

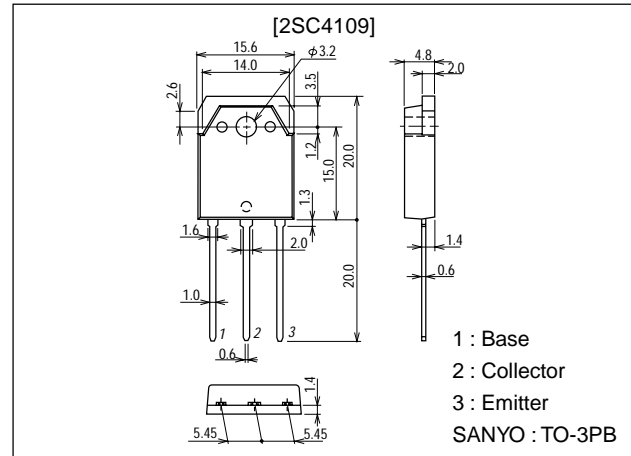
**2SC4109****400V/16A Switching Regulator Applications****Features**

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

**Package Dimensions**

unit:mm

2022A

**Specifications****Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		500	V
Collector-to-Emitter Voltage	$V_{CE0}$		400	V
Emitter-to-Base Voltage	$V_{EB0}$		7	V
Collector Current	$I_C$		16	A
Collector Current (Pulse)	$I_{CP}$	PW≤300μs, duty cycle≤10%	32	A
Base Current	$I_B$		6	A
Collector Dissipation	$P_C$		2.5	W
		$T_c=25^\circ\text{C}$	140	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

**Electrical Characteristics at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=400\text{V}, I_E=0$			10	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5\text{V}, I_C=0$			10	μA
DC Current Gain	$h_{FE1}$	$V_{CE}=5\text{V}, I_C=2\text{A}$	15*		50*	
	$h_{FE2}$	$V_{CE}=5\text{V}, I_C=10\text{A}$	10			
	$h_{FE3}$	$V_{CE}=5\text{V}, I_C=10\text{mA}$	10			

\* : The  $h_{FE1}$  of the 2SC4109 is classified as follows. When specifying the  $h_{FE1}$  rank, specify two ranks or more in principle.

15	L	30	20	M	40	30	N	50
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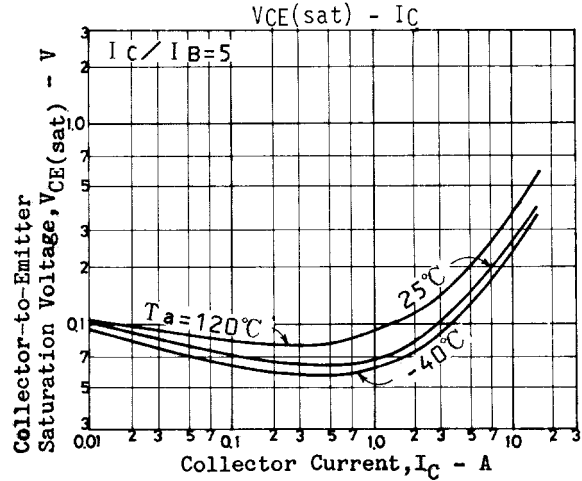
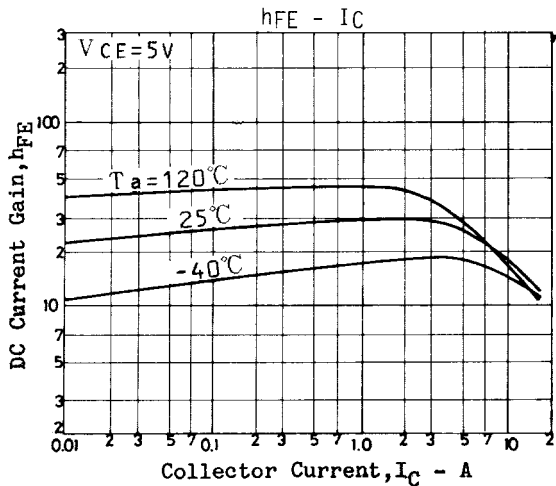
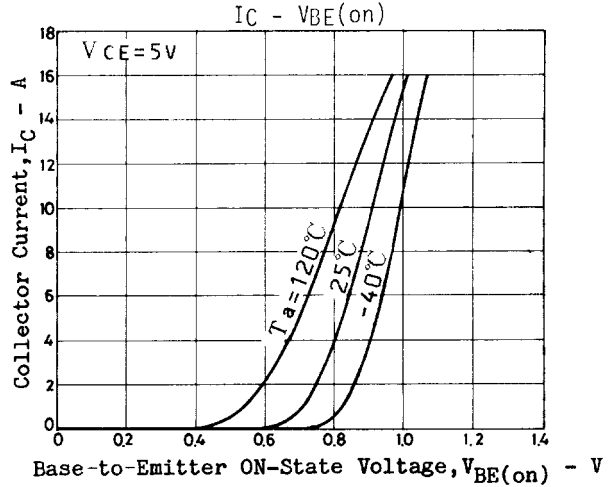
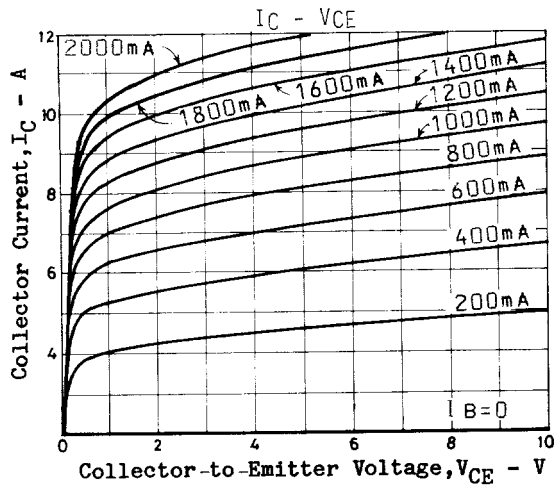
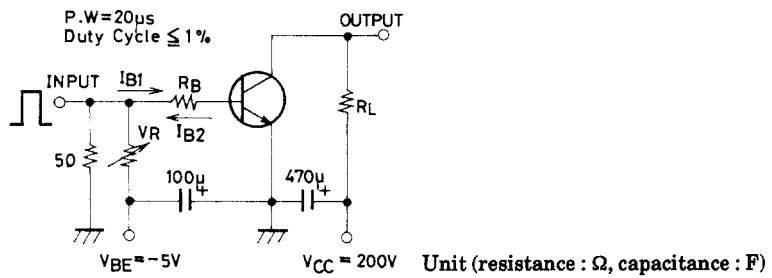
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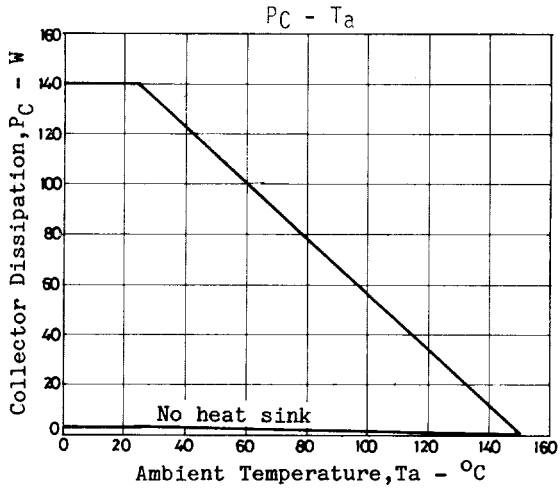
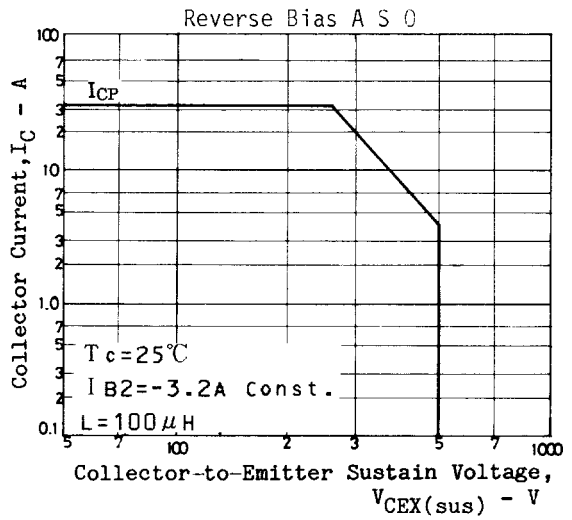
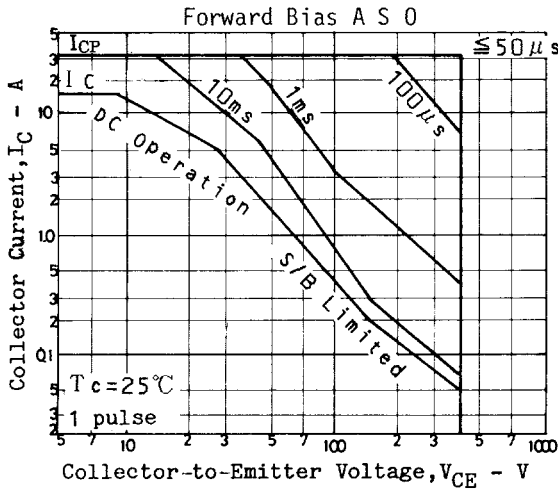
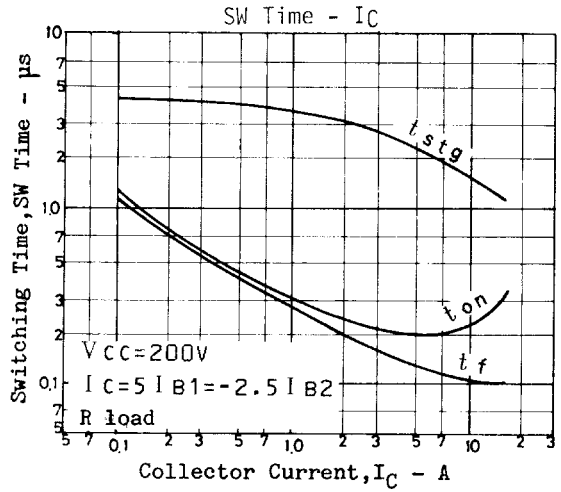
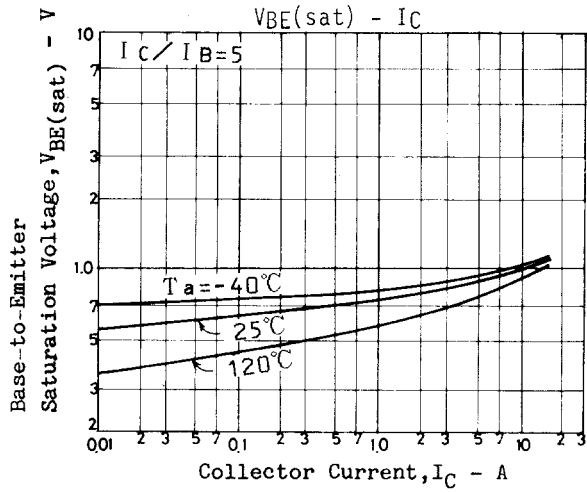
# 2SC4109

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=10A, I_B=2A$			0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=10A, I_B=2A$			1.5	V
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=2A$		20		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		230		pF
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	500			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	$I_C=8A, I_{B1}=0.8A, I_{B2}=-3.2A, L=200\mu H, \text{clamped}$	400			V
Turn-ON Time	$t_{on}$	$I_C=12A, I_{B1}=2.4A, I_{B2}=-4.8A, R_L=16.6\Omega, V_{CC}=200V$			0.5	$\mu s$
Storage Time	$t_{stg}$	$I_C=12A, I_{B1}=2.4A, I_{B2}=-4.8A, R_L=16.6\Omega, V_{CC}=200V$			2.5	$\mu s$
Fall Time	$t_f$	$I_C=12A, I_{B1}=2.4A, I_{B2}=-4.8A, R_L=16.6\Omega, V_{CC}=200V$			0.3	$\mu s$

## Switching Time Test Circuit



# 2SC4109



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