

No. 2474A

2 S C 4 1 0 9

## SWITCHING REGULATOR APPLICATIONS

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

Collector-Emitter Ratings at 125°C				unit
Collector-to-Base Voltage	$V_{CBO}$	500		V
Collector-to-Emitter Voltage	$V_{CEO}$	400		V
Emitter-to-Base Voltage	$V_{EBO}$	7		V
Collector Current	$I_C$	16		A
Peak Collector Current	$i_{cp}$	32	$PW \leq 300\mu s, \text{duty cycle} \leq 10\%$	A
Base Current	$I_B$	6		A
Collector Dissipation	$P_C$	2.5		W
		140	$T_c = 25^\circ C$	W
Junction Temperature	$T_j$	150		$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +150		$^\circ C$

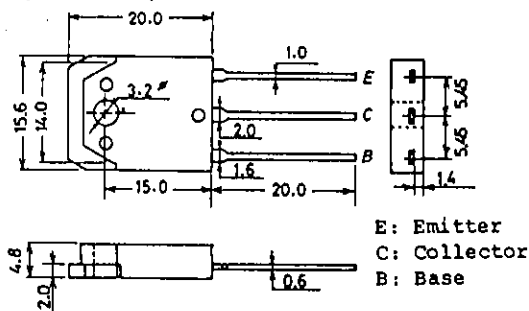
Electrical Characteristics at Ta=25°C			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=400V, I_E=0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			10	$\mu A$
DC Current Gain	$h_{FE(1)}$	$V_{CE}=5V, I_C=2A$	15*		50*	
	$h_{FE(2)}$	$V_{CE}=5V, I_C=10A$	10			
	$h_{FE(3)}$	$V_{CE}=5V, I_C=10mA$	10			
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=10A, I_B=2A$			0.8	V
B-E 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

Continued on next page.

\*: 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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(unit:mm)
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E: Emitter  
C: Collector  
B: Base

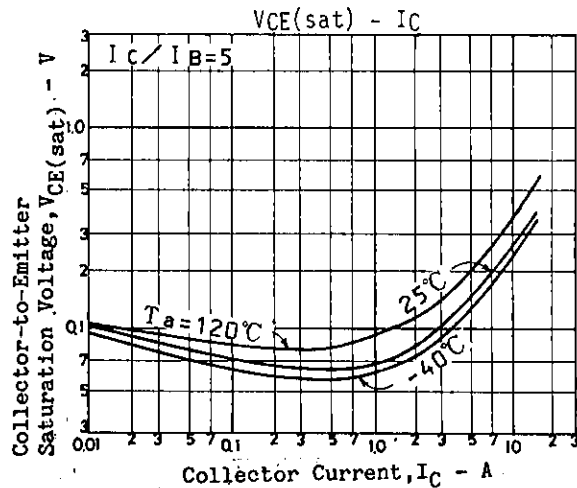
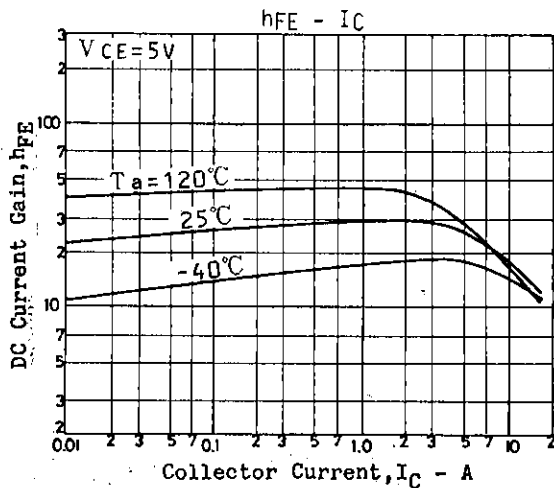
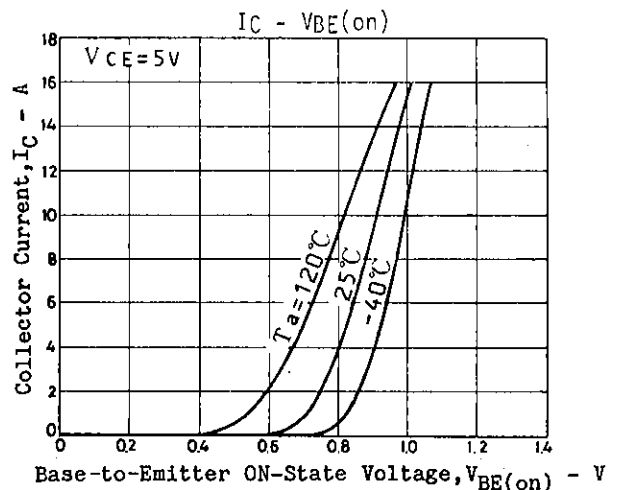
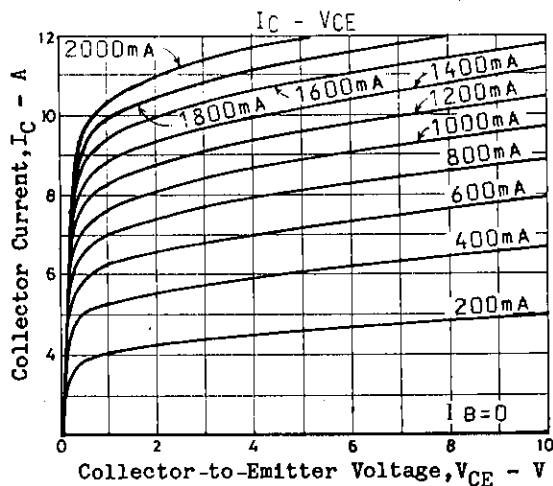
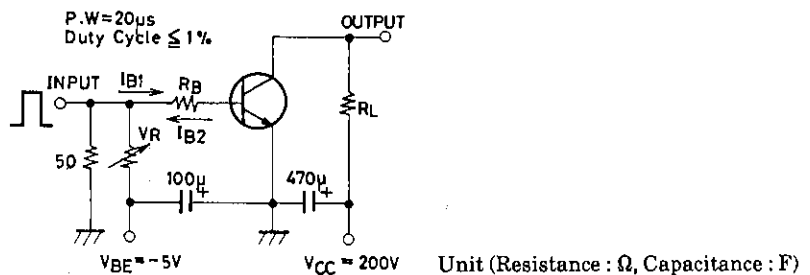
**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**  
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110 JAPAN

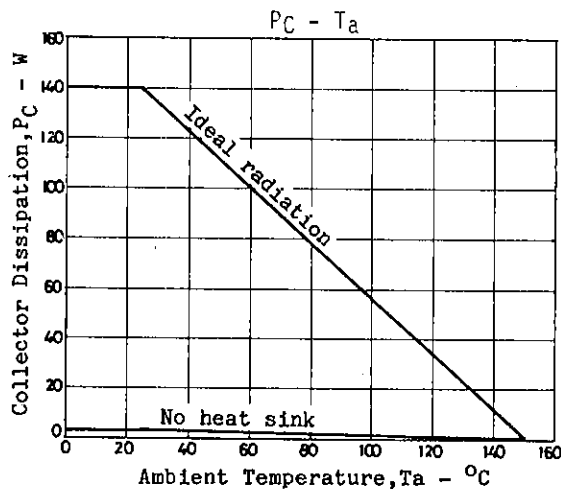
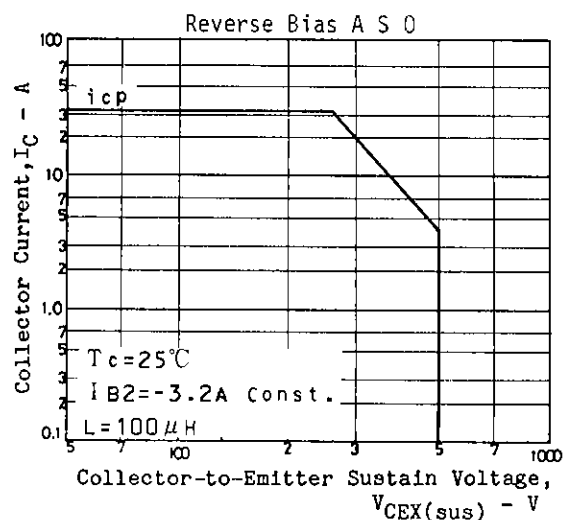
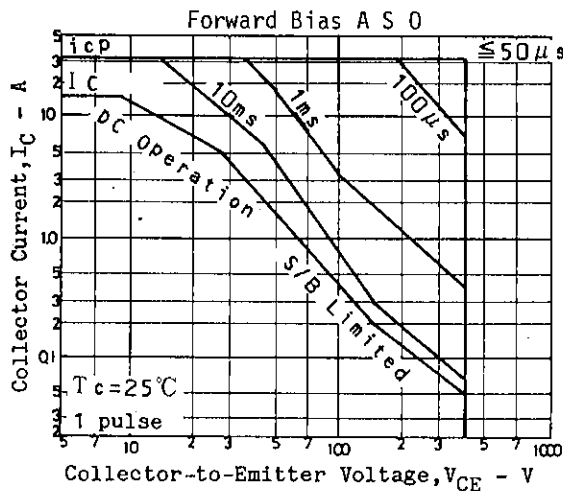
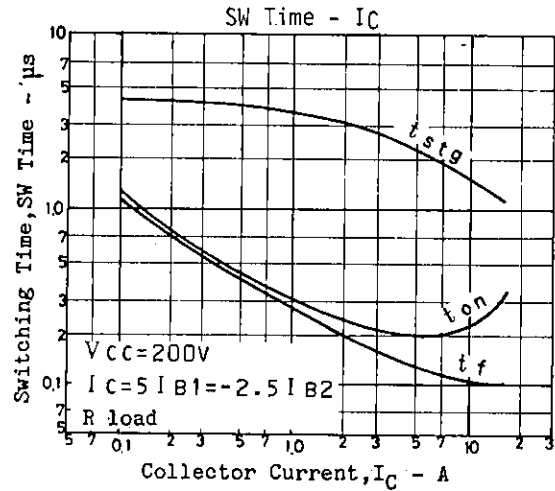
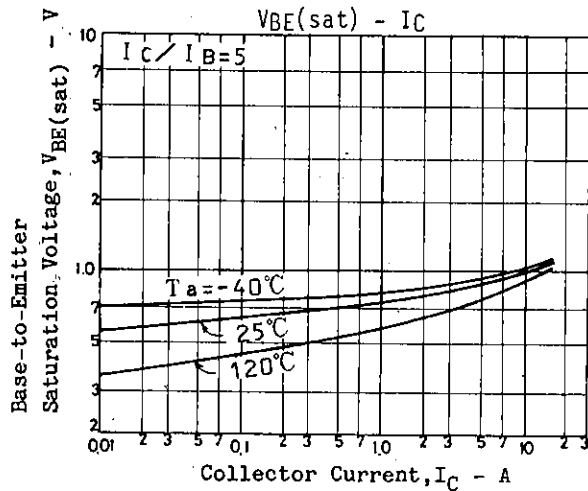
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			min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	500			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=10mA, R_{BE}=\infty$	400			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
C-E Sustain Voltage	$V_{CEX(sus)}$	$I_C=8A, I_{B1}=0.8A,$ $I_{B2}=-3.2A, L=200\mu H,$ clamped	400			V
Turn-on Time	$t_{on}$	$I_C=12A, I_{B1}=2.4A,$ $I_{B2}=-4.8A, R_L=16.6ohms$ $V_{CC}=200V$		0.5		$\mu s$
Storage Time	$t_{stg}$	$I_C=12A, I_{B1}=2.4A,$ $I_{B2}=-4.8A, R_L=16.6ohms,$ $V_{CC}=200V$		2.5		$\mu s$
Fall Time	$t_f$	$I_C=12A, I_{B1}=2.4A,$ $I_{B2}=-4.8A, R_L=16.6ohms,$ $V_{CC}=200V$		0.3		$\mu s$

## Switching Time Test Circuit





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