Ordering number:EN1969A

NPN Triple Diffused Planar Silicon Transistor

2SC3750

500V/5A Switching Regulator Applications

Features

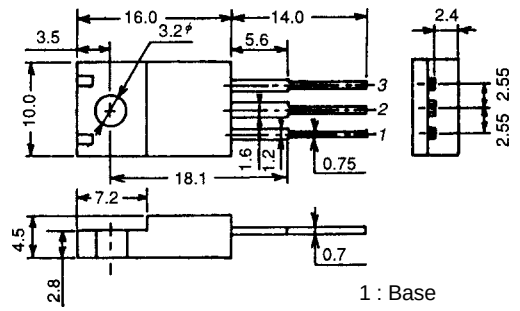
- High breakdown voltage and high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2041A

[2SC3750]



1 : Base
2 : Collector
3 : Emitter
SANYO : TO-220ML

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		5	A
Collector Current (Pulse)	I_{CP}	PW≤300μs, Duty Cycle≤10%	10	A
Base Current	I_B		2	A
Collector Dissipation	P_C	Tc=25˚C	30	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=0.6A	15*		50*	
	$h_{FE}2$	V_{CE}=5V, I_C=3A	8			
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.6A		18		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		80		pF

* : The $h_{FE}1$ of the 2SC3750 is classified as follows. When specifying the $h_{FE}1$ rank, specify two ranks or more in principle.

15	L	30	20	M	40	30	N	50

SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
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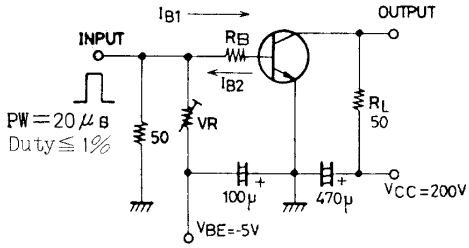
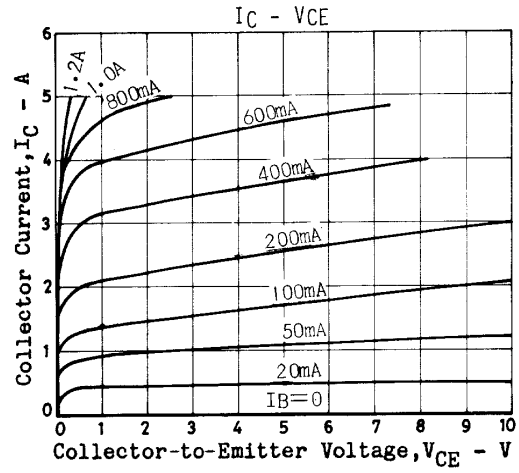
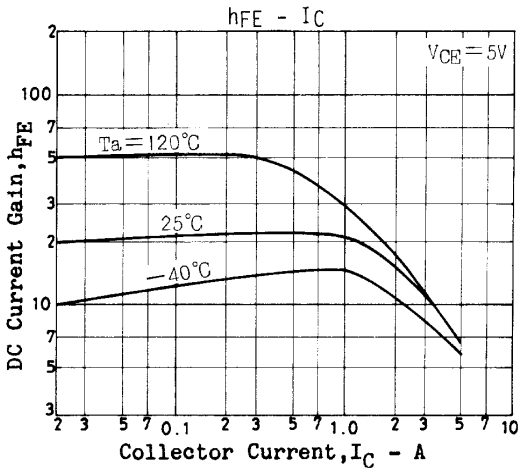
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=3A, I_B=0.6A			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=3A, I_B=0.6A			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=1mA, I_E=0	800			V
Collector-to-Emitter 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=2.5A, I_{B1}=–I_{B2}=1A, L=1mH, Clamped	500			V
Turn-ON Time	t_{on}	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=4A, R_L=50Ω			0.5	μs
Storage Time	t_{stg}	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=4A, R_L=50Ω			3.0	μs
Fall Time	t_f	V_{CC}=200V, 5I_{B1}=–2.5I_{B2}=I_C=4A, R_L=50Ω			0.3	μs

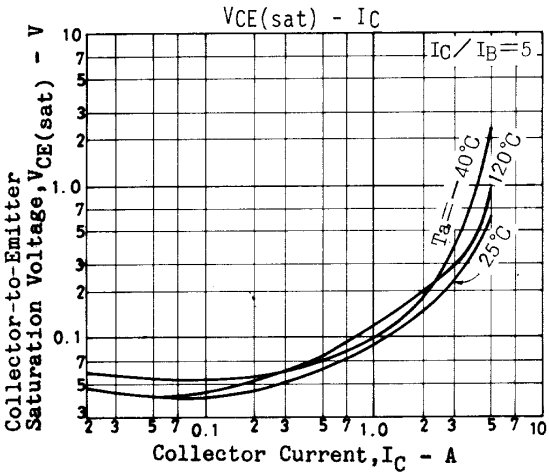
Switching Time Test Circuit

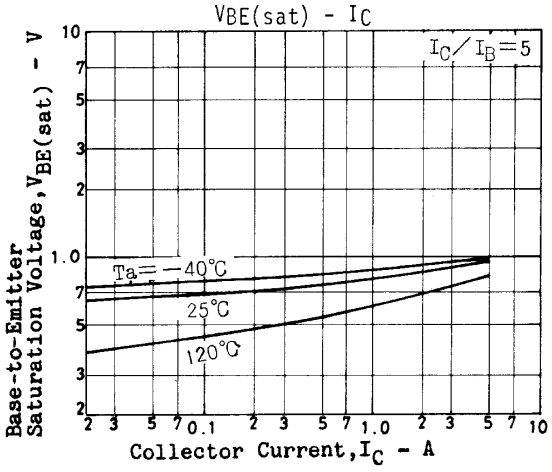


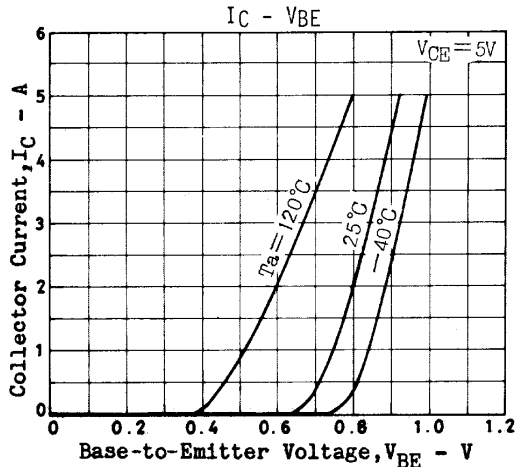
Unit (resistance : Ω, capacitance : F)

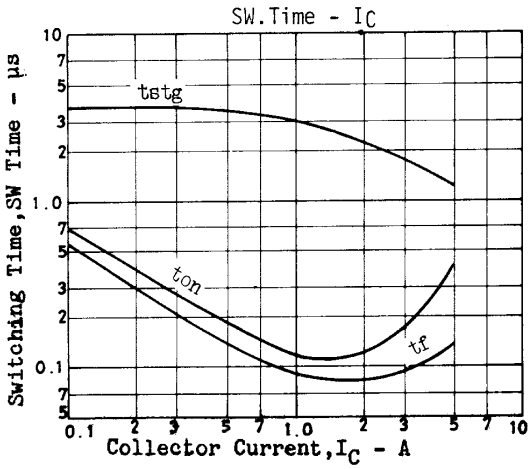


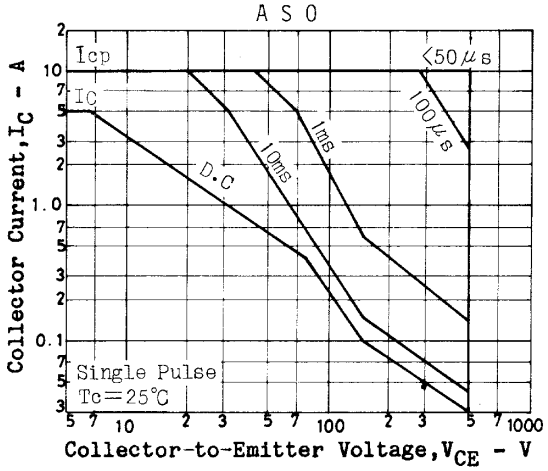


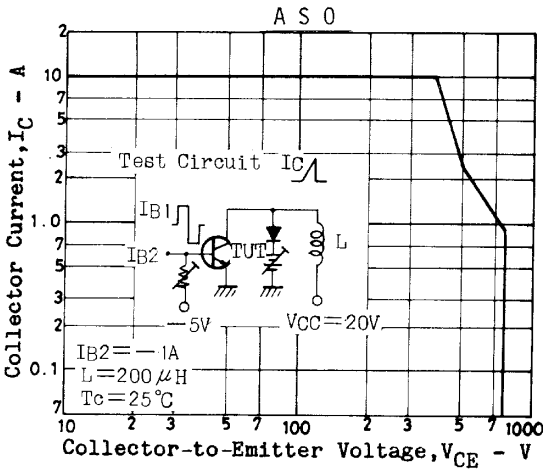


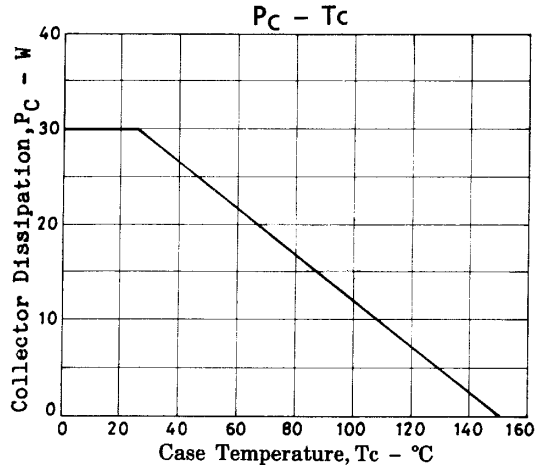



IC - VBE
VCE=5V
Ta=120°C
25°C
−40°C
Collector Current, IC - A
Base-to-Emitter Voltage, VBE - V


SW.Time - IC
tstg
ton
tf
Switching Time, SW Time - μs
Collector Current, IC - A


A S O
Icp
IC
<50μs
100μs
1ms
10ms
D.C
Single Pulse
Tc=25°C
Collector Current, IC - A
Collector-to-Emitter Voltage, VCE - V


A S O
Test Circuit IC
IB1
IB2
TUT
L
5V
VCC=20V
IB2=−1A
L=200μH
Tc=25°C
Collector Current, IC - A
Collector-to-Emitter Voltage, VCE - V


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