

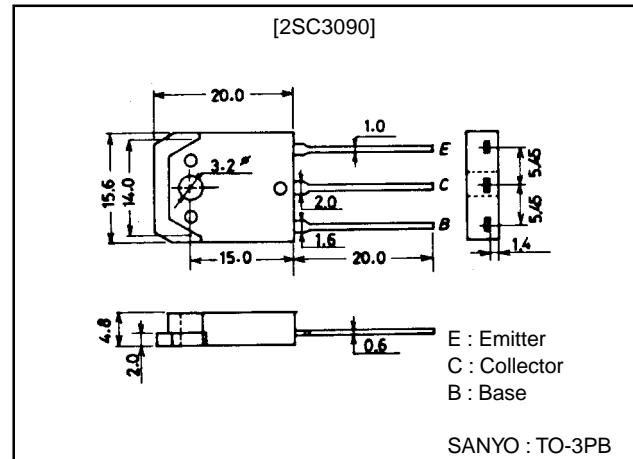
**2SC3090****500V/10A Switching Regulator Applications****Features**

- High breakdown voltage ( $V_{CBO} \geq 800V$ ).
- Fast switching speed.
- Wide ASO.

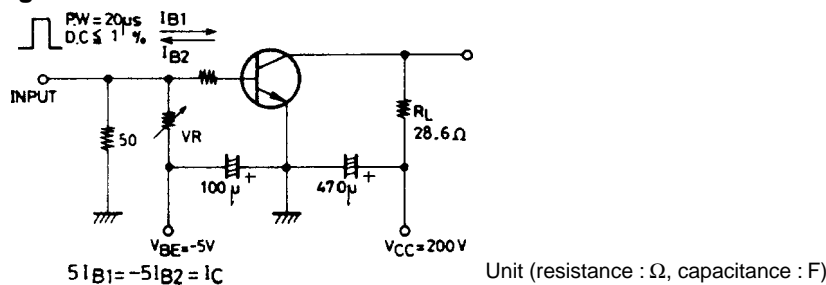
**Package Dimensions**

unit:mm

2022

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

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	$I_C$		10	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu s$ , duty cycle $\leq 10\%$	20	A
Base Current	$I_B$		4	W
Collector Dissipation	$P_C$	$T_c = 25^\circ C$	2.5	W
Junction Temperature	$T_j$		100	W
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

**Switching Time Test Circuit**

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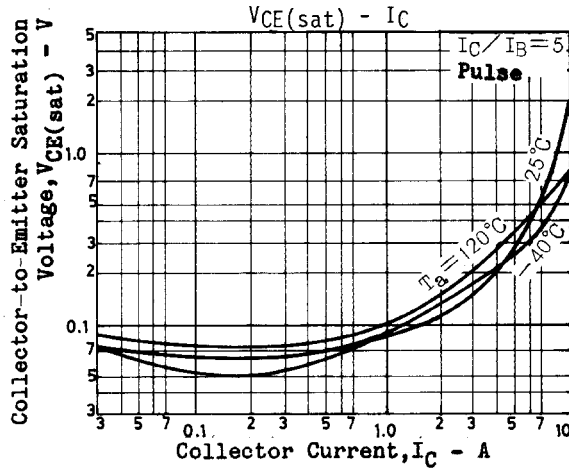
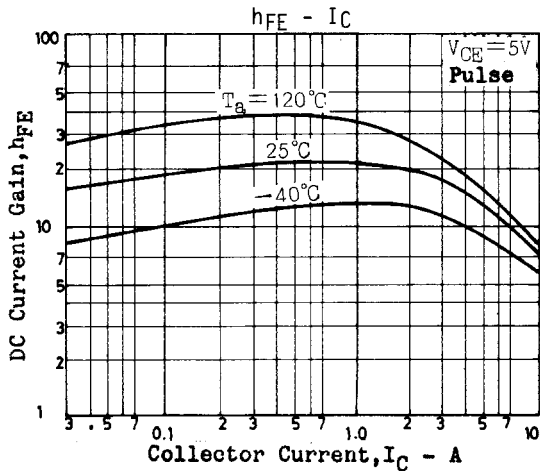
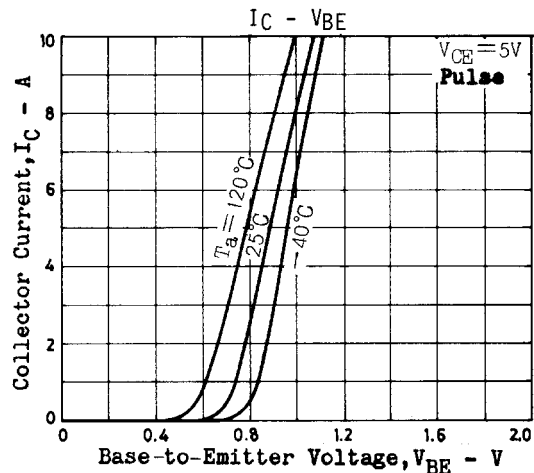
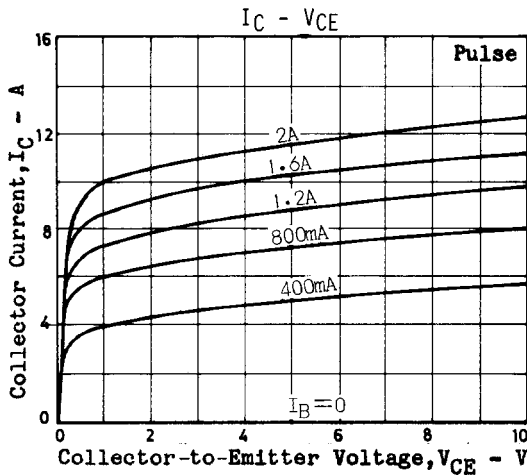
# 2SC3090

## Electrical Characteristics at Ta = 25°C

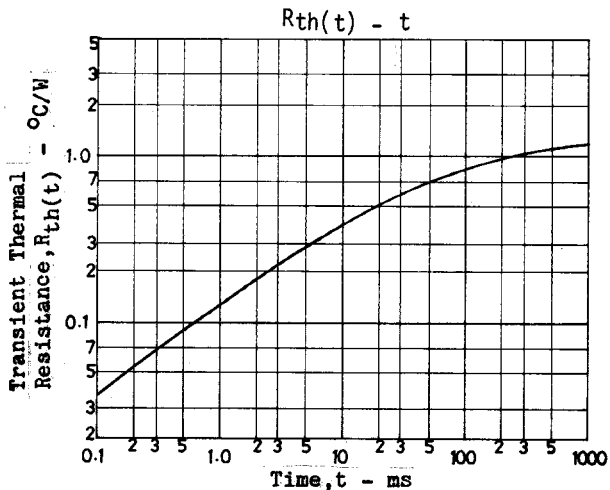
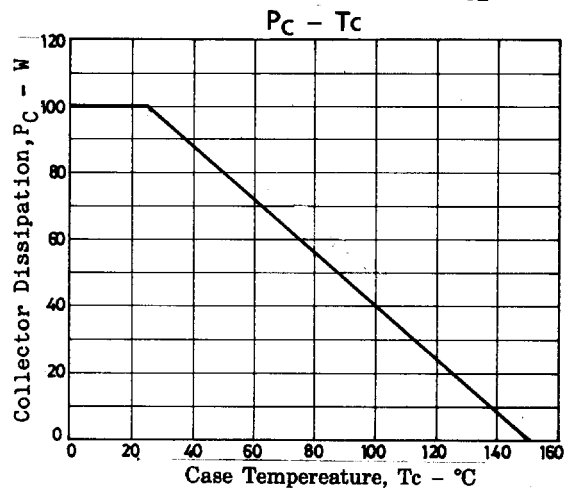
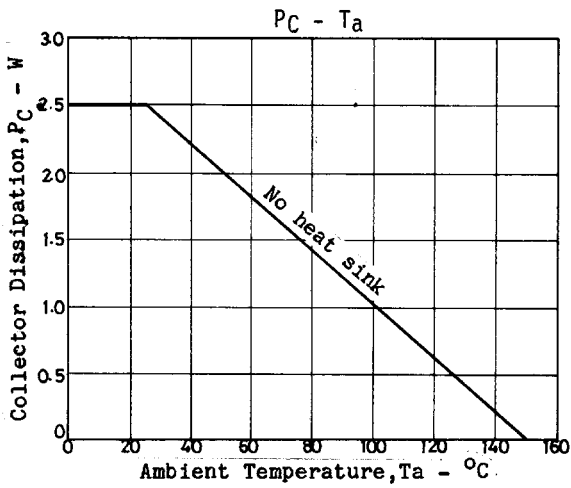
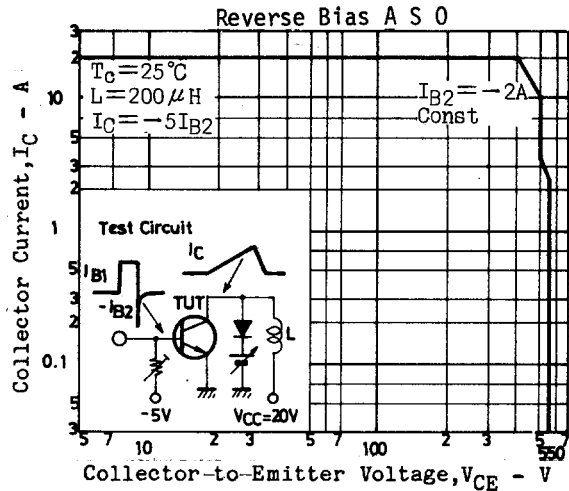
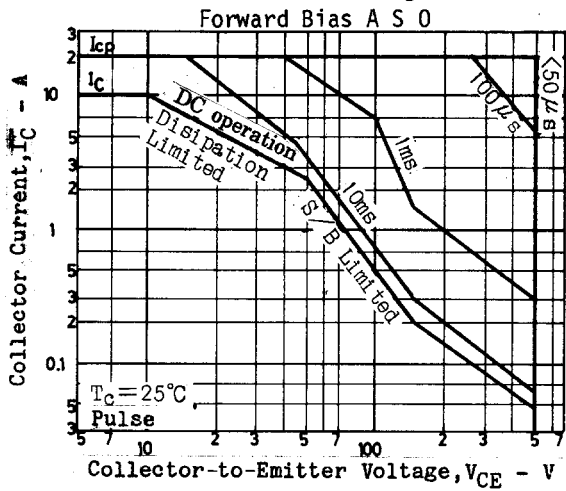
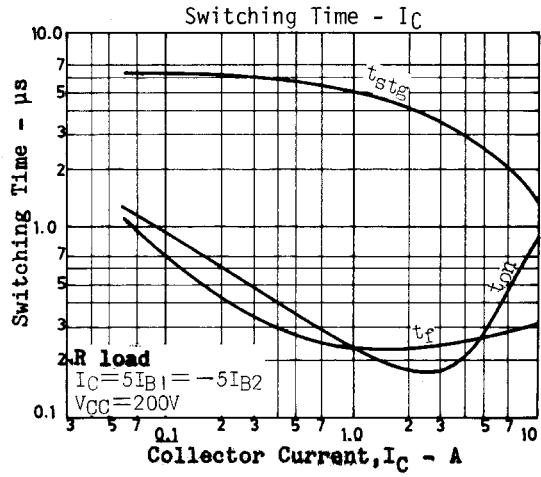
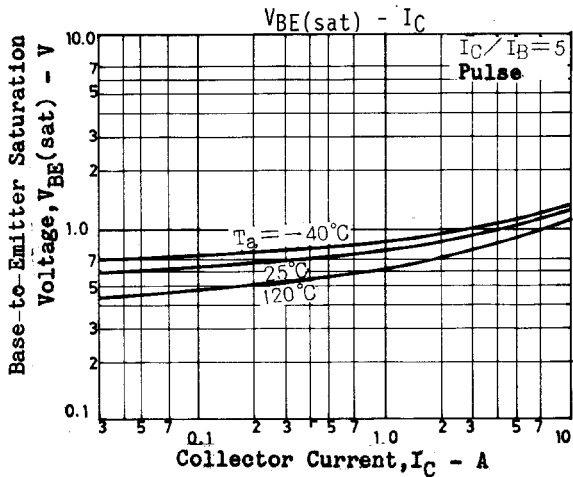
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=500V, I_E=0$			10	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=5V, I_C=0$			10	$\mu A$
DC Current Gain	$h_{FE1}$	$V_{CE}=5V, I_C=1.2A$	15*		50*	
	$h_{FE2}$	$V_{CE}=5V, I_C=6A$	8			
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=6A, I_B=1.2A$			1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=6A, I_B=1.2A$			1.5	V
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=1.2A$		18		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		160		pF
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	800			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	500			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEO(sus)}$	$I_C=10A, I_B=2A, L=50\mu H$	500			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)1}$	$I_C=10A, I_{B1}=2A, L=200\mu H, I_{B2}=-2A, \text{clamped}$	500			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)2}$	$I_C=2.4A, I_{B1}=0.48A, L=200\mu H, I_{B2}=-0.48A, \text{clamped}$	550			V
Turn-ON Time	$t_{on}$	$I_C=7A, I_{B1}=0.14A, I_{B2}=-1.4A, R_L=28.6\Omega, V_{CC}=200V$			1.0	$\mu s$
Storage Time	$t_{stg}$	$I_C=7A, I_{B1}=0.14A, I_{B2}=-1.4A, R_L=28.6\Omega, V_{CC}=200V$			3.0	$\mu s$
Fall Time	$t_f$	$I_C=7A, I_{B1}=0.14A, I_{B2}=-1.4A, R_L=28.6\Omega, V_{CC}=200V$			1.0	$\mu s$

\* The  $h_{FE1}$  of the 2SC3090 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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# 2SC3090



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