Ordering number:EN3330

NPN Triple Diffused Planar Silicon Transistor

2SC4459

500V/10A Switching Regulator Applications

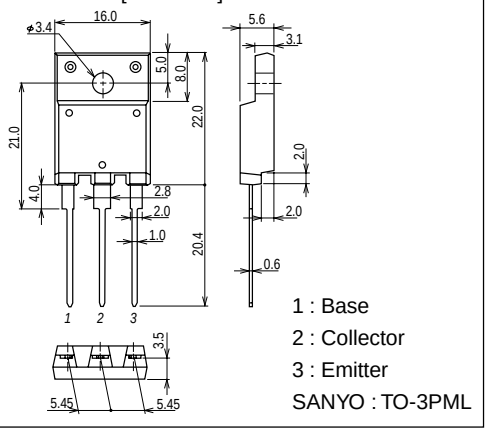
Features

- High breakdown voltage, high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2039D



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		800	V
Collector-to-Emitter Voltage	V_{CEO}		500	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		10	A
Collector Current (Pulse)	I_{CP}	PW≤300μs, duty cycle≤10%	20	A
Base Current	I_B		3	A
Collector Dissipation	P_C		3	W
		Tc=25˚C	50	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}=500V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.8A	15*		50*	
	$h_{FE}2$	V_{CE}=5V, I_C=4A	8			

* : For the $h_{FE}1$ of the 2SC4459, specify two ranks or more in principle.

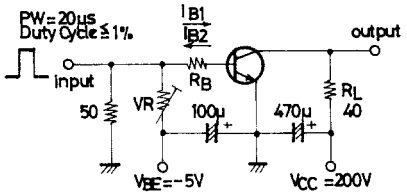
15 L 30	20 M 40	30 N 50

SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters

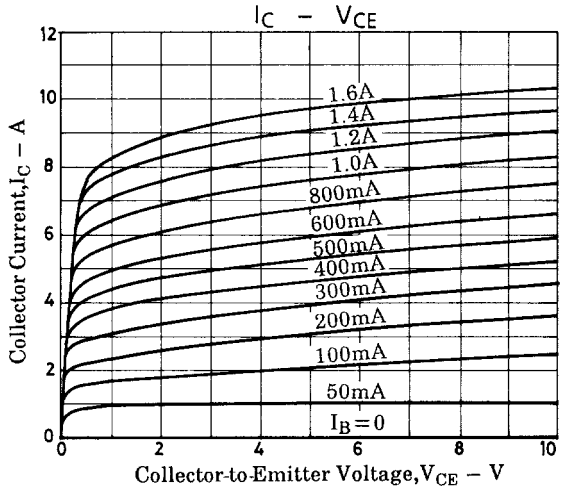
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

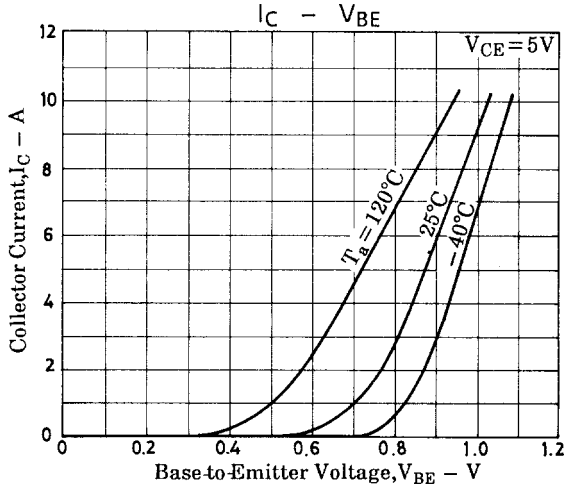
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.8A		18		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		50		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=4A, I_B=0.8A			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=4A, I_B=0.8A			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=1mA, I_E=0	800			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=5mA, R_{BE}=∞	500			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=1mA, I_C=0	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	I_C=3.5A, I_{B1}=–I_{B2}=1.4A, L=500μH, Clamped	500			V
Turn-ON Time	t_{on}	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=5A, R_L=40Ω			0.5	μs
Storage Time	t_{stg}	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=5A, R_L=40Ω			3.0	μs
Fall Time	t_f	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=5A, R_L=40Ω			0.3	μs

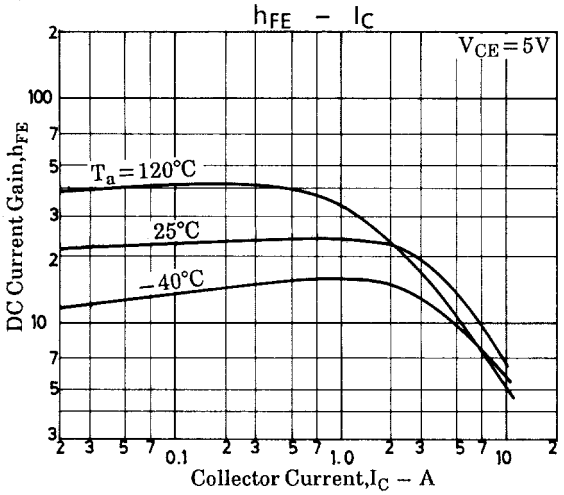
Switching Time Test Circuit

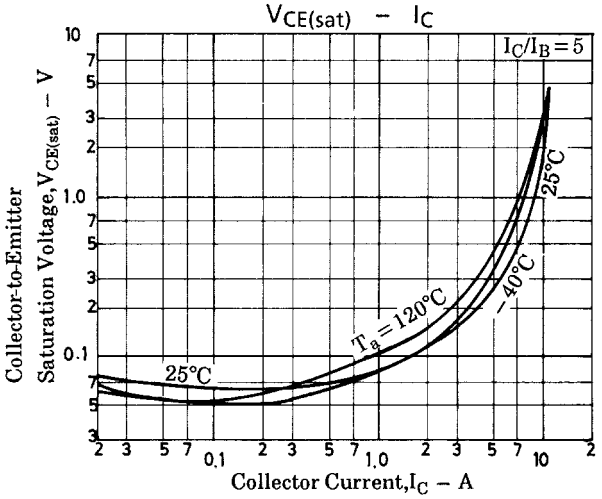


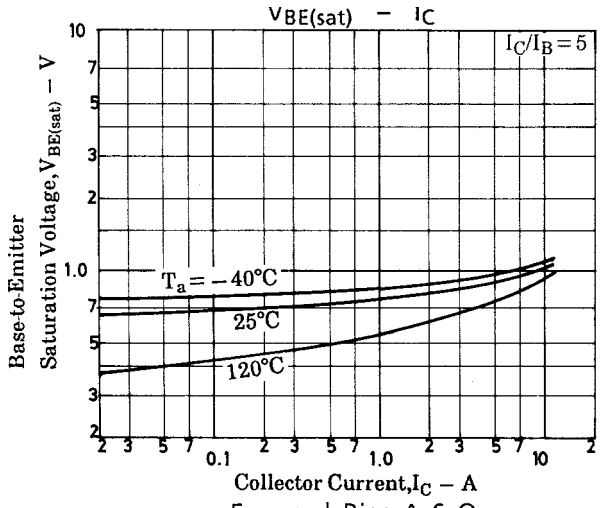
Unit (resistance : Ω, capacitance : F)

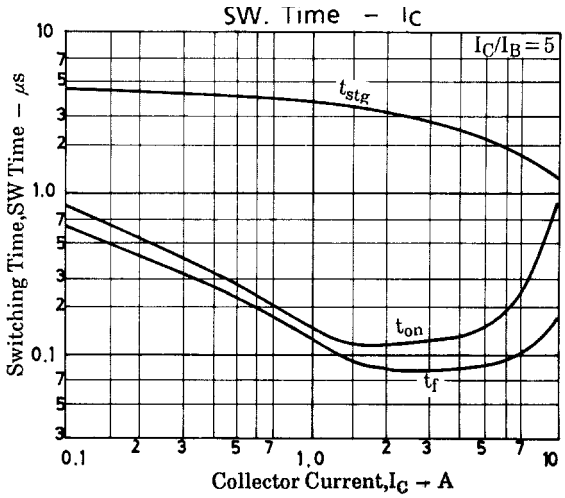


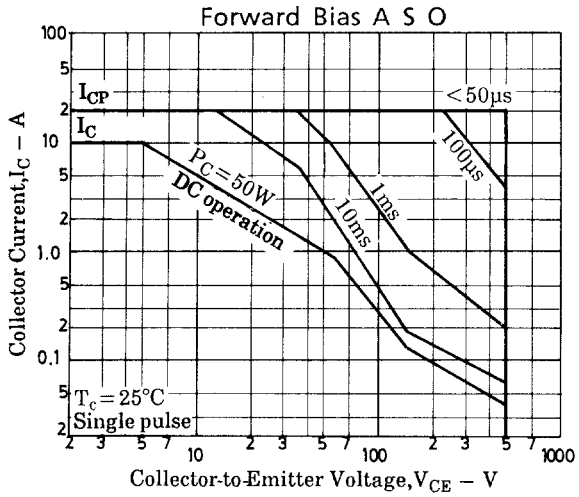


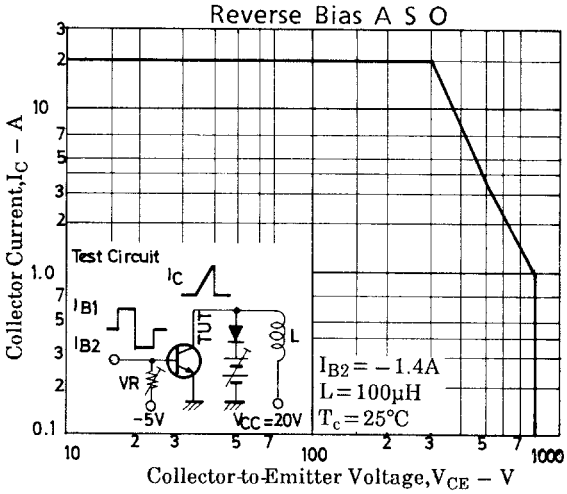


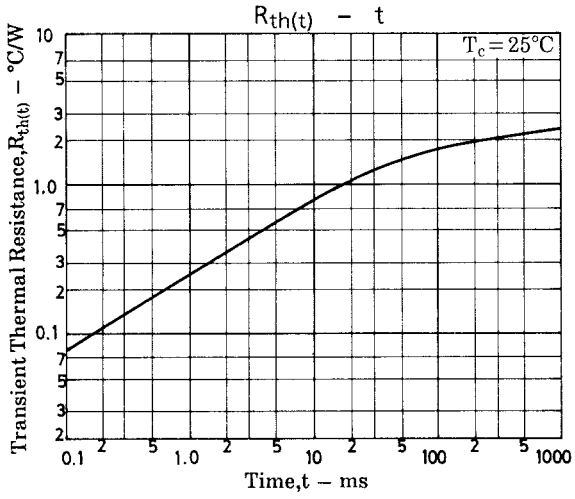


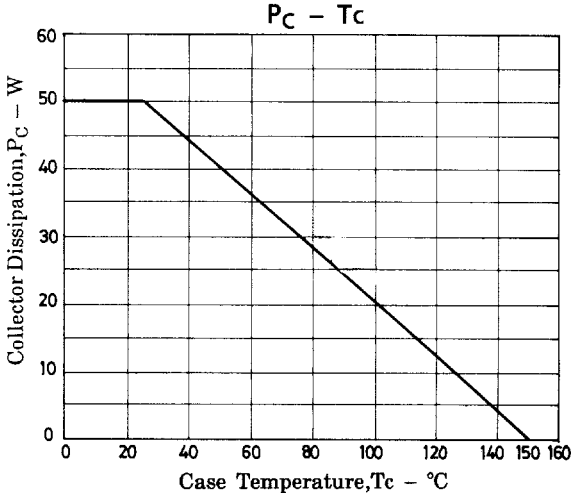

VBE(sat) – IC
IC/IB=5
Ta=–40°C
25°C
120°C
Base-to-Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A


SW. Time – IC
IC/IB=5
tstg
ton
tf
Switching Time,SW Time – μs
Collector Current,IC – A


Forward Bias A S O
ICP
IC
<50μs
100μs
1ms
10ms
PC=50W
DC operation
Tc=25°C
Single pulse
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V


Reverse Bias A S O
Test Circuit
IC
IB1
IB2
VR
-5V
TUT
L
VCC=20V
IB2=–1.4A
L=100μH
Tc=25°C
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V


Rth(t) – t
Tc=25°C
Transient Thermal Resistance,Rth(t) – °C/W
Time,t – ms


PC – Tc
Collector Dissipation,PC – W
Case Temperature,Tc – °C