



SANYO Semiconductors

DATA SHEET

F5H2201 — 50V / 15A 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.
- The F5H2201 consists of two chips which are equivalent to the 2SC6082 encapsulated in a package.

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		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 \leq 1%	12	A
Collector Current (PW=100ms)	I_C	Duty cycle \leq 1%	15	A
Collector Current (Pulse)	I_{CP}	PW \leq 10 μ s, duty cycle \leq 10%	20	A
Base Current	I_B		3	A
Collector Dissipation	P_C		2	W
		$T_c=25^\circ\text{C}$, 1unit	25	W
Total Dissipation	P_T	$T_c=25^\circ\text{C}$	28	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

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SANYO Semiconductor Co., Ltd.

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

F5H2201

Electrical Characteristics at Ta=25°C

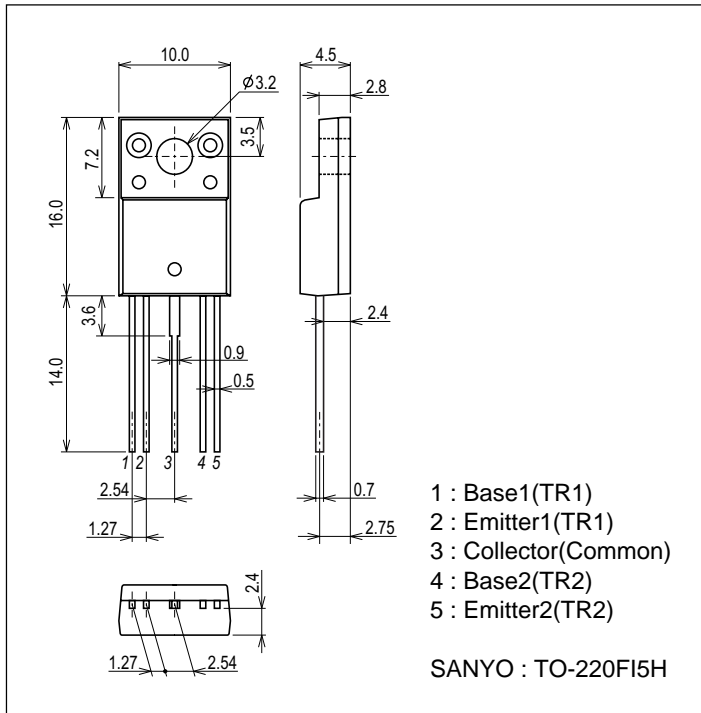
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=40V, I_E=0A$			10	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=4V, I_C=0A$			10	μA
DC Current Gain	h_{FE1}	$V_{CE}=2V, I_C=330mA$	200		560	
	h_{FE2}	$V_{CE}=2V, I_C=10A$	50			
Gain-Bandwidth Product	f_T	$V_{CE}=10V, I_C=2A$		195		MHz
Output Capacitance	C_{ob}	$V_{CB}=10V, f=1MHz$		85		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=7.5A, I_B=375mA$		250	500	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=7.5A, I_B=375mA$			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.		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.

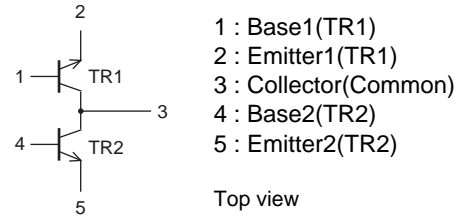
Package Dimensions

unit : mm (typ)

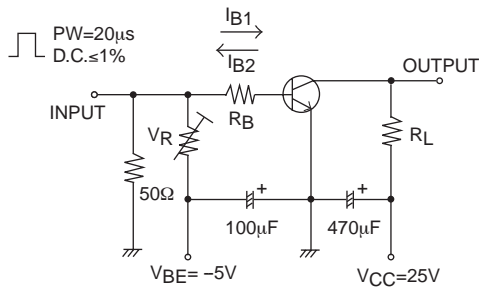
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Electrical Connection

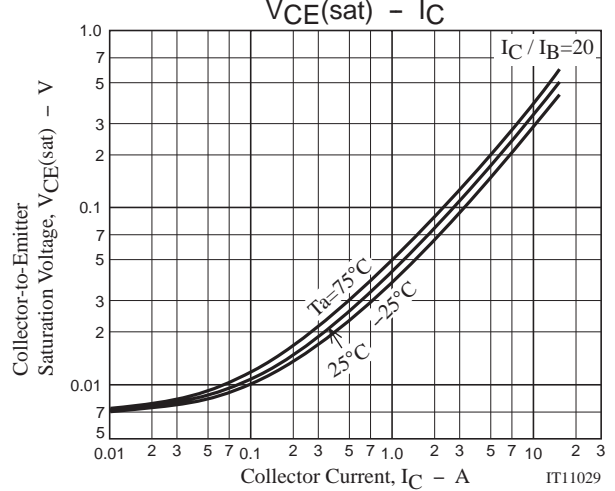
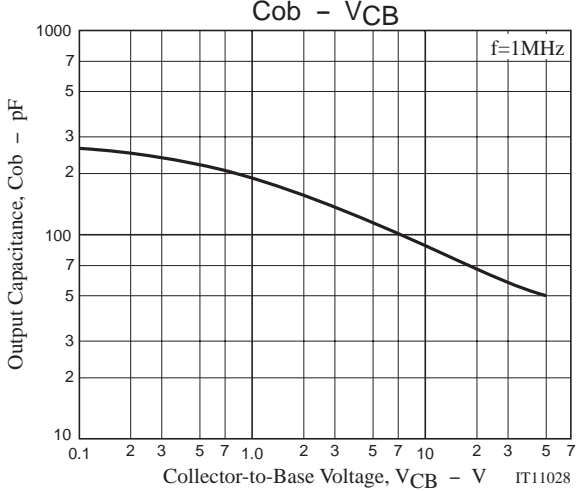
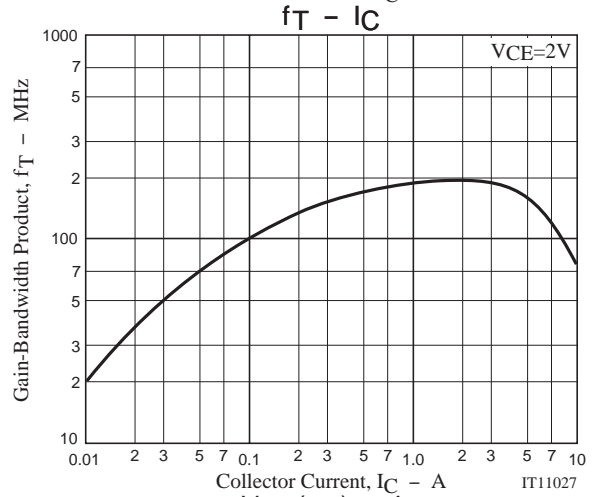
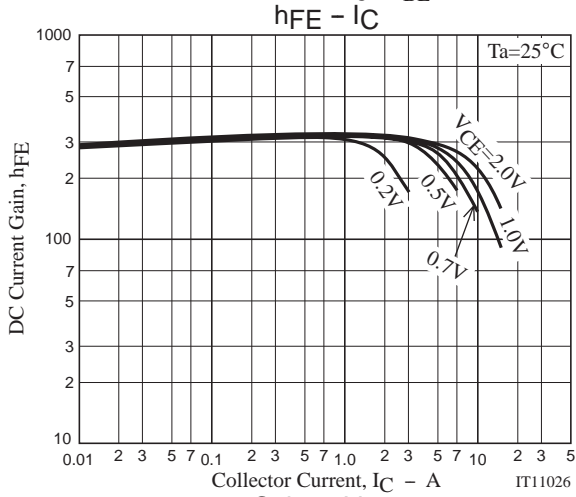
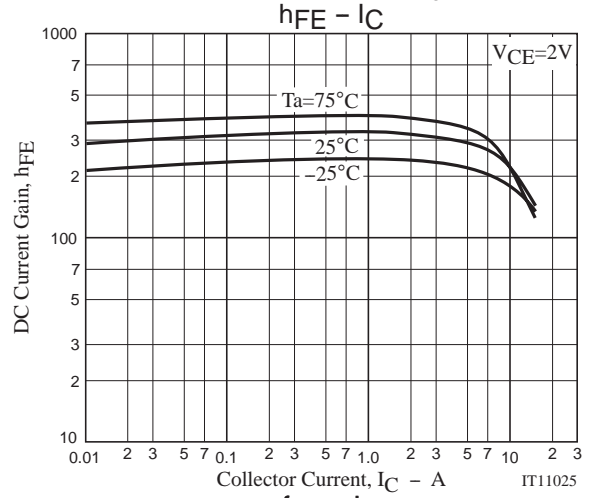
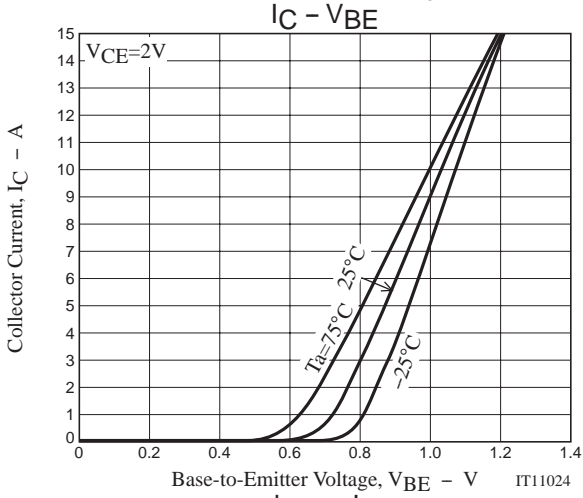
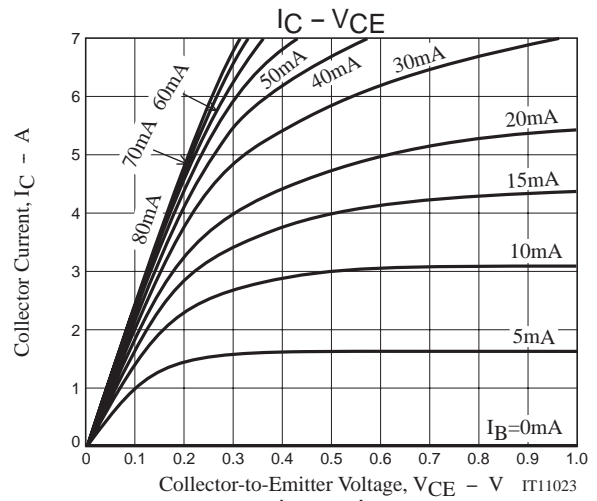
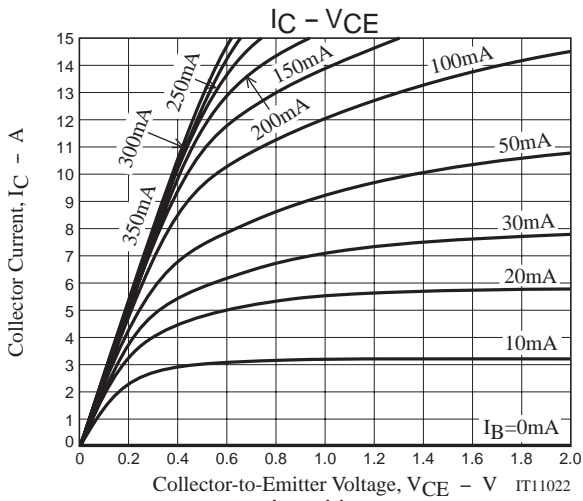


Switching Time Test Circuit

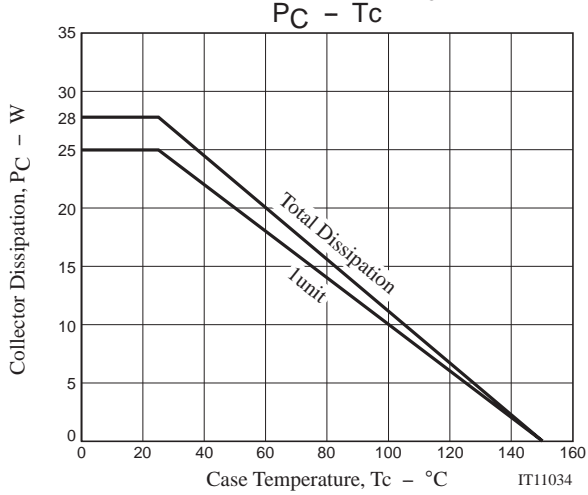
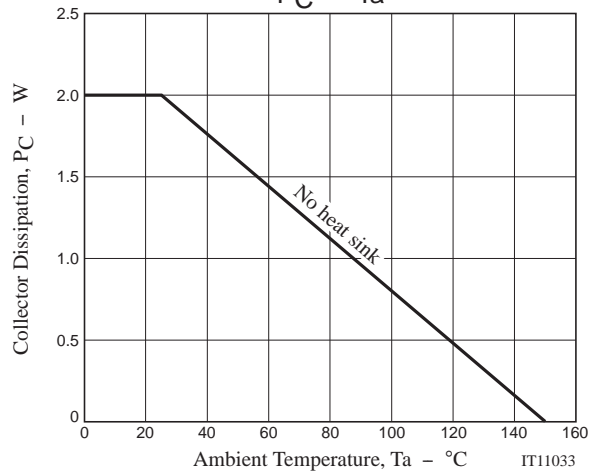
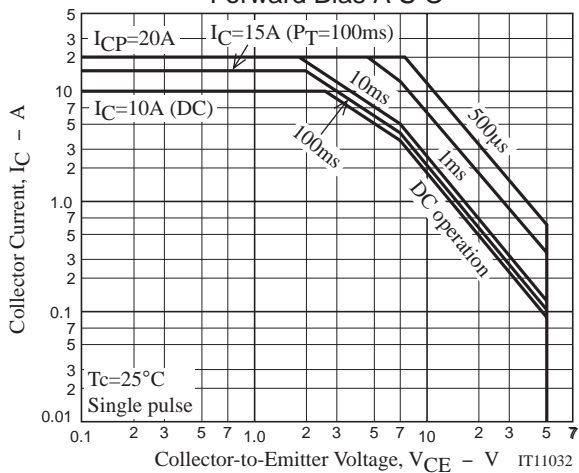
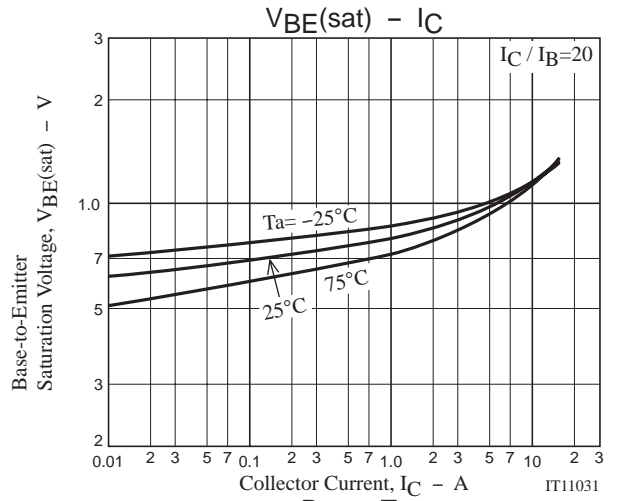
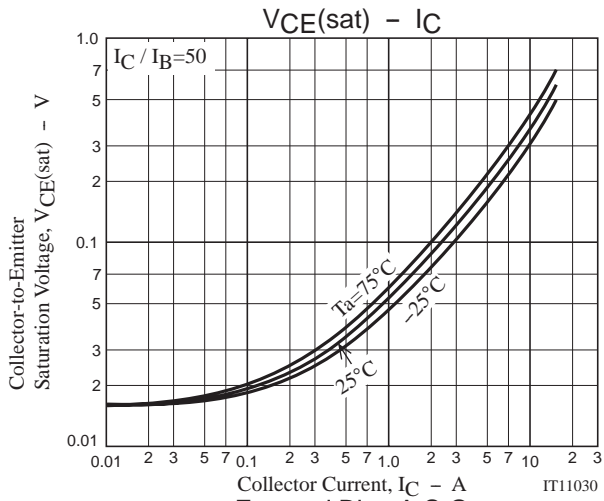


$$I_C = 20I_{B1} = -20I_{B2} = 5A$$

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