

Ordering number : ENN7610

NPN Triple Diffused Planar Silicon Transistor

**2SC5960**

## Switching Regulator Applications

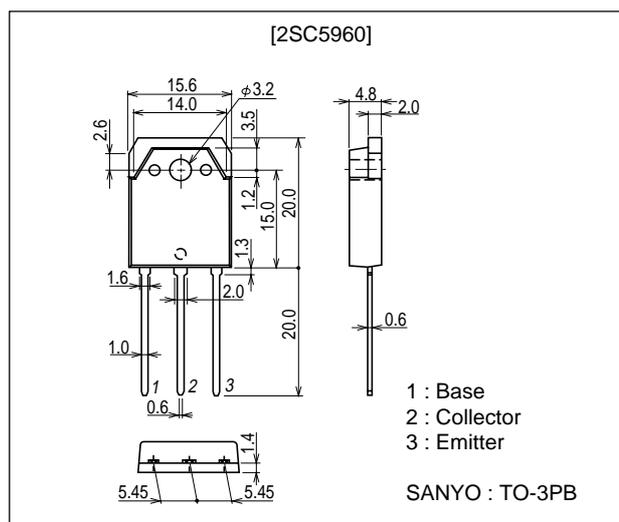
### Features

- High breakdown voltage and high reliability.
- High-speed switching.
- Wide ASO.
- Adoption of MBIT process.

### Package Dimensions

unit : mm

2022A



### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		500	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		400	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		7	V
Collector Current	I <sub>C</sub>		7	A
Collector Current (Pulse)	I <sub>CP</sub>	PW≤300μs, Duty Cycle≤10%	14	A
Base Current	I <sub>B</sub>		3	A
Collector Dissipation	P <sub>C</sub>		2.5	W
		T <sub>c</sub> =25°C	60	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> =400V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			10	μA

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## 2SC5960

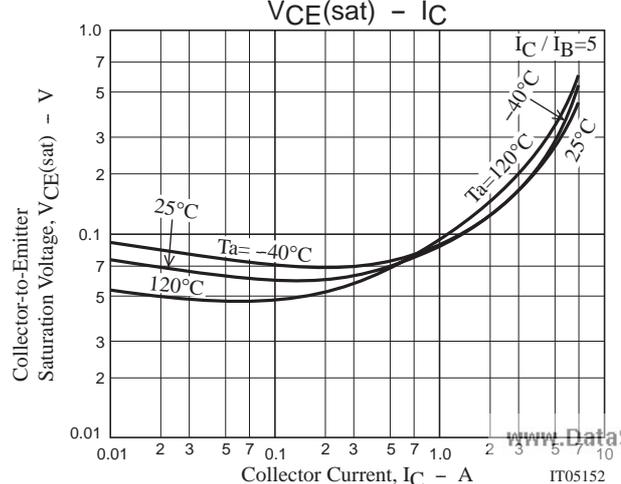
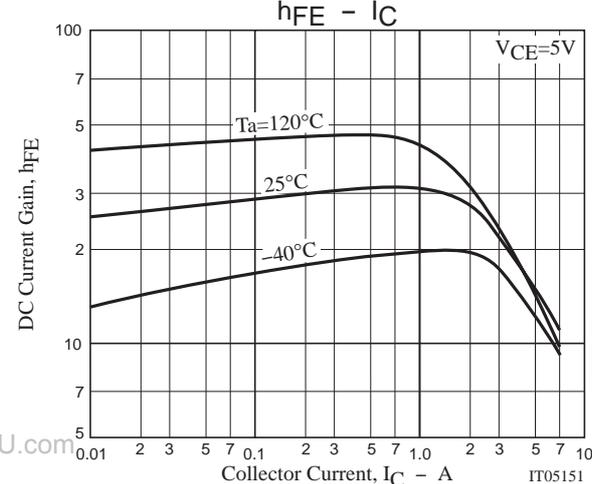
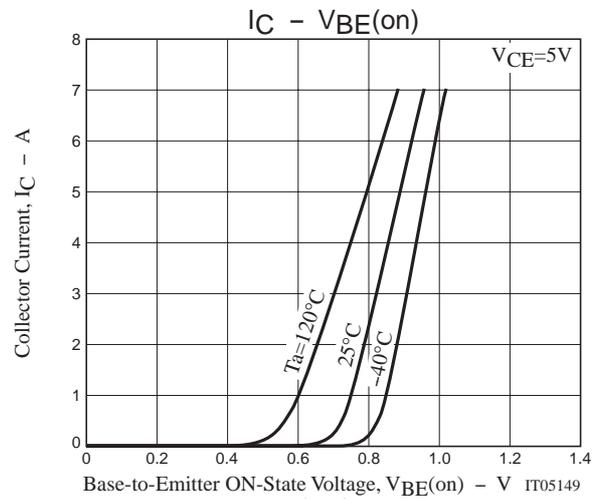
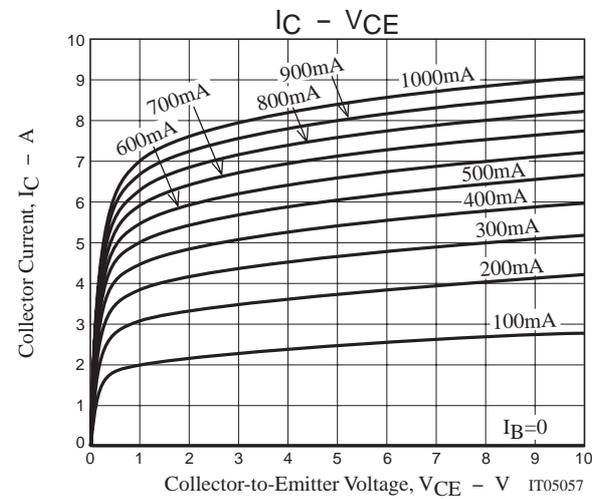
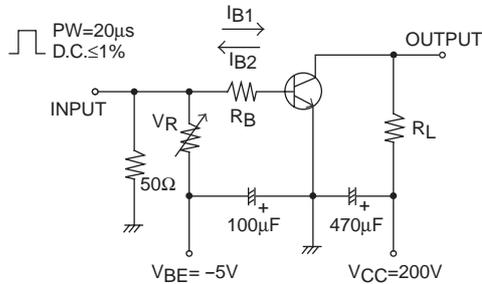
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE1}$	$V_{CE}=5V, I_C=0.8A$	20*		50*	
	$h_{FE2}$	$V_{CE}=5V, I_C=4A$	10			
	$h_{FE3}$	$V_{CE}=5V, I_C=1mA$	10			
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=4A, I_B=0.8A$			0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=4A, I_B=0.8A$			1.5	V
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=0.8A$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		50		pF
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	500			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Turn-On Time	$t_{on}$	$I_C=5A, I_{B1}=1A, I_{B2}=-2A, R_L=40\Omega, V_{CC}=200V$			0.5	$\mu s$
Storage Time	$t_{stg}$	$I_C=5A, I_{B1}=1A, I_{B2}=-2A, R_L=40\Omega, V_{CC}=200V$			2.5	$\mu s$
Fall Time	$t_f$	$I_C=5A, I_{B1}=1A, I_{B2}=-2A, R_L=40\Omega, V_{CC}=200V$			0.3	$\mu s$

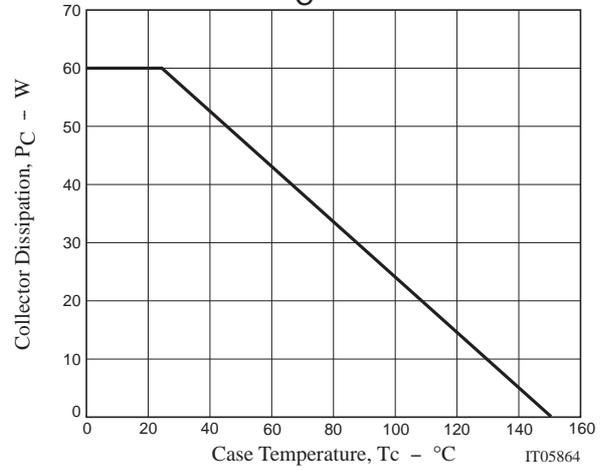
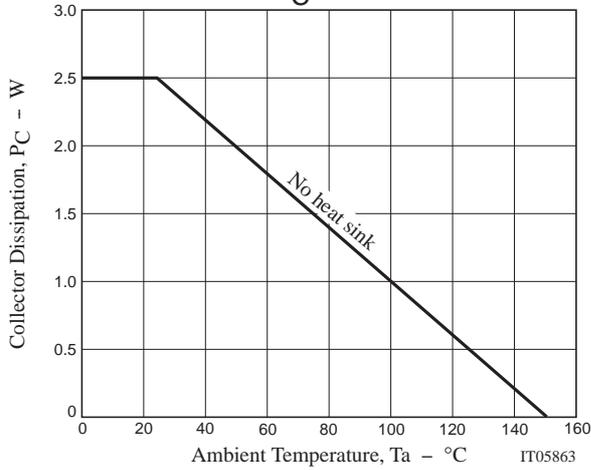
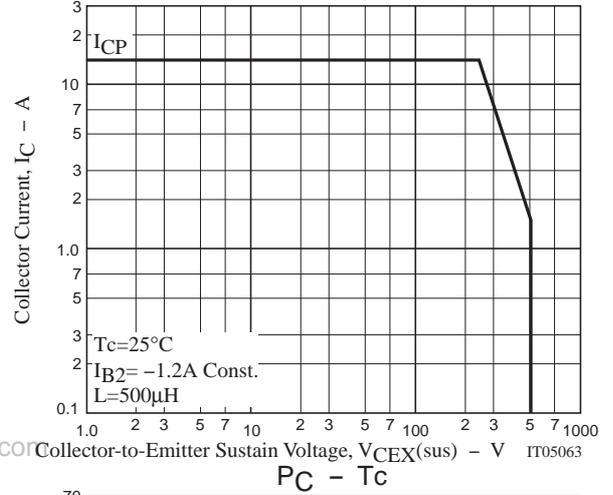
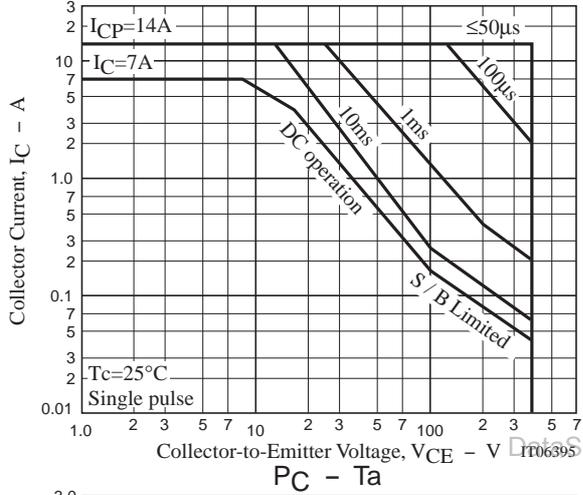
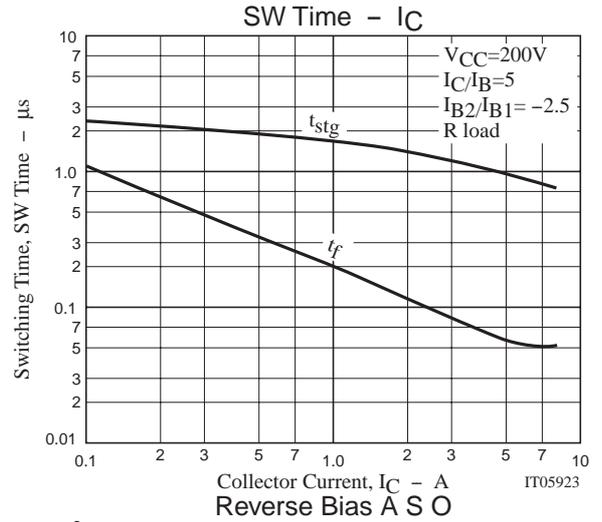
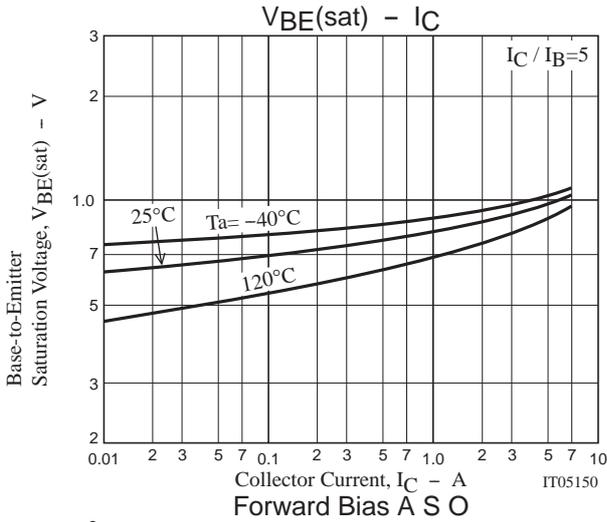
\* : The  $h_{FE1}$  of the 2SC5960 is classified as follows.

Rank	M	N
$h_{FE}$	20 to 40	30 to 50

### Switching Time Test Circuit



## 2SC5960



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