Ordering number:ENN2440B

~~PNP/~~NPN Epitaxial Planar Silicon Transistors

~~2SA1541~~/2SC3956

High-Definition CRT Display Video Output Applications

Applications

· High-definition CRT display video output, wide-band amplifier.

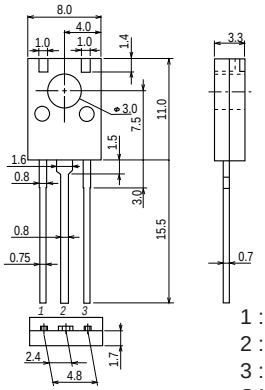
Features

· High gain-bandwidth product : f_T=300MHz.
· High breakdown voltage : V_{CEO}=200Vmin.
· Small reverse transfer capacitance and excellent high frequency characteristics : C_{re}=2.2pF/NPN,~~2.7pF/PNP.~~
· Complementary PNP and NPN types.
· Adoption of FBET process.
· Micaless type : TO-126 plastic package.

Package Dimensions

unit:mm

2042B



~~( ) : 2SA1541~~

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		~~(–)~~200	V
Collector-to-Emitter Voltage	V_{CEO}		~~(–)~~200	V
Emitter-to-Base Voltage	V_{EBO}		~~(–)~~3	V
Collector Current	I_C		~~(–)~~200	mA
Peak Collector Current	I_{CP}		~~(–)~~300	mA
Collector Dissipation	P_C		1.3	W
		Tc=25˚C	7	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}=~~(–)~~150V, I_E=0			~~(–)~~0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=~~(–)~~2V, I_C=0			~~(–)~~1.0	μA
DC Current Gain	$h_{FE}1$	V_{CE}=~~(–)~~10V, I_C=~~(–)~~10mA	40*		320*	
	$h_{FE}2$	V_{CE}=~~(–)~~10V, I_C=~~(–)~~100mA	20			
Gain-Bandwidth Product	f_T	V_{CE}=~~(–)~~30V, I_C=~~(–)~~50mA		300		MHz

*$h_{FE}1$: The ~~2SA1541~~/2SC3956 are classified by 10mA h_{FE} as follows :

Continued on next page.

Rank	C	D	E	F
h_{FE}	40 to 80	60 to 120	100 to 200	160 to 320

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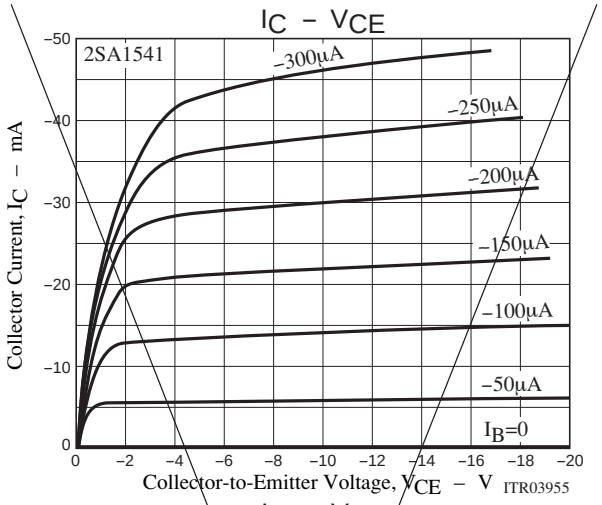
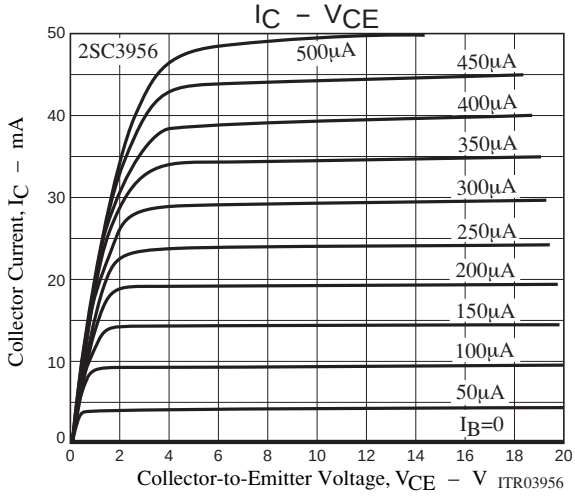
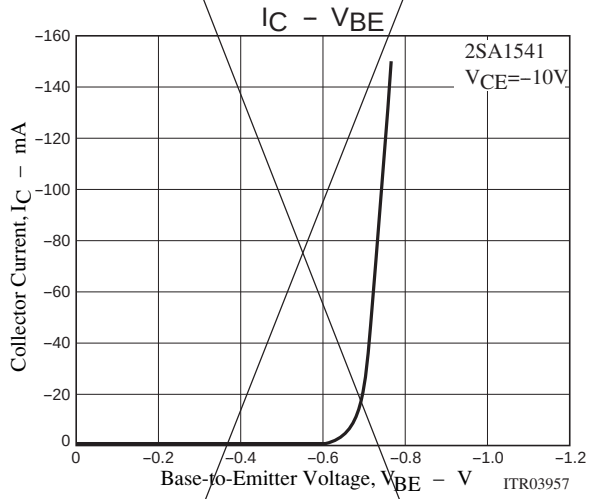
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

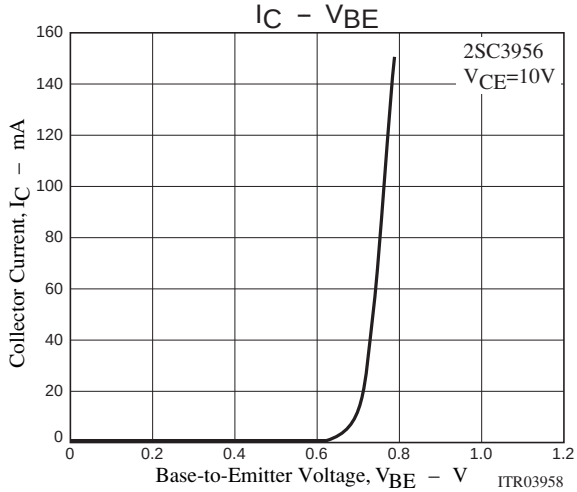
Continued from preceding page.

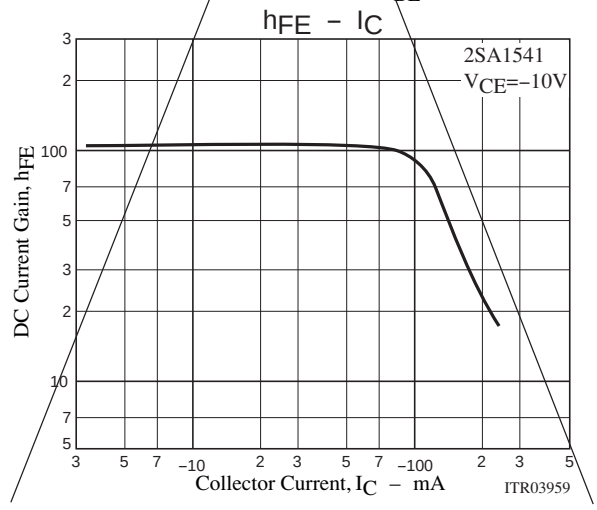
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	C_{ob}	V_{CB}=~~(−)~~30V, f=1MHz		2.7		pF
				~~(3.2)~~		pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=~~(−)~~30V, f=1MHz		2.2		pF
				~~(2.7)~~		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=~~(−)~~30mA, I_B=~~(−)~~3mA			~~(−)~~1.0	V
Emitter-to-Base Saturation Voltage	$V_{BE(sat)}$	I_C=~~(−)~~30mA, I_B=~~(−)~~3mA			~~(−)~~1.0	V

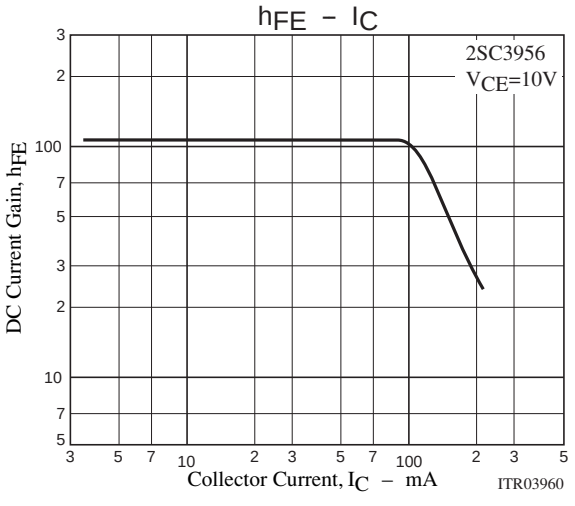


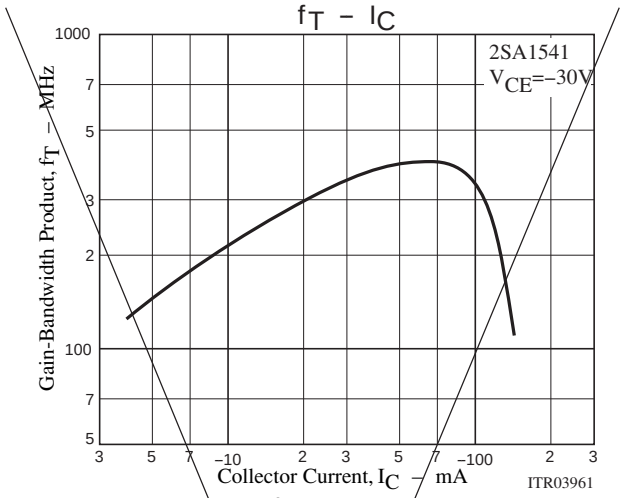


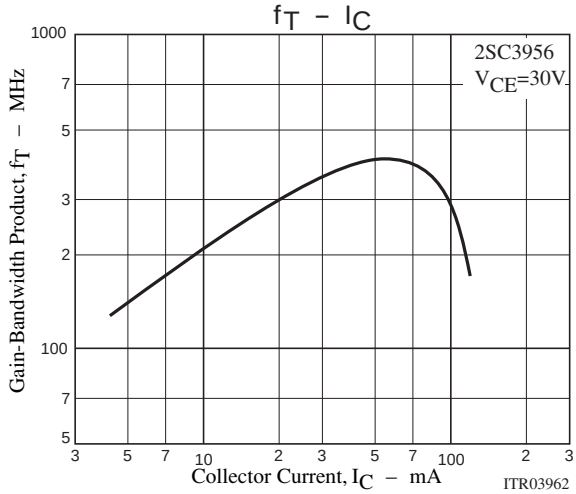


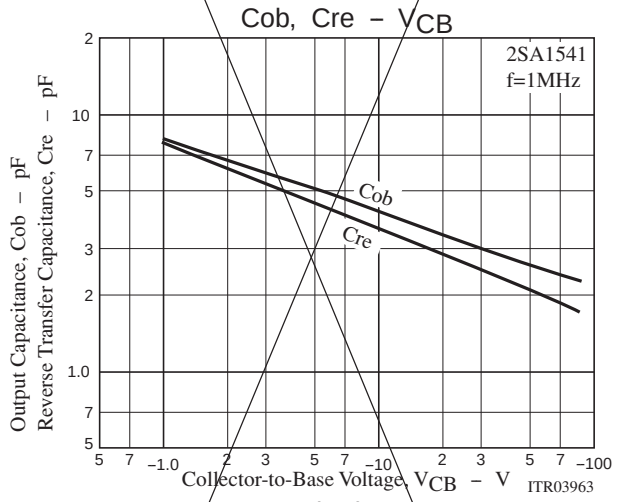


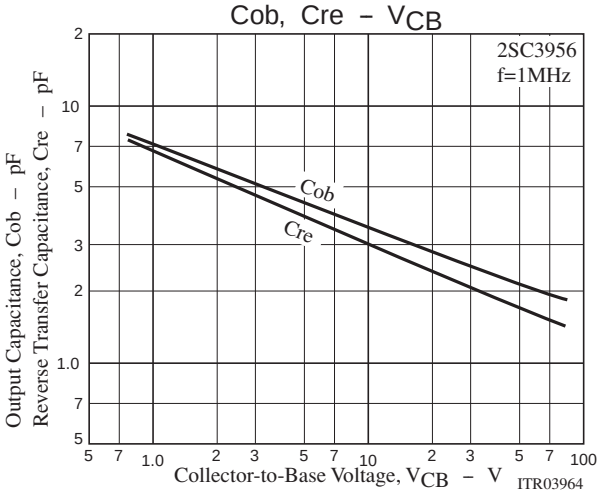


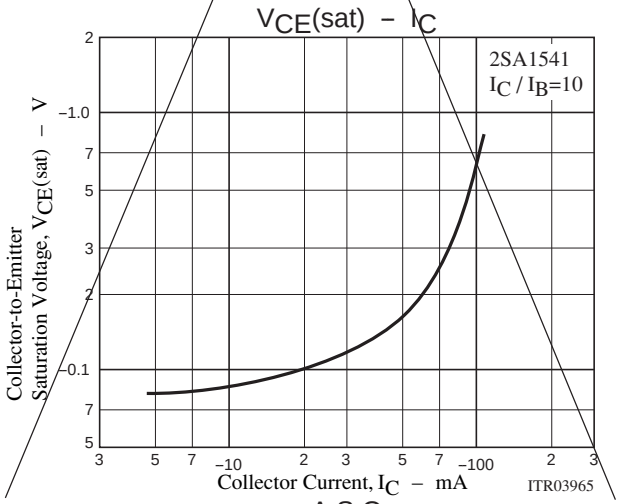


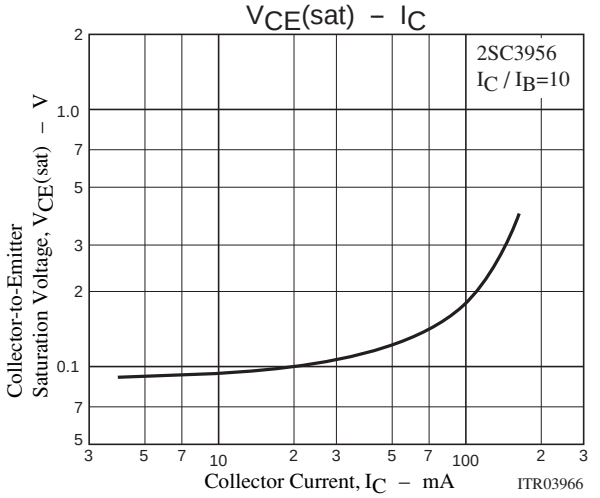

fT – IC
2SA1541
VCE=–30V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03961

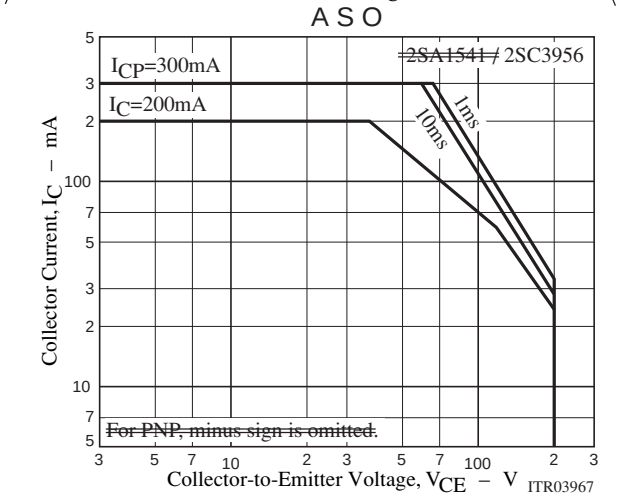

fT – IC
2SC3956
VCE=30V
Gain-Bandwidth Product, fT – MHz
Collector Current, IC – mA
ITR03962

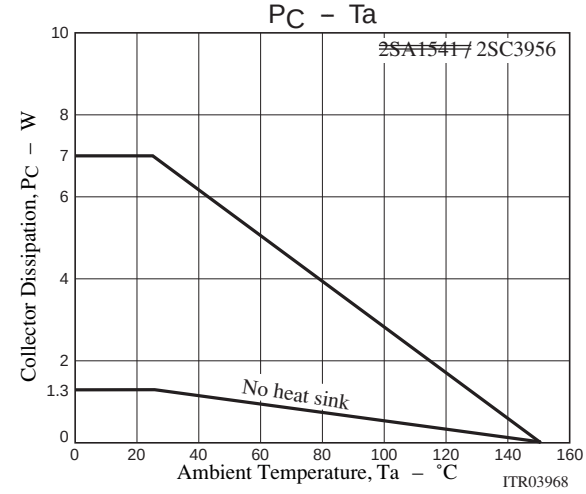

Cob, Cre – VCB
2SA1541
f=1MHz
Cob
Cre
Output Capacitance, Cob – pF
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
ITR03963


Cob, Cre – VCB
2SC3956
f=1MHz
Cob
Cre
Output Capacitance, Cob – pF
Reverse Transfer Capacitance, Cre – pF
Collector-to-Base Voltage, VCB – V
ITR03964


VCE(sat) – IC
2SA1541
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03965


VCE(sat) – IC
2SC3956
IC / IB=10
Collector-to-Emitter Saturation Voltage, VCE(sat) – V
Collector Current, IC – mA
ITR03966


A S O
~~2SA1541~~/ 2SC3956
ICP=300mA
IC=200mA
1ms
10ms
For PNP, minus sign is omitted.
Collector Current, IC – mA
Collector-to-Emitter Voltage, VCE – V
ITR03967


PC – Ta
~~2SA1541~~/ 2SC3956
No heat sink
Collector Dissipation, PC – W
Ambient Temperature, Ta – °C
ITR03968