

**SANYO**

No.949B

**2SC3038**

NPN Triple Diffused Planar Silicon Transistor

FOR SWITCHING REGULATORS

**Features**

- . High breakdown voltage ( $V_{CBO} \geq 500V$ )
- . Fast switching speed.
- . Wide ASO.

**Absolute Maximum Ratings at  $T_a=25^\circ C$** 

			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	$I_C$	4	A
Peak Collector Current	$i_{cp}$	8	A
		PW $\leq 300\mu s$ , Duty Cycle $\leq 10\%$	
Base Current	$I_B$	1.5	A
Collector Dissipation	$P_C$	1.75	W
		$T_c=25^\circ C$	
		40	W
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ C$

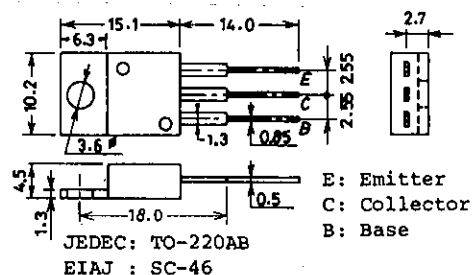
**Electrical Characteristics at  $T_a=25^\circ C$** 

			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	$h_{FE}(1)$	$V_{CE}=5V, I_C=0.4A$	15*		50*	
	$h_{FE}(2)$	$V_{CE}=5V, I_C=2A$	8			
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=2A, I_B=0.4A$			1.0	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=2A, I_B=0.4A$			1.5	V
Gain Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=0.4A$		20		MHz
Output Capacitance	$c_{ob}$	$V_{CB}=10V, f=1MHz$		40		pF
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	500			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	400			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
C-E Sustain Voltage	$V_{CEO(sus)}$	$I_C=4A, I_B=0.8A, L=50\mu H$	400			V
C-E Sustain Voltage	$V_{CEX(sus)}$	$I_C=4A, I_{B1}=0.8A, L=200\mu H,$ $I_{B2}=-0.8A, \text{clamped}$	400			V
C-E Sustain Voltage	$V_{CEX(sus)}$	$I_C=0.75A, I_{B1}=0.15A, L=200\mu H,$ $I_{B2}=-0.15A, \text{clamped}$	450			V

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\*: The  $h_{FE}(1)$  of the 2SC3038 is classified as follows. When specifying the  $h_{FE}(1)$  rank, specify two ranks or more in principle.

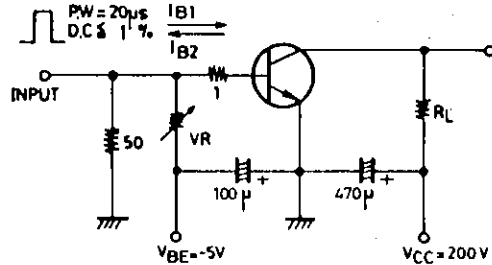
15 L 30	20 M 40	30 N 50
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**Package Dimensions 2010A**  
(unit:mm)

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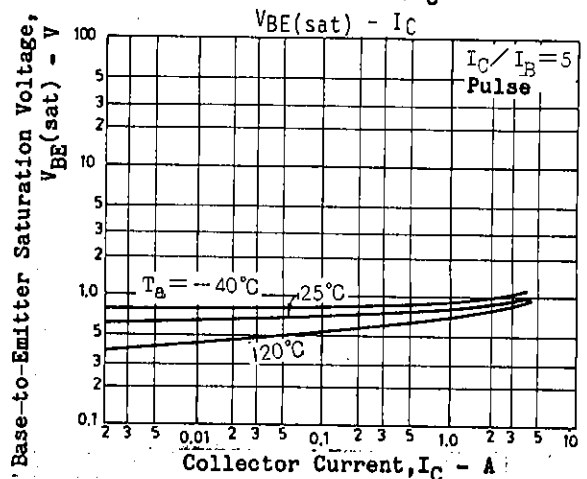
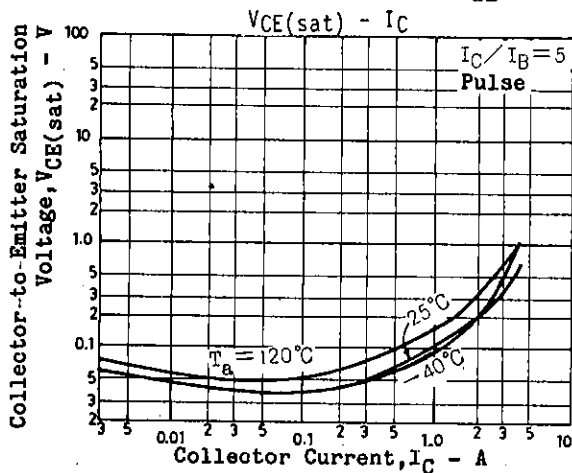
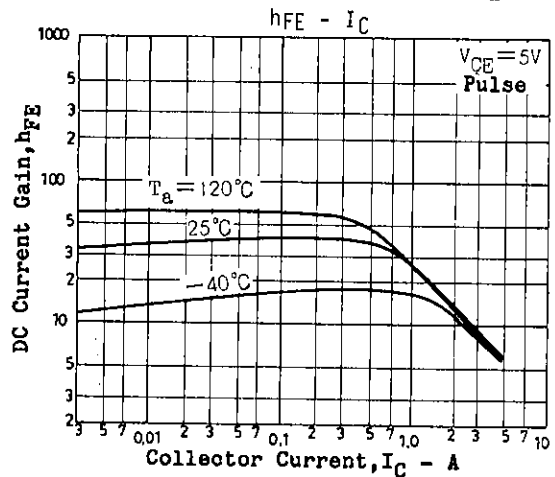
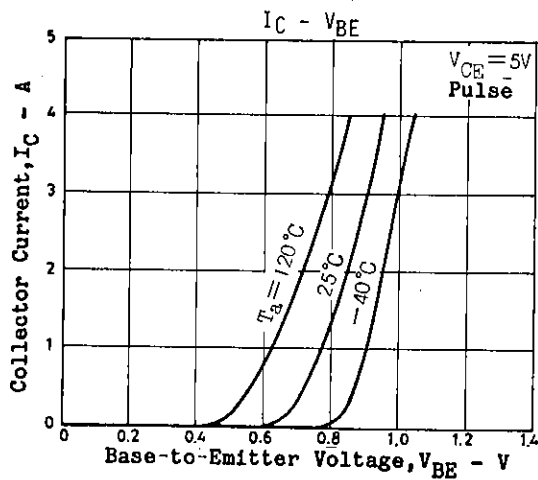
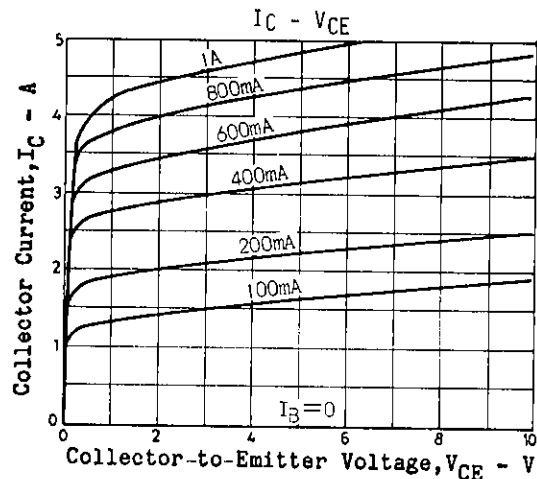
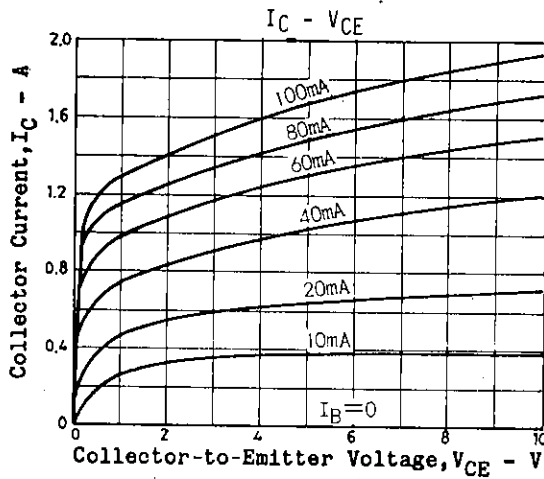
			min	typ	max	unit
Turn-ON Time	$t_{on}$	$I_C=3A, I_{B1}=0.6A, I_{B2}=-0.6A,$ $R_L=66.6\Omega, V_{CC}=200V$			1.0	$\mu s$
Storage Time	$t_{stg}$	" "			2.5	$\mu s$
Fall Time	$t_f$	" "			1.0	$\mu s$

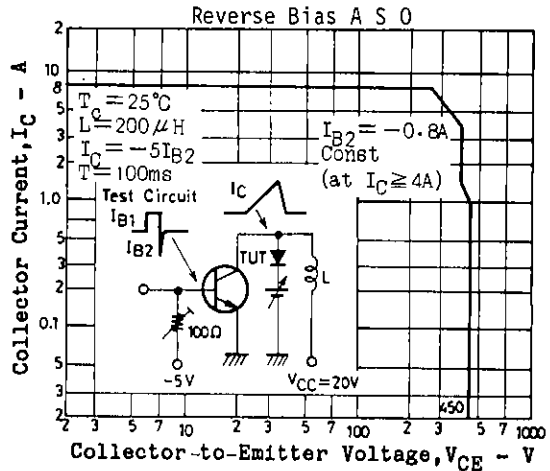
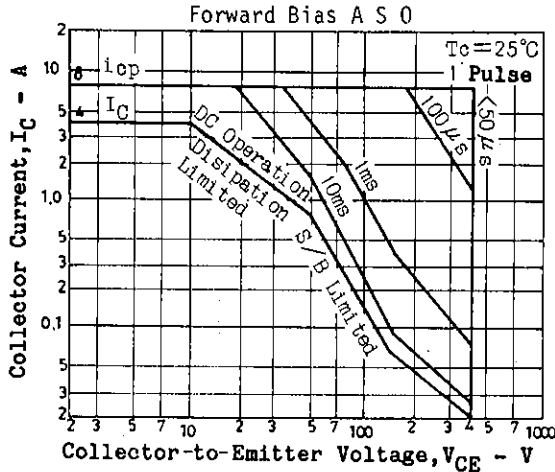
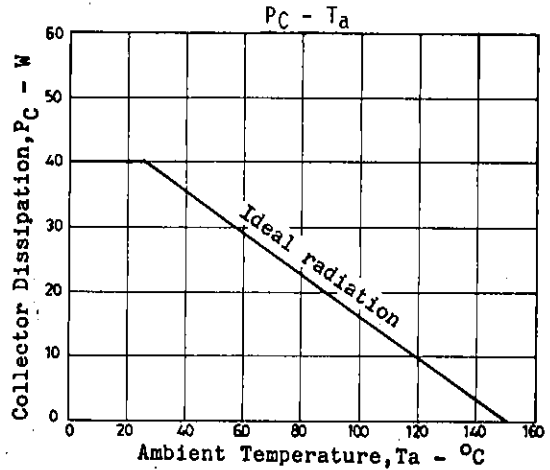
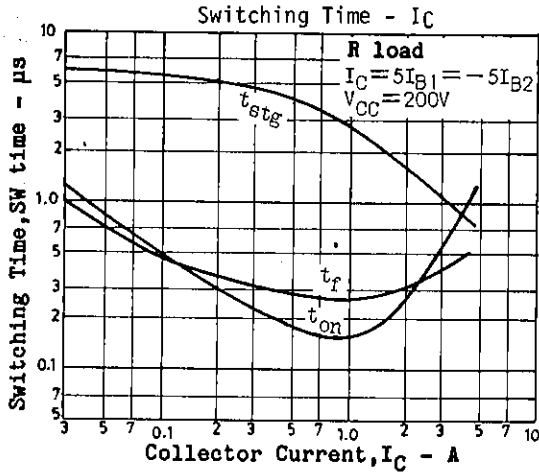
Switching Time Test Circuit



$5I_{B1} = -5I_{B2} = I_C$

Unit (Resistance :  $\Omega$ , Capacitance : F)





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