Ordering number:EN3147

NPN Triple Diffused Planar Silicon Transistor

2SC4601

Switching Regulator Applications

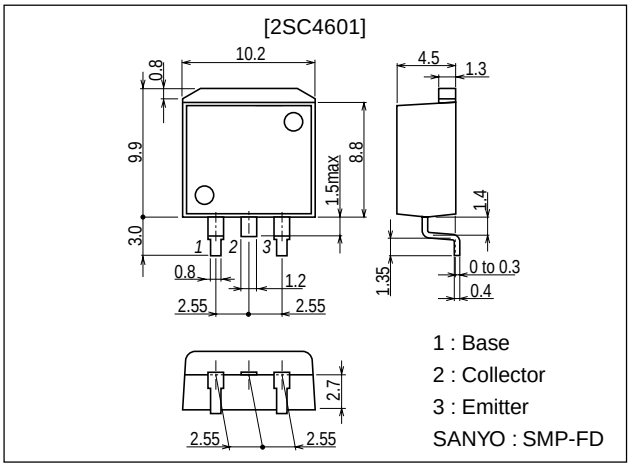
Features

- Surface mount type device making the following possible.
  -Reduction in the number of manufacturing processes for 2SC4601-applied equipment.
  -High density surface mount applications.
  -Small size of 2SC4601-applied equipment.
- High breakdown voltage, high reliability.
- Fast switching speed.
- Wide ASO.
- Adoption of MBIT process.

Package Dimensions

unit:mm

2069C



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		1100	V
Collector-to-Emitter Voltage	V_{CEO}		800	V
Emitter-to-Base Voltage	V_{EBO}		7	V
Collector Current	I_C		1.5	A
Collector Current (Pulse)	I_{CP}	PW≤300μs, duty cycle≤10%	5	A
Base Current	I_B		0.8	A
Collector Dissipation	P_C		1.65	W
		Tc=25˚C	40	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}=800V, 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=0.1A	10*		40*	
	$h_{FE}2$	V_{CE}=5V, I_C=0.5A	8			

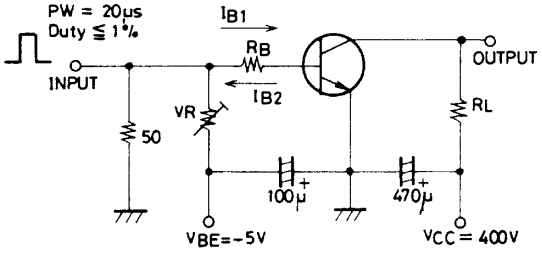
* : For the $h_{FE}1$ of the 2SC4601, specify two ranks or more in principle.

10 K 20	15 L 30	20 M 40

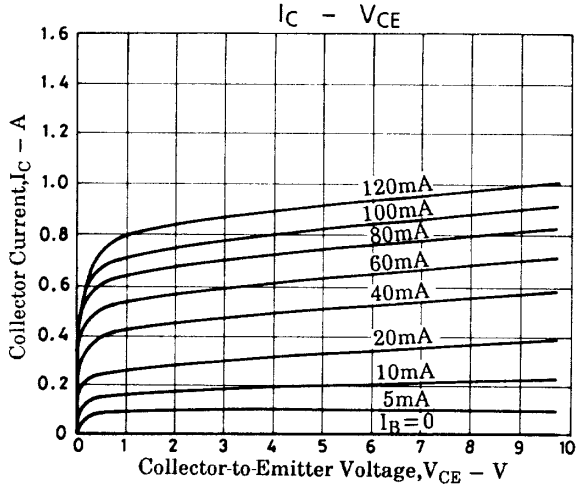
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

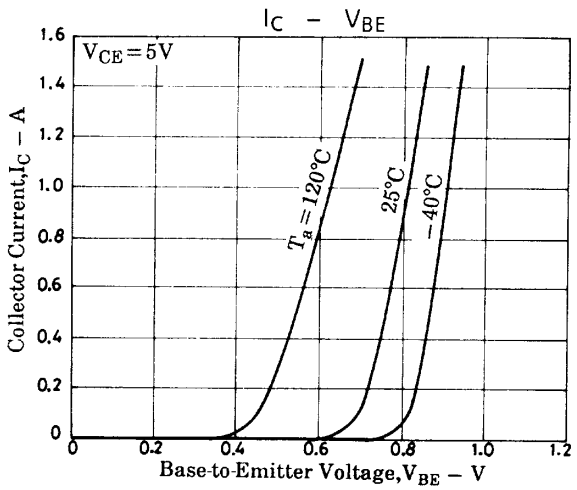
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.1A		15		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		35		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=0.75A, I_B=0.15A			2.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=0.75A, I_B=0.15A			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=1mA, I_E=0	1100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=5mA, R_{BE}=∞	800			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=1mA, I_C=0	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEO(sus)}$	I_C=0.75A, I_{B1}=–I_{B2}=0.15A, L=5mH, clamped	800			V
Turn-ON Time	t_{on}	I_C=1A, I_{B1}=0.2A, I_{B2}=–0.4A, R_L=400Ω, V_{CC}=400V			0.5	μs
Storage Time	t_{stg}	I_C=1A, I_{B1}=0.2A, I_{B2}=–0.4A, R_L=400Ω, V_{CC}=400V			3.0	μs
Fall Time	t_f	I_C=1A, I_{B1}=0.2A, I_{B2}=–0.4A, R_L=400Ω, V_{CC}=400V			0.3	μs

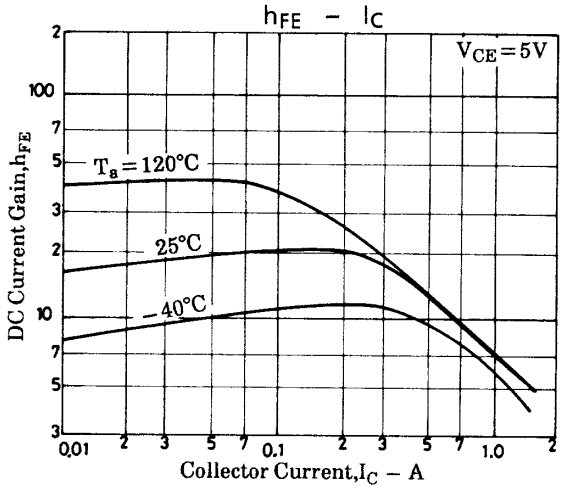
Switching Time Test Circuit

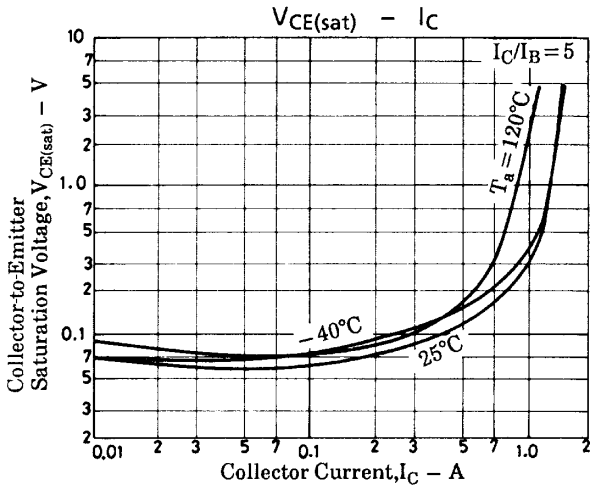


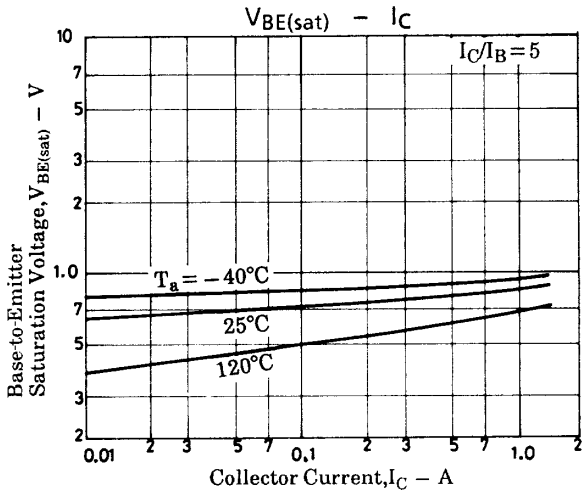
Unit (resistance : Ω, capacitance : F)

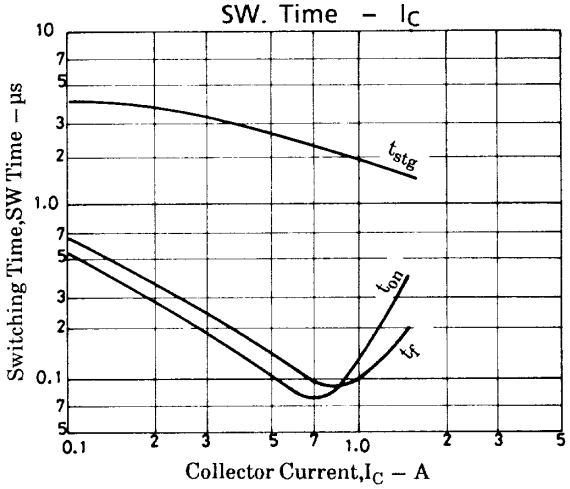


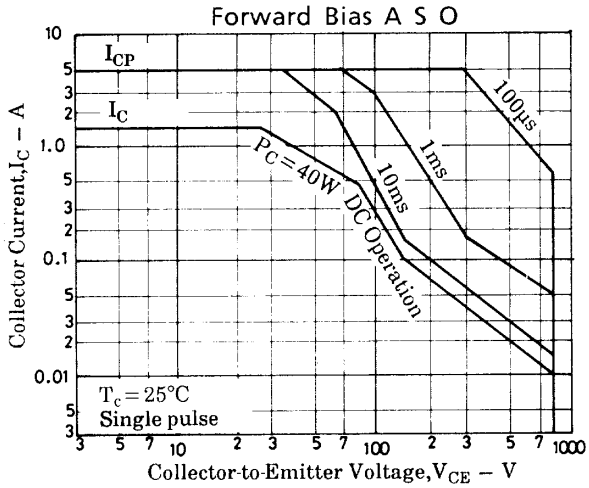


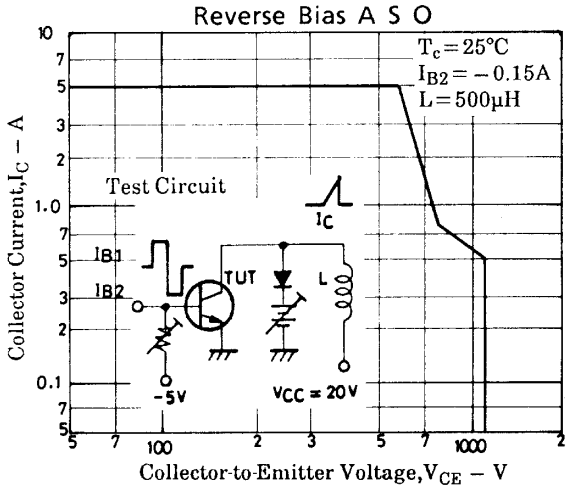


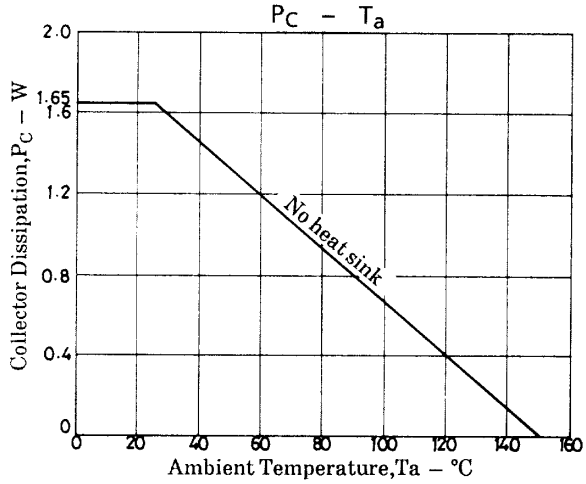


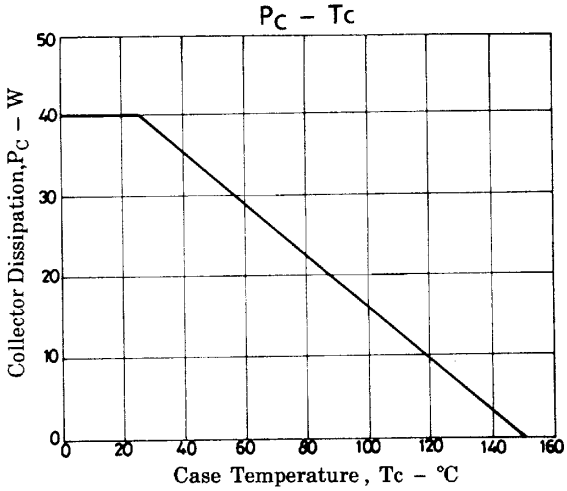

VBE(sat) – IC
IC/IB=5
Ta=–40°C
25°C
120°C
Base-to-Emitter Saturation Voltage,VBE(sat) – V
Collector Current,IC – A

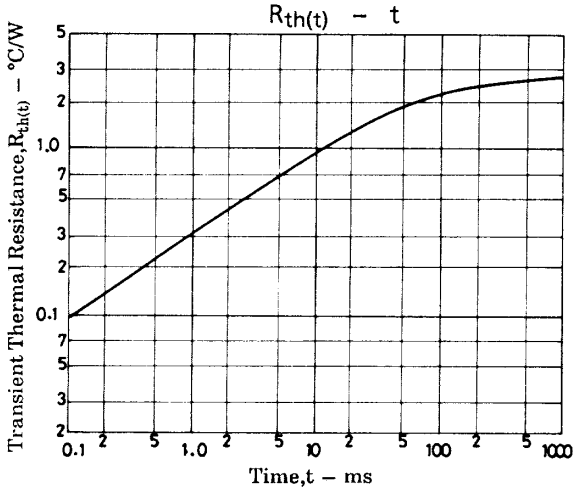

SW. Time – IC
tstg
ton
tf
Switching Time,SW Time – µs
Collector Current,IC – A


Forward Bias A S O
ICP
IC
100µs
1ms
10ms
PC=40W
DC Operation
Tc=25°C
Single pulse
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V


Reverse Bias A S O
Tc=25°C
IB2=–0.15A
L=500µH
Test Circuit
IC
IB1
IB2
TUT
L
–5V
VCC=20V
Collector Current,IC – A
Collector-to-Emitter Voltage,VCE – V


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


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


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