



2SA1687/2SC4446

Low-Frequency General-Purpose Amplifier Applications

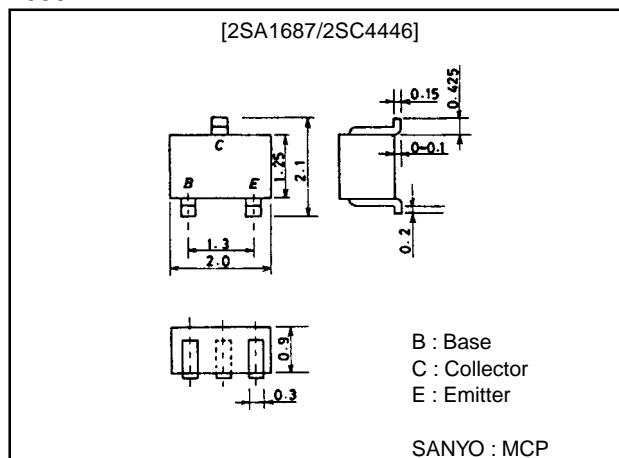
Features

- 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

Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-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)	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = (-)10\text{V}, I_C = 0$			(-0.1)	μA
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 :

135	5	270	200	6	400	300	7	600
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Marking : D (2SA1687) h_{FE} rank : 5, 6, 7

H (2SC4446)

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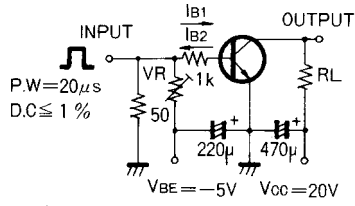
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2SA1687/2SC4446

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

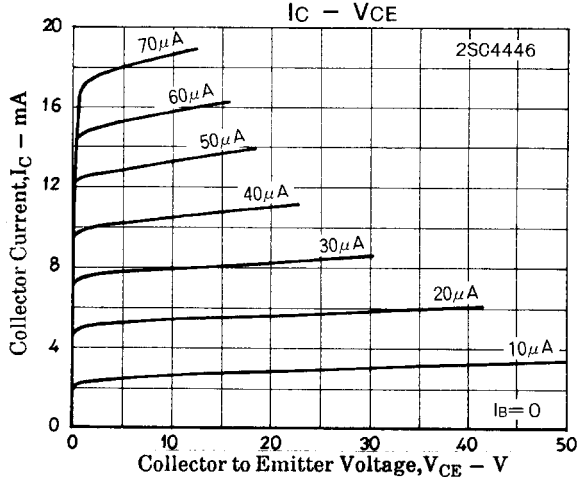
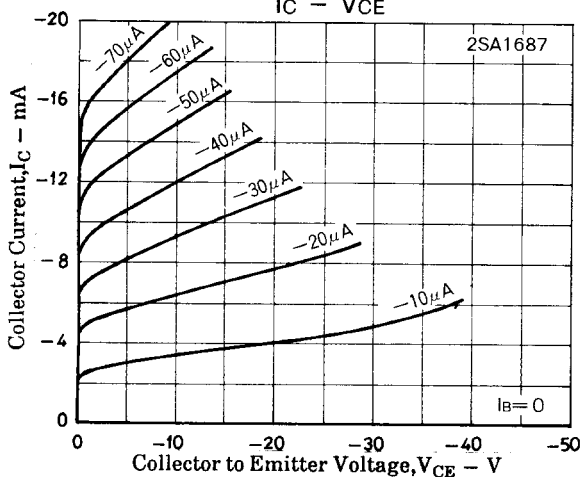
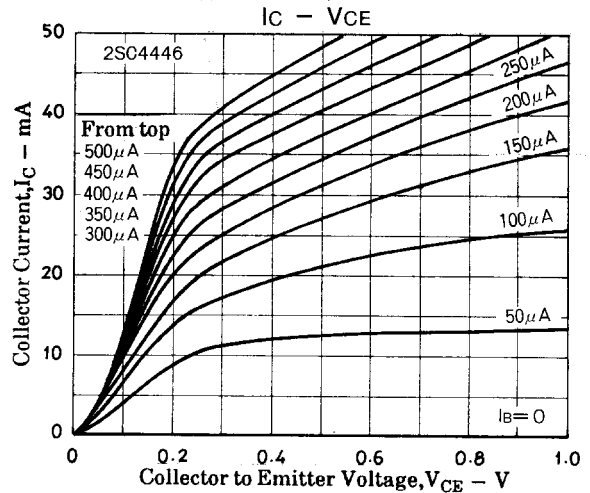
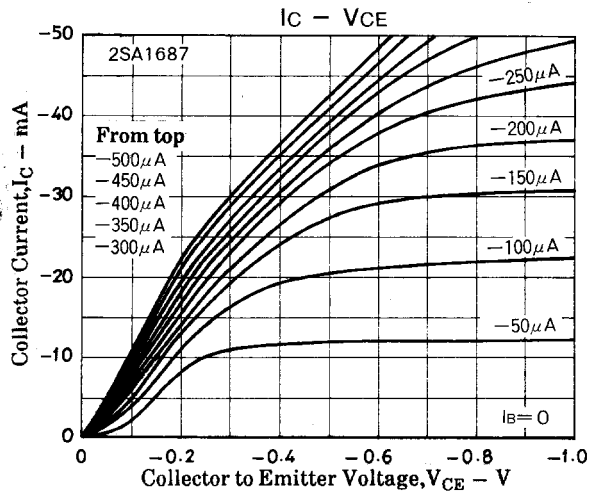
Switching Time Test Circuit



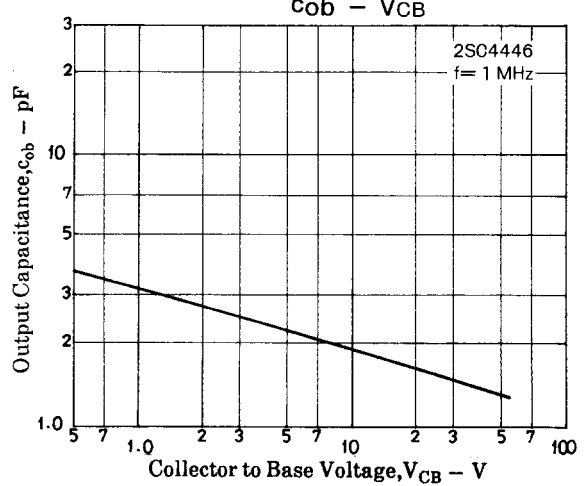
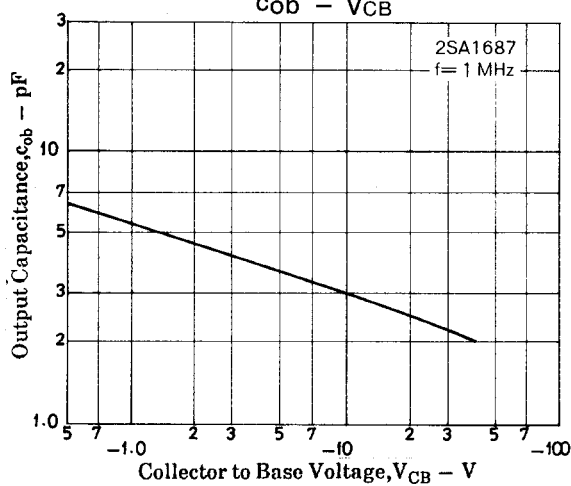
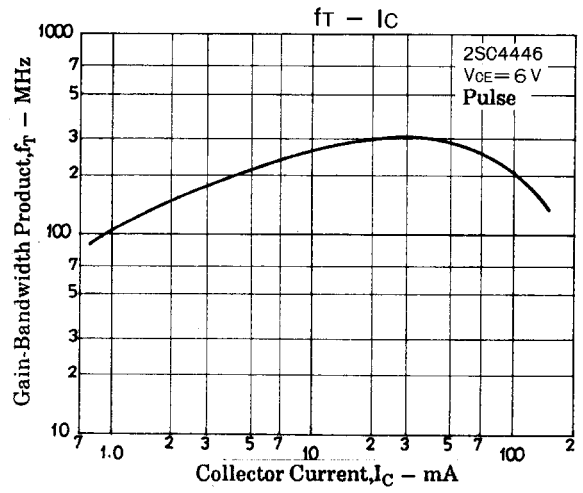
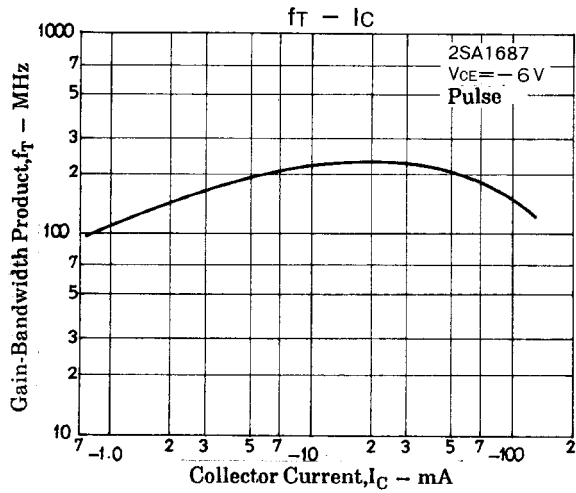
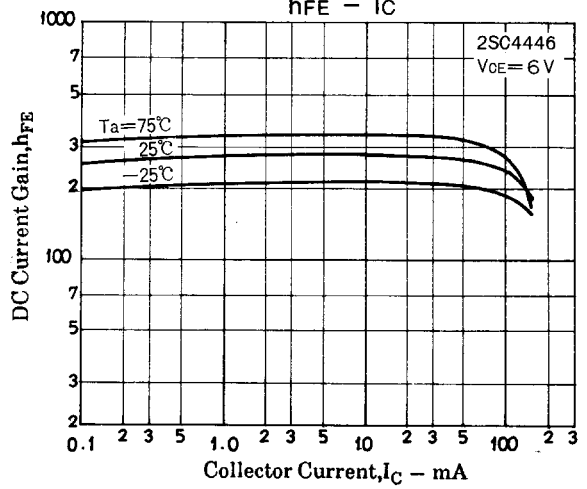
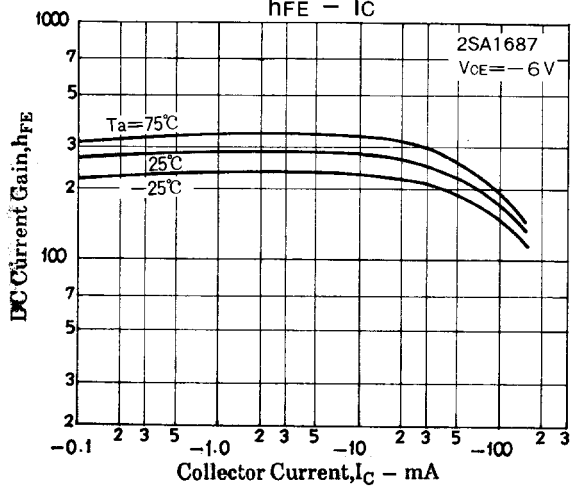
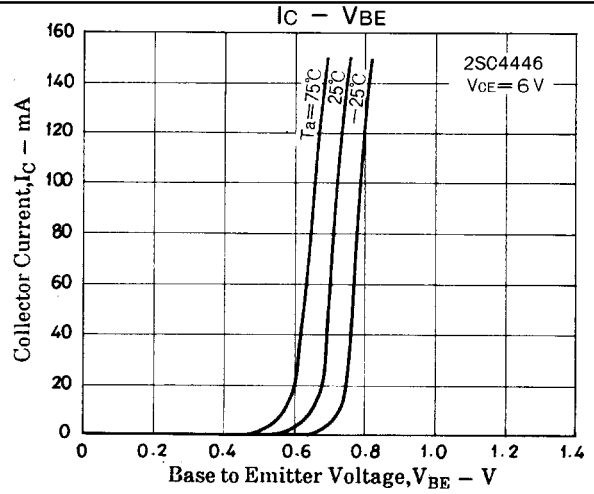
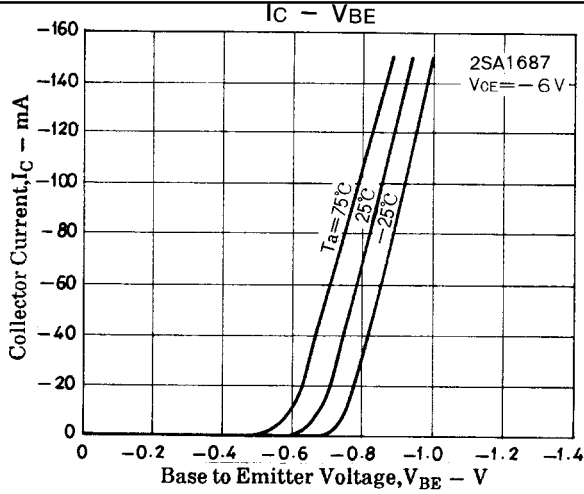
$$10I_{B1} = -10I_{B2} = I_C = 50mA$$

(For PNP, the polarity is reversed.)

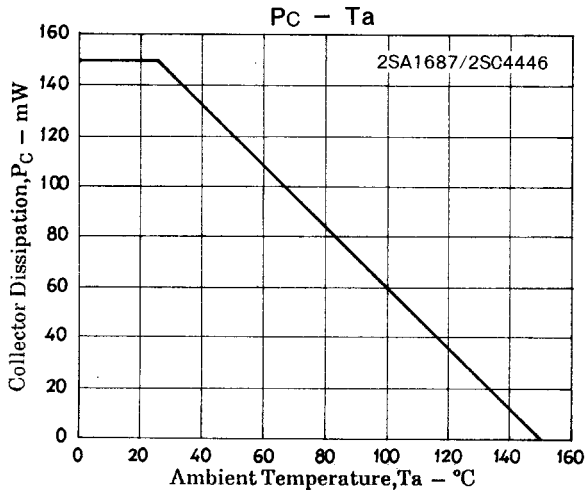
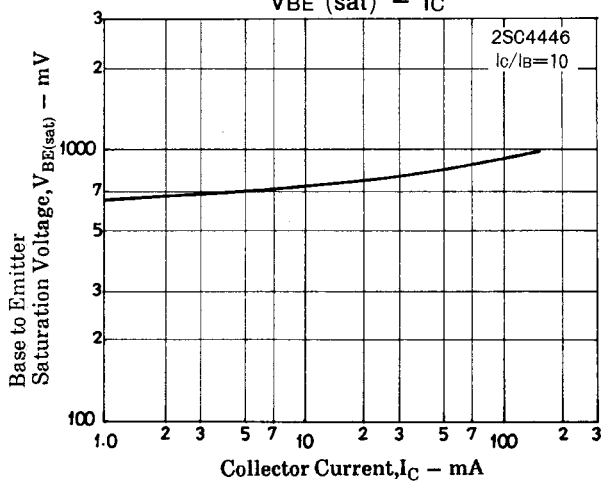
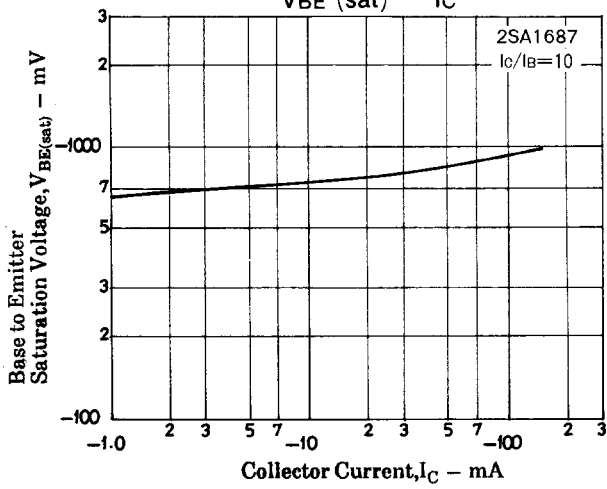
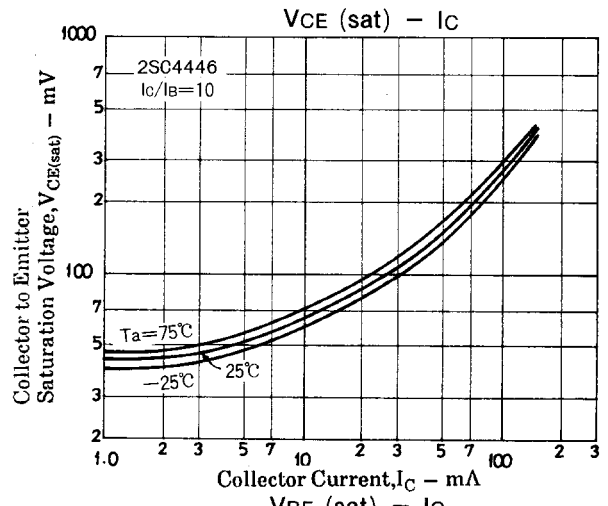
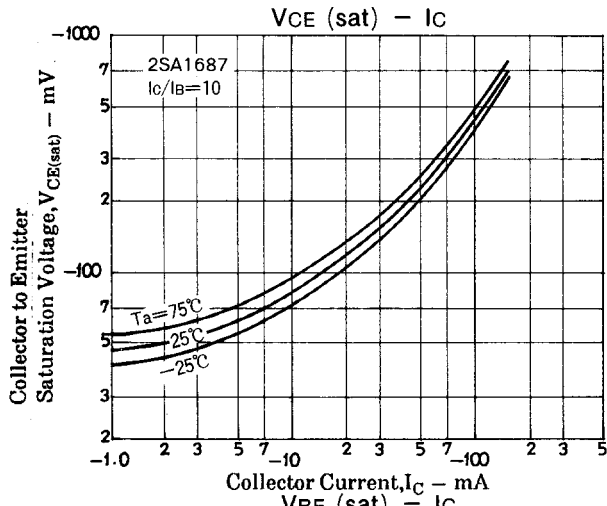
Unit (resistance : Ω , capacitance : F)



2SA1687/2SC4446



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