



## 2SA1709/2SC4489

### High-Voltage Switching Applications

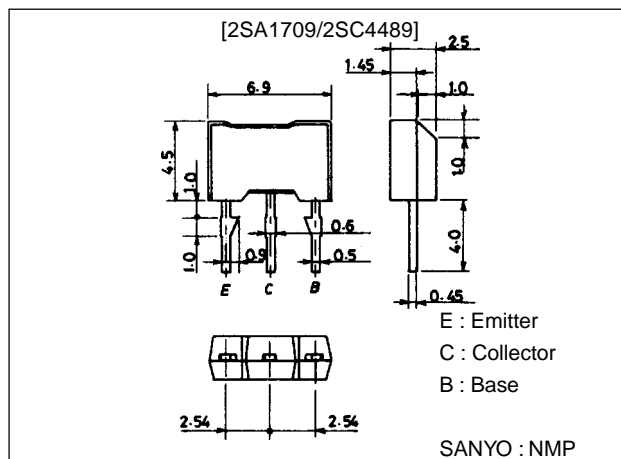
#### Features

- Adoption of FBET, MBIT processes.
- High breakdown voltage, large current capacity.
- Fast switching speed.

#### Package Dimensions

unit:mm

2064



() 2SA1709

#### Specifications

##### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-120)	V
Collector-to-Emitter Voltage	$V_{CE0}$		(-100)	V
Emitter-to-Base Voltage	$V_{EB0}$		(-6)	V
Collector Current	$I_C$		(-2)	A
Collector Current (Pulse)	$I_{CP}$		(-3)	A
Collector Dissipation	$P_C$		1	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	$I_{CBO}$	$V_{CB}=(-)100V, I_E=0$			(-100)	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4V, I_C=0$			(-100)	nA
DC Current Gain	$h_{FE}$	$V_{CE}=(-)5V, I_C=(-)100mA$	100*		400*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10V, I_C=(-)100mA$		120		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)100mA$		(-0.22)	(-0.6)	V
				0.13	0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)1A, I_B=(-)100mA$		(-0.85)	(-1.2)	V
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		(25)16		pF

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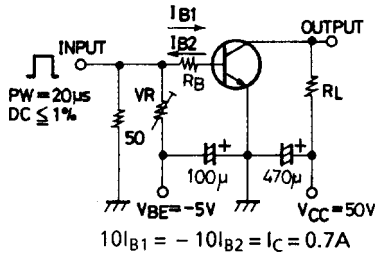
# 2SA1709/2SC4489

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)100			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)CEO}$	$I_E = (-)10\mu A, I_C = 0$	(-)6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		80		ns
Storage Time	$t_{stg}$	See specified Test Circuit		(750)		ns
				1000		ns
Fall Time	$t_f$	See specified Test Circuit		(40)50		ns

\* : The 2SA1709/2SC4489 are classified by 100mA  $h_{FE}$  as follows :

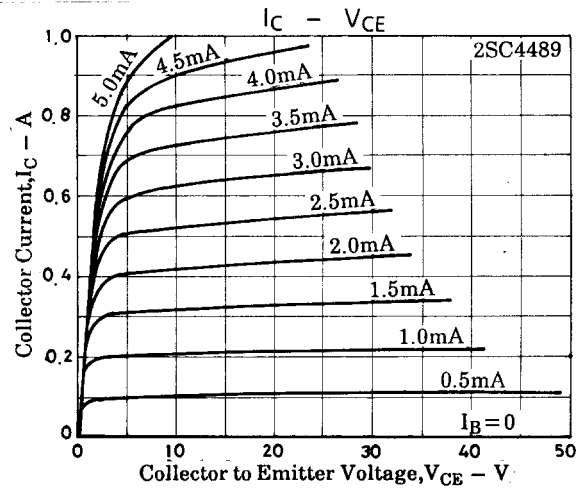
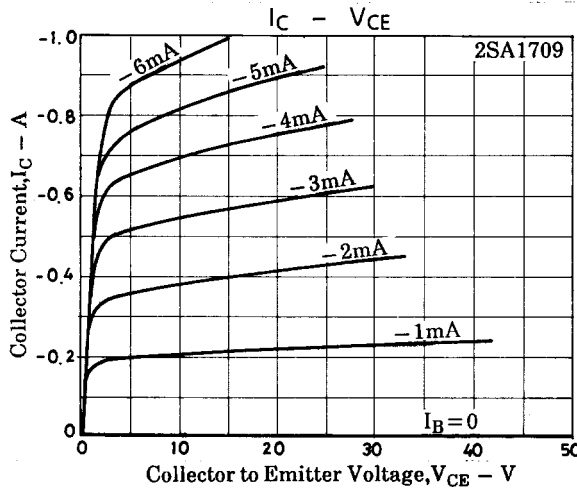
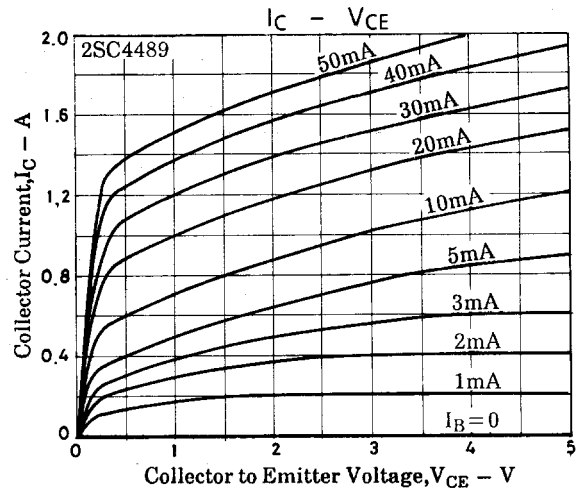
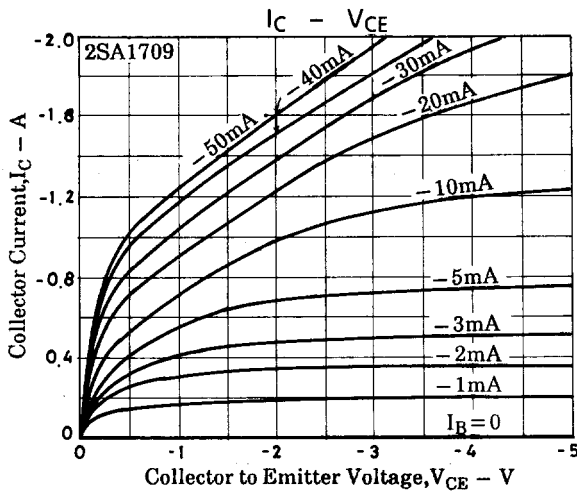
100	R	200	140	S	280	200	T	400
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## Switching Time Test Circuit

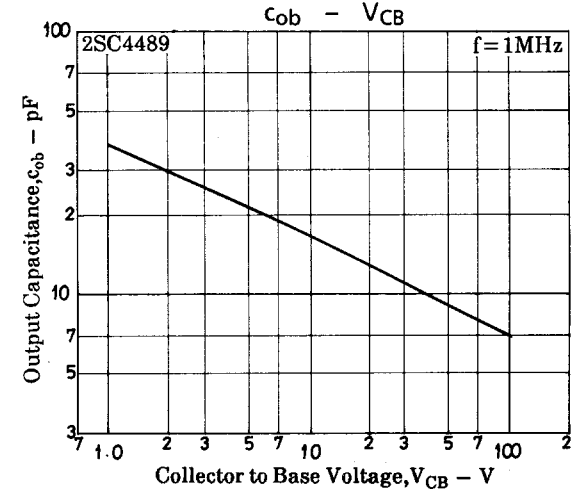
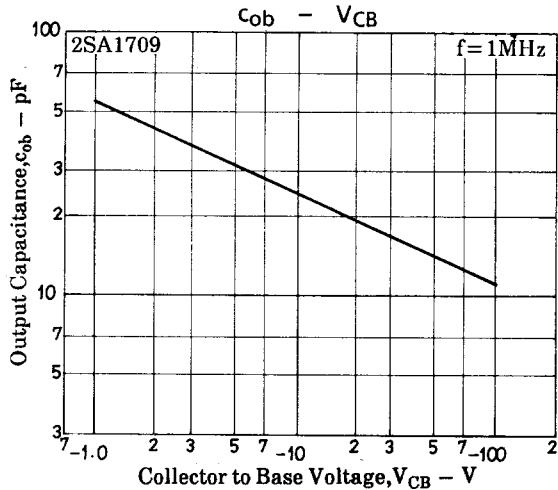
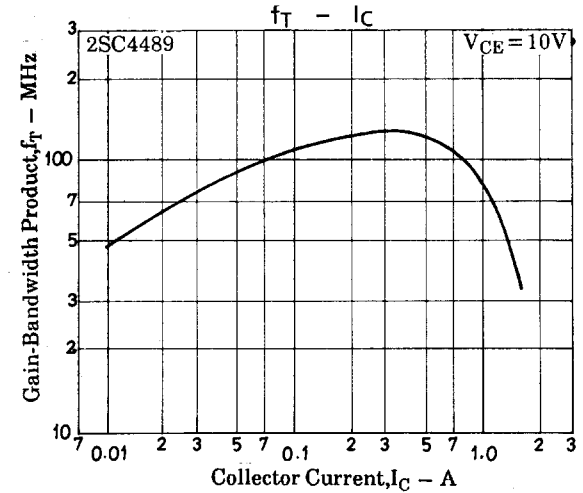
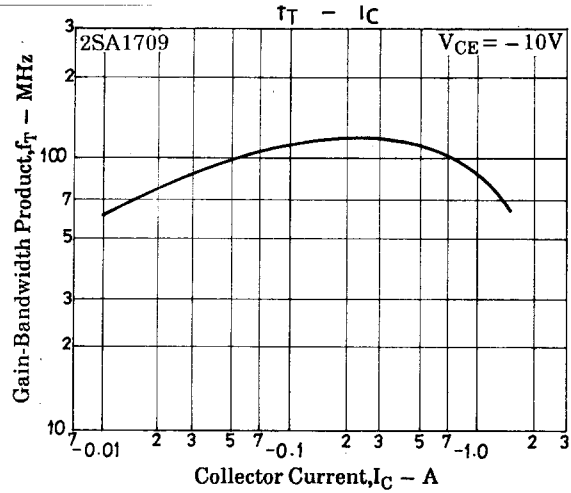
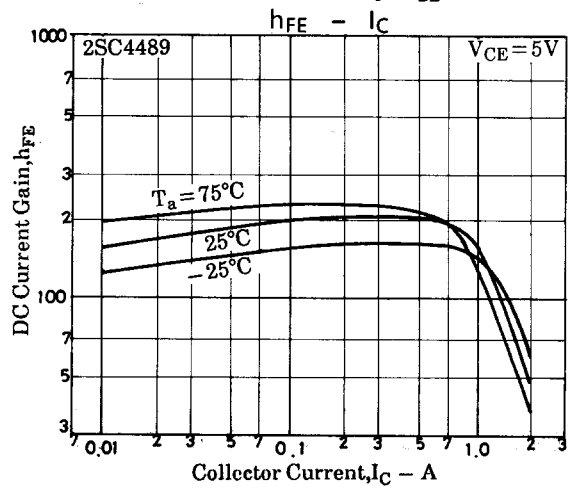
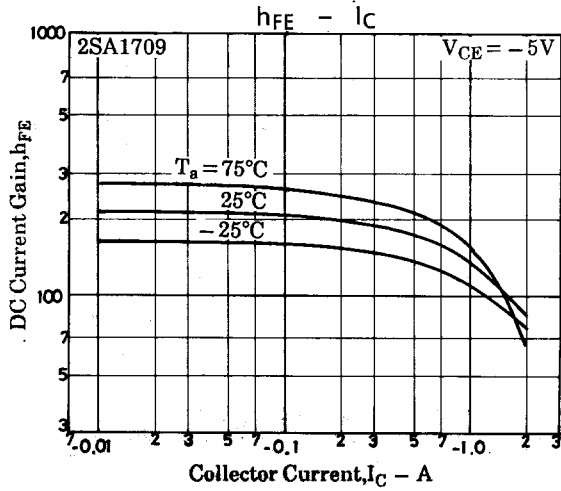
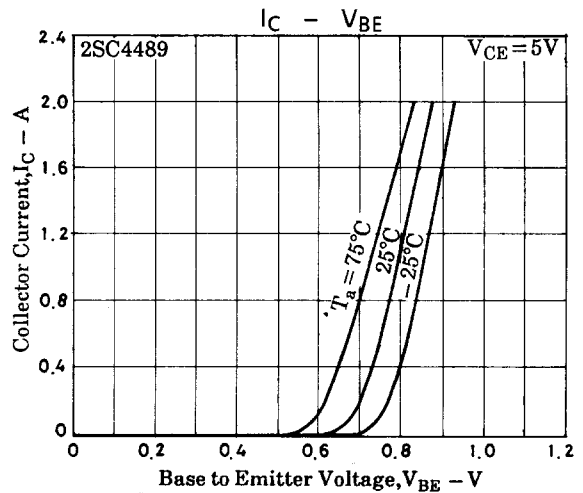
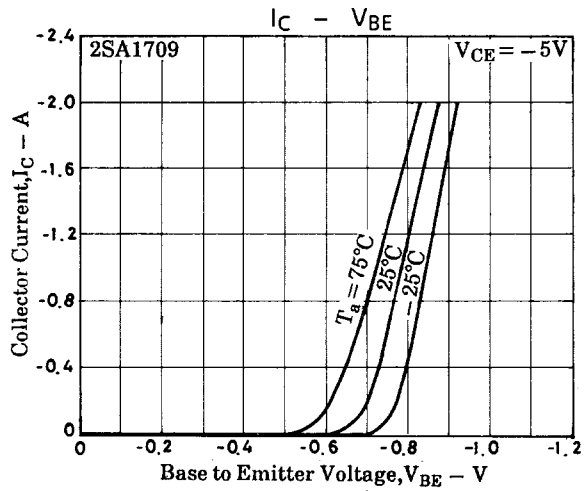


$$10I_{B1} = -10I_{B2} = I_C = 0.7A$$

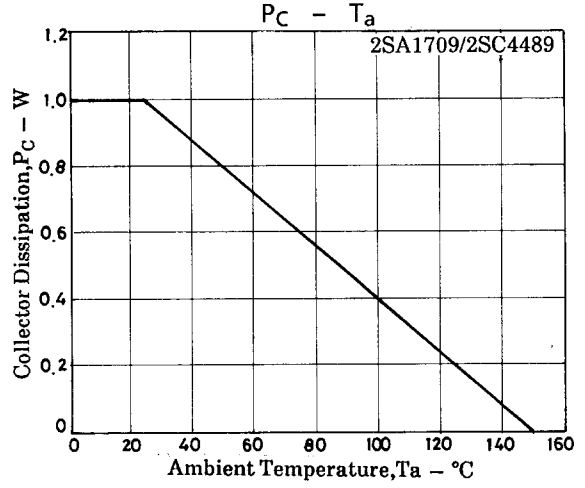
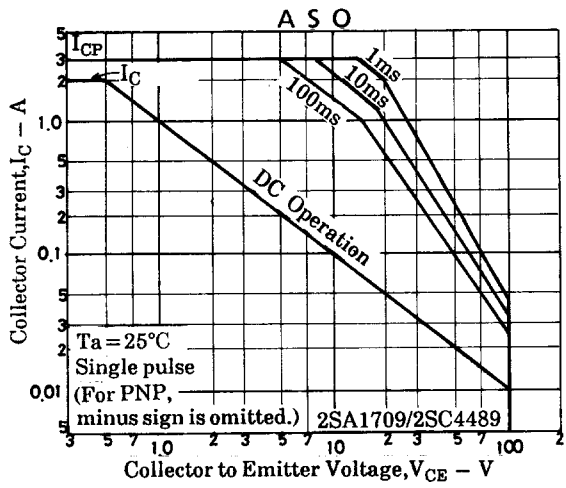
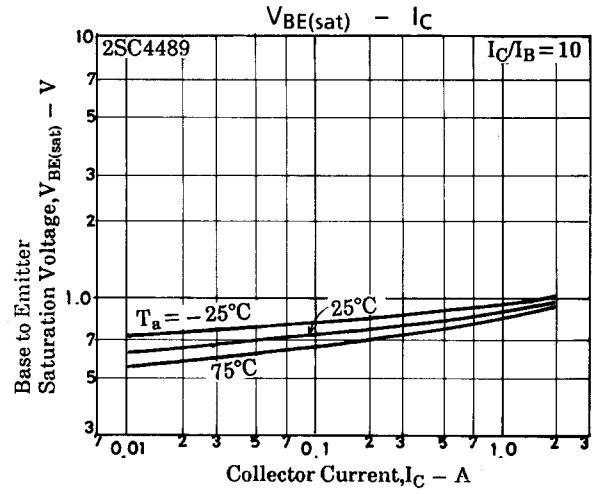
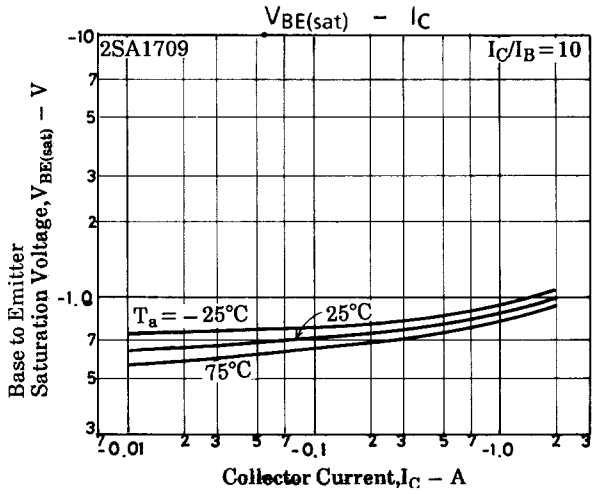
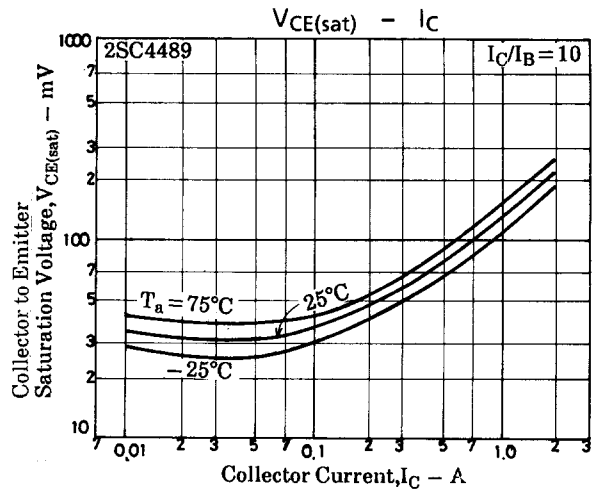
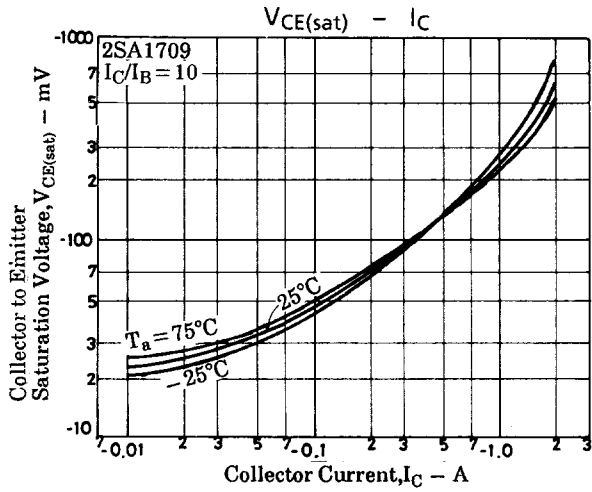
(For PNP, the polarity is reversed.)  
Unit (resistance :  $\Omega$ , capacitance : F)



2SA1709/2SC4489



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