Ordering number : ENA0543

SANYO Semiconductors
DATA SHEET

2SA2204 — PNP Epitaxial Planar Silicon Transistor
High-Voltage Switching Applications

Applications

- DC / DC converter, Relay drivers, lamp drivers, motor drivers.

Features

- Adoption of FBET, MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		-80	V
Collector-to-Emitter Voltage	V_{CES}		-80	V
Collector-to-Emitter Voltage	V_{CEO}		-80	V
Emitter-to-Base Voltage	V_{EBO}		-7	V
Collector Current	I_C		-2.5	A
Collector Current (Pulse)	I_{CP}		-4	A
Base Current	I_B		-500	mA
Collector Dissipation	P_C		0.8	W
		Tc=25°C	15	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}=-70V, I_E=0A			-1	µA
Emitter Cutoff Current	I_{EBO}	V_{EB}=-4V, I_C=0A			-1	µA
DC Current Gain	h_{FE}	V_{CE}=-5V, I_C=-100mA	200		400	
Gain-Bandwidth Product	f_T	V_{CE}=-10V, I_C=-500mA		350		MHz
Output Capacitance	Cob	V_{CB}=-10V, f=1MHz		23		pF

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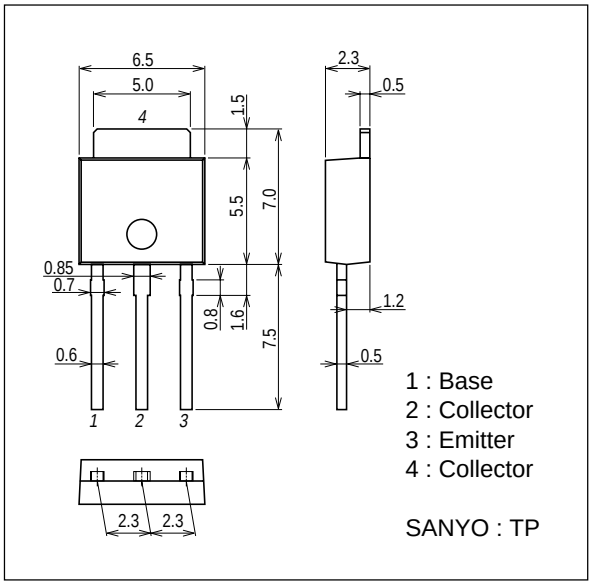
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	V_{CE}(sat)	I_C=–1A, I_B=–100mA		–100	–200	mV
Base-to-Emitterr Saturation Voltage	V_{BE}(sat)	I_C=–1A, I_B=–100mA		–0.85	–1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=–10μA, I_E=0A	–80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	I_C=–100μA, R_{BE}=0Ω	–80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=–1mA, R_{BE}=∞	–80			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=–10μA, I_C=0A	–7			V
Turn-On Time	t_{on}	See specified Test Circuit.		40		ns
Storage Time	t_{stg}	See specified Test Circuit.		500		ns
Fall Time	t_f	See specified Test Circuit.		28		ns

Package Dimensions

unit : mm (typ)

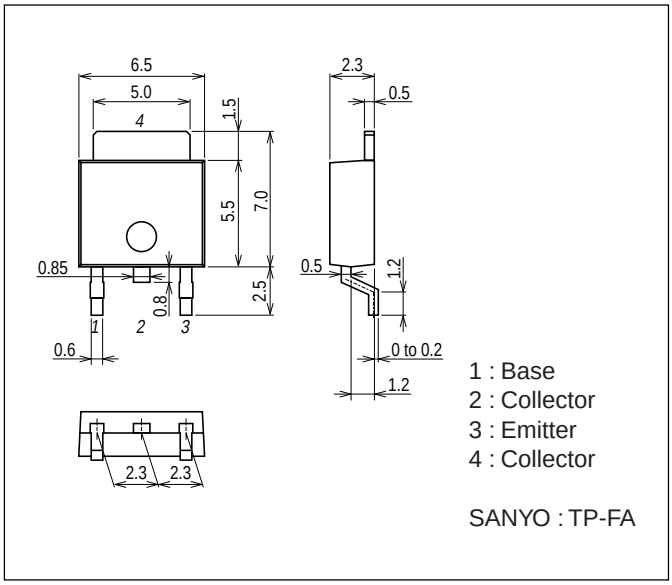
7518-003



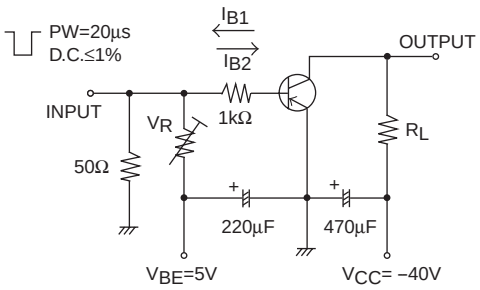
Package Dimensions

unit : mm (typ)

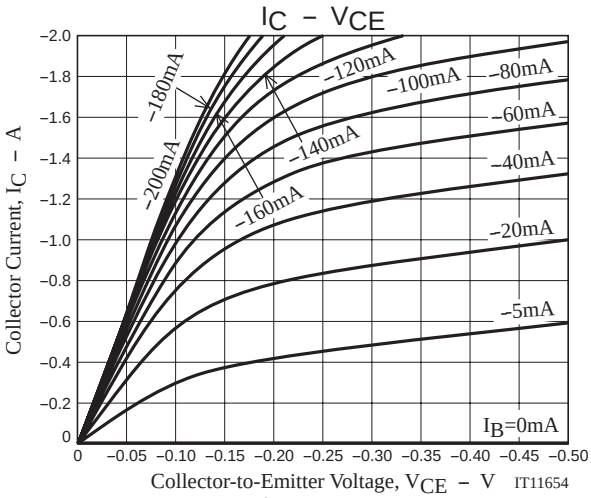
7003-003

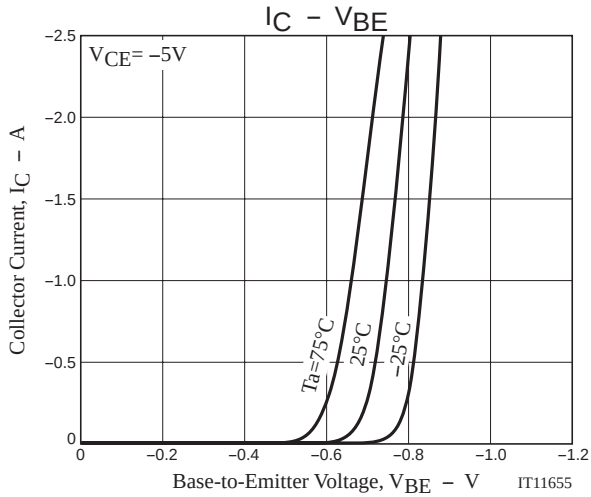


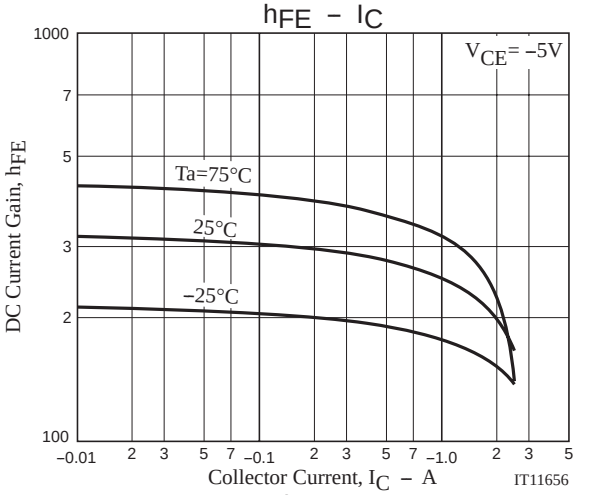
Switching Time Test Circuit

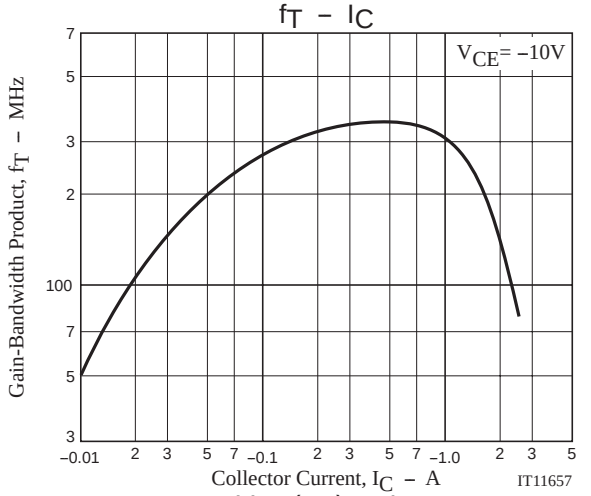


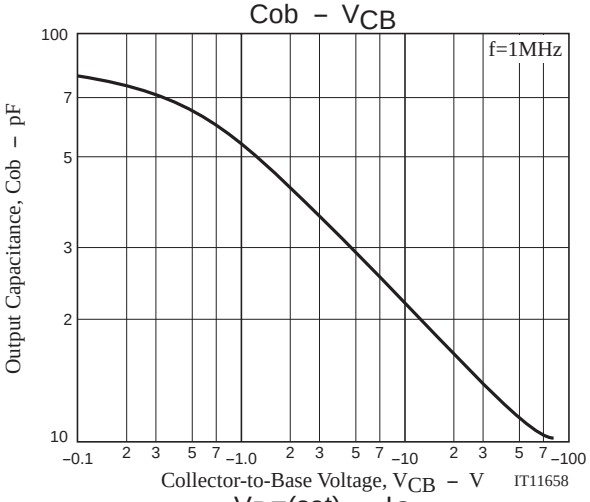
I_C= –10I_{B1}=10I_{B2}= –0.5A

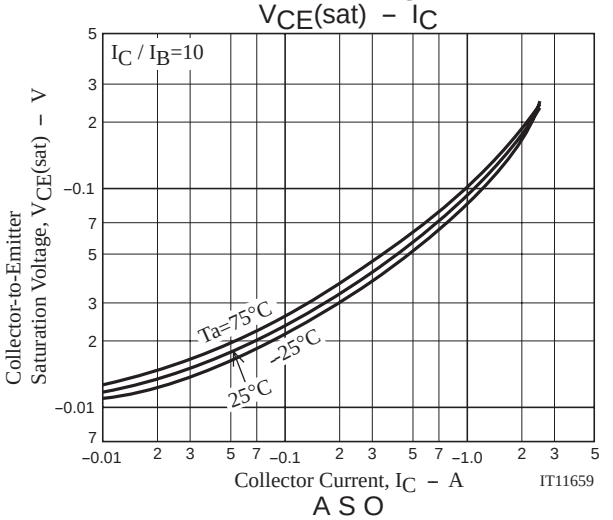

IC – VCE
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11654
–180mA
–200mA
–120mA
–100mA
–80mA
–60mA
–140mA
–160mA
–40mA
–20mA
–5mA
IB=0mA

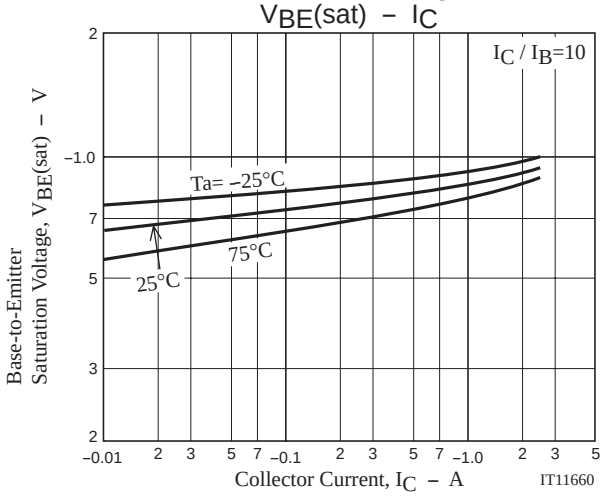

IC – VBE
VCE= –5V
Collector Current, IC – A
Base-to-Emitter Voltage, VBE – V
IT11655
Ta=75°C
25°C
–25°C

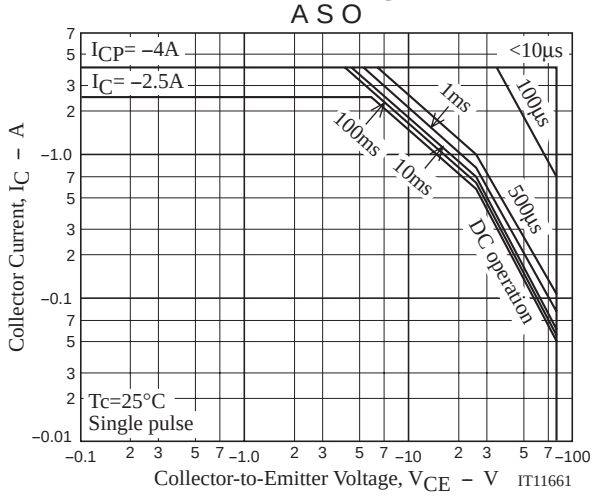

hFE – IC
VCE= –5V
DC Current Gain, hFE
Collector Current, IC – A
IT11656
Ta=75°C
25°C
–25°C


fT – IC
VCE= –10V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – A
IT11657


Cob – VCB
f=1MHz
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VCB – V
IT11658


VCE(sat) – IC
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – A
IT11659
Ta=75°C
–25°C
25°C


VBE(sat) – IC
IC / IB=10
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – A
IT11660
Ta= –25°C
75°C
25°C


A S O
ICP= –4A
IC= –2.5A
<10µs
100µs
1ms
10ms
100ms
500µs
DC operation
Tc=25°C
Single pulse
Collector Current, IC – A
Collector-to-Emitter Voltage, VCE – V
IT11661