

Ordering number : ENA0403



SANYO Semiconductors

DATA SHEET

NPN Epitaxial Planar Silicon Transistor

F5H2201 — 50V / 15A High-Speed Switching Applications

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.
- The F5H2201 consists of two chips which are equivalent to the 2SC6082 encapsulated in a package.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CBO}		60	V
Collector-to-Emitter Voltage	V _{CES}		60	V
Collector-to-Emitter Voltage	V _{CEO}		50	V
Emitter-to-Base Voltage	V _{EBO}		6	V
Collector Current	I _C		10	A
Collector Current (PW=1s)	I _C	Duty cycle≤1%	12	A
Collector Current (PW=100ms)	I _C	Duty cycle≤1%	15	A
Collector Current (Pulse)	I _{CP}	PW≤10μs, duty cycle≤10%	20	A
Base Current	I _B		3	A
Collector Dissipation	P _C		2	W
		T _c =25°C, 1unit	25	W
Total Dissipation	P _T	T _c =25°C	28	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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F5H2201

Electrical Characteristics at $T_a=25^\circ\text{C}$

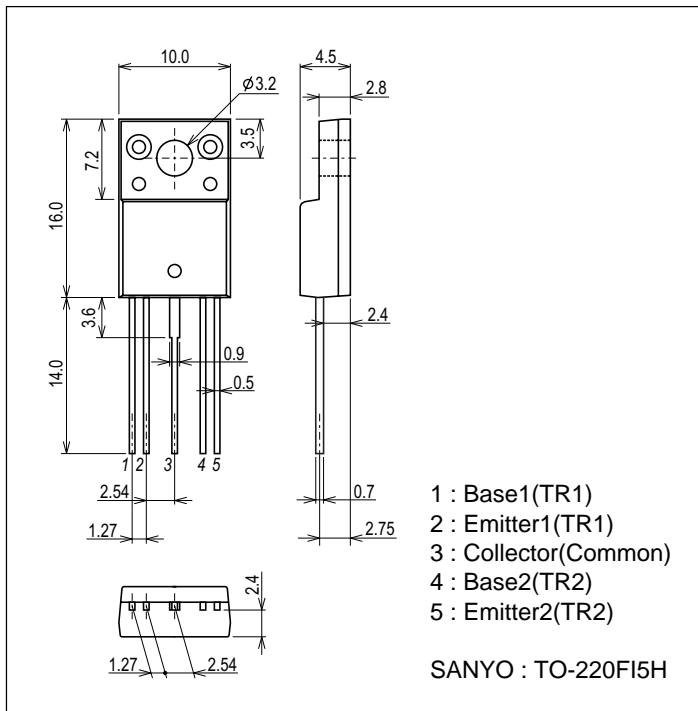
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=40\text{V}, I_E=0\text{A}$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4\text{V}, I_C=0\text{A}$			10	μA
DC Current Gain	h_{FE1}	$V_{CE}=2\text{V}, I_C=330\text{mA}$	200		560	
	h_{FE2}	$V_{CE}=2\text{V}, I_C=10\text{A}$	50			
Gain-Bandwidth Product	f_T	$V_{CE}=10\text{V}, I_C=2\text{A}$		195		MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, f=1\text{MHz}$		85		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=7.5\text{A}, I_B=375\text{mA}$		250	500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=7.5\text{A}, I_B=375\text{mA}$			1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=100\mu\text{A}, I_E=0\text{A}$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=100\mu\text{A}, R_{BE}=0\Omega$	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, R_{BE}=\infty$	50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=100\mu\text{A}, I_C=0\text{A}$	6			V
Turn-ON Time	t_{on}	See specified Test Circuit.		52		ns
Storage Time	t_{stg}	See specified Test Circuit.		560		ns
Fall Time	t_f	See specified Test Circuit.		37		ns

Note : The specifications shown above are for each individual transistor.

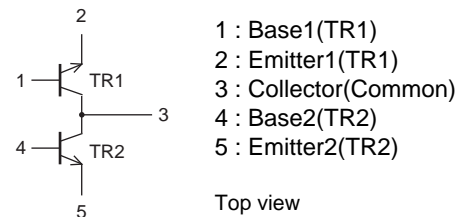
Package Dimensions

unit : mm (typ)

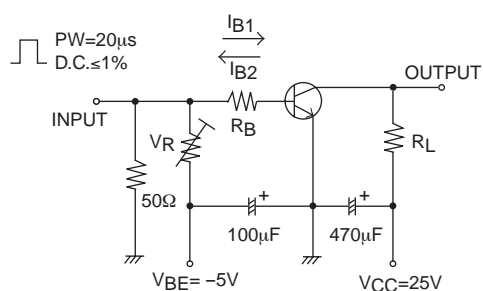
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Electrical Connection

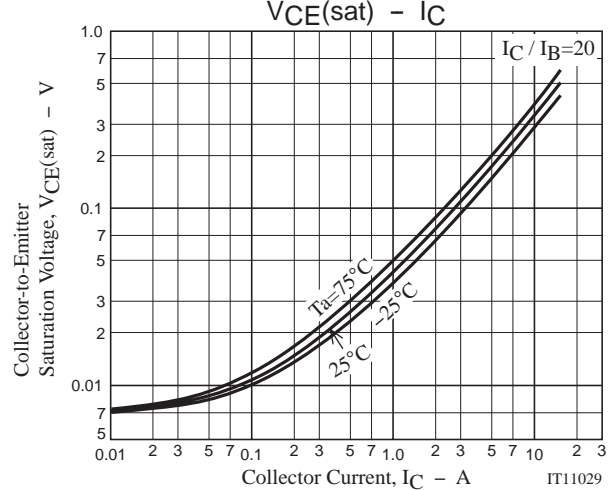
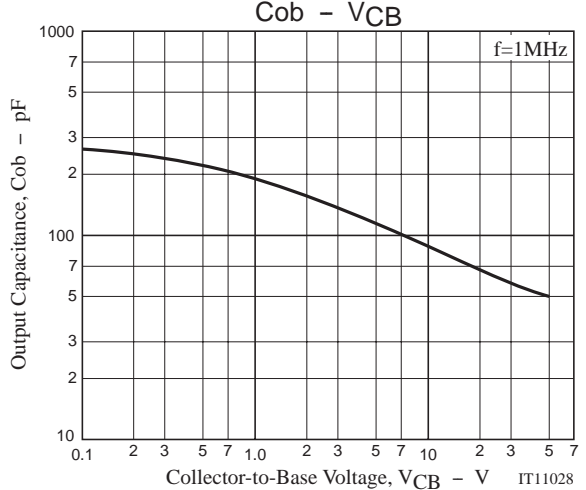
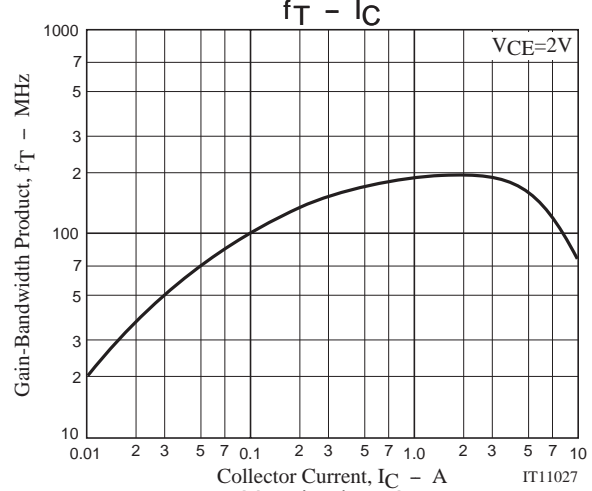
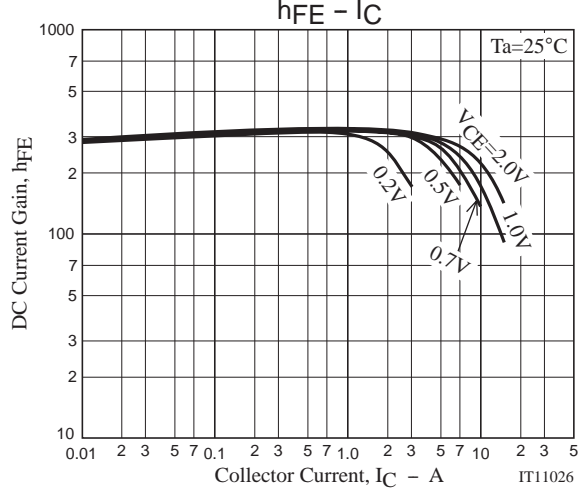
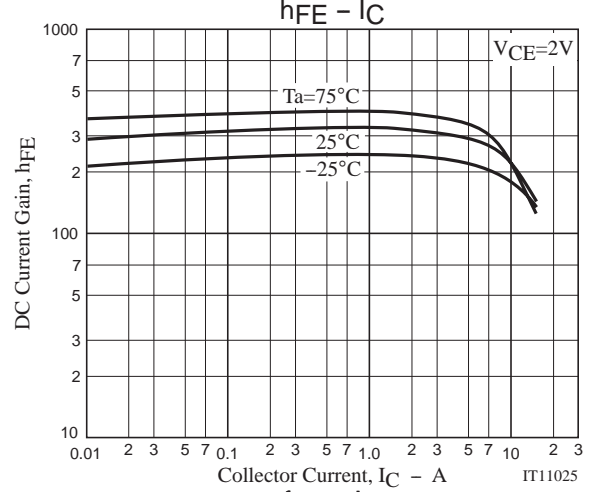
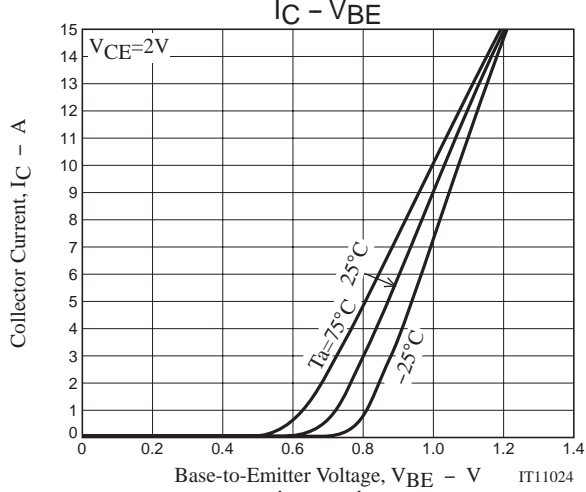
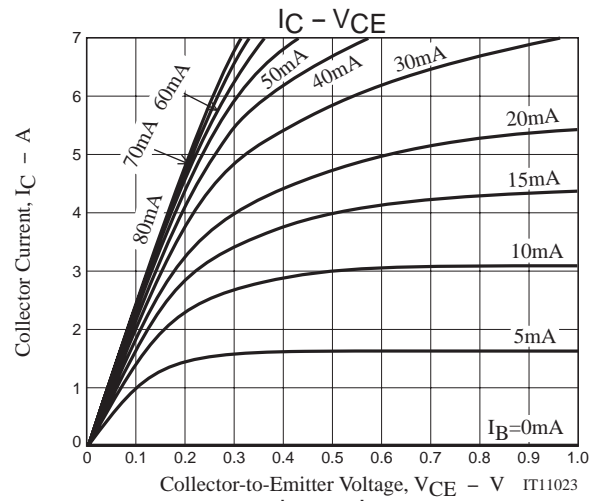
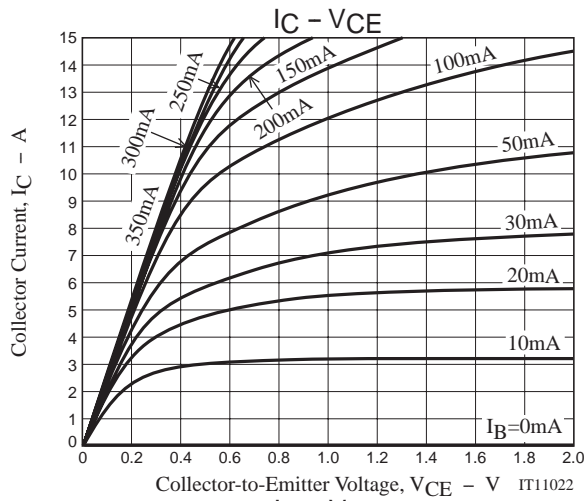


Switching Time Test Circuit

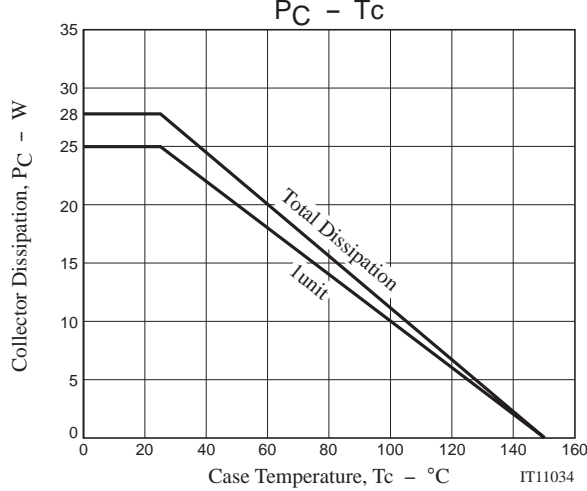
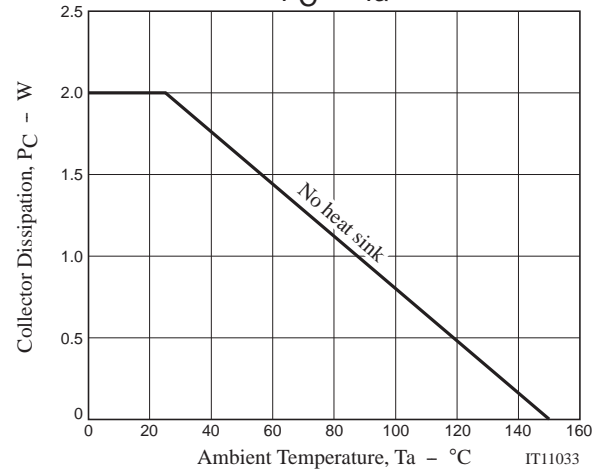
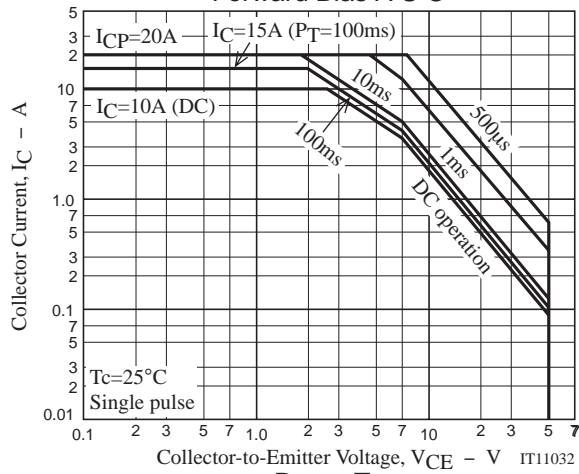
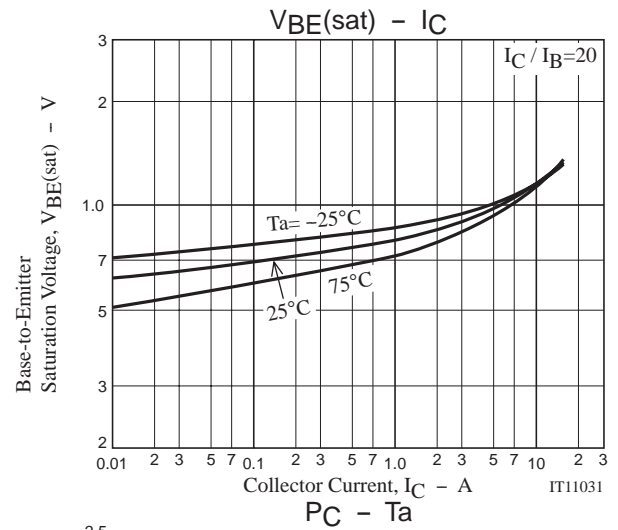
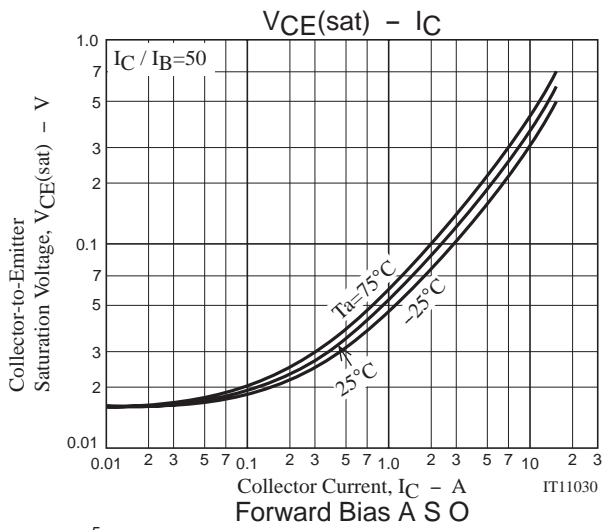


$$I_C = 20I_{B1} = -20I_{B2} = 5\text{A}$$

F5H2201



F5H2201



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