Ordering number: EN 3180B

SANYO

No.3180B

2SA1764

PNP Epitaxial Planar Silicon Transistor

High-Speed Switching Applications

Features

- Fast switching speed
- Low collector saturation voltage
- High gain-bandwidth product
- Small collector capacitance
- Small-sized package permitting the 2SA1764-applied sets to be made small and slim
- Complementary pair with the 2SC4453

Absolute Maximum Ratings at Ta = 25°C

			unit
Collector to Base Voltage	V_{CBO}	−15	V
Collector to Emitter Voltage	V_{CEO}	−15	V
Emitter to Base Voltage	V_{EBO}	−5	V
Collector Current	I_C	−200	mA
Collector Current(Pulse)	I_{CP}	−500	mA
Base Current	I_B	−40	mA
Collector Dissipation	P_C	200	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C

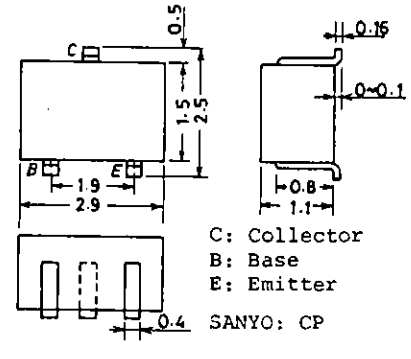
Electrical Characteristics at Ta = 25°C

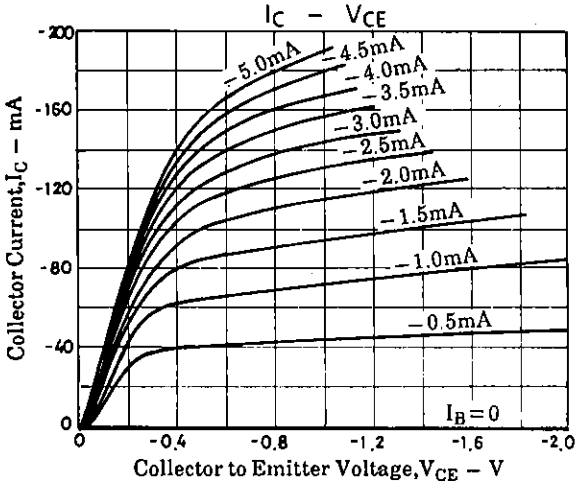
			min	typ	max	unit
Collector Cutoff Current	I_{CBO}	$V_{CB}=-8V, I_E=0$			−0.1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-3V, I_C=0$			−0.1	μA
DC Current Gain	h_{FE}	$V_{CE}=-1V, I_C=-10mA$	50	80	140	
Gain-Bandwidth Product	f_T	$V_{CE}=-10V, I_C=-10mA$	450	1000		MHz
Output Capacitance	c_{ob}	$V_{CB}=-5V, f=1MHz$		1.8	3.0	pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=-10mA, I_B=-1mA$		−0.07	−0.20	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=-10mA, I_B=-1mA$		−0.80	−0.90	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	−15			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1mA, R_{BE}=\infty$	−15			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	−5			V
Turn-ON Time	t_{on}	See specified Test Circuit.		11		ns
Storage Time	t_{stg}	〃		21		ns
Turn-OFF Time	t_{off}	〃		19		ns

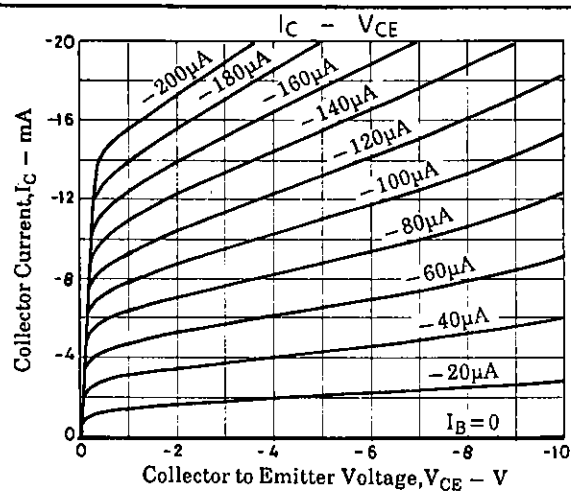
Marking : FS

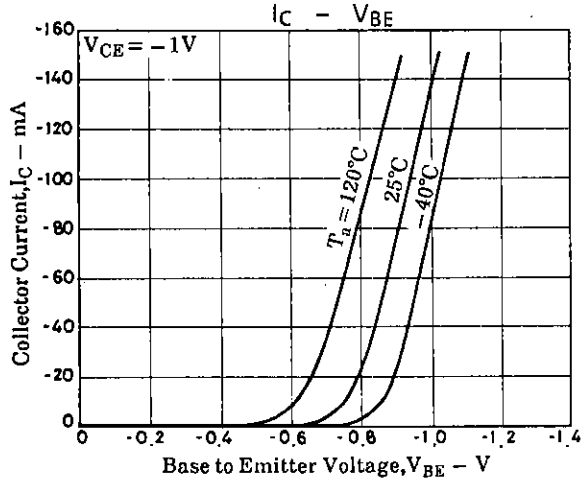
Package Dimensions 2018A

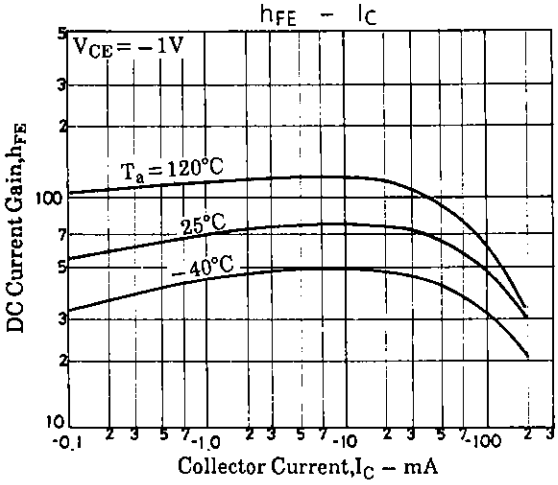
(unit : mm)

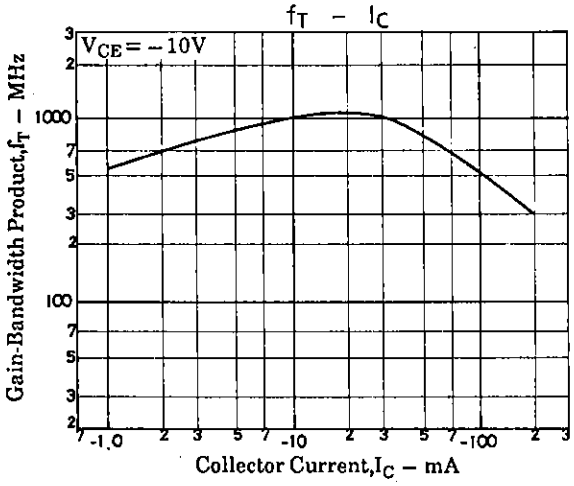


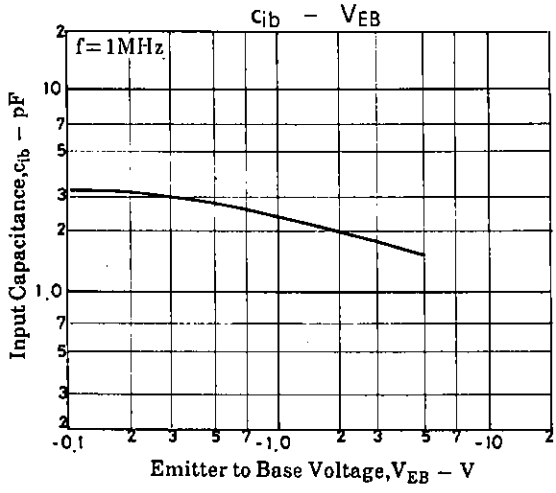

I_C – V_{CE}
Collector Current, I_C – mA
Collector to Emitter Voltage, V_{CE} – V
–5.0mA
–4.5mA
–4.0mA
–3.5mA
–3.0mA
–2.5mA
–2.0mA
–1.5mA
–1.0mA
–0.5mA
I_B=0

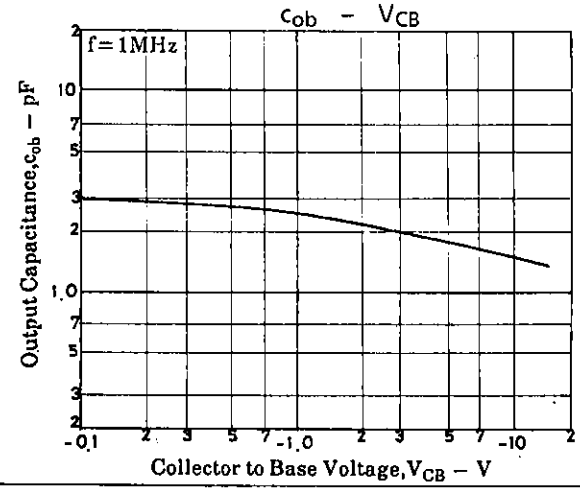

I_C – V_{CE}
Collector Current, I_C – mA
Collector to Emitter Voltage, V_{CE} – V
–200μA
–180μA
–160μA
–140μA
–120μA
–100μA
–80μA
–60μA
–40μA
–20μA
I_B=0

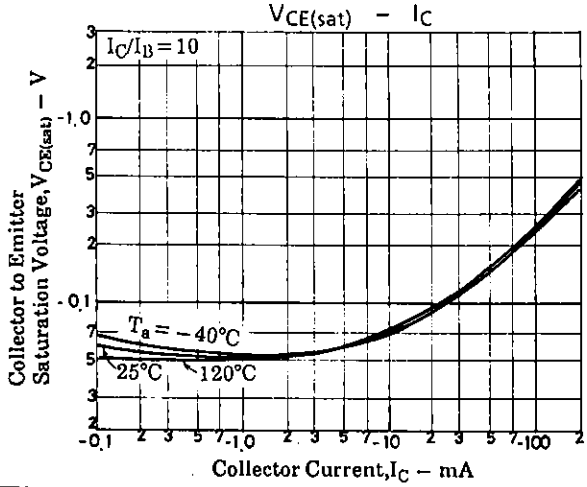

I_C – V_{BE}
V_{CE} = –1V
Collector Current, I_C – mA
Base to Emitter Voltage, V_{BE} – V
T_a = 120°C
25°C
–40°C

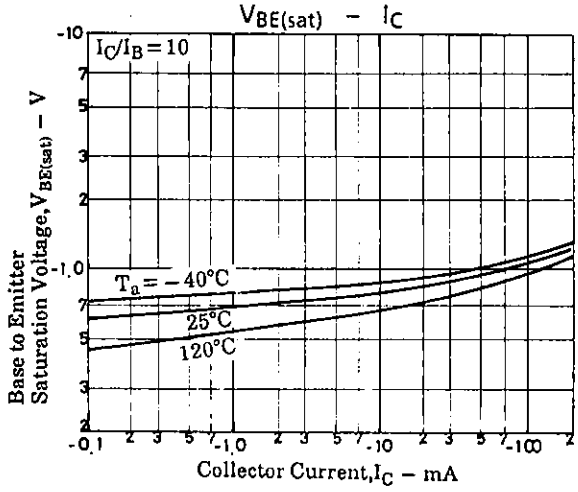

h_{FE} – I_C
V_{CE} = –1V
DC Current Gain, h_{FE}
Collector Current, I_C – mA
T_a = 120°C
25°C
–40°C

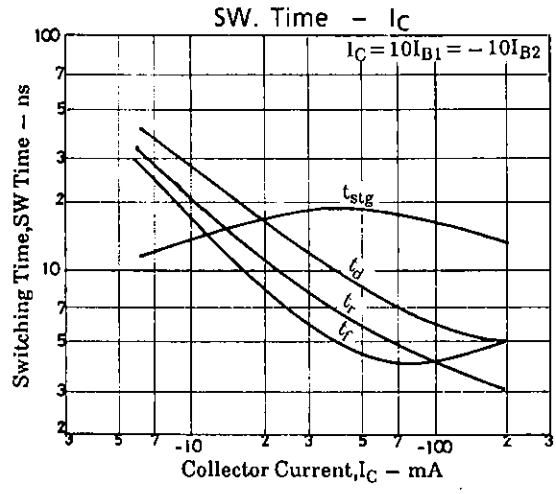

f_T – I_C
V_{CE} = –10V
Gain-Bandwidth Product, f_T – MHz
Collector Current, I_C – mA

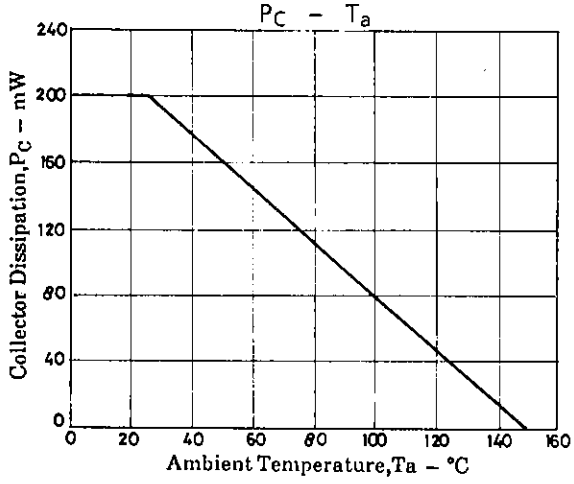

C_{ib} – V_{EB}
f = 1MHz
Input Capacitance, C_{ib} – pF
Emitter to Base Voltage, V_{EB} – V


C_{ob} – V_{CB}
f = 1MHz
Output Capacitance, C_{ob} – pF
Collector to Base Voltage, V_{CB} – V


$V_{CE(sat)}$ – I_C
I_C/I_B = 10
Collector to Emitter Saturation Voltage, $V_{CE(sat)}$ – V
Collector Current, I_C – mA
T_a = –40°C
25°C
120°C

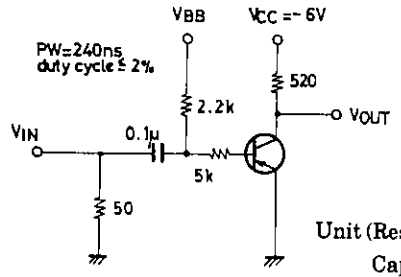






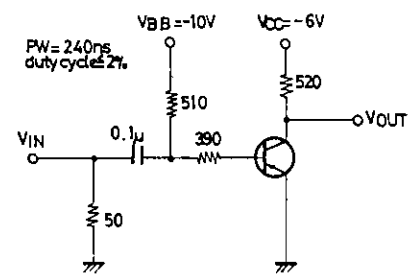
Switching Time Test Circuits

t_{on}, t_{off} Test Circuit



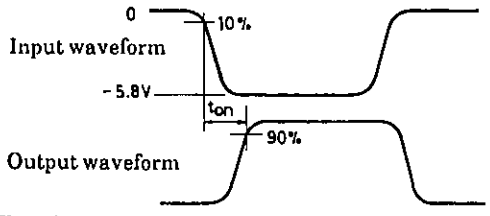
Unit (Resistance : Ω, Capacitance : F)

t_{stg} Test Circuit

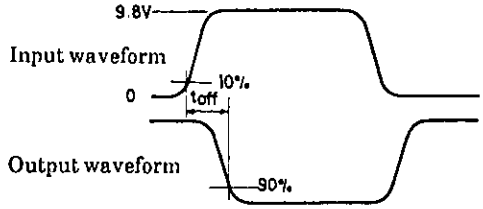


Unit (Resistance : Ω, Capacitance : F)

t_{on} Test Waveform (V_{BB} = GND)



t_{off} Test Waveform (V_{BB} = –8.0V)



t_{stg} Test Waveform