Ordering number:EN3707

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1769/2SC4613

160V/700mA Switching Applications

Applications

· Color TV audio output, conveter, inverter.

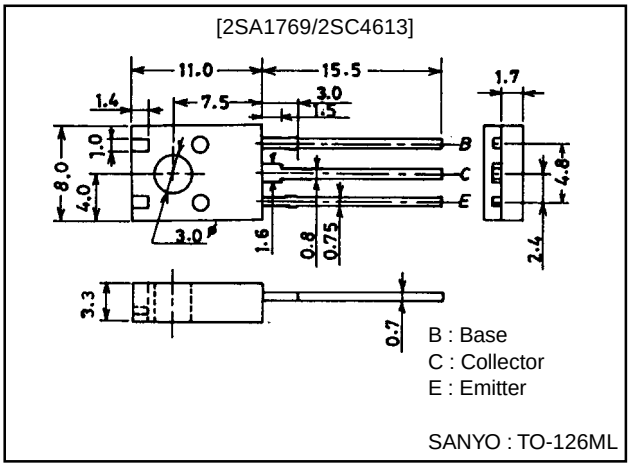
Features

· Adoption of MBIT processes.
· High breakdown voltage and large current capacity.
· Fast switching speed.

Package Dimensions

unit:mm

2042A



( ) : 2SA1769

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)180	V
Collector-to-Emitter Voltage	V_{CEO}		(–)160	V
Emitter-to-Base Voltage	V_{EBO}		(–)6	V
Collector Current	I_C		(–)0.7	A
Collector Current (Pulse)	I_{CP}		(–)1.5	A
Collector Dissipation	P_C		1.5	W
		Tc=25˚C	10	W
Junction Temperature	Tj		150	˚C
Storage Temperature	Tstg		–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}=(–)120V, I_E=0			(–)0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=(–)4V, I_C=0			(–)0.1	μA
DC Current Gain	$h_{FE}1$	V_{CE}=(–)5V, I_C=(–)100mA	100*		400*	
	$h_{FE}2$	V_{CE}=(–)5V, I_C=(–)10mA	90			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		120		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		0.12	0.4	V
				(–0.2)	(–0.5)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)250mA, I_B=(–)25mA		(–)0.85	(–)1.2	V

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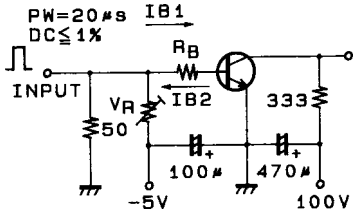
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)180			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)160			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=(–)10μA, I_C=0	6			V
Output Capacitance	C_{ob}	V_{CB}=(–)10V, f=1MHz		8		pF
				(11)		pF
Turn-ON Time	t_{on}	See specified Test Circuit		(60)50		ns
Storage Time	t_{stg}	See specified Test Circuit		(900)		ns
				1000		ns
Fall Time	t_f	See specified Test Circuit		(60)60		ns

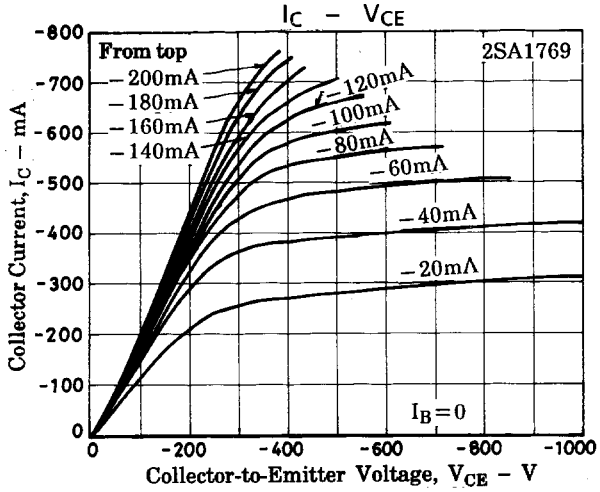
* The 2SA1769/2SC4613 are classified by 100mA h_{FE} as follows :

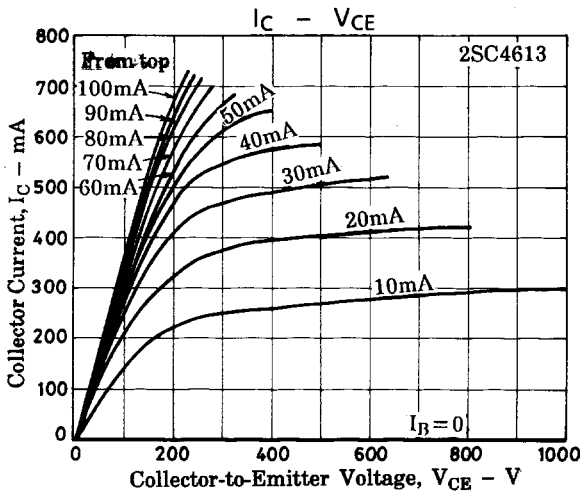
100	R	200	140	S	280	200	T	400

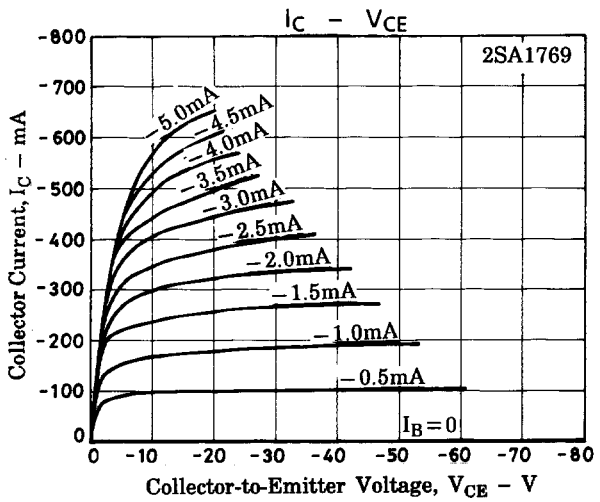
Switching Time Test Circuit

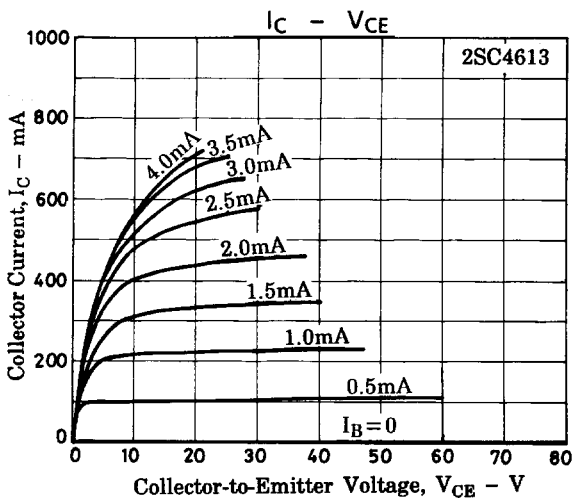


$20I_{B}1=-20I_{B}2=I_C=300$mA
(For PNP, the polarity is reversed).
Unit (resistance : Ω, capacitance : F)

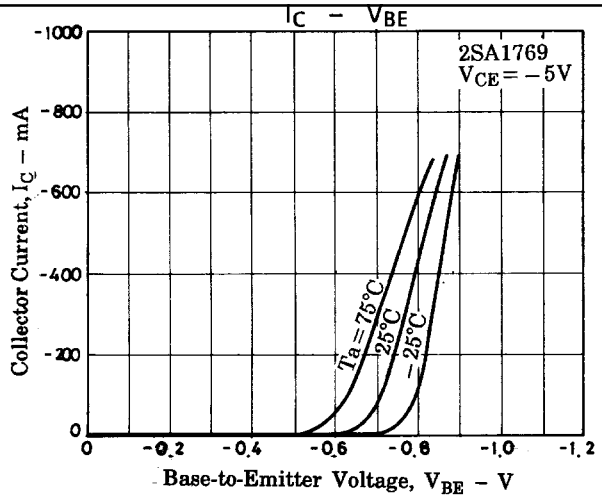




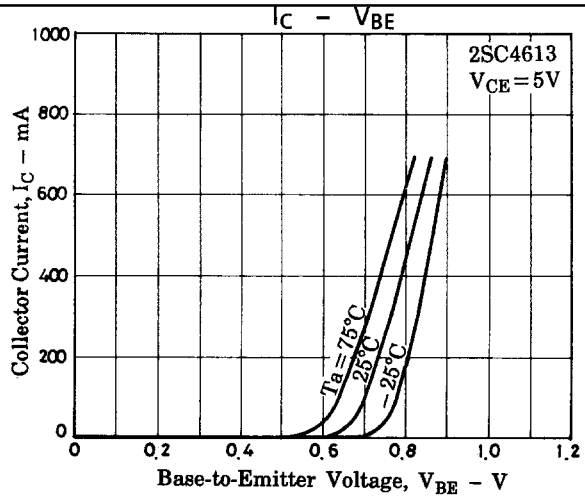




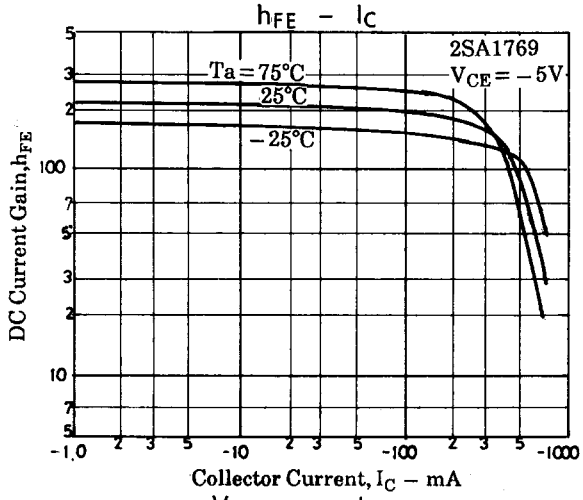
I_C – V_{BE}



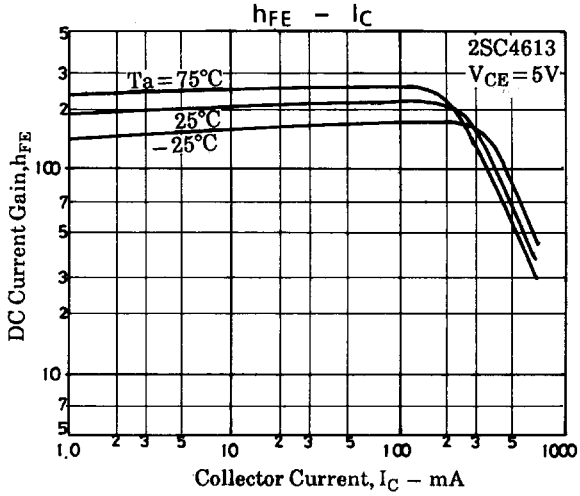
I_C – V_{BE}



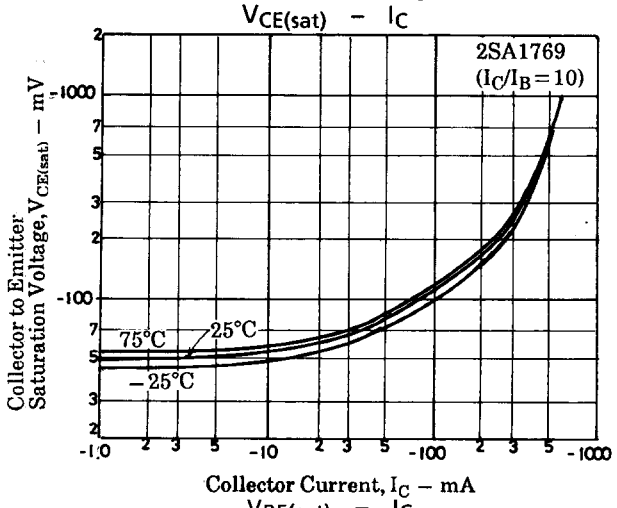
h_{FE} – I_C



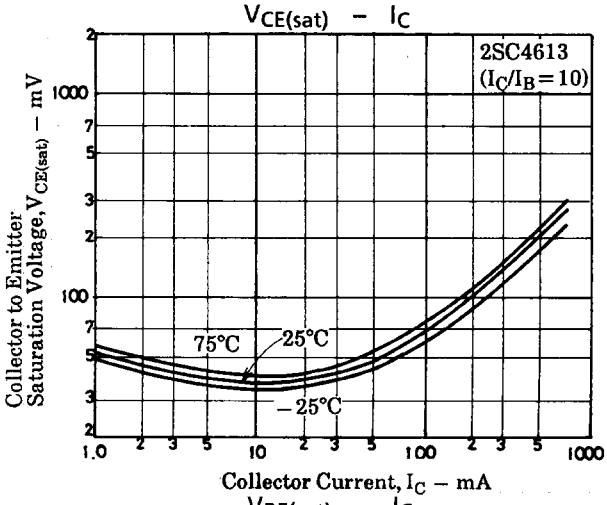
h_{FE} – I_C



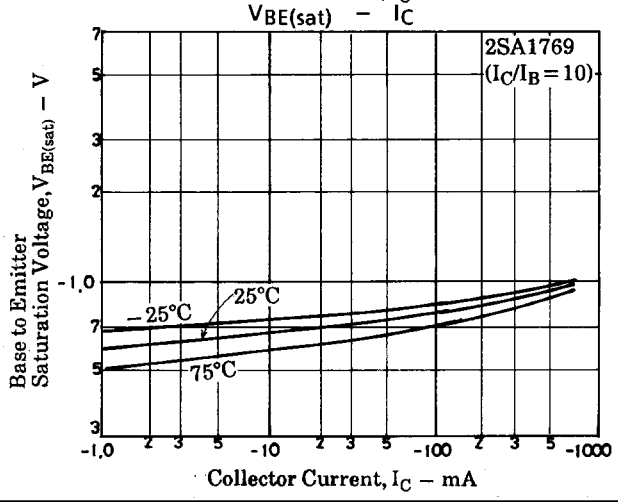
$V_{CE(sat)}$ – I_C



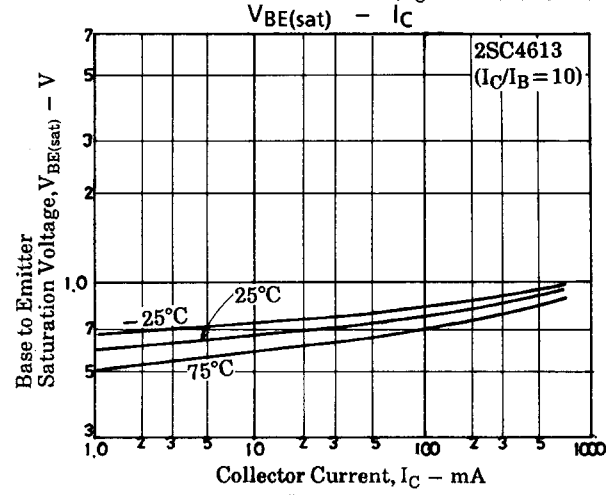
$V_{CE(sat)}$ – I_C

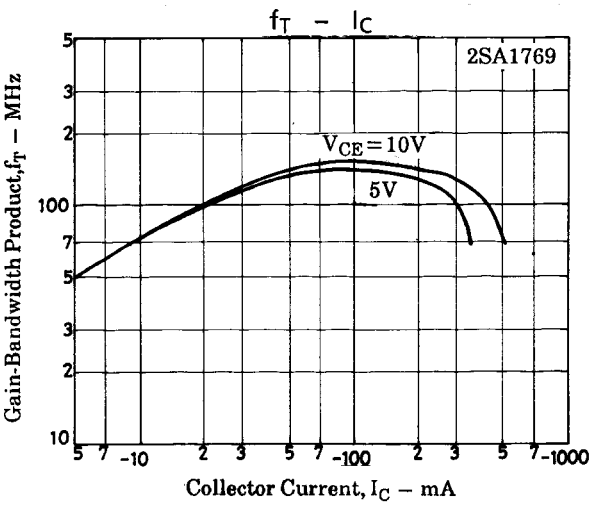


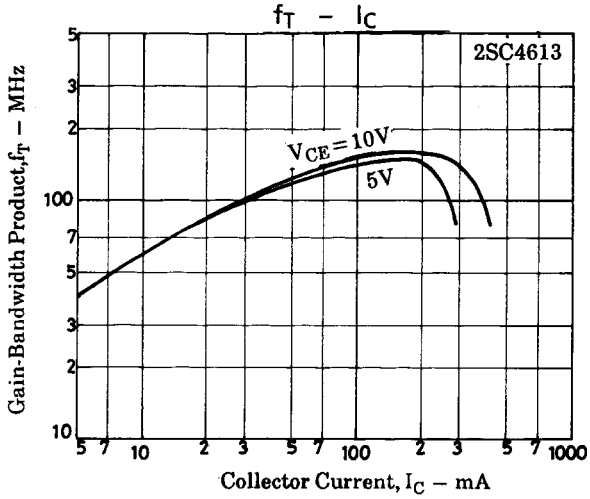
$V_{BE(sat)}$ – I_C

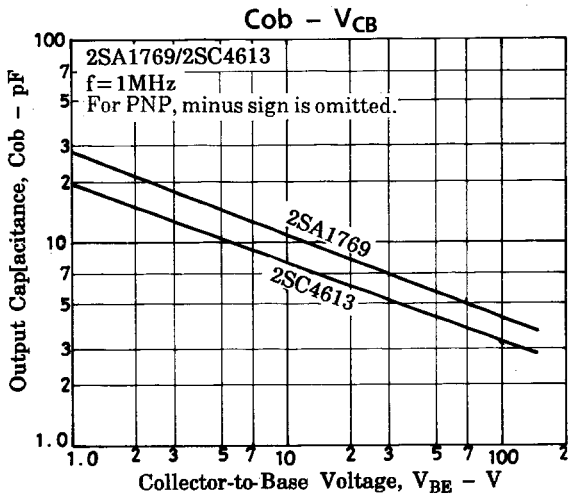


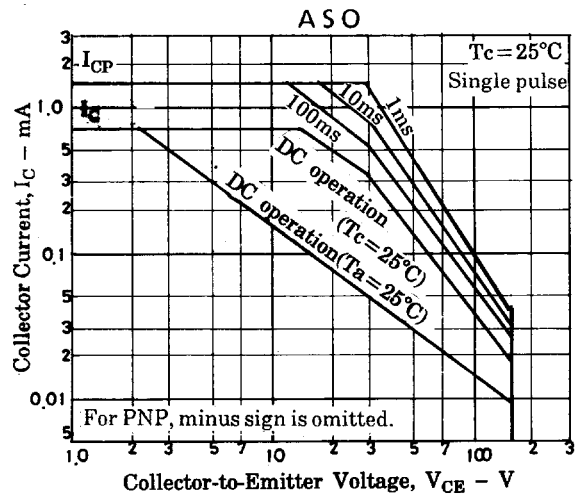
$V_{BE(sat)}$ – I_C

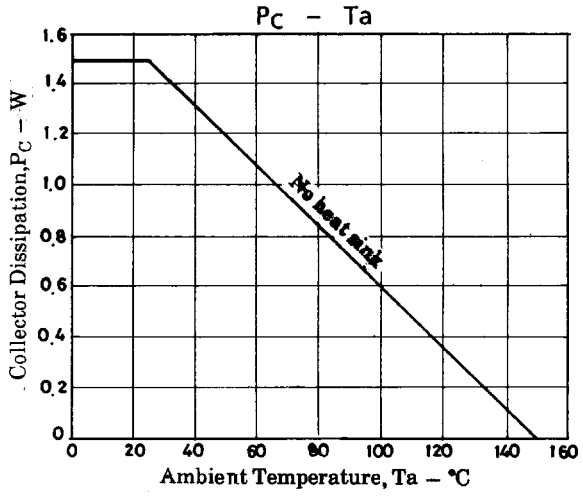


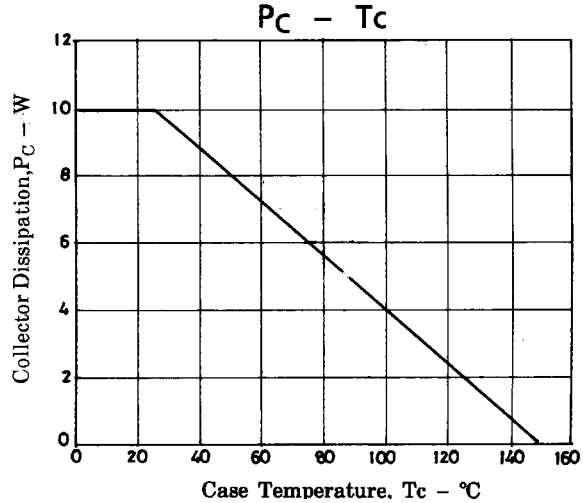

fT – IC
2SA1769
VCE=10V
5V
Gain-Bandwidth Product,fT – MHz
Collector Current, IC – mA


fT – IC
2SC4613
VCE=10V
5V
Gain-Bandwidth Product,fT – MHz
Collector Current, IC – mA


Cob – VCB
2SA1769/2SC4613
f=1MHz
For PNP, minus sign is omitted.
2SA1769
2SC4613
Output Capacitance, Cob – pF
Collector-to-Base Voltage, VBE – V


ASO
Tc=25°C
Single pulse
ICP
IC
1ms
10ms
100ms
DC operation
(Tc=25°C)
DC operation(Ta=25°C)
For PNP, minus sign is omitted.
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V


PC – Ta
No heat sink
Collector Dissipation,PC – W
Ambient Temperature, Ta – °C


PC – Tc
Collector Dissipation,PC – W
Case Temperature, Tc – °C