Ordering number:EN3139

NPN Epitaxial Planar Silicon Transistors

2SC4520

High-Speed Switching Applications

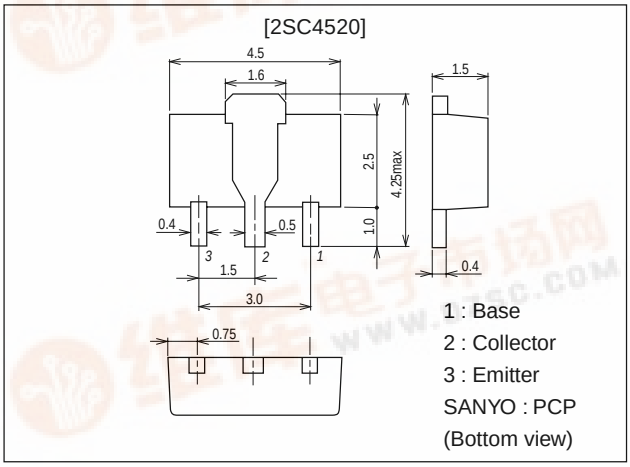
Features

- Adoption of FBET, MBIT process.
- Large current capacity.
- Low collector-to-emitter saturation voltage.
- Fast switching speed.
- Small-sized package.

Package Dimensions

unit:mm

2038A



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_{CEO}		45	V
Emitter-to-Base Voltage	V_{EBO}		5	V
Collector Current	I_C		1.5	A
Collector Current (Pulse)	I_{CP}		3	A
Collector Dissipation	P_C	Mounted on ceramic board (250mm²×0.8mm)	1.3	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=45V, I_E=0			1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=2V, I_C=100mA	100*		400*	
	$h_{FE}2$	V_{CE}=2V, I_C=1.5A	40			
Gain-Bandwidth Product	f_T	V_{CE}=2V, I_C=100mA		300		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		13		pF

* : The 2SC4520 is classified by 100mA h_{FE} as follows :

100	R	200	140	S	280	200	T	400

Marking : CK

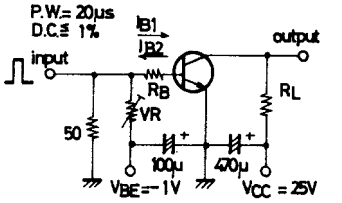
h_{FE} rank : R, S, T

SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

2SC4520

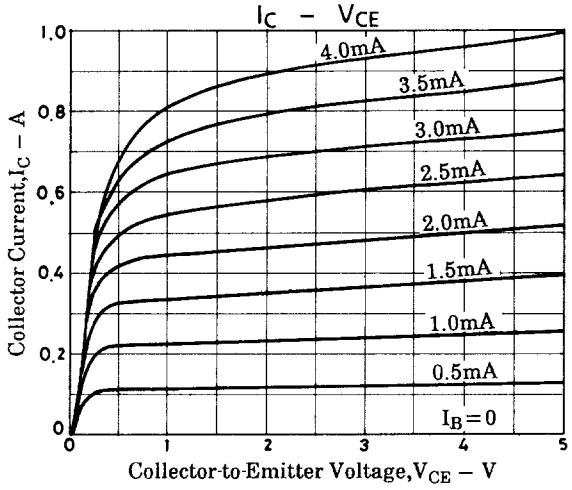
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=800mA, I_B=40mA		0.25	0.7	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=800mV, I_B=40mA		0.9	1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	45			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	5			V
Turn-ON Time	t_{on}	See specified test circuit.		50	100	ns
Storage Time	t_{stg}	See specified test circuit.		150	270	ns
Fall Time	t_f	See specified test circuit.		180	350	ns

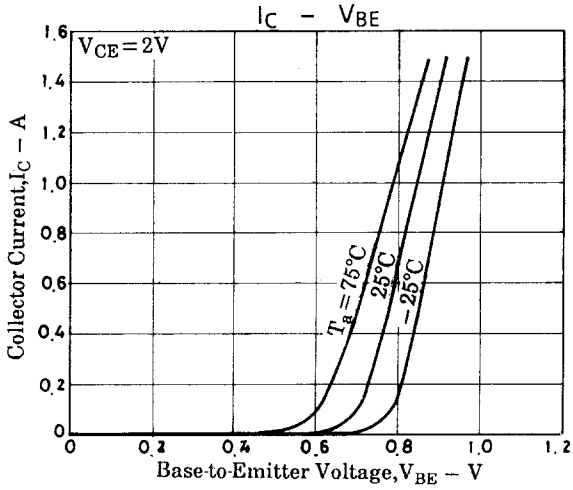
Switching Time Test Circuit

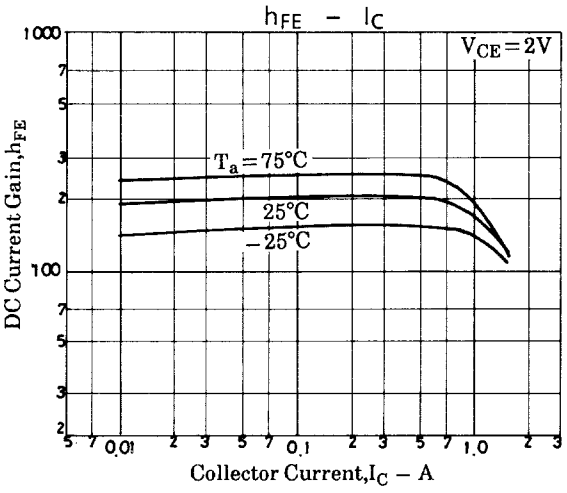


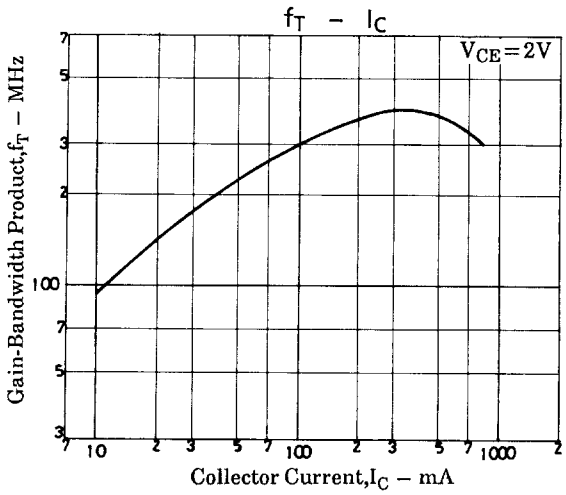
$20I_{B1} = -20I_{B2} = I_C = 800mA$

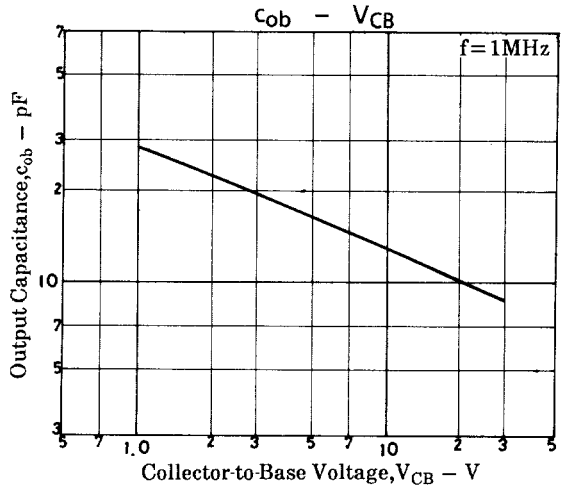
Unit (resistance : Ω, capacitance : F)

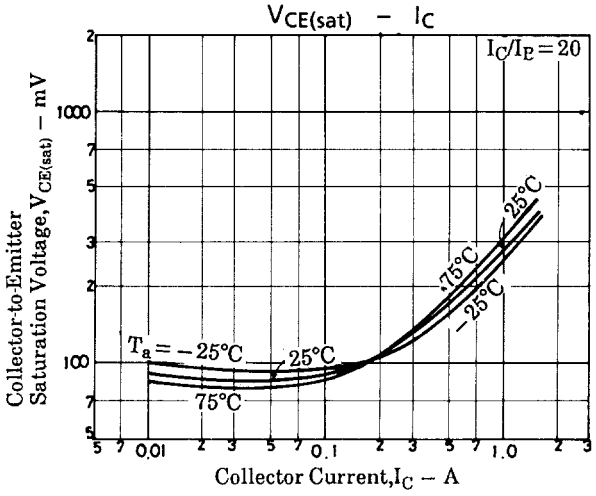


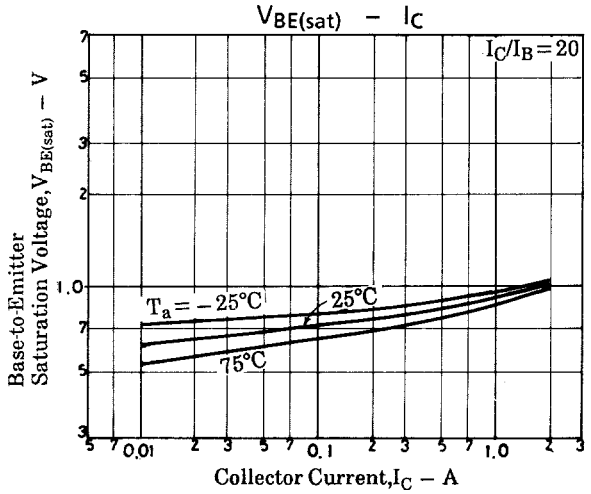


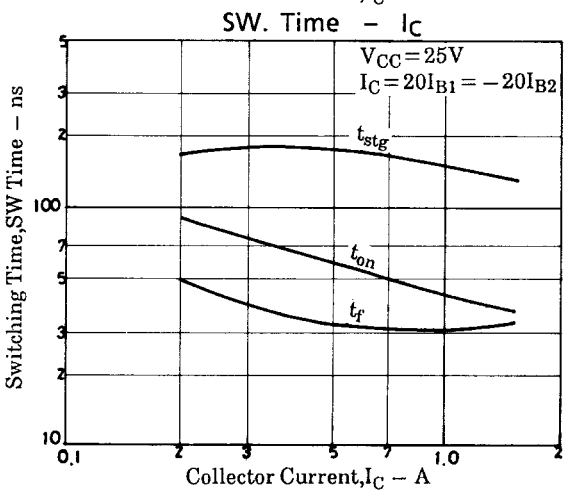


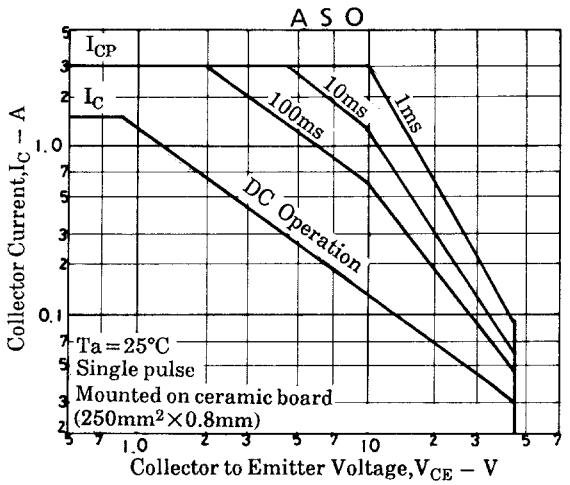


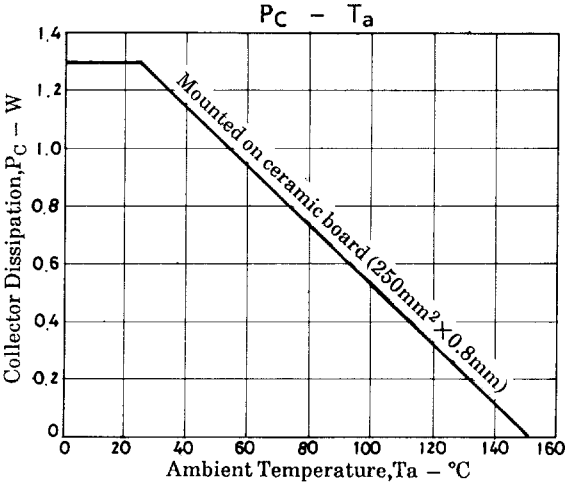

Cob – VCB
f=1MHz
Output Capacitance,Cob – pF
Collector-to-Base Voltage,VCB – V


VCE(sat) – IC
IC/IB=20
Collector-to-Emitter Saturation Voltage,VCE(sat) – mV
Ta=–25°C
25°C
75°C
25°C
75°C
–25°C
Collector Current,IC – A


VBE(sat) – IC
IC/IB=20
Base-to-Emitter Saturation Voltage,VBE(sat) – V
Ta=–25°C
25°C
75°C
Collector Current,IC – A


SW. Time – IC
VCC=25V
IC=20IB1=–20IB2
tstg
ton
tf
Switching Time,SW Time – ns
Collector Current,IC – A


A S O
ICP
IC
100ms
10ms
1ms
DC Operation
Ta=25°C
Single pulse
Mounted on ceramic board
(250mm²×0.8mm)
Collector Current,IC – A
Collector to Emitter Voltage,VCE – V


PC – Ta
Mounted on ceramic board (250mm²×0.8mm)
Collector Dissipation,PC – W
Ambient Temperature,Ta – °C