

<b>SANYO</b>	No.3013	<b>2SA1687/2SC4446</b>
	PNP/NPN Epitaxial Planar Silicon Transistors	
Low-Frequency General-Purpose Amp Applications		

**Features**

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

( ) : 2SA1687

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

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

			min	typ	max	unit
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
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)50\text{mA}, I_B = (-)5\text{mA}$		(-0.25)0.15	(-)0.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)50\text{mA}, I_B = (-)5\text{mA}$		(-)0.85	(-)1.2	V
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu\text{A}, I_E = 0$	(-)60			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1\text{mA}, R_{BE} = \infty$	(-)50			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu\text{A}, I_C = 0$	(-)15			V
Output Capacitance	$c_{ob}$	$V_{CB} = (-)6\text{V}, f = 1\text{MHz}$		(3.5)2.2		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit.		50		ns
Storage Time	$t_{stg}$	"		(460)590		ns
Fall Time	$t_f$	"		(60)110		ns

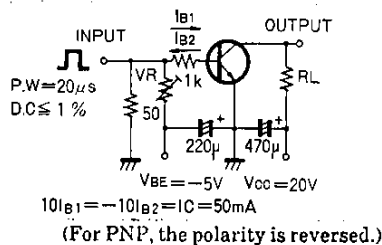
\* : The 2SA1687/2SC4446 are classified by 1mA  $h_{FE}$  as follows :

135	5	270	200	6	400	300	7	600
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Marking : D (2SA1687)  
          H (2SC4446)

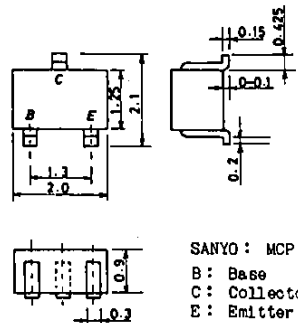
$h_{FE}$  rank : 5,6,7

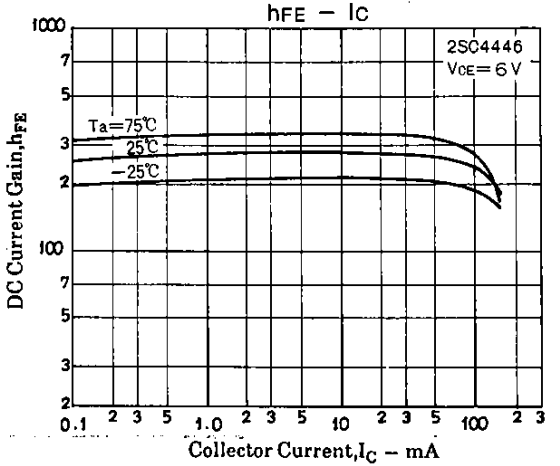
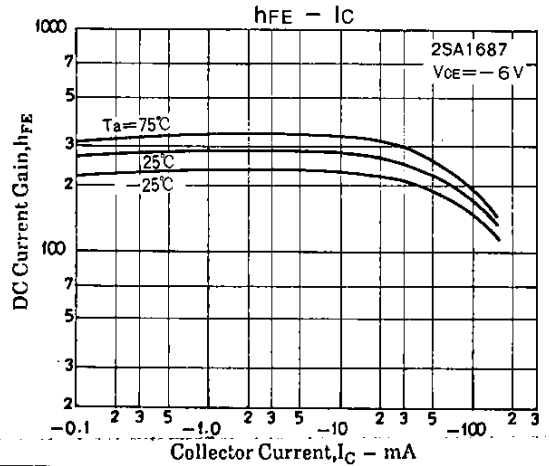
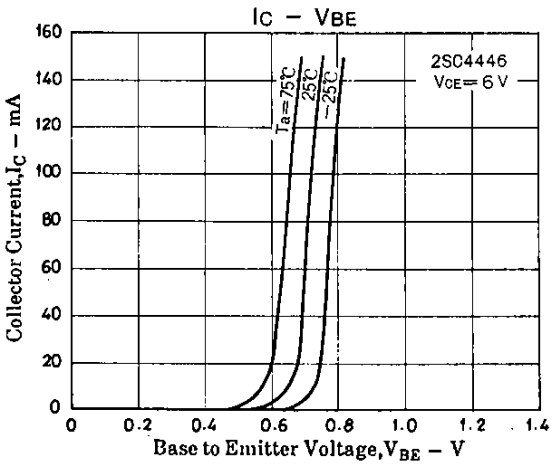
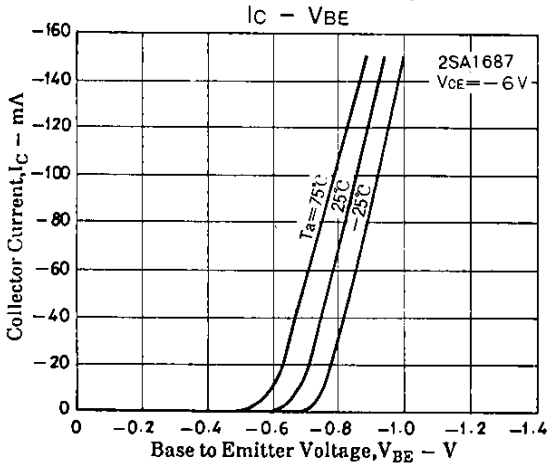
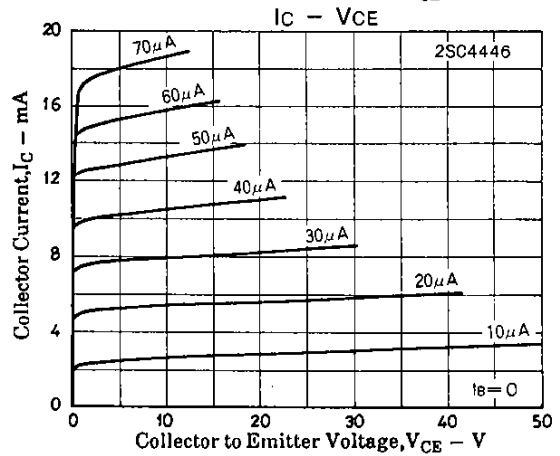
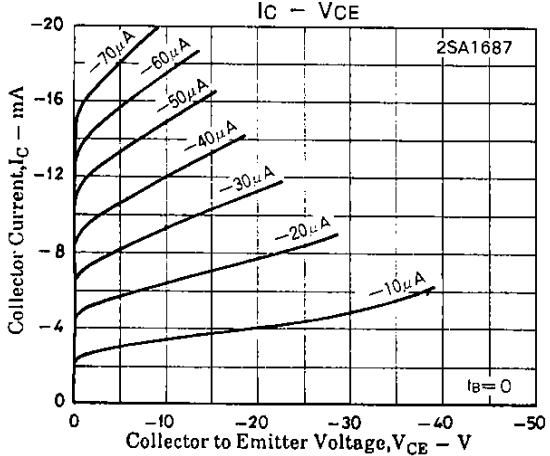
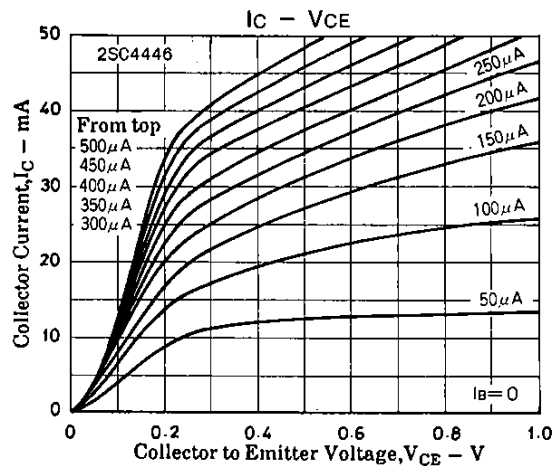
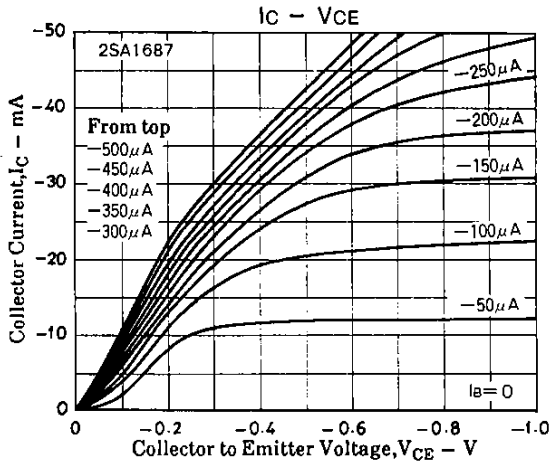
**Switching Time Test Circuit**

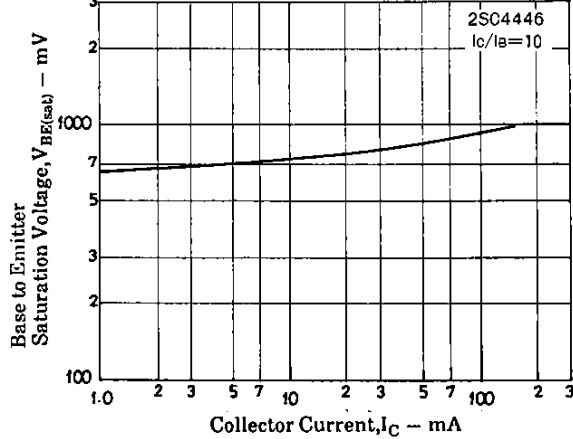
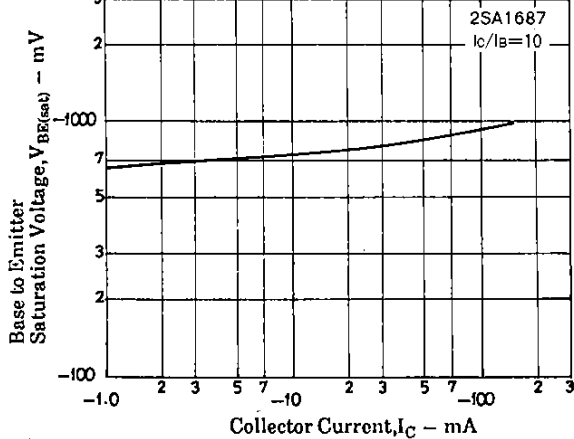
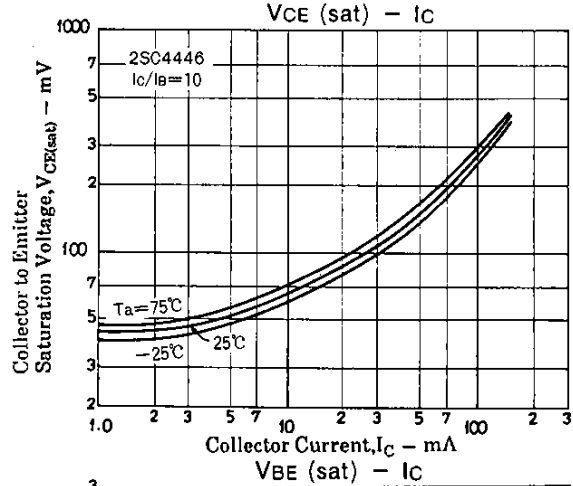
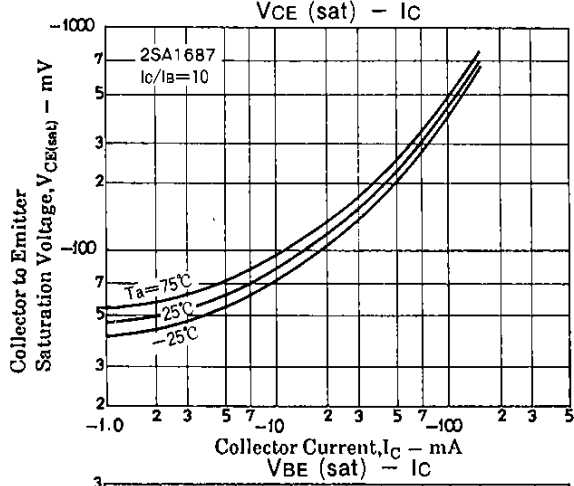
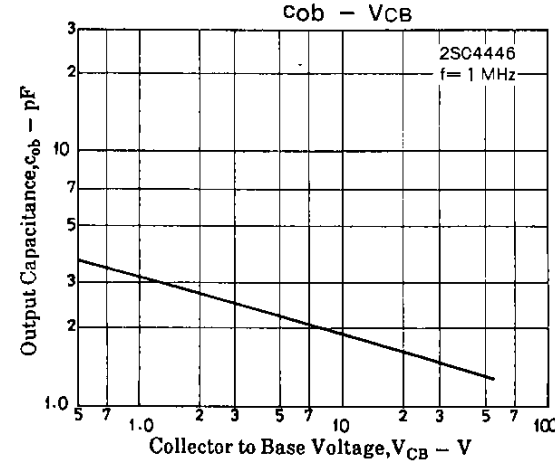
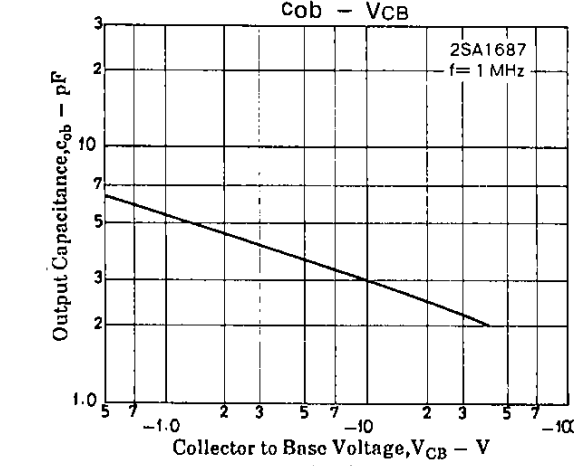
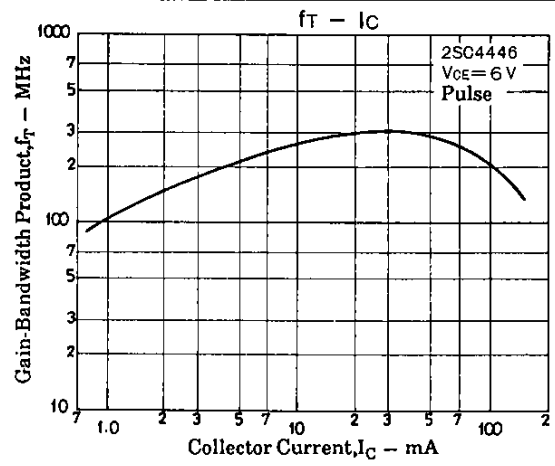
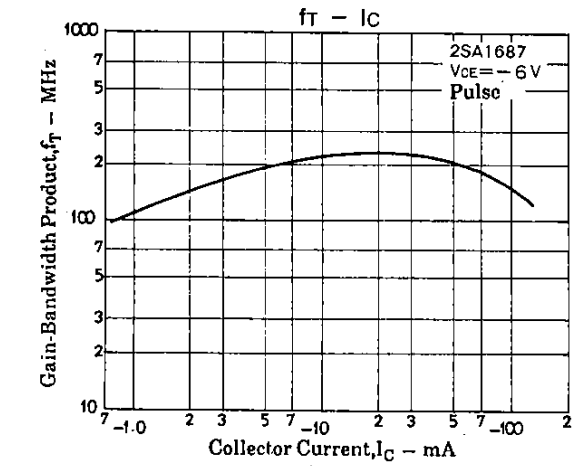


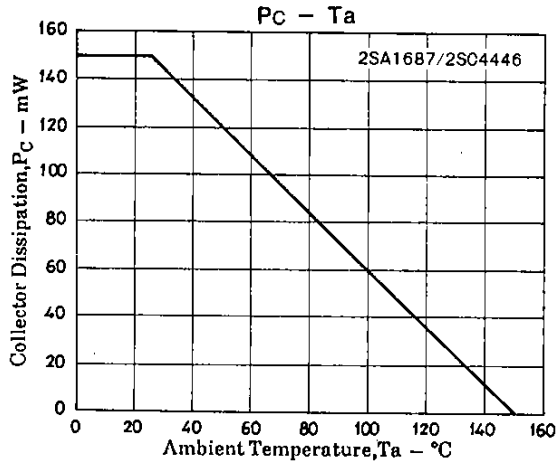
Unit (Resistance :  $\Omega$ , Capacitance : F)

**Package Dimensions 2059**  
(unit : mm)









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