



# 2SC5980

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 hFE width.
- High allowable power dissipation.

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		100	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		100	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>		8	A
Collector Current (Pulse)	I <sub>CP</sub>		11	A
Base Current	I <sub>B</sub>		2	A
Collector Dissipation	P <sub>C</sub>		1.0	W
		T <sub>C</sub> =25°C	15	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> =40V, I <sub>E</sub> =0			0.1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =500mA	250		400	

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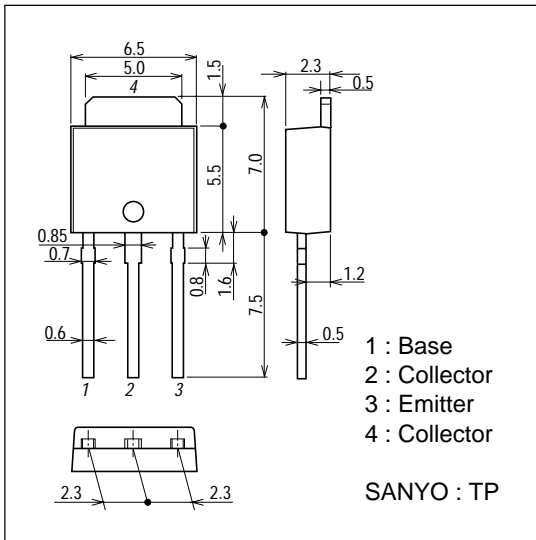
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=500mA$		330		MHz
Output Capacitance	Cob	$V_{CB}=10V, f=1MHz$		28		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=3.5A, I_B=175mA$		125	190	mV
		$I_C=2A, I_B=40mA$		100	150	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=2A, I_B=40mA$		0.83	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=\infty$	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		420		ns
Fall Time	$t_f$	See specified Test Circuit.		25		ns

## Package Dimensions

unit : mm

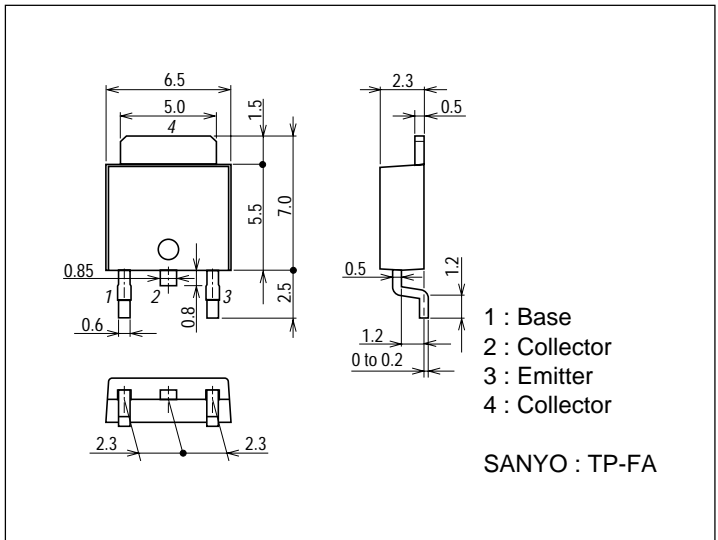
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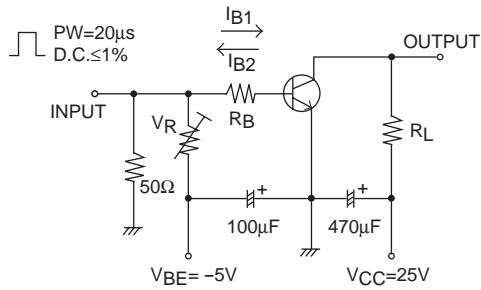
## Package Dimensions

unit : mm

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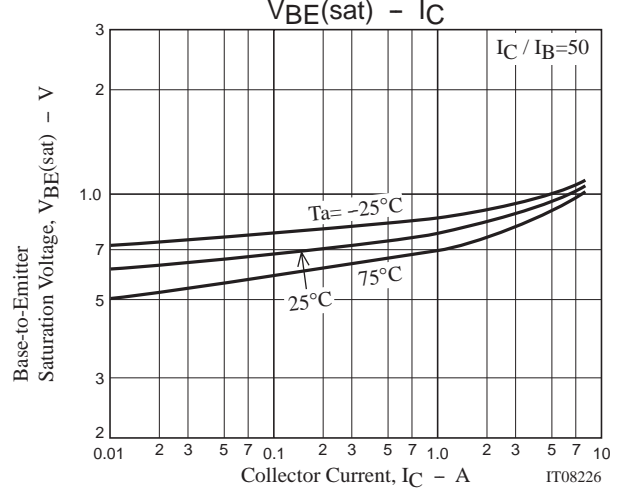
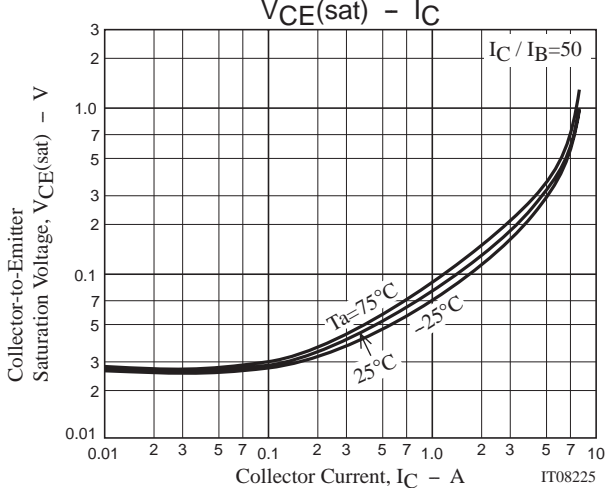
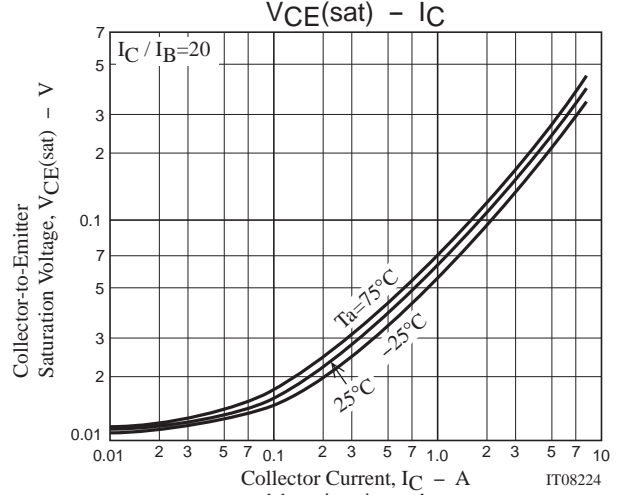
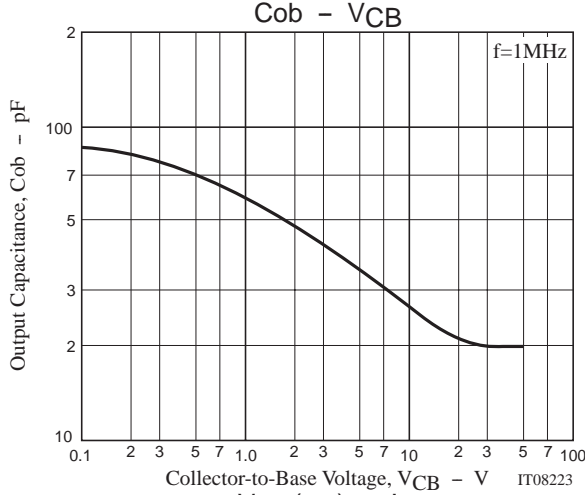
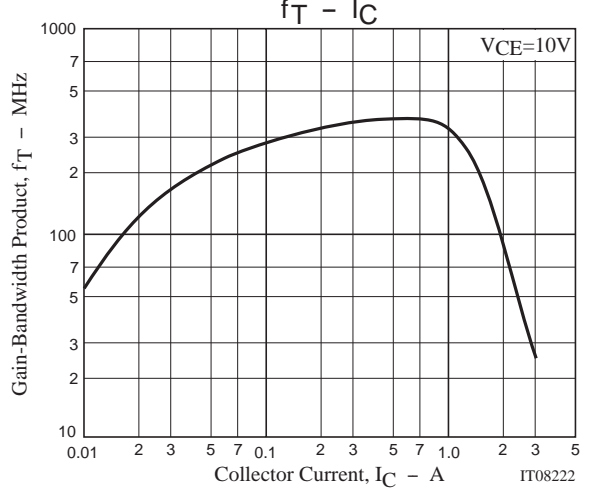
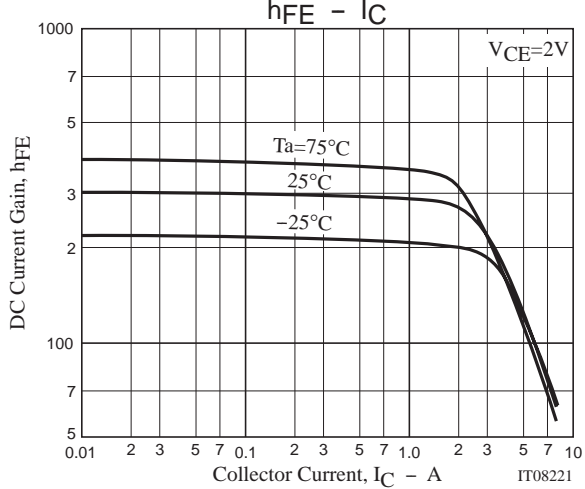
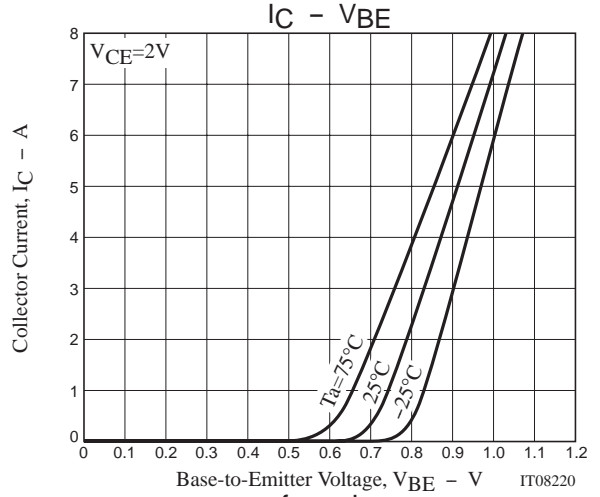
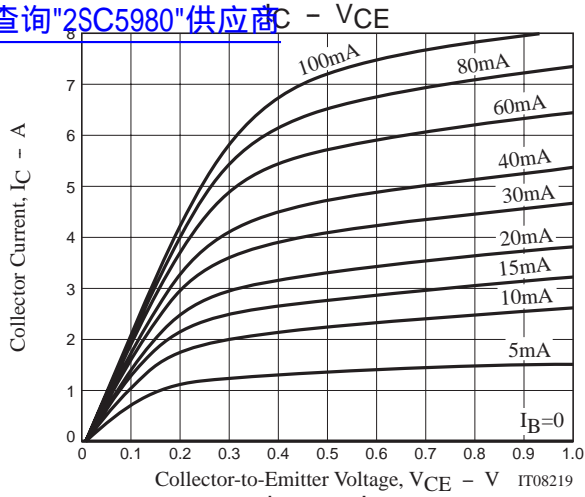
## Switching Time Test Circuit



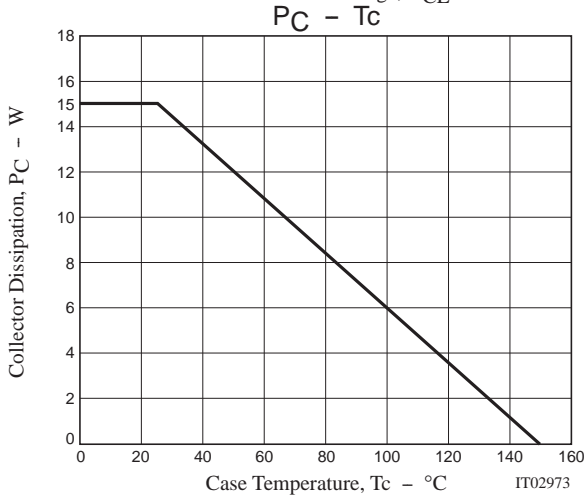
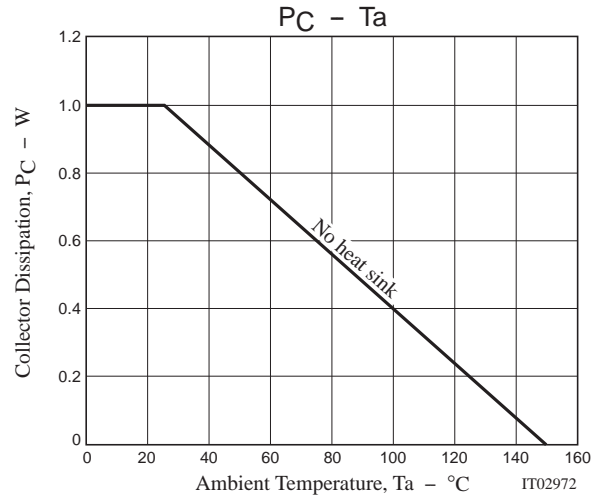
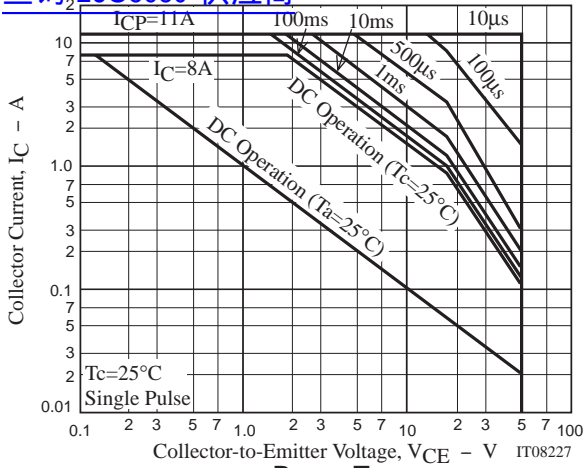
$$I_C = 20I_{B1} = -20I_{B2} = 2.5A$$

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