Ordering number:EN2959A

NPN Triple Diffused Planar Silicon Transistor

2SC4003

High-Voltage Driver Applications

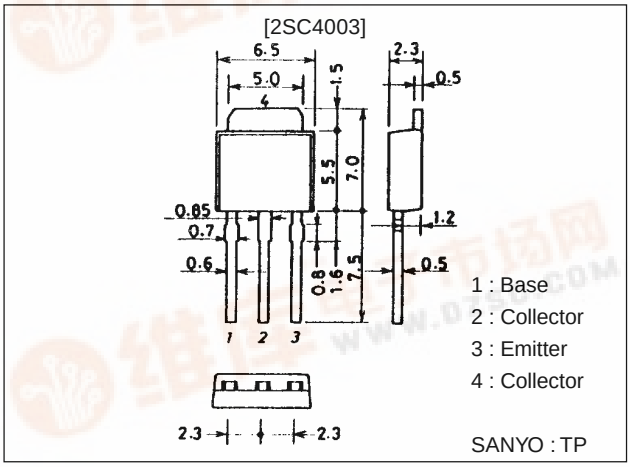
Features

- High breakdown voltage.
- Adoption of MBIT process.
- Excellent h_{FE} linearity.

Package Dimensions

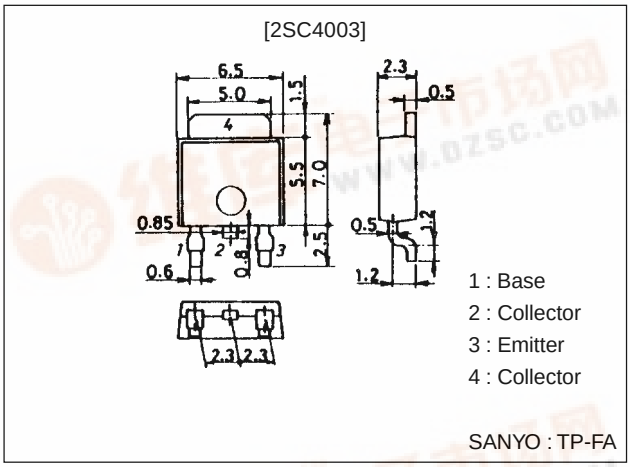
unit:mm

2045B



unit:mm

2044B



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

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		400	V
Collector-to-Emitter Voltage	V_{CEO}		400	V
Emitter-to-Base Voltage	V_{EBO}		5	V
Collector Current	I_C		200	mA
Collector Current (Pulse)	I_{CP}		400	mA
Collector Dissipation	P_C		1	W
		Tc=25˚C	10	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

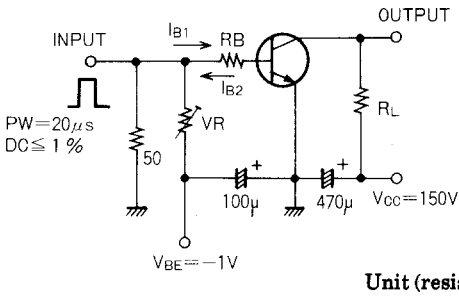
Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=300V, I_E=0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=4V, I_C=0			0.1	μA
DC Current Gain	h_{FE}	V_{CE}=10V, I_C=50mA	60*		200*	
Gain-Bandwidth Product	f_T	V_{CE}=30V, I_C=10mA		70		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=50mA, I_B=5mA			0.6	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=50mA, I_B=5mA			1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=1mA, R_{BE}=∞	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=10μA, I_C=0	5			V
Output Capacitance	C_{ob}	V_{CB}=30V, f=1MHz		4		pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=30V, f=1MHz		3		pF
Turn-ON Time	t_{on}	See specified test circuit.		0.25		μs
Turn-OFF Time	t_{off}	See specified test circuit.		5.0		μs

* : The 2SC4003 is classified by 50mA h_{FE} as follows :

60 D 120	100 E 200

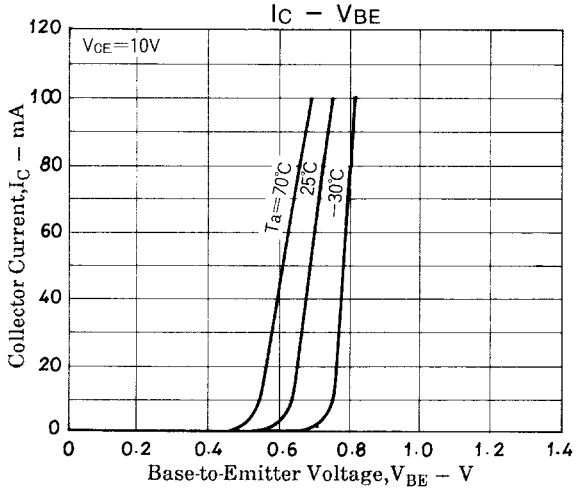
Switching Time Test Circuit

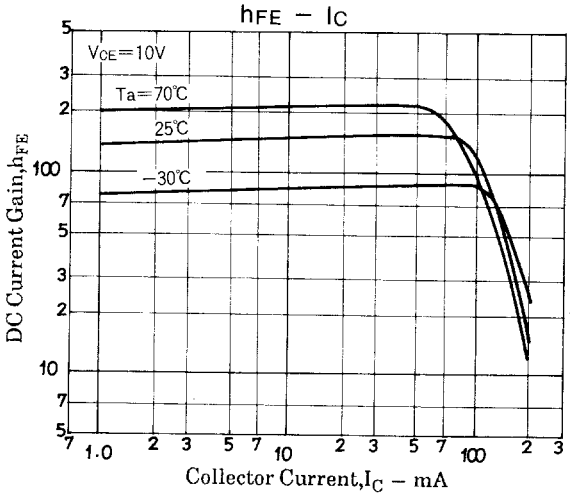


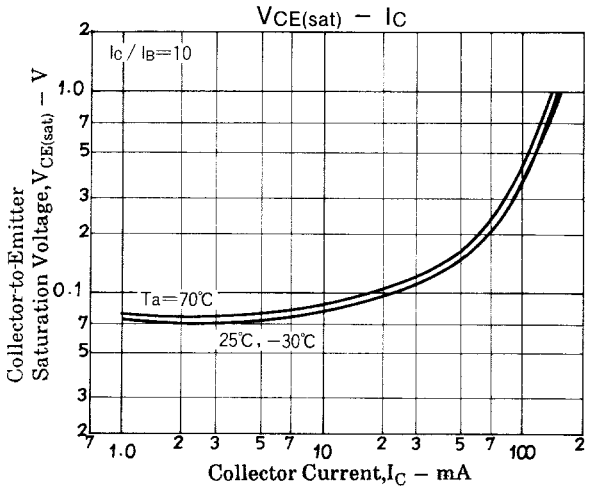
Unit (resistance : Ω, capacitance : F)

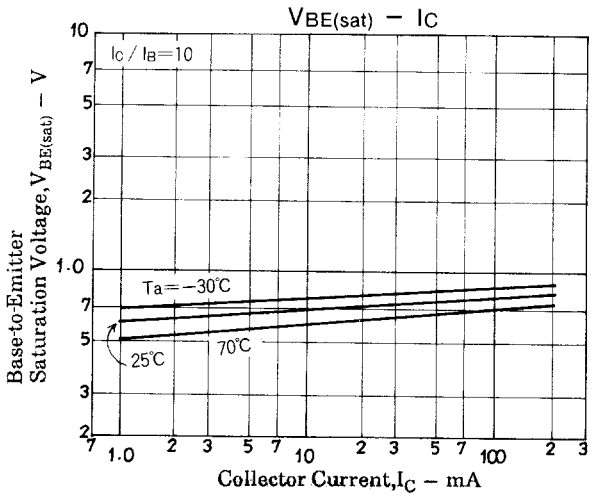
$10I_{B1}=-10I_{B2}=I_C=50mA$

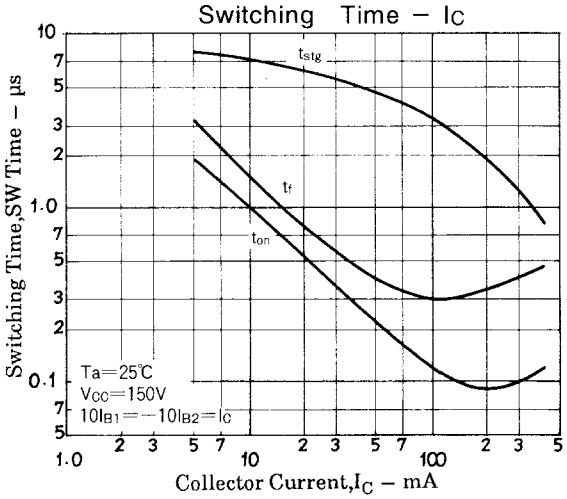
$R_L=3k\Omega$, $R_B=200\Omega$ at $I_C=50mA$

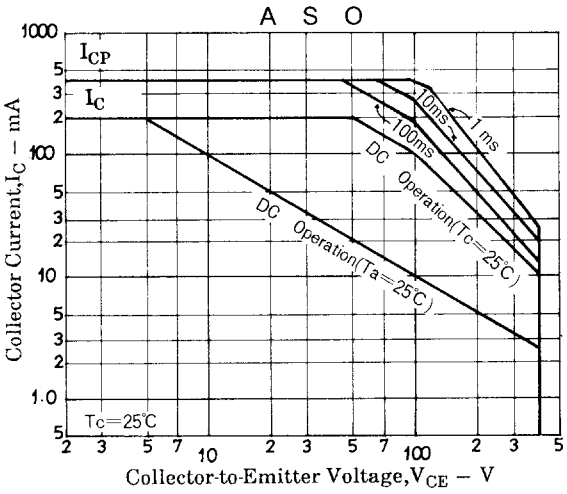


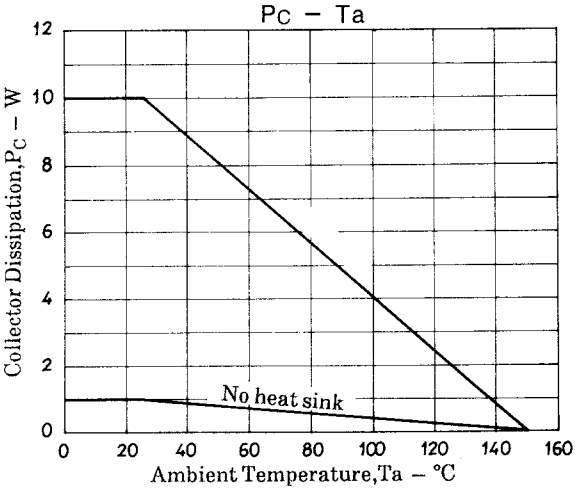



VCE(sat) – IC
IC / IB=10
Ta=70℃
25℃, –30℃
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA


VBE(sat) – IC
IC / IB=10
Ta=–30℃
25℃
70℃
Base-to-Emitter Saturation Voltage, VBE(sat) – V
Collector Current, IC – mA


Switching Time – IC
tstg
tf
ton
Ta=25℃
VCC=150V
10IB1=–10IB2=IC
Switching Time, SW Time – μs
Collector Current, IC – mA


A S O
ICP
IC
10ms
1ms
100ms
DC Operation(TC=25℃)
DC Operation(Ta=25℃)
TC=25℃
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V


PC – Ta
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C