

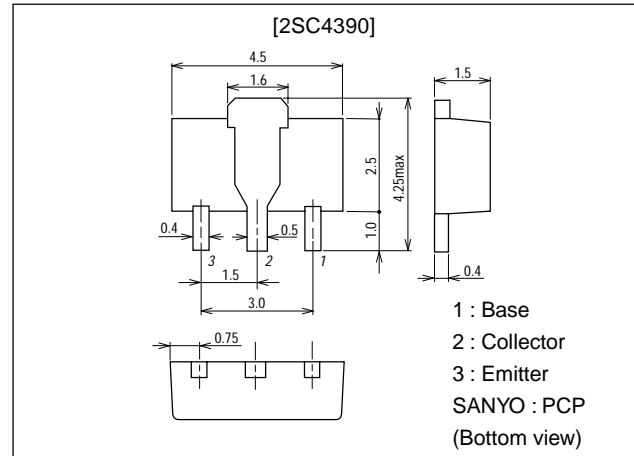
**2SC4390****High- $h_{FE}$ , AF Amplifier Applications****Features**

- Adoption of MBIT process.
- High DC current gain ( $h_{FE}=800$  to  $3200$ ).
- Large current capacity ( $I_C=2A$ ).
- Low collector-to-emitter saturation voltage ( $V_{CE(sat)}\leq 0.3V$ ).
- High  $V_{EBO}$  ( $V_{EBO}\geq 15V$ ).

**Package Dimensions**

unit:mm

2038A

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		20	V
Collector-to-Emitter Voltage	$V_{CEO}$		10	V
Emitter-to-Base Voltage	$V_{EBO}$		15	V
Collector Current	$I_C$		2	A
Collector Current (Pulse)	$I_{CP}$		4	A
Base Current	$I_B$		0.4	A
Collector Dissipation	$P_C$		500	mW
		Mounted on ceramic board (250mm $^2$ $\times$ 0.8mm)	1.3	W
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=15V, I_E=0$			0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=10V, I_C=0$			0.1	$\mu A$
DC Current Gain	$h_{FE1}$	$V_{CE}=2V, I_C=500mA$	800	1500	3200	
	$h_{FE2}$	$V_{CE}=2V, I_C=2A$	400			
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V, I_C=50mA$		260		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=10V, f=1MHz$		28		pF

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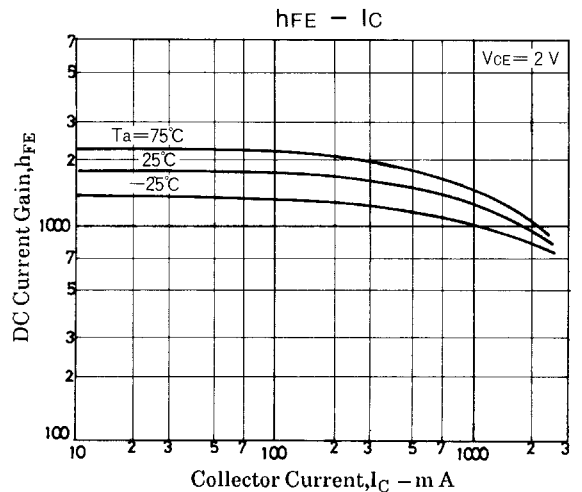
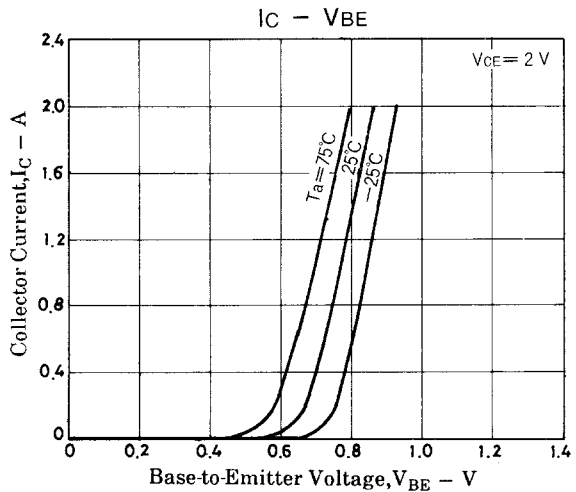
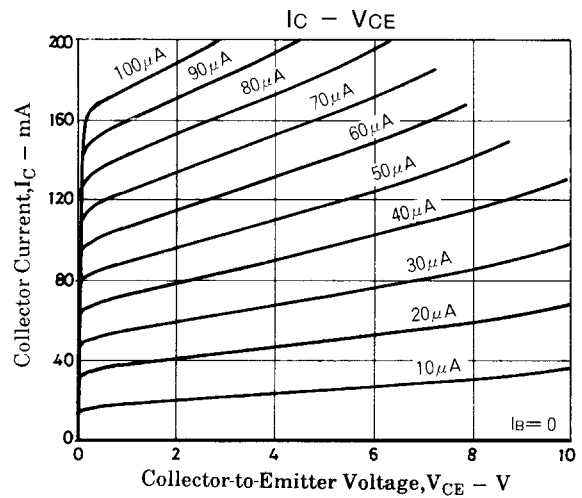
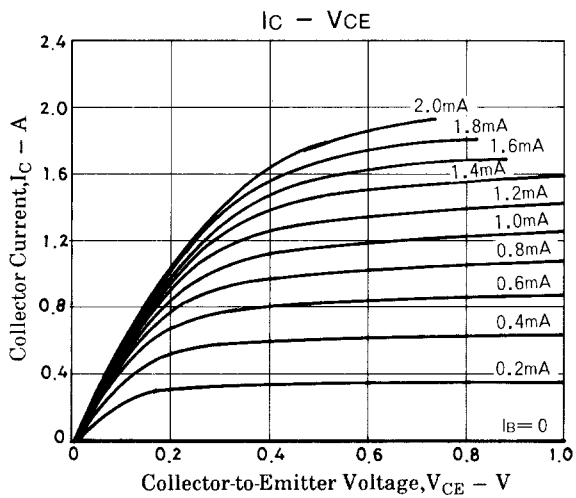
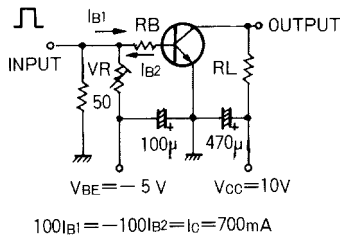
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1A, I_B=20mA$		0.11	0.5	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A, I_B=20mA$		0.87	1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	20			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	10			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	15			V
Turn-on Time	$t_{on}$	See specified Test Circuit.		0.13		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		0.8		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		0.1		$\mu s$

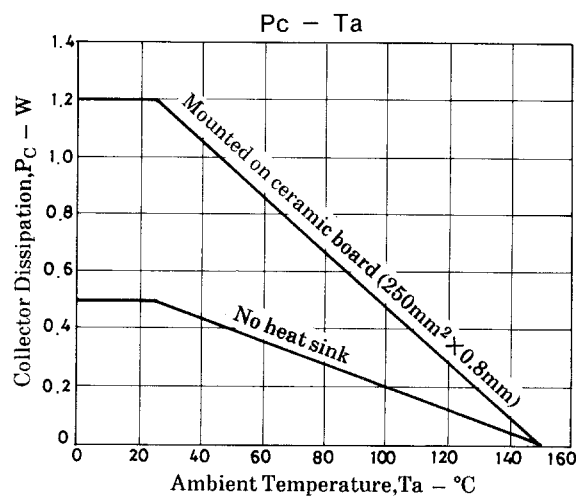
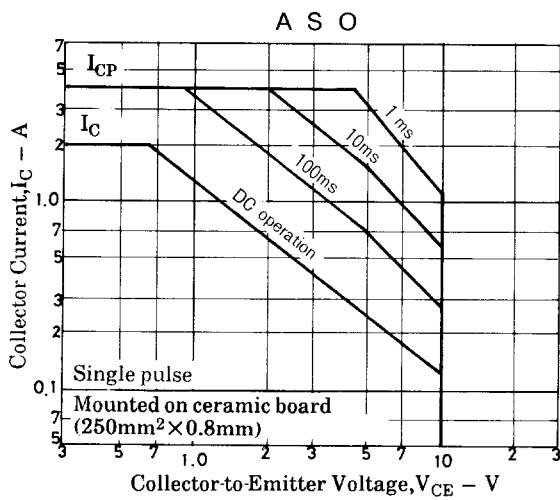
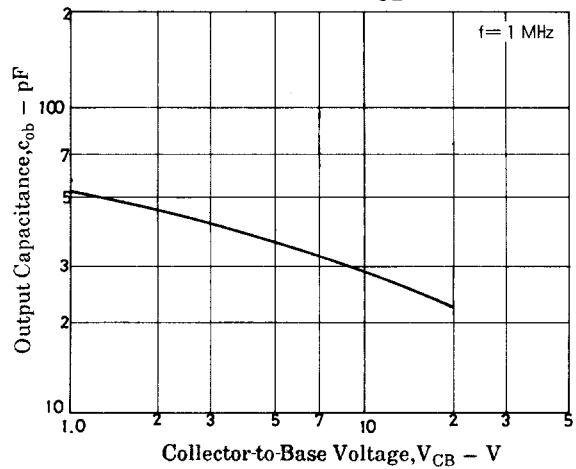
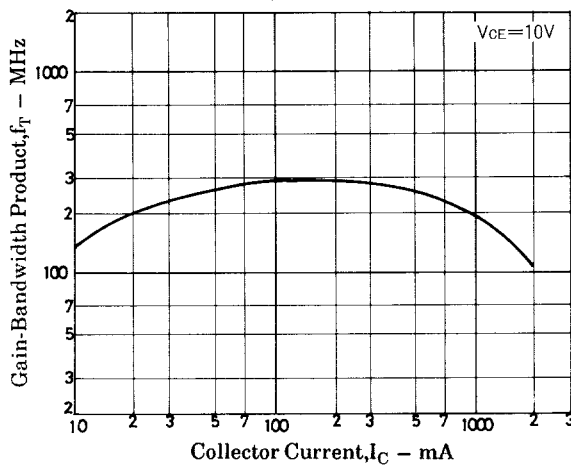
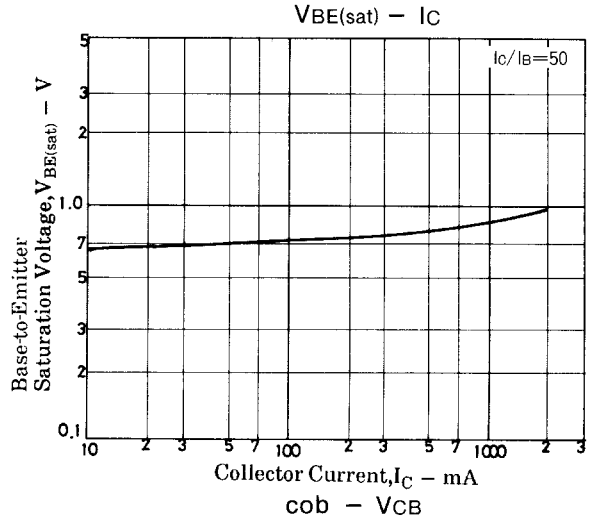
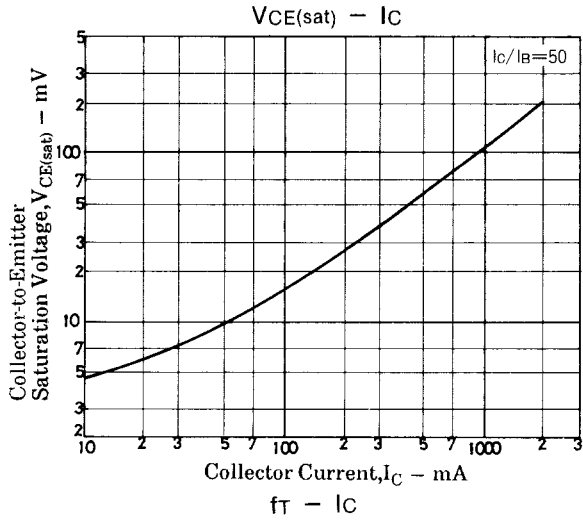
## Switching Time Test Circuit

PW = 20 $\mu$ s

DC  $\leq$  1%



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