Ordering number:EN2527A

PNP/NPN Epitaxial Planar Silicon Transistors

2SA1475/2SC3781

Ultrahigh-Definition CRT Display Video Output Applications

Applications

- Video output.
- Color TV chroma output.
- Wide-band amp.

Features

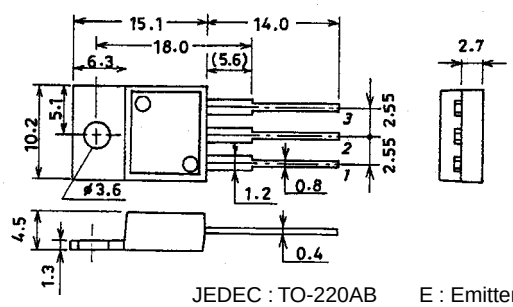
- High f_T (f_T typ=500MHz).
- High breakdown voltage (V_{CEO}≥120V).
- Small reverse transfer capacitance and excellent HF response
  : C_{re}=2.6pF (NPN), 3.9pF (PNP).
- Complementary PNP and NPN types.
- Adoption of FBET process.

Package Dimensions

unit:mm

2010C

[2SA1475/2SC3781]



JEDEC : TO-220AB
EIAJ : SC-46

E : Emitter
C : Collector
B : Base

( ) : 2SA1475

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		(–)120	V
Collector-to-Emitter Voltage	V_{CEO}		(–)120	V
Emitter-to-Base Voltage	V_{EBO}		(–)4	V
Collector Current	I_C		(–)400	mA
Peak Collector Current	I_{CP}		(–)600	mA
Collector Dissipation	P_C		1.5	W
		Tc=50˚C	15	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}=(–)80V, 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=(–)50mA	40*		320*	
	$h_{FE}2$	V_{CE}=(–)10V, I_C=(–)250mA	20			
Gain-Bandwidth Product	f_T	V_{CE}=(–)10V, I_C=(–)50mA		500		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	I_C=(–)70mA, I_B=(–)7mA			0.6	V
					(–0.8)	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	I_C=(–)70mA, I_B=(–)7mA			(–)1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=(–)10μA, I_E=0	(–)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=(–)1mA, R_{BE}=∞	(–)120			V
Emitter-to-Base Breakdown Votage	$V_{(BR)EBO}$	I_E=(–)100μA, I_C=0	(–)4			V
Output Capacitance	C_{ob}	V_{CB}=(–)30V, f=1MHz		3.0		pF
				(4.4)		pF
Reverse Transfer Capacitance	C_{re}	V_{CB}=(–)30V, f=1MHz		2.6		pF
				(3.9)		pF

*: The 2SA1475/2SC3781 are classified by 50mA h_{FE} as follows :

40	C	80	60	D	120	100	E	200	160	F	320

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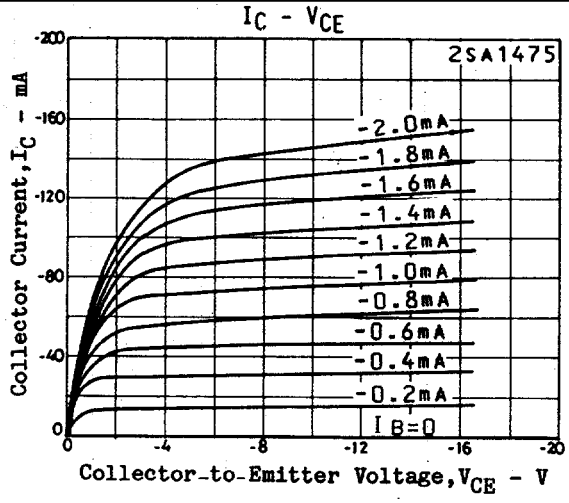
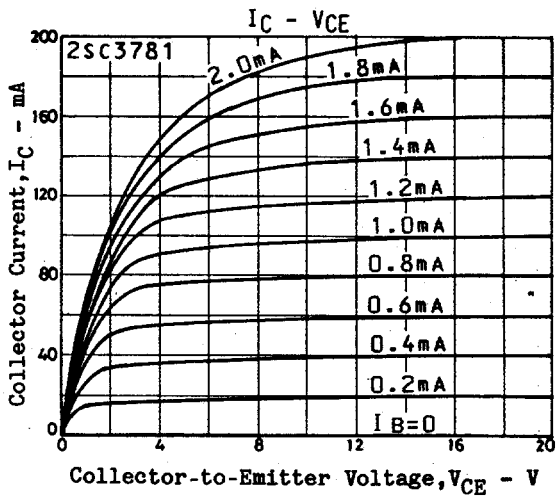
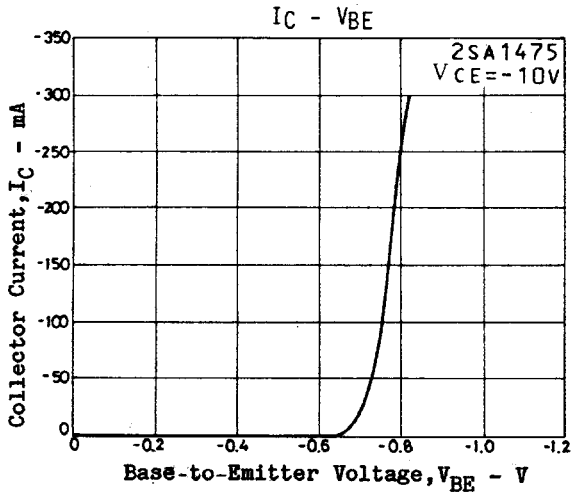
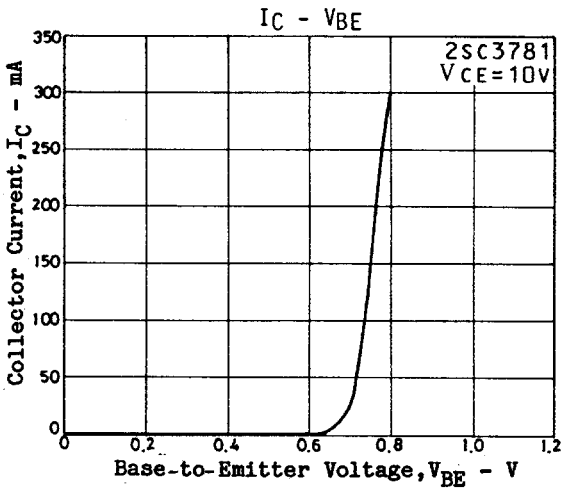
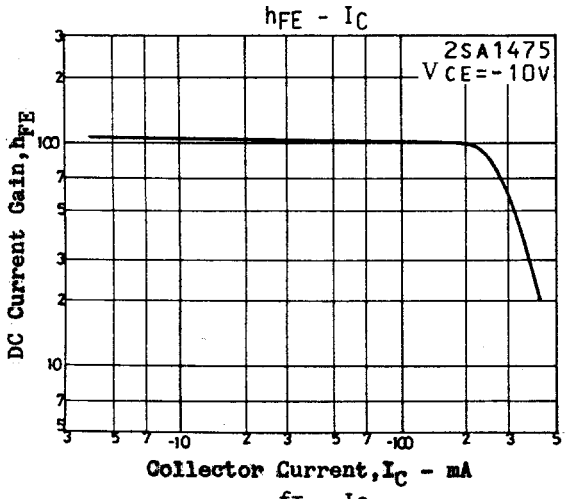
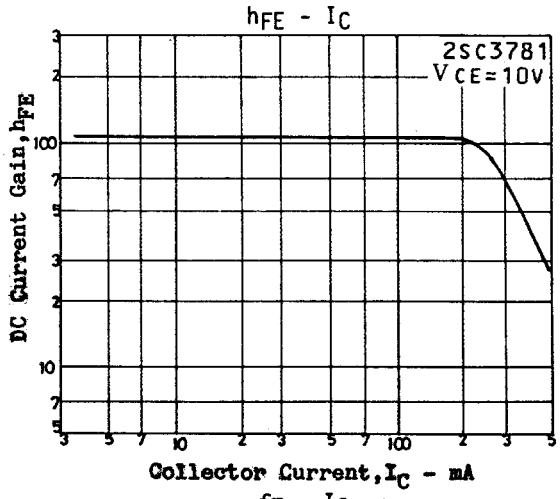

I_C - V_{CE}
2SA1475
-2.0mA
-1.8mA
-1.6mA
-1.4mA
-1.2mA
-1.0mA
-0.8mA
-0.6mA
-0.4mA
-0.2mA
I_B=0
Collector Current, I_C - mA
Collector-to-Emitter Voltage, V_{CE} - V

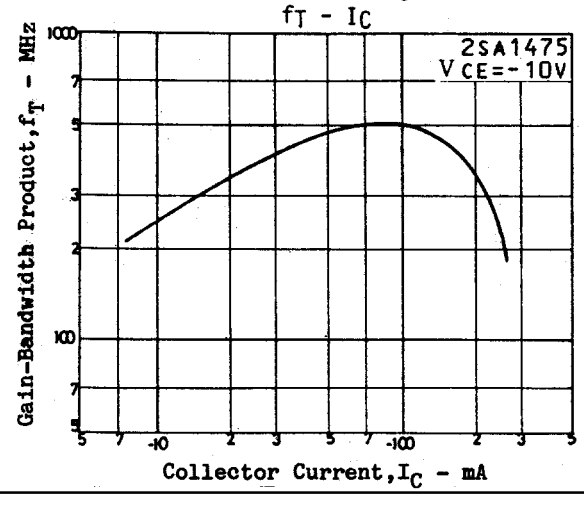

I_C - V_{CE}
2SC3781
2.0mA
1.8mA
1.6mA
1.4mA
1.2mA
1.0mA
0.8mA
0.6mA
0.4mA
0.2mA
I_B=0
Collector Current, I_C - mA
Collector-to-Emitter Voltage, V_{CE} - V

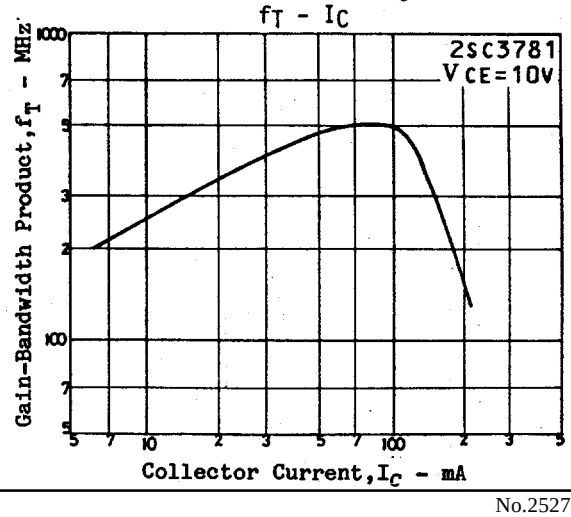

I_C - V_{BE}
2SA1475
V_{CE}=-10V
Collector Current, I_C - mA
Base-to-Emitter Voltage, V_{BE} - V


I_C - V_{BE}
2SC3781
V_{CE}=10V
Collector Current, I_C - mA
Base-to-Emitter Voltage, V_{BE} - V

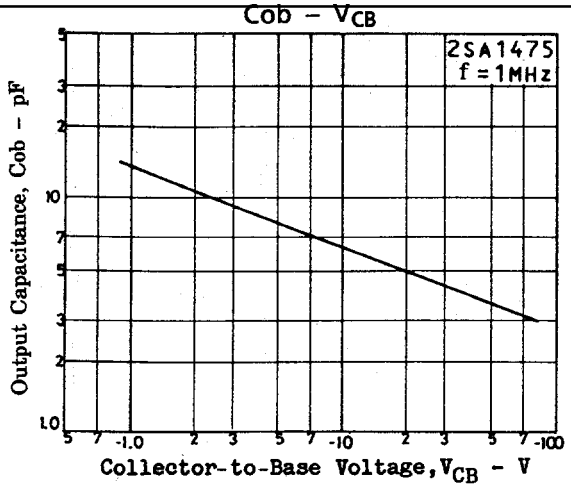

h_{FE} - I_C
2SA1475
V_{CE}=-10V
DC Current Gain, h_{FE}
Collector Current, I_C - mA


h_{FE} - I_C
2SC3781
V_{CE}=10V
DC Current Gain, h_{FE}
Collector Current, I_C - mA

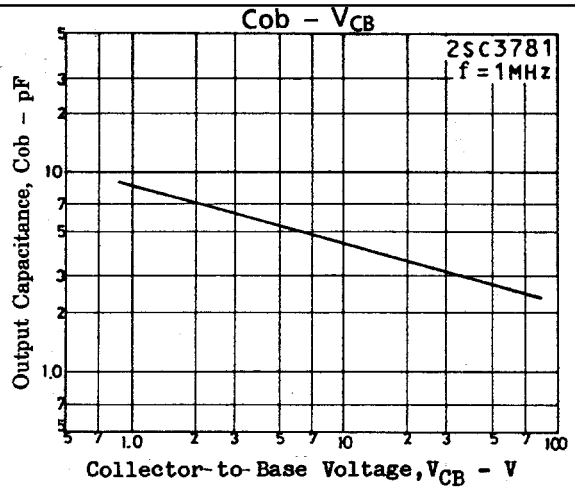

f_T - I_C
2SA1475
V_{CE}=-10V
Gain-Bandwidth Product, f_T - MHz
Collector Current, I_C - mA


f_T - I_C
2SC3781
V_{CE}=10V
Gain-Bandwidth Product, f_T - MHz
Collector Current, I_C - mA

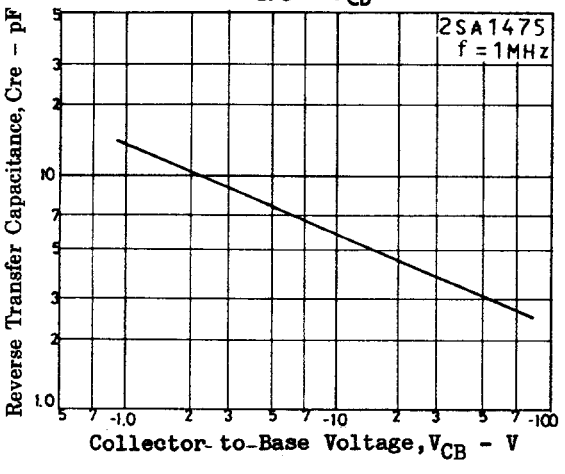
Cob – V_{CB}



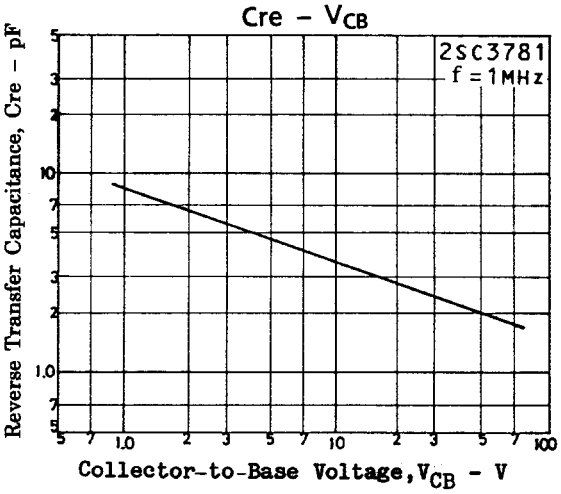
Cob – V_{CB}



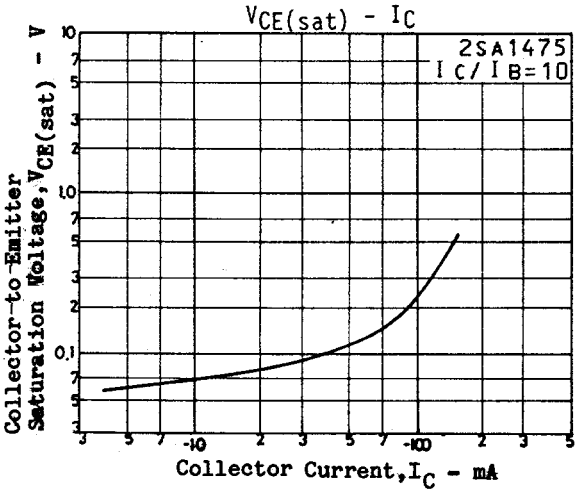
Cre – V_{CB}



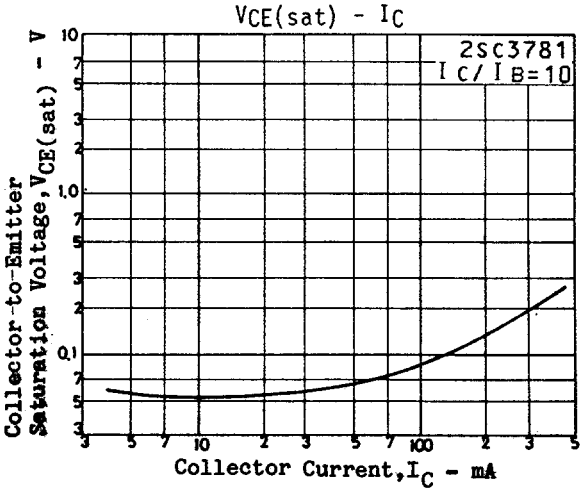
Cre – V_{CB}



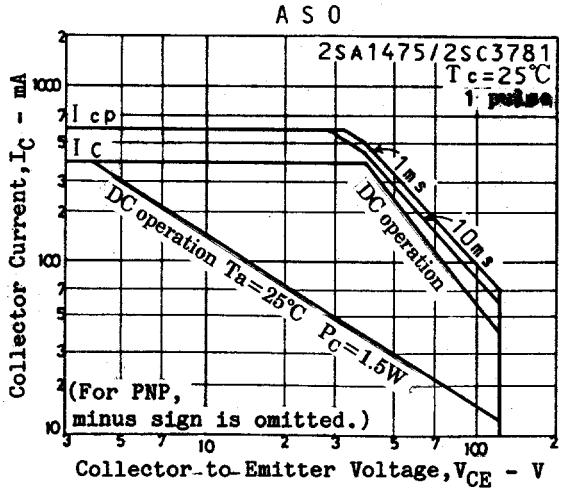
$V_{CE(sat)}$ – I_C



$V_{CE(sat)}$ – I_C



A S O



P_C – T_a