

## 2SA2180 — PNP Epitaxial Planar Silicon Transistor

### 50V / 5A High-Speed Switching Applications

#### Applications

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

#### Features

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

#### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		-50	V
Collector-to-Emitter Voltage	$V_{CEO}$		-50	V
Emitter-to-Base Voltage	$V_{EBO}$		-6	V
Collector Current	$I_C$		-5	A
Collector Current (Pulse)	$I_{CP}$		-8	A
Base Current	$I_B$		-1	A
Collector Dissipation	$P_C$		2	W
		$T_c=25^\circ\text{C}$	20	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	$I_{CBO}$	$V_{CB}=-40\text{V}, I_E=0\text{A}$			-10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4\text{V}, I_C=0\text{A}$			-10	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=-2\text{V}, I_C=-125\text{mA}$	200		500	
	$h_{FE2}$	$V_{CE}=-2\text{V}, I_C=-3.75\text{A}$	50			
Gain-Bandwidth Product	$f_T$	$V_{CE}=-10\text{V}, I_C=-300\text{mA}$		130		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, f=1\text{MHz}$		55		pF

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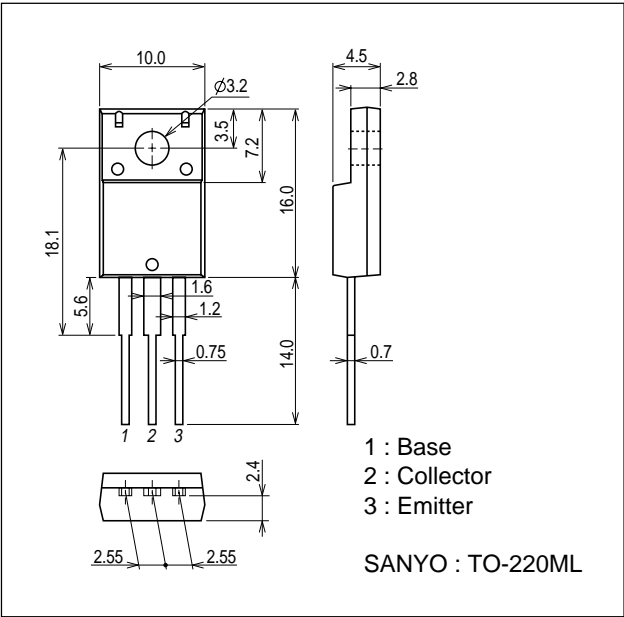
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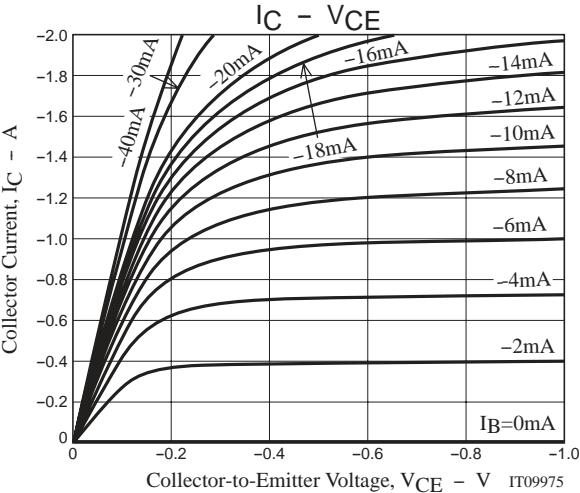
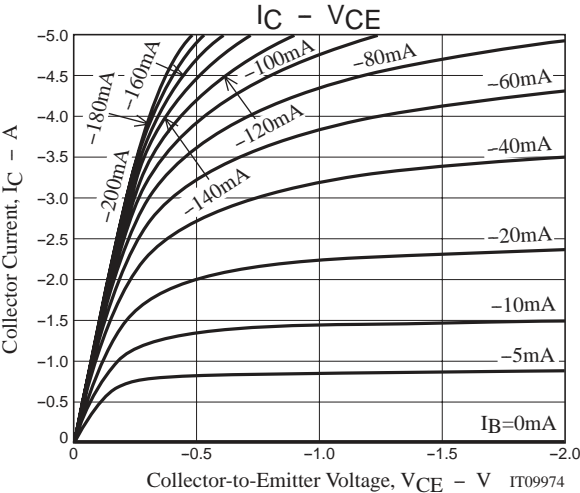
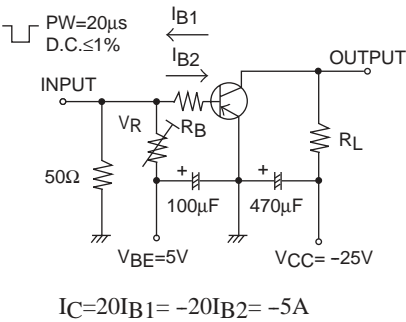
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -2.5A, I_B = -125mA$		-250	-500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -2.5A, I_B = -125mA$			-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\mu A, I_E = 0A$	-50			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.		75		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		100		ns
Fall Time	$t_f$	See specified Test Circuit.		40		ns

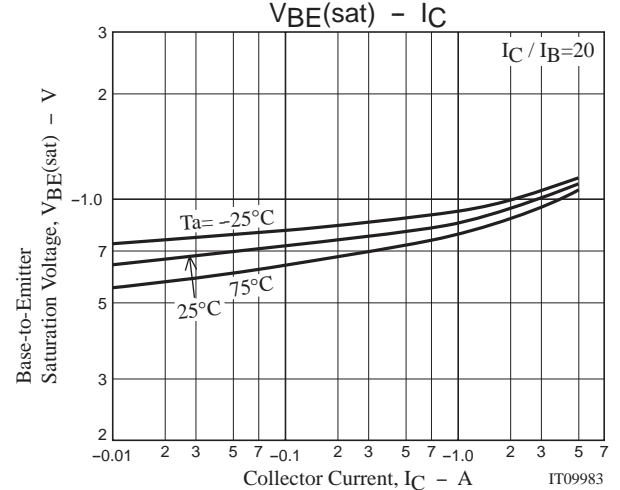
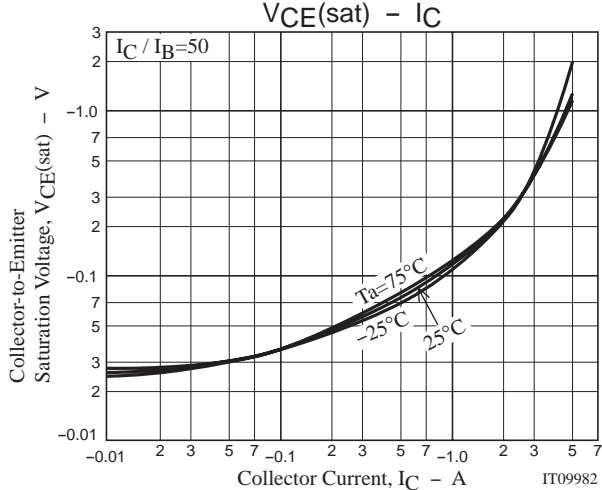
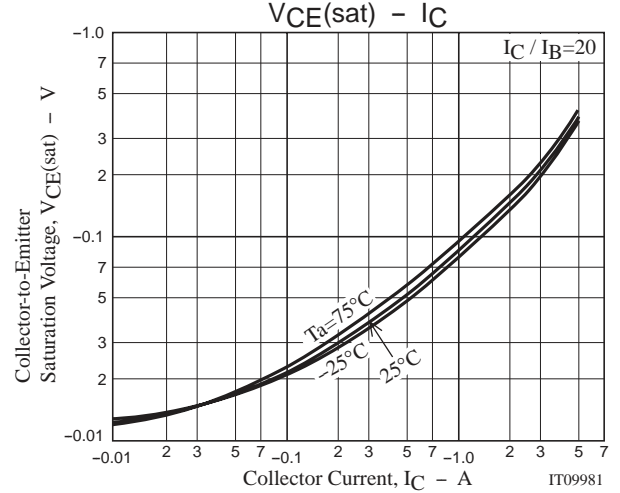
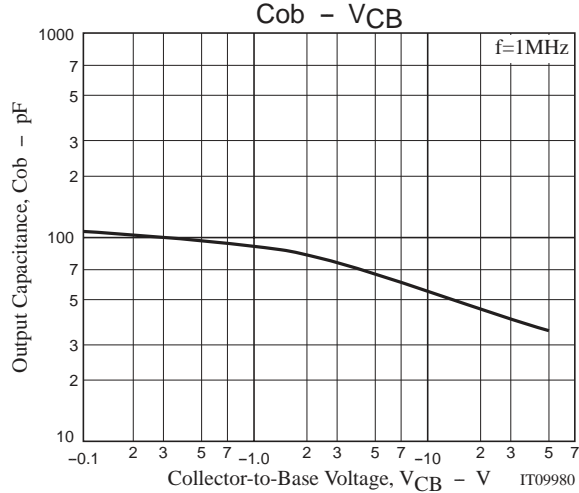
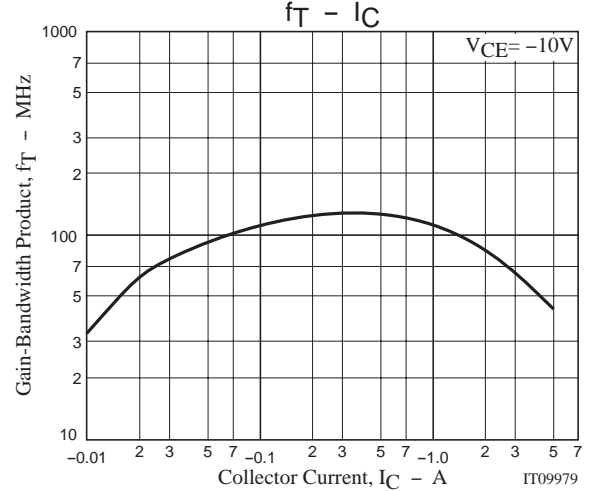
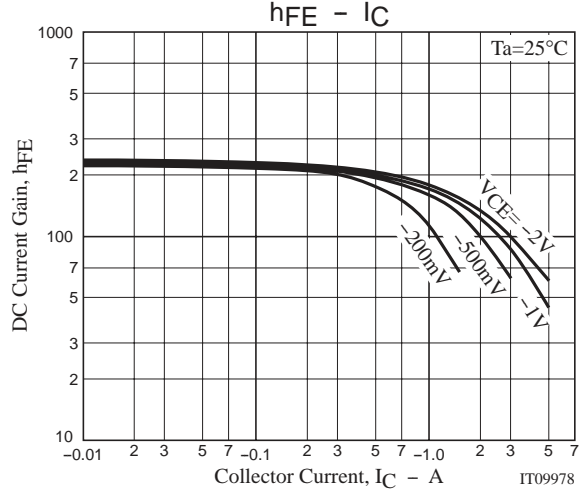
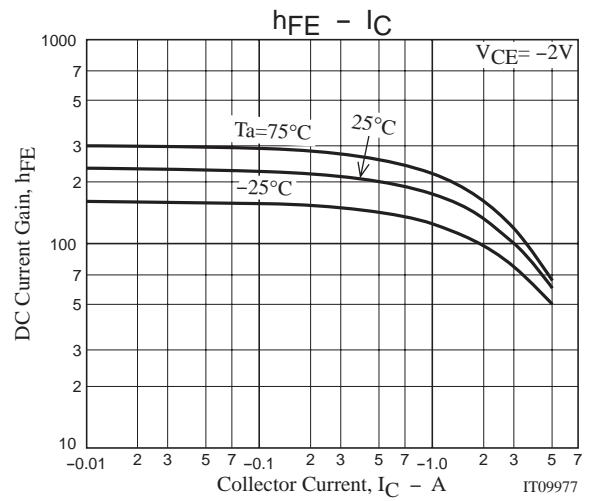
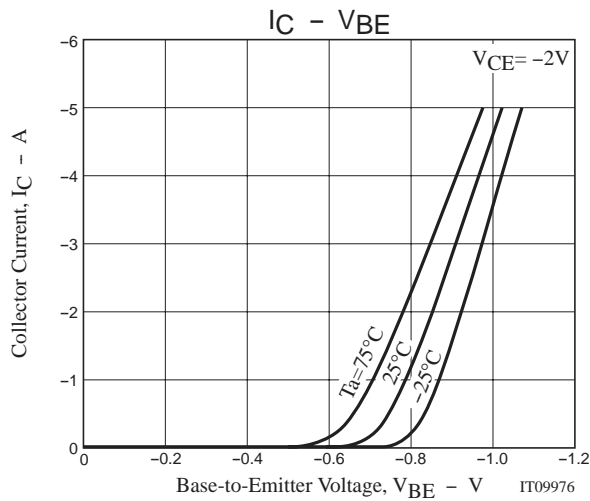
Package Dimensions

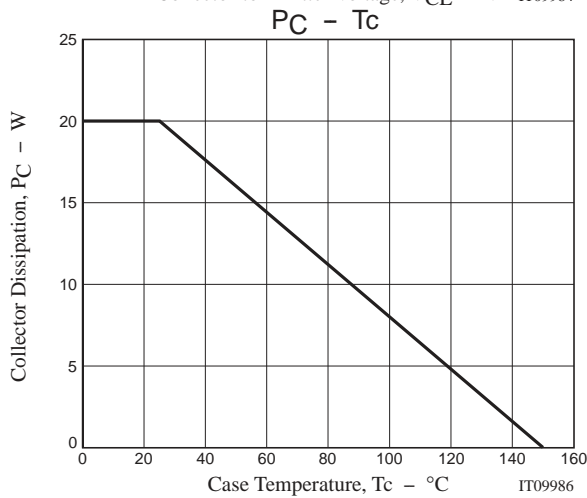
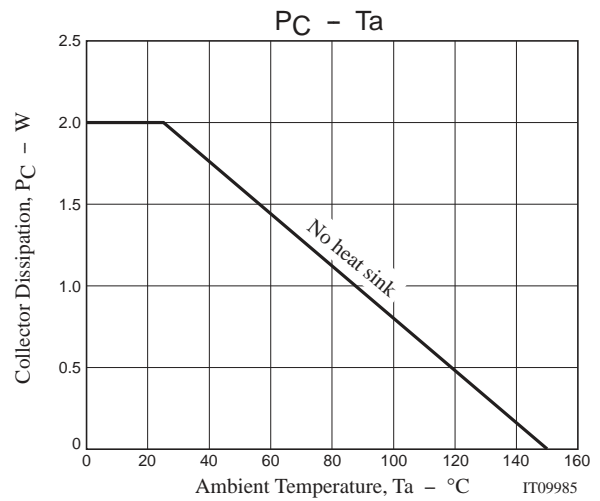
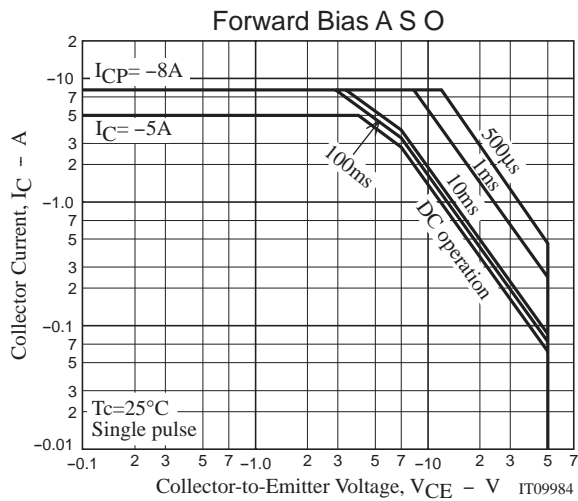
unit : mm  
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Switching Time Test Circuit







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