Ordering number:EN3146

NPN Triple Diffused Planar Silicon Transistor

2SC4600

Switching Regulator Applications

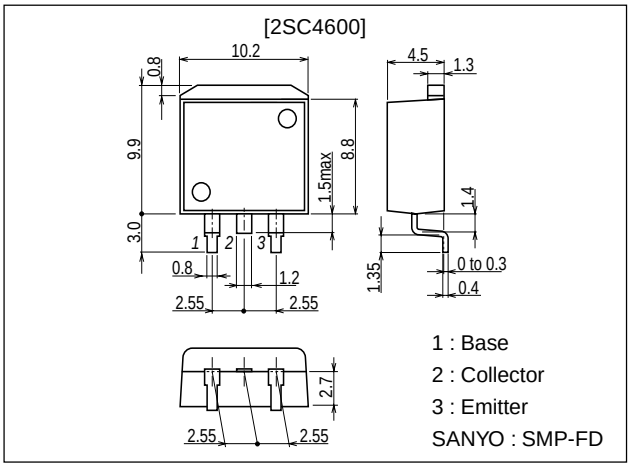
Features

- Surface mount type device making the following possible.
  -Reduction in the number of manufacturing processes for 2SC4600-applied equipment.
  -High density surface mount applications.
  -Small size of 2SC4600-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}		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		1.65	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=0.6A	15*		50*	
	$h_{FE}2$	V_{CE}=5V, I_C=3A	8			

* : For the $h_{FE}1$ of the 2SC4600, specify two ranks or more in principle.

15	L	30	20	M	40	30	N	50

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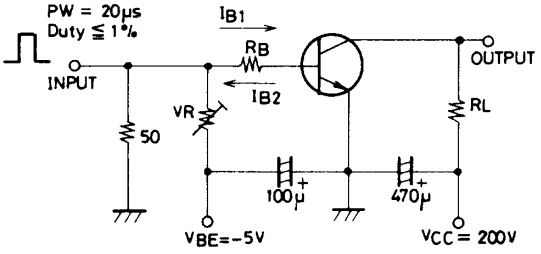
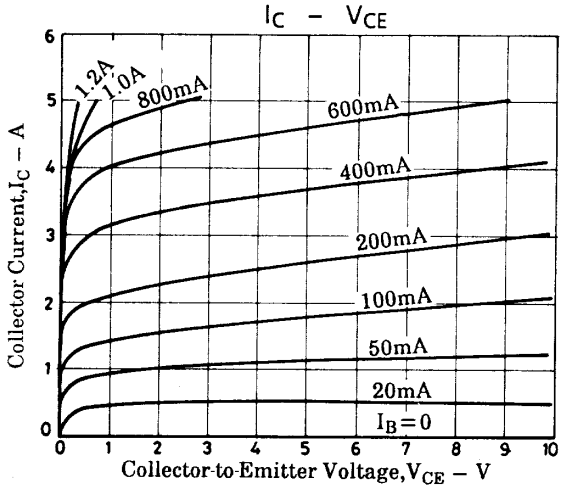
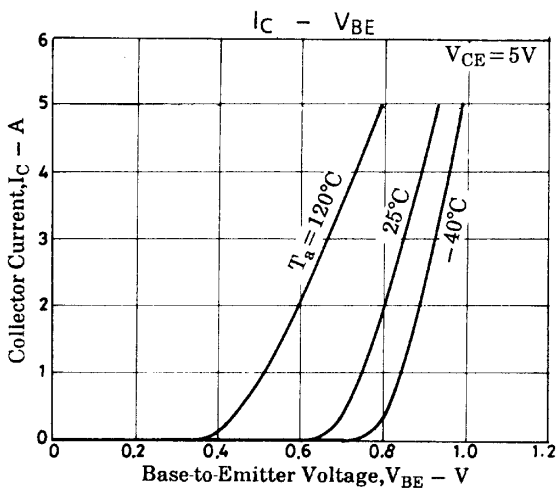
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.6A		18		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		80		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=3A, I_B=0.6A			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=3A, 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	$V_{CEO(sus)}$	I_C=5A, I_{B1}=1A, L=50μH	500			V
	$V_{CEX(sus)}$	I_C=2.5A, I_{B1}=–I_{B2}=1A, L=1mH, clamped	500			V
Turn-ON Time	t_{on}	I_C=4A, I_{B1}=0.8A, I_{B2}=–1.6A, R_L=50Ω, V_{CC}=200V			0.5	μs
Storage Time	t_{stg}	I_C=4A, I_{B1}=0.8A, I_{B2}=–1.6A, R_L=50Ω, V_{CC}=200V			3.0	μs
Fall Time	t_f	I_C=4A, I_{B1}=0.8A, I_{B2}=–1.6A, R_L=50Ω, V_{CC}=200V			0.3	μs

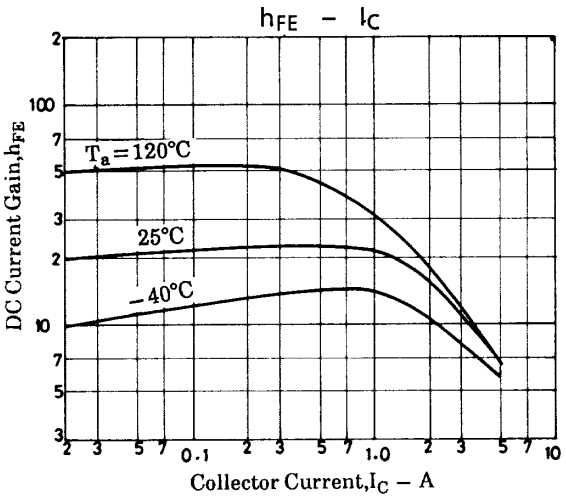
Switching Time Test Circuit

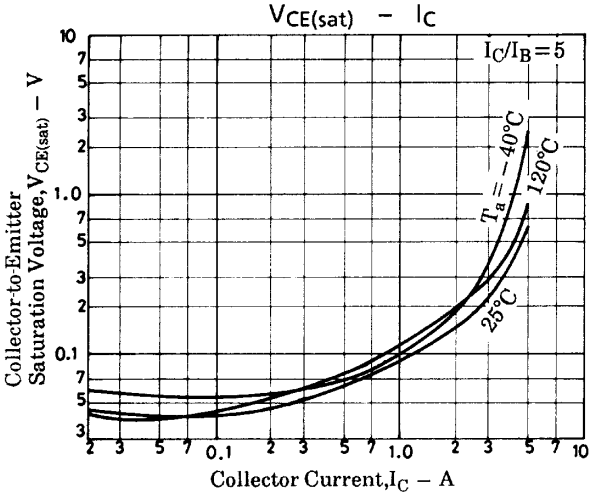


Unit (resistance : Ω, capacitance : F)

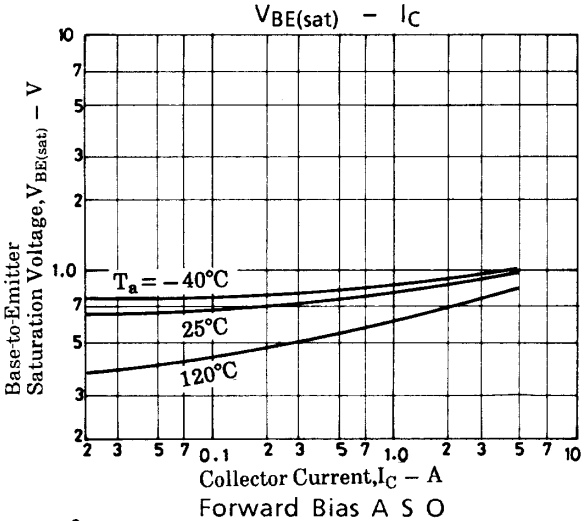




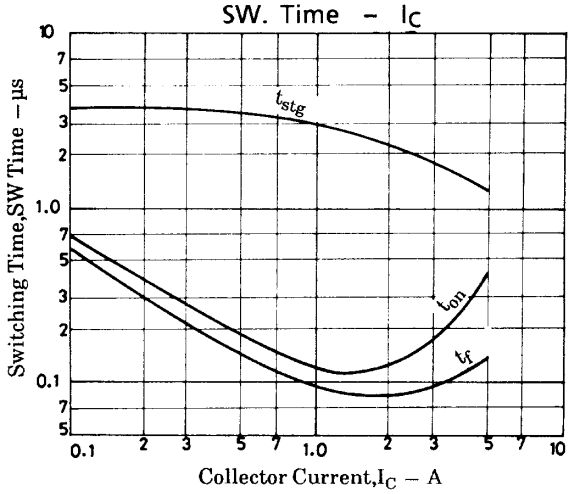




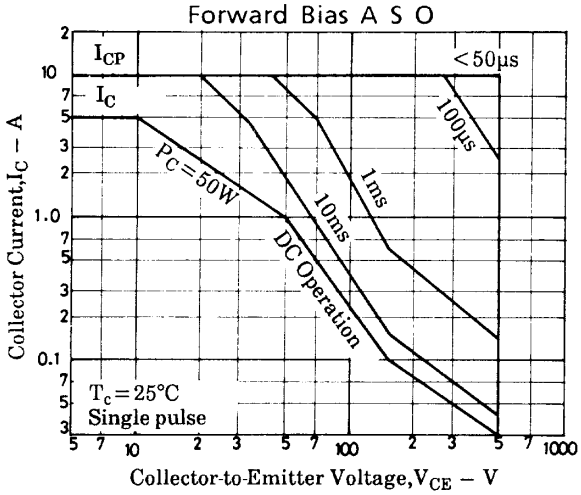
$V_{BE(sat)}$ – I_C



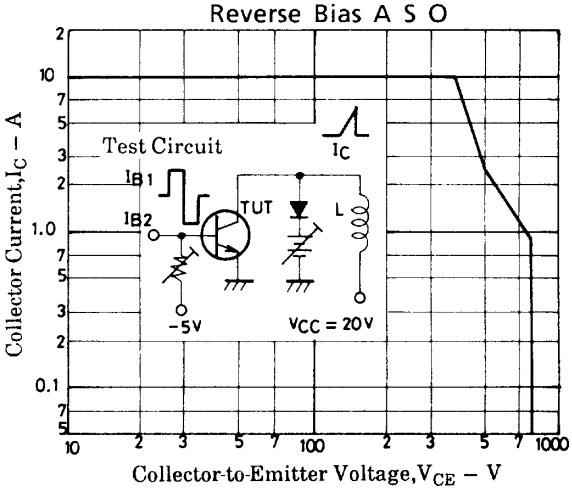
SW. Time – I_C



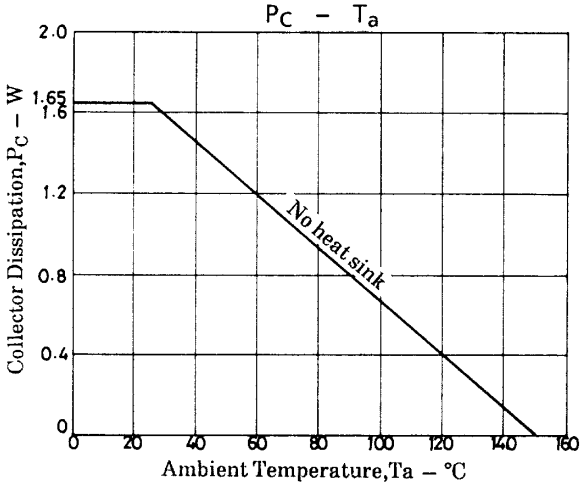
Forward Bias A S O



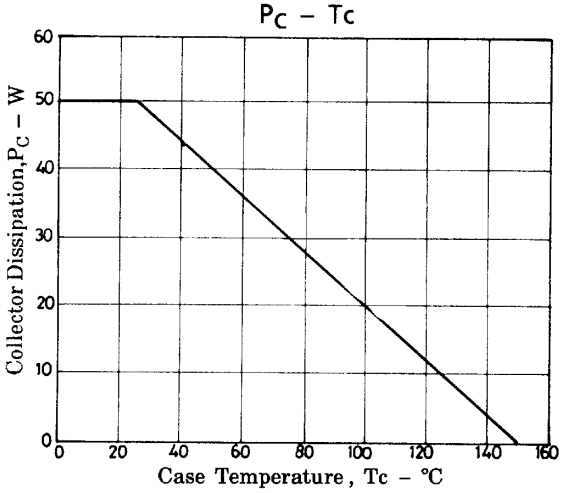
Reverse Bias A S O



P_C – T_a



P_C – Tc



$R_{th(t)}$ – t