



SANYO Semiconductors

## DATA SHEET

# 2SC6094

NPN Epitaxial Planar Silicon Transistor

## High-Current Switching Applications

### Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, inverter.

### Features

- Adoption of FBET, MBIT process.
- High current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- 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	$V_{CEO}$		60	V
Emitter-to-Base Voltage	$V_{EBO}$		6.5	V
Collector Current	$I_C$		3	A
Collector Current (Pulse)	$I_{CP}$		5	A
Base Current	$I_B$		600	mA
Collector Dissipation	$P_C$	Mounted on a ceramic board (250mm <sup>2</sup> ×0.8mm)	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	$I_{CB0}$	$V_{CB}=50\text{V}, I_E=0\text{A}$			1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0\text{A}$			1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=2\text{V}, I_C=100\text{mA}$	300		600	

Marking : QE

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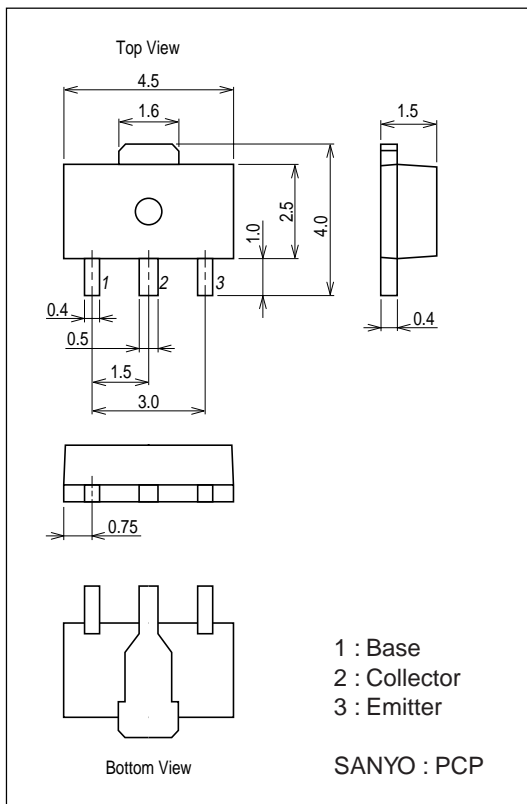
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=500mA$		390		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		18		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)1}$	$I_C=1A, I_B=50mA$		90	135	mV
	$V_{CE(sat)2}$	$I_C=1A, I_B=100mA$		80	120	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A, I_B=100mA$		0.84	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0A$	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu A, R_{BE}=0\Omega$	100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	60			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0A$	6.5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		35		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		680		ns
Fall Time	$t_f$	See specified Test Circuit.		24		ns

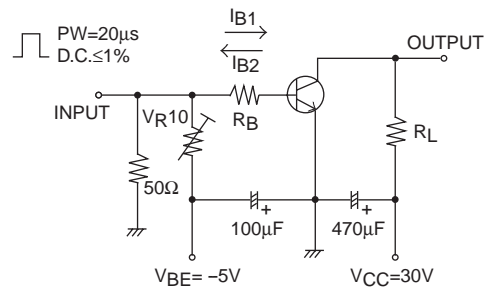
## Package Dimensions

unit : mm

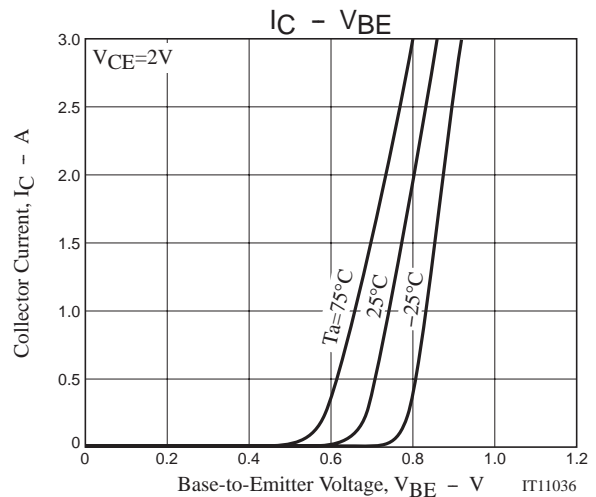
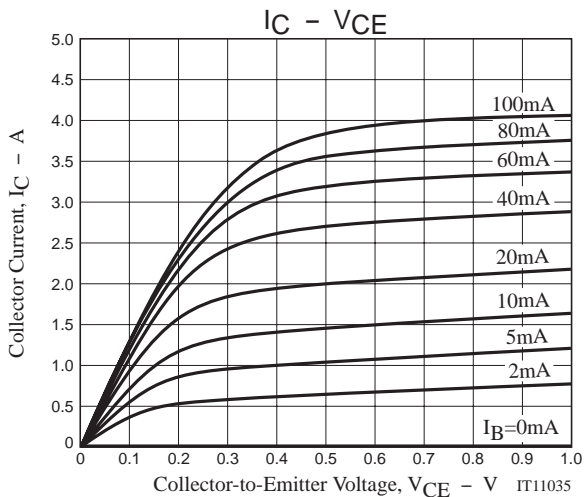
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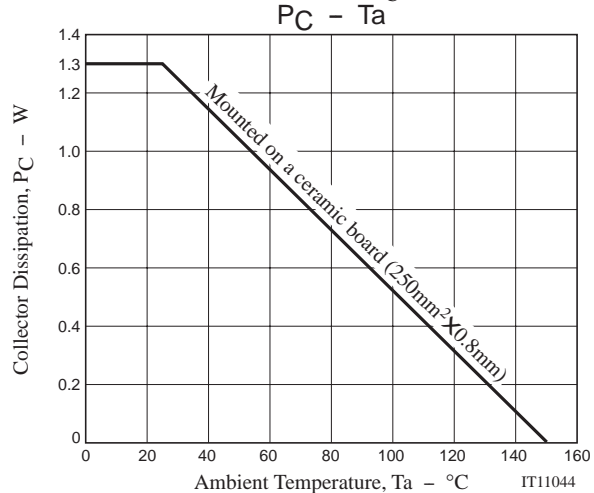
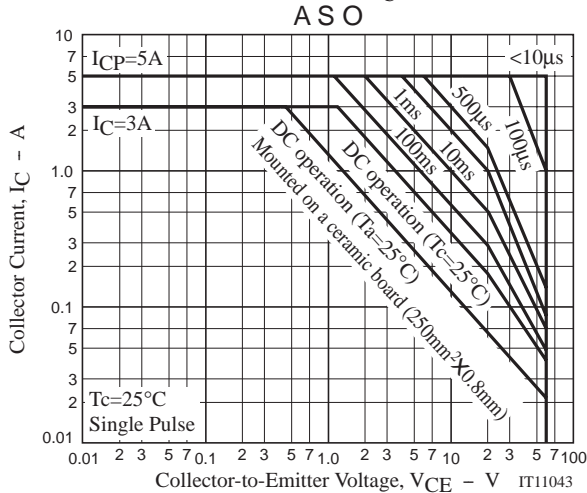
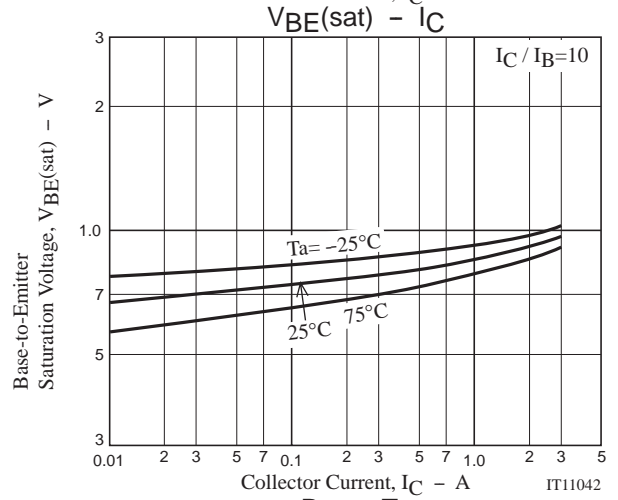
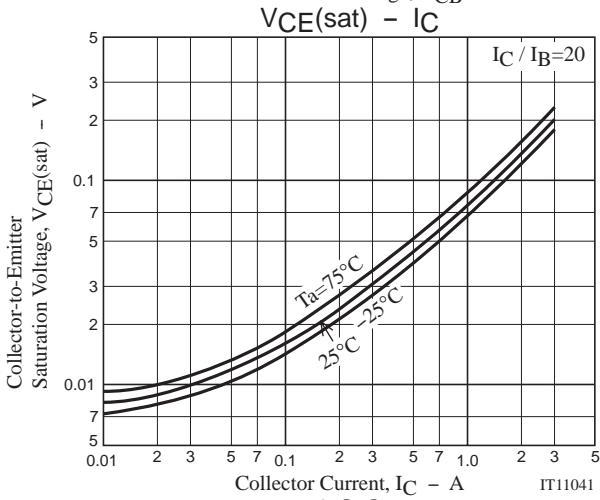
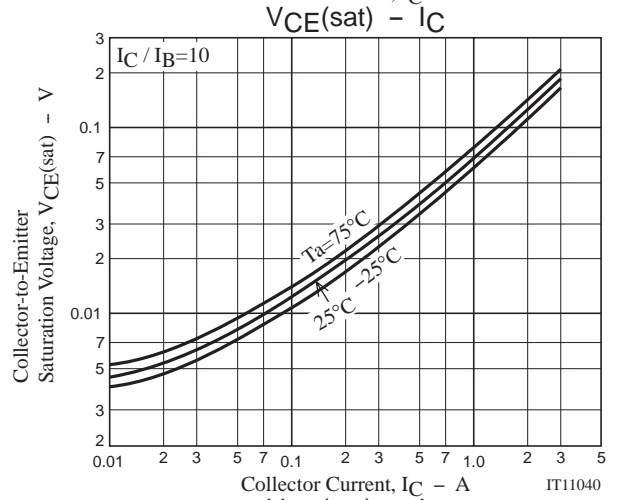
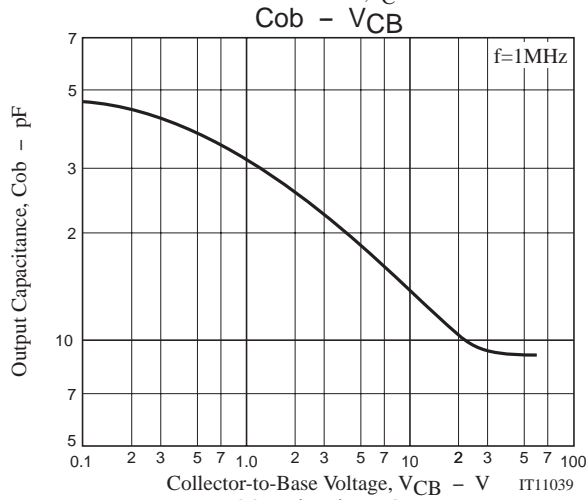
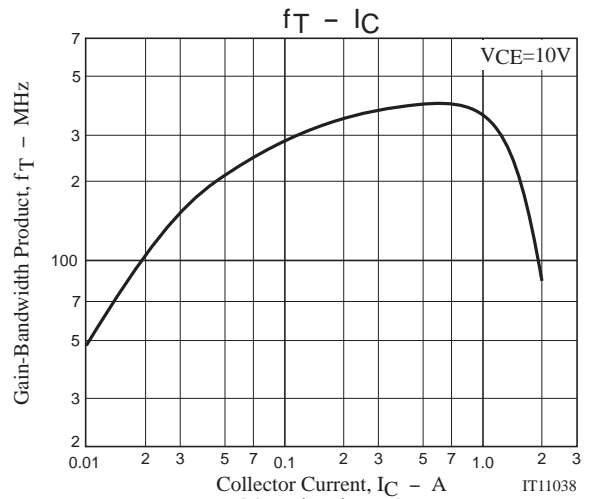
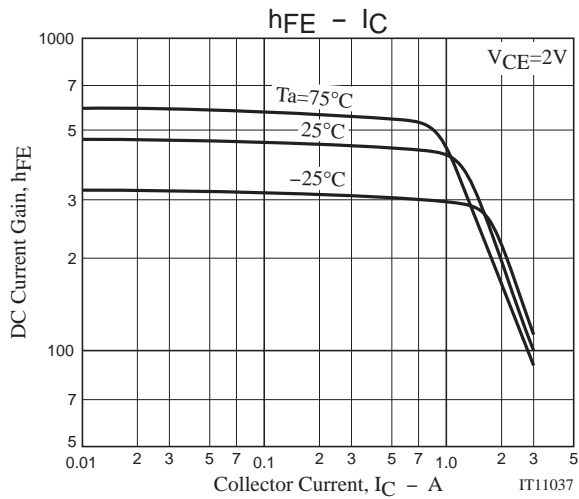
## Switching Time Test Circuit

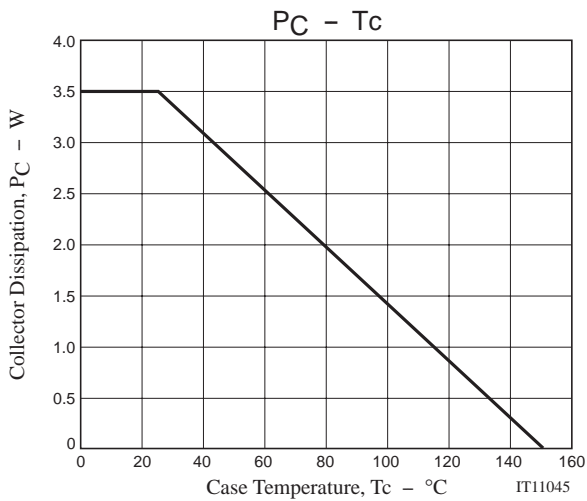


$$10I_{B1} = -10I_{B2} = I_C = 0.5A$$



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