Ordering number:EN2762A

NPN Triple Diffused Planar Silicon Transistor

2SC4223

800V/1.5A Switching Regulator Applications

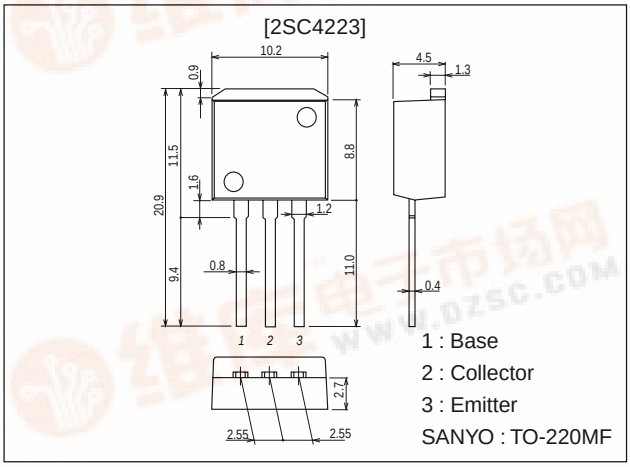
Features

- High breakdown voltage, high reliability.
- Fast switching speed (t_f=0.1μs typ).
- Wide ASO.
- Adoption of MBIT process.
- Suitable for sets whose height is restricted.

Package Dimensions

unit:mm

2049C



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	Ta=25˚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

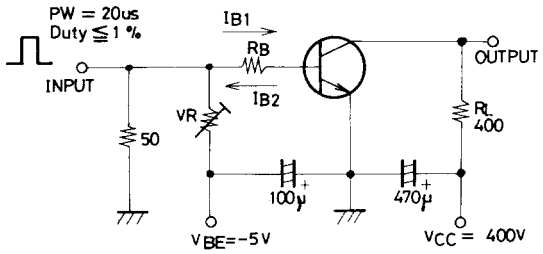
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=800V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=5V, I_C=0			10	μA
DC Current Gain	$h_{FE}1$	V_{CE}=5V, I_C=0.1A	10*		40*	
	$h_{FE}2$	V_{CE}=5V, I_C=0.5A	8			

* : The $h_{FE}1$ of the 2SC4223 is classified as follows. When specifying the $h_{FE}1$ rank, specify two ranks or more in principle.

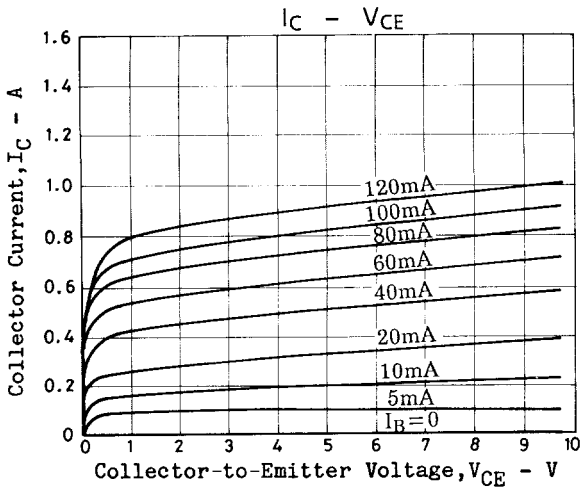
10	K	20	15	L	30	20	M	40

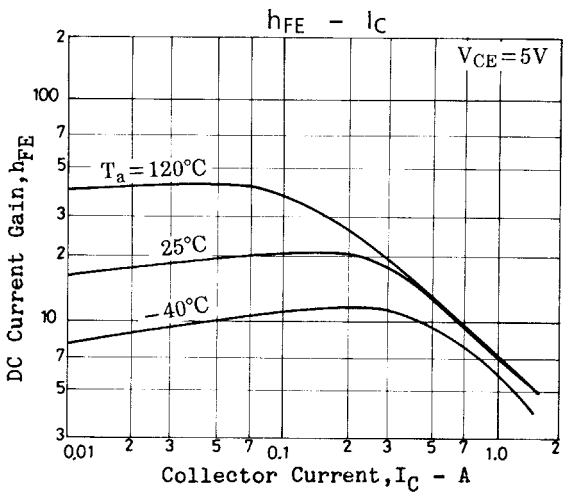
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.1A		15		MHz
Output Capacitance	C_{ob}	V_{CB}=10V, f=1MHz		35		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=0.75A, I_B=0.15A			2.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	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	$V_{CEX(sus)}$	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

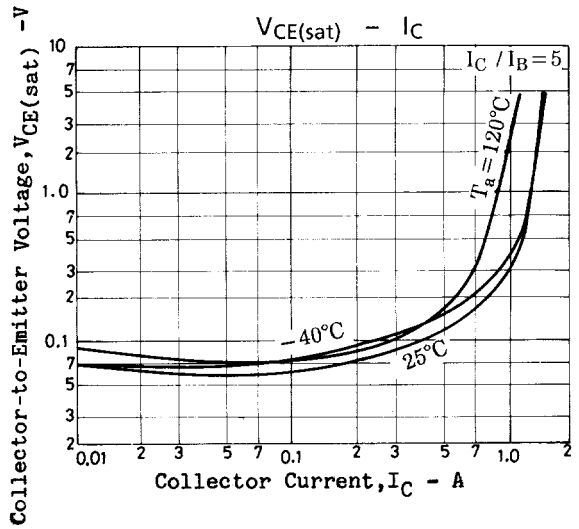
Switching Time Test Circuit

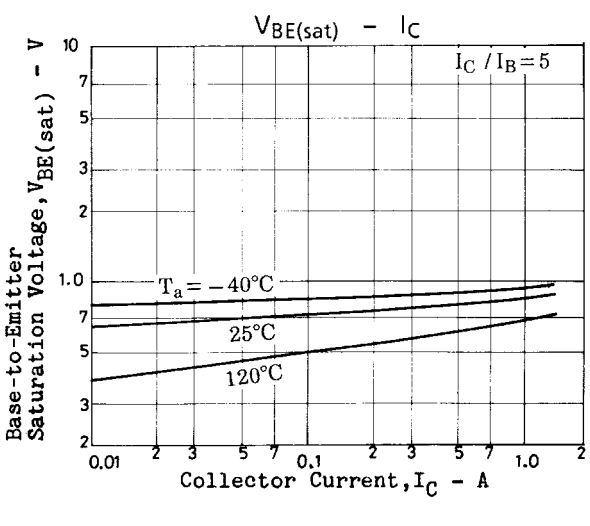


Unit (resistance: Ω, capacitance: F)

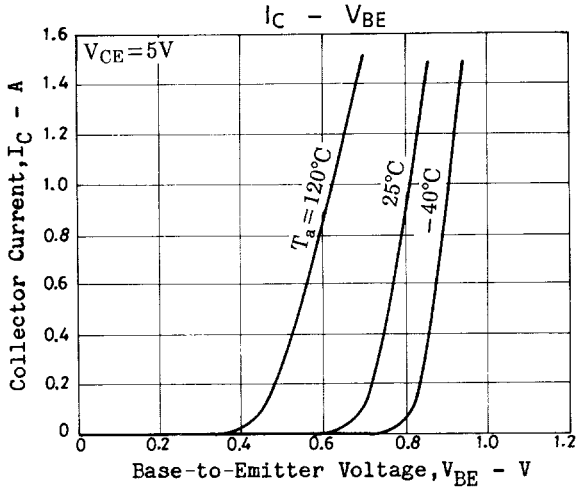


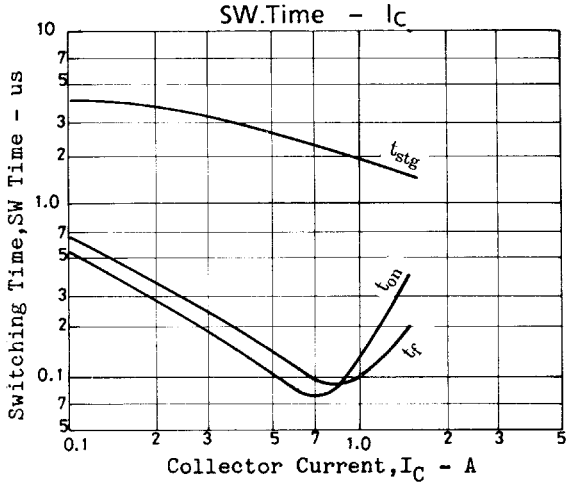


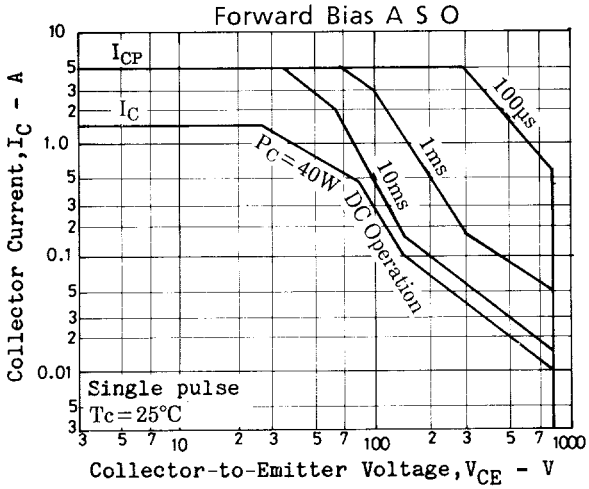


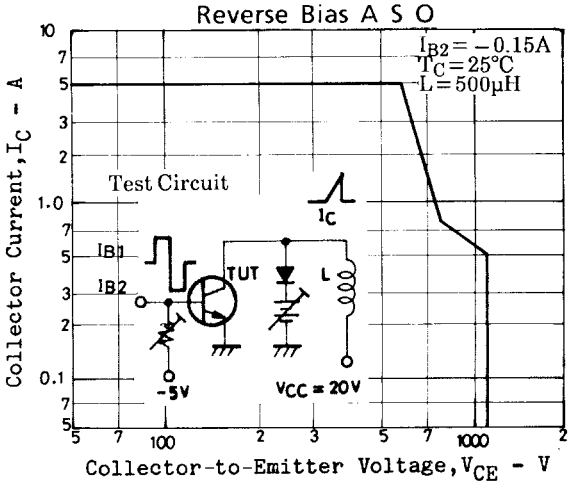


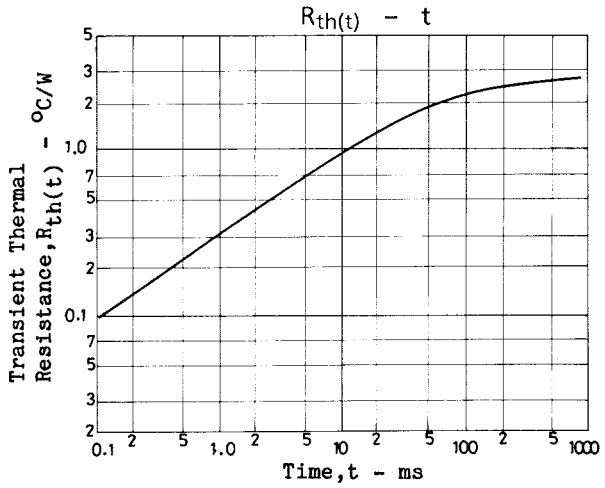
2SC4223

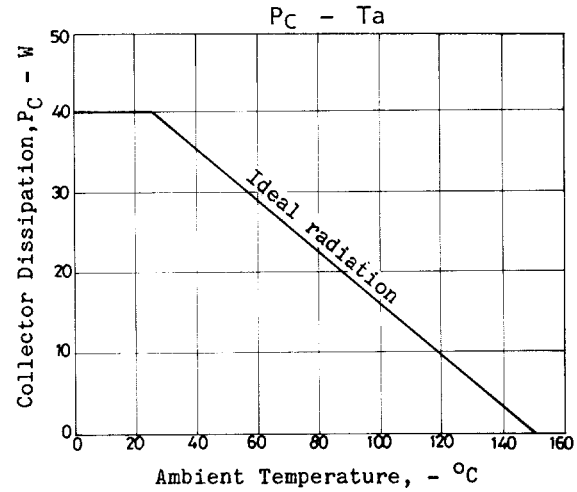

I_C - V_{BE}
V_{CE}=5V
T_a=120°C
25°C
-40°C
Collector Current, I_C - A
Base-to-Emitter Voltage, V_{BE} - V


SW.Time - I_C
t_{stg}
t_{on}
t_f
Switching Time, SW Time - us
Collector Current, I_C - A


Forward Bias A S O
I_{CP}
I_C
100μs
1ms
10ms
P_C=40W DC Operation
Single pulse
Tc=25°C
Collector Current, I_C - A
Collector-to-Emitter Voltage, V_{CE} - V


Reverse Bias A S O
I_{B2}=-0.15A
T_C=25°C
L=500μH
Test Circuit
I_C
I_{B1}
I_{B2}
TUT
L
-5V
Vcc = 20V
Collector Current, I_C - A
Collector-to-Emitter Voltage, V_{CE} - V


$R_{th(t)}$ - t
Transient Thermal Resistance, $R_{th(t)}$ - °C/W
Time, t - ms


P_C - Ta
Ideal radiation
Collector Dissipation, P_C - W
Ambient Temperature, - °C