



SANYO Semiconductors

## DATA SHEET

# 2SC6081 — 50V / 5A High-Speed Switching Applications

NPN Epitaxial Planar Silicon Transistor

## Applications

- High-speed switching applications (switching regulator, driver circuit).

## Features

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

## Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		60	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		60	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>		5	A
Collector Current (Pulse)	I <sub>CP</sub>	PW≤10μs, duty cycle≤10%	8	A
Base Current	I <sub>B</sub>		1	A
Collector Dissipation	P <sub>C</sub>		2	W
		T <sub>C</sub> =25°C	20	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>CBO</sub>	V <sub>CB</sub> =40V, I <sub>E</sub> =0A			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0A			10	μA
DC Current Gain	h <sub>FE1</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =125mA	200		560	
	h <sub>FE2</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =3.75A	50			

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**SANYO Semiconductor Co., Ltd.**

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# 2SC6081

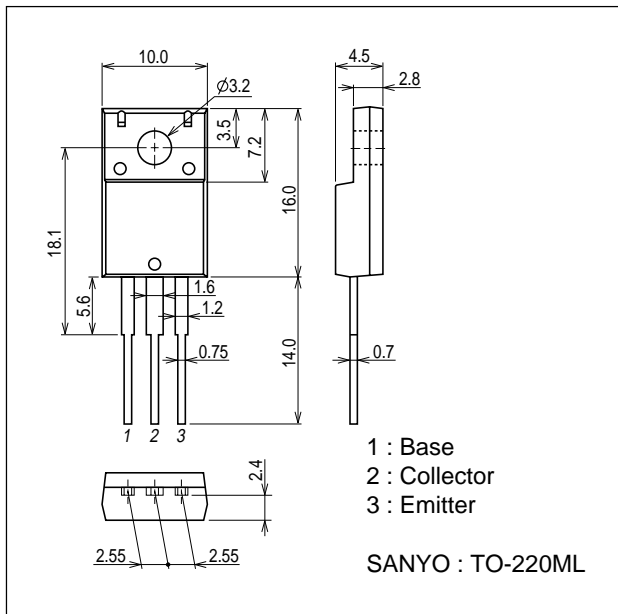
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=0.7A$		250		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		35		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=2.5A, I_B=125mA$		200	400	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=2.5A, I_B=125mA$			1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu A, I_E=0A$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=0\Omega$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu A, I_C=0A$	6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		49		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		600		ns
Fall Time	$t_f$	See specified Test Circuit.		42		ns

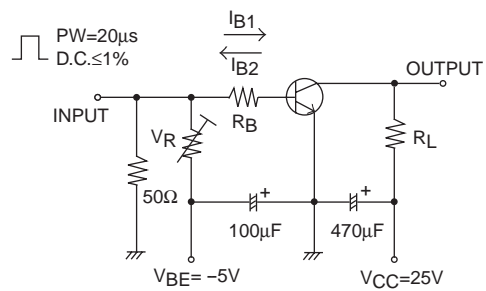
## Package Dimensions

unit : mm

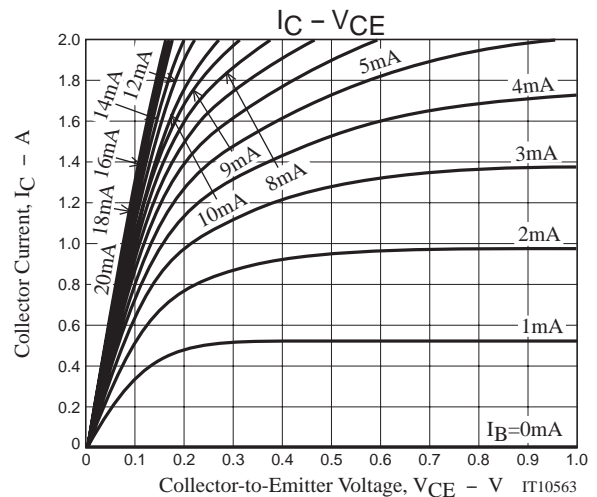
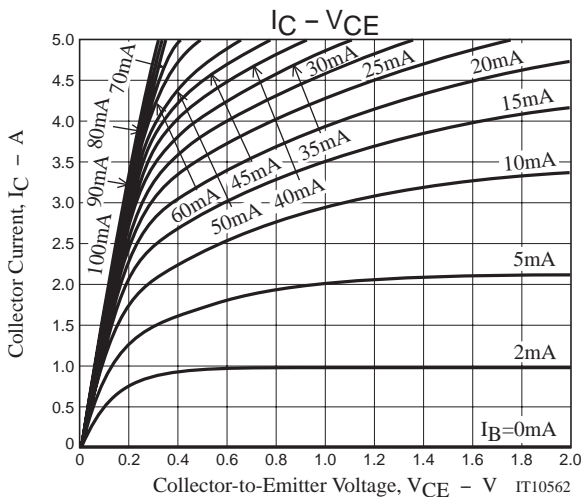
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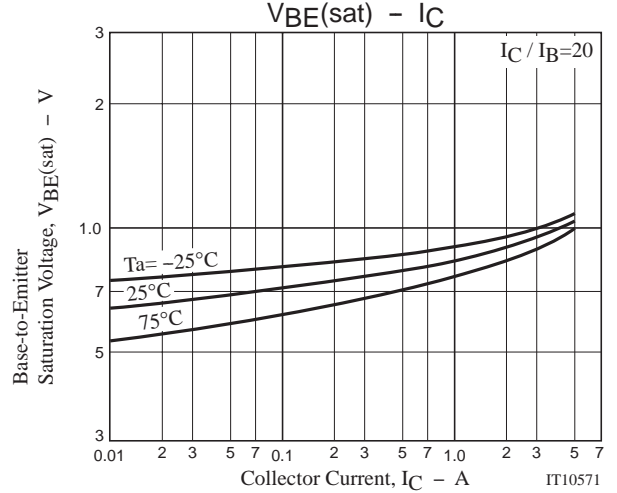
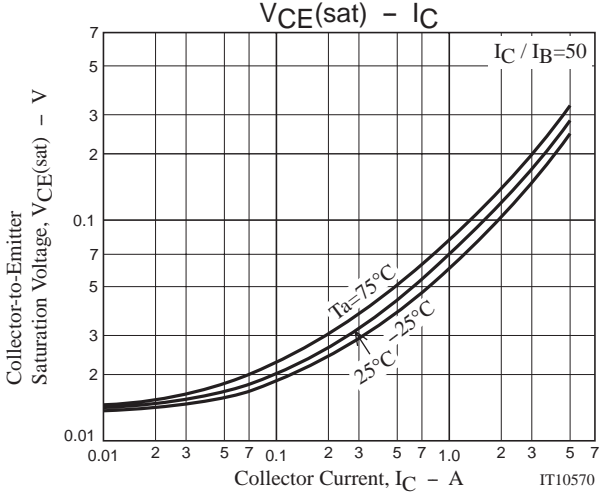
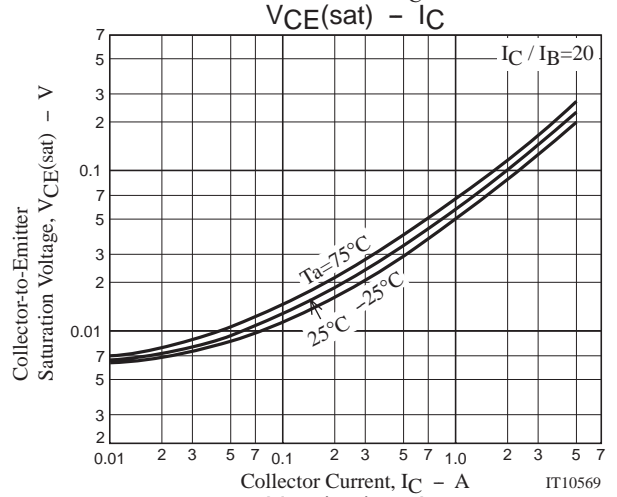
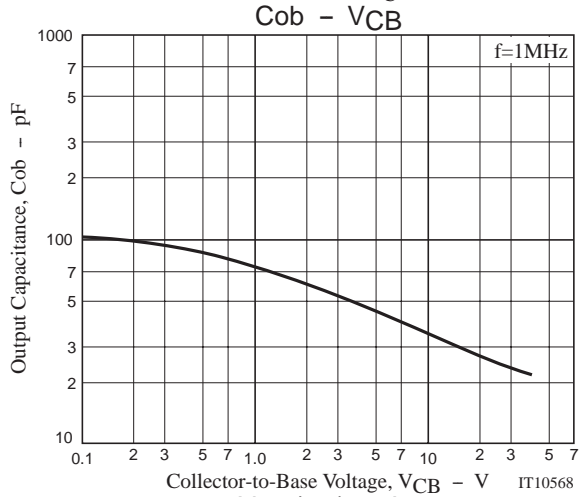
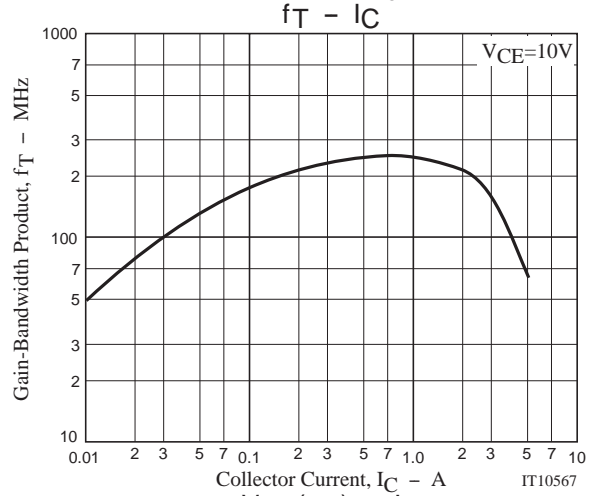
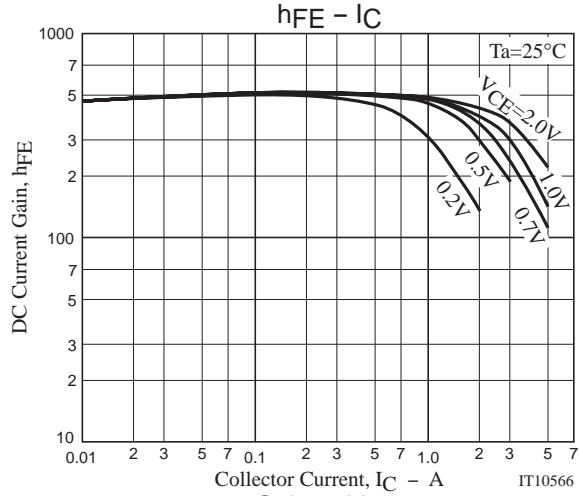
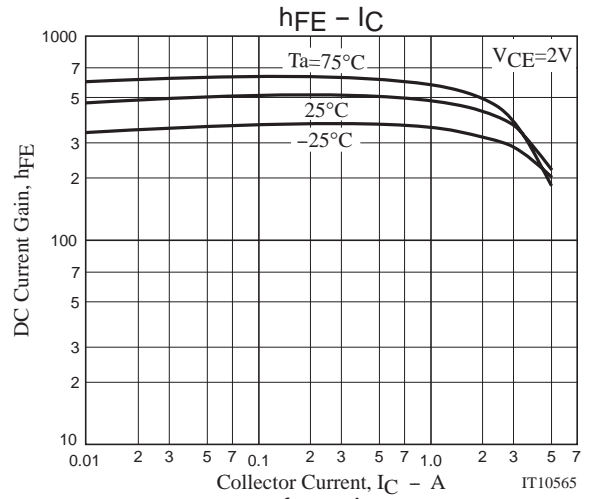
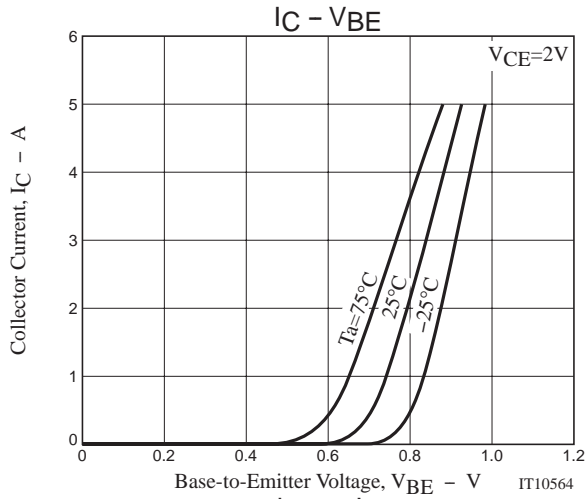
## Switching Time Test Circuit

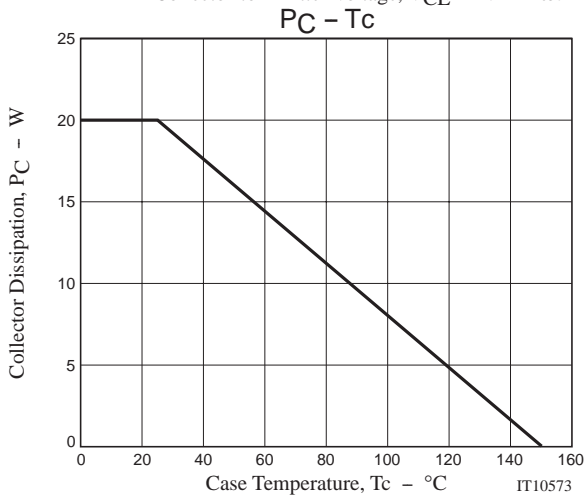
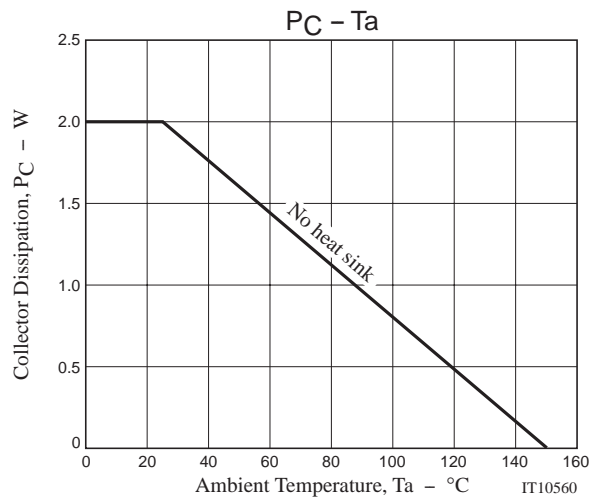
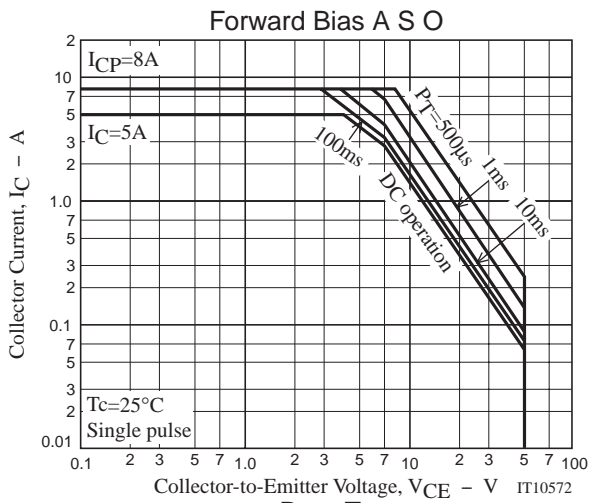


$$I_C = 20I_{B1} = -20I_{B2} = 1.5A$$



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