

**SANYO****2SA1687/2SC4446****Low-Frequency  
General-Purpose Amplifier Applications****Features**

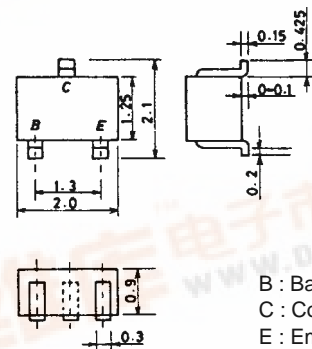
- Very small-sized package permitting the 2SA1687/2SC4446-applied sets to be made small and slim.
- High  $V_{EBO}$ .

**Package Dimensions**

unit:mm

2059

[2SA1687/2SC4446]



B : Base  
C : Collector  
E : Emitter

SANYO : MCP

() : 2SA1687

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		(-)-60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)-50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)-15	V
Collector Current	$I_C$		(-)-150	mA
Collector Current (Pulse)	$I_{CP}$		(-)-300	mA
Base Current	$I_B$		(-)-30	mA
Collector Dissipation	$P_C$		150	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=(-)40\text{V}, I_E=0$			(-)-0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)10\text{V}, I_C=0$			(-)-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)6\text{V}, I_C=(-)1\text{mA}$	135*		600*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)6\text{V}, I_C=(-)1\text{mA}$		130		MHz

\* : The 2SA1687/2SC4446 are classified by 1mA  $h_{FE}$  as follows :Marking : D (2SA1687)  $h_{FE}$  rank : 5, 6, 7

H (2SC4446)

135	5	270	200	6	400	300	7	600
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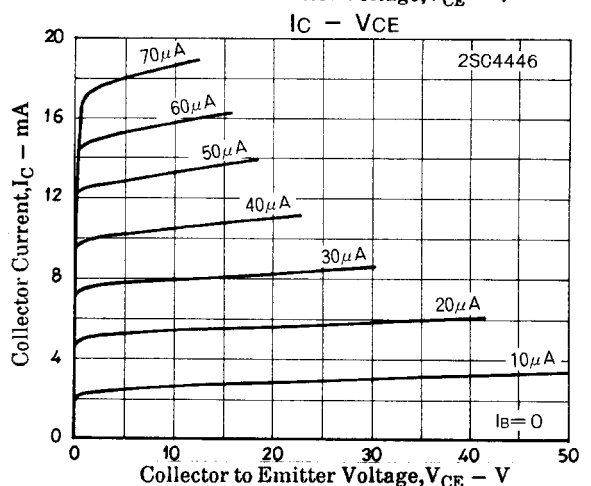
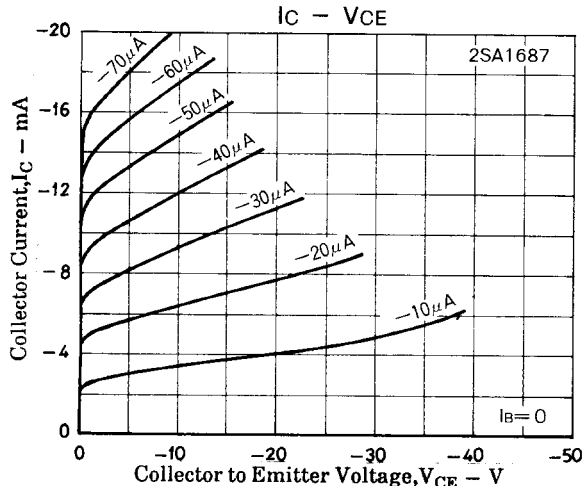
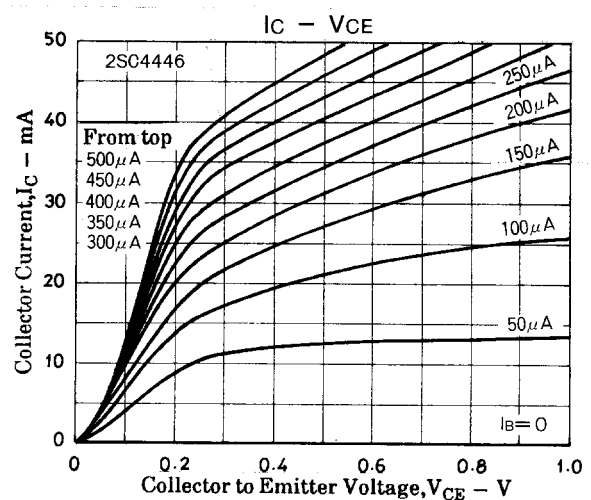
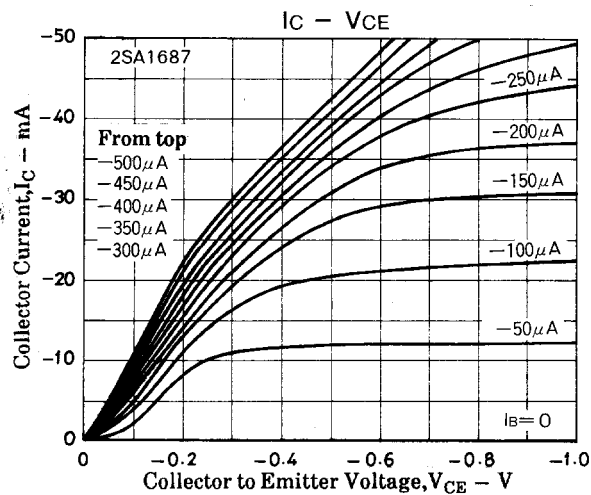
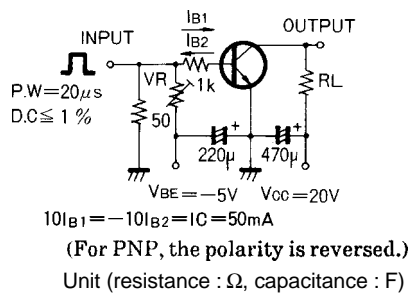
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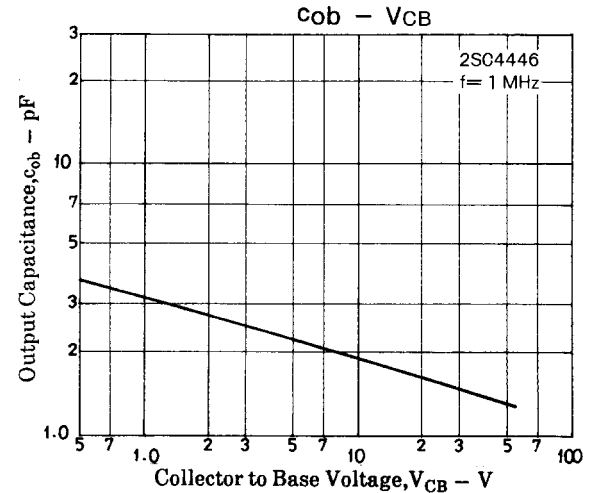
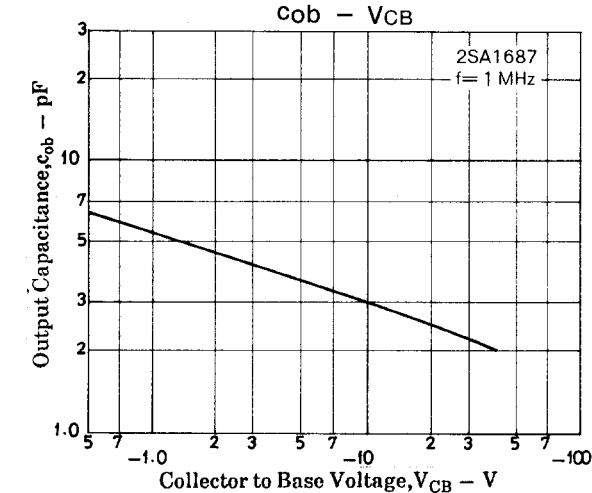
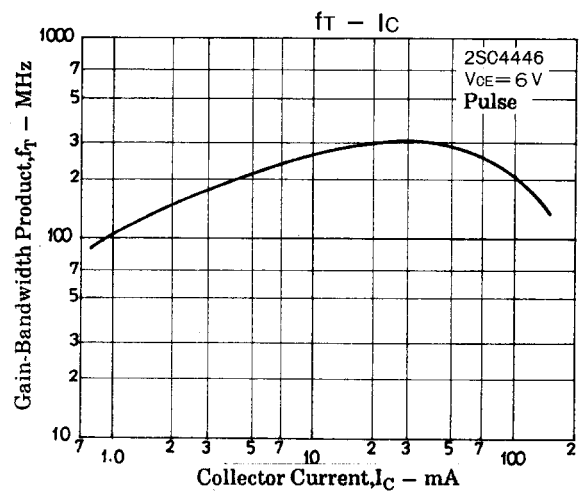
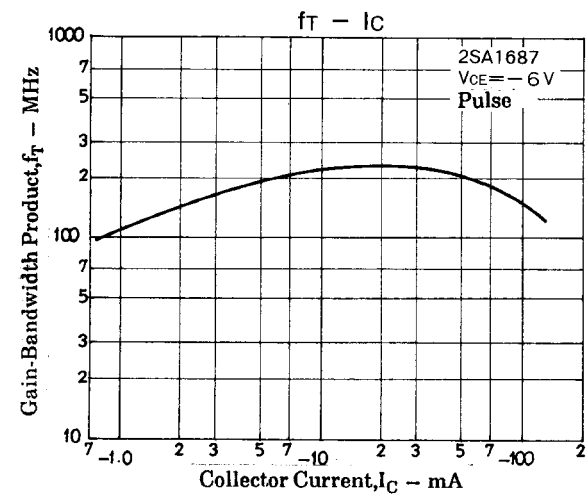
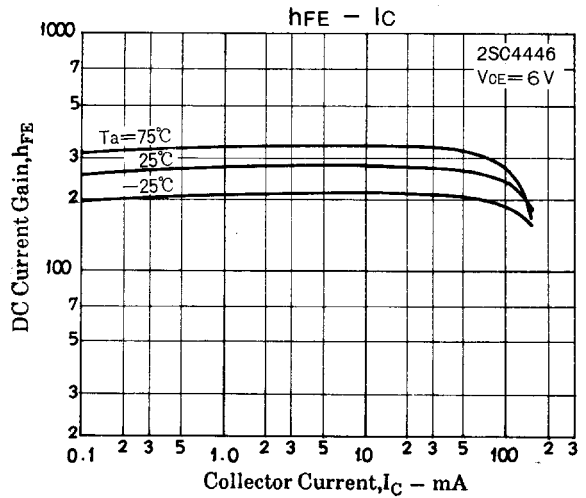
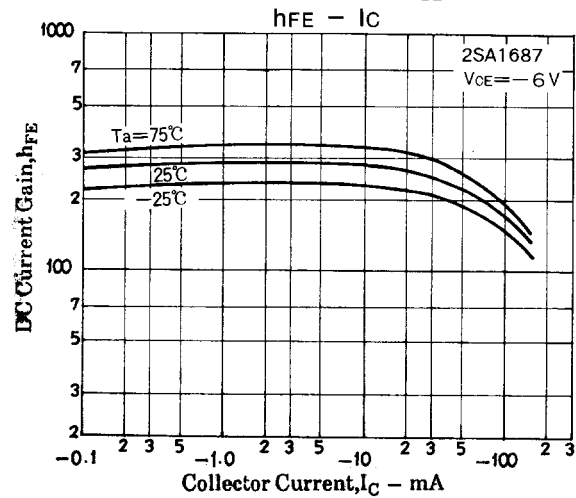
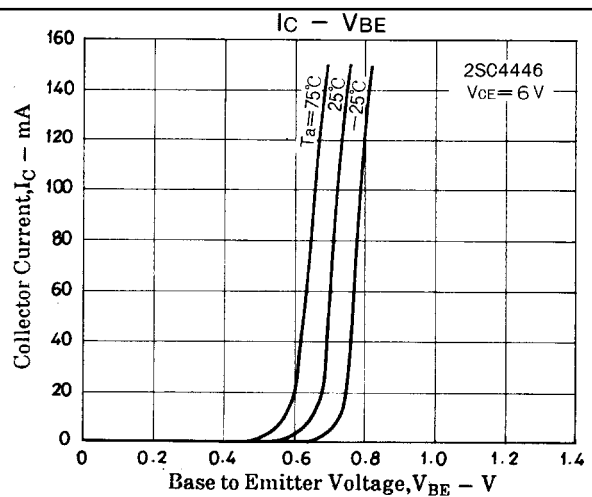
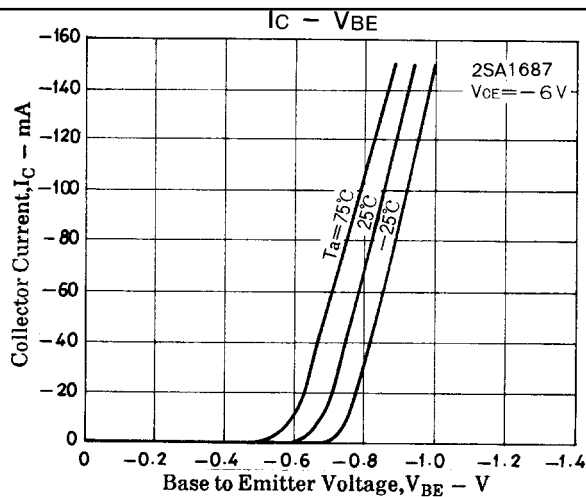
## 2SA1687/2SC4446

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)50mA, I_B=(-)5mA$		0.15	$(-)0.5$	V
				$(-0.25)$		V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)50mA, I_B=(-)5mA$		$(-)0.85$	$(-)1.2$	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	$(-)60$			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	$(-)50$			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	$(-)15$			V
Output Capacitance	$C_{ob}$	$V_{CB}=(-)6V, f=1MHz$		(3.5)		pF
				2.2		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit		50		ns
Storage Time	$t_{stg}$	See specified Test Circuit		(460)		ns
				590		ns
Fall Time	$t_f$	See specified Test Circuit		(60)		ns
				110		ns

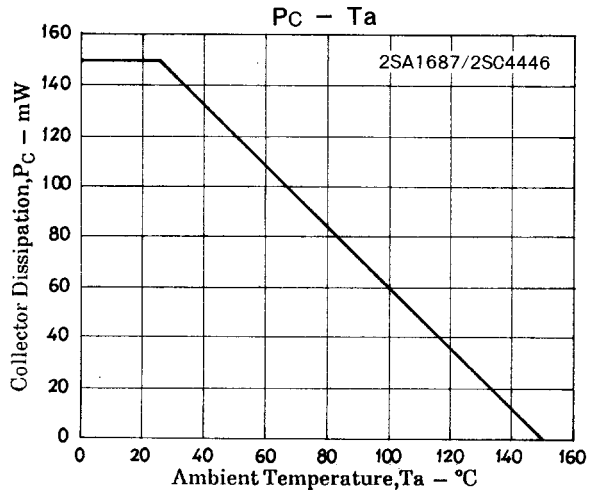
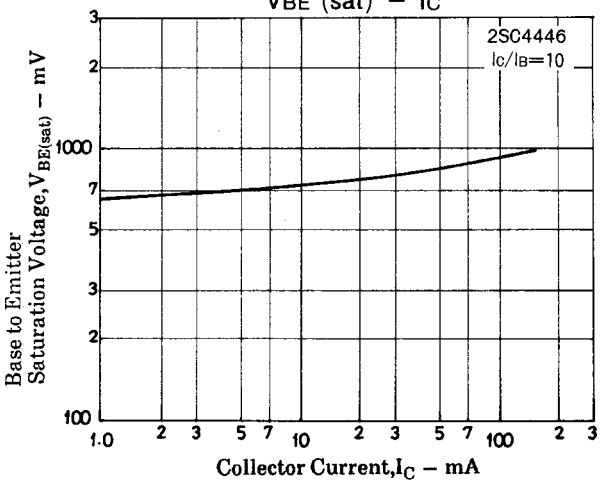
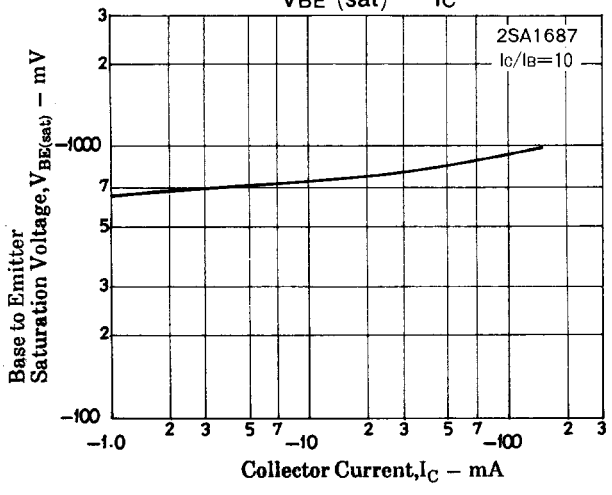
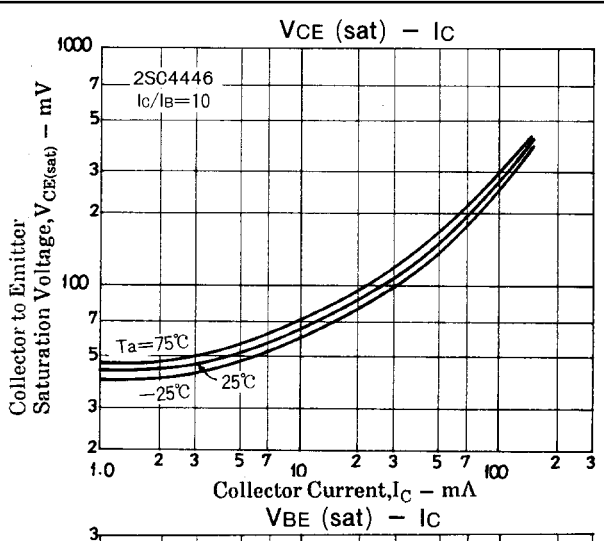
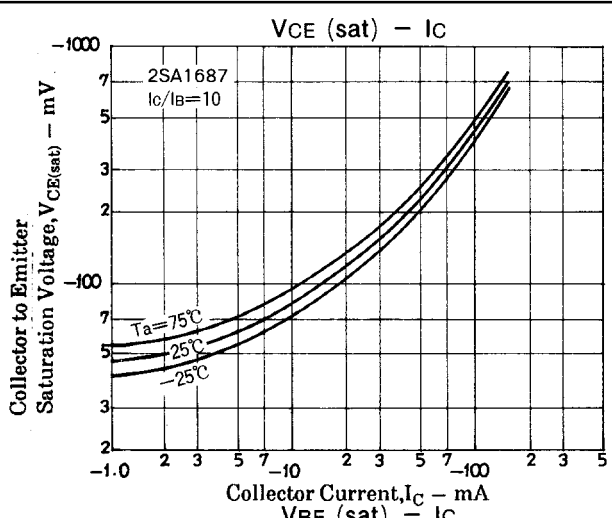
### Switching Time Test Circuit



## 2SA1687/2SC4446



2SA1687/2SC4446



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