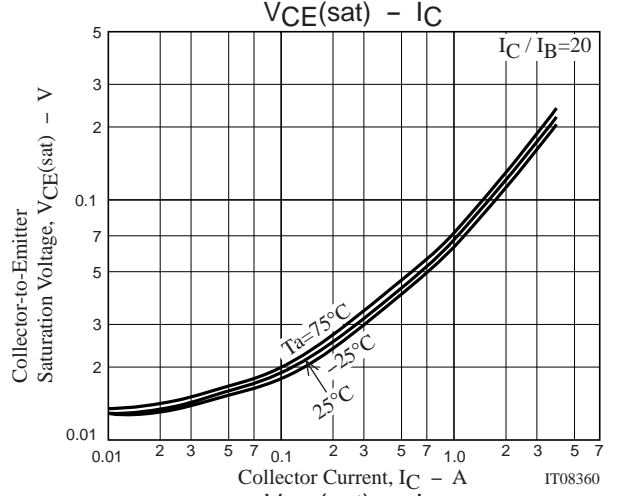
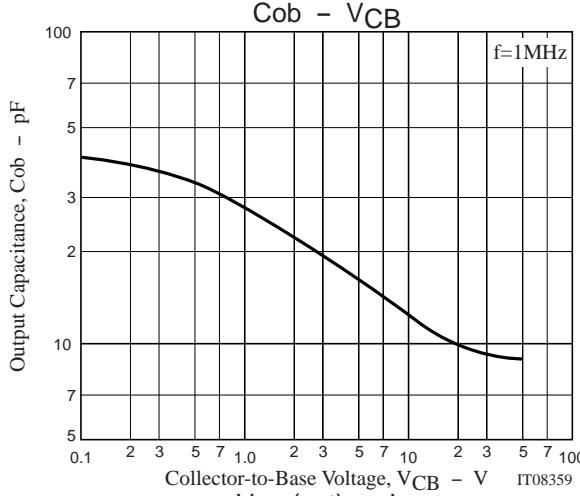
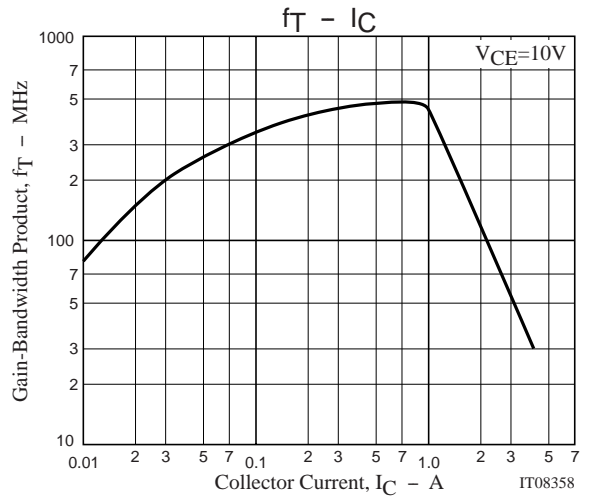
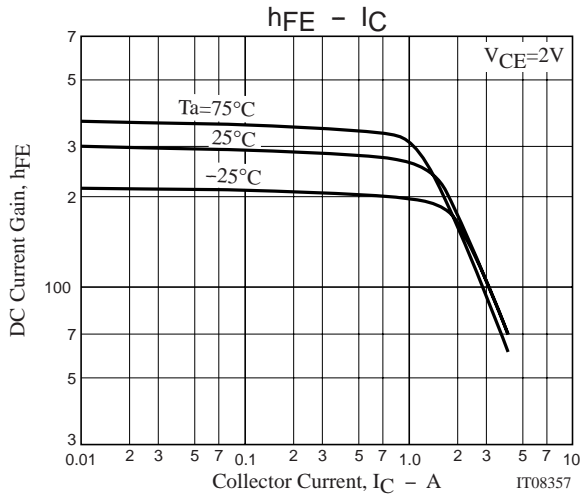
Package Dimensions

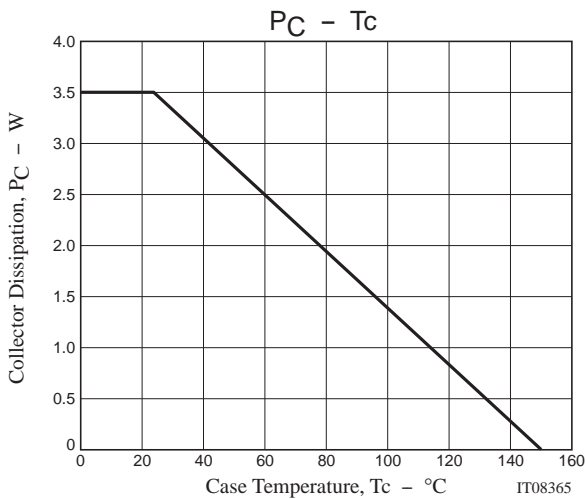
unit : mm
7007-004



Switching Time Test Circuit







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