



# 2SA1538/2SC3953

## High-Definition CRT Display Video Output Applications

### Applications

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

### Features

- High  $f_T$  :  $f_T=400\text{MHz}$ .
- High breakdown voltage :  $V_{CEO}=120\text{Vmin}$ .
- Small reverse transfer capacitance and excellent HF response :  $C_{re}=1.7\text{pF/NPN}$ ,  $2.2\text{pF/PNP}$ .
- Complementary PNP and NPN types.
- Adoption of FBET process.
- Micaless type : TO-126 plastic package.

( ) : 2SA1538

### Specifications

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

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	$V_{EBO}$		(-)3	V
Collector Current	$I_C$		(-)200	mA
Peak Collector Current	$I_{CP}$		(-)400	mA
Collector Dissipation	$P_C$		1.3	W
		$T_c=25^\circ\text{C}$	8	W
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	$I_{CBO}$	$V_{CB}=(-)80\text{V}$ , $I_E=0$			(-)0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)2\text{V}$ , $I_C=0$			(-)1.0	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=(-)10\text{V}$ , $I_C=(-)10\text{mA}$	40*		320*	
	$h_{FE2}$	$V_{CE}=(-)10\text{V}$ , $I_C=(-)100\text{mA}$	20			
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10\text{V}$ , $I_C=(-)50\text{mA}$		400		MHz

\*  $h_{FE1}$  : The 2SA1538/2SC3953 are classified by 50mA  $h_{FE}$  as follows :

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

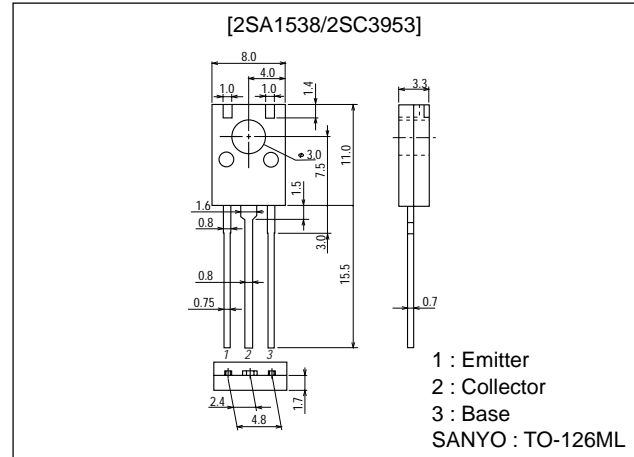
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### Package Dimensions

unit:mm

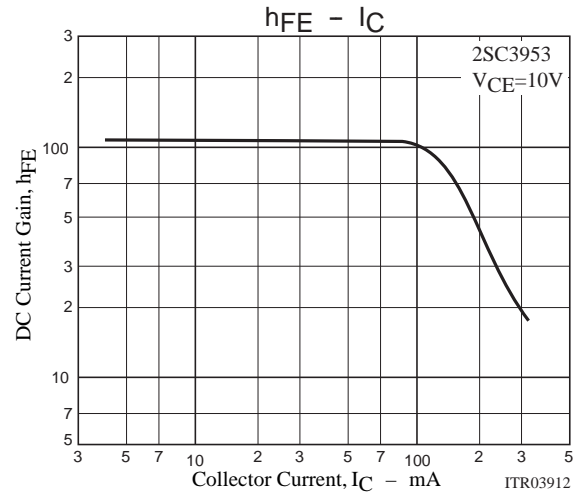
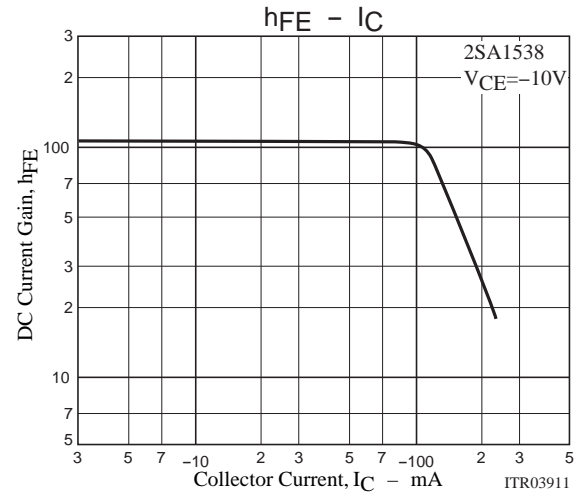
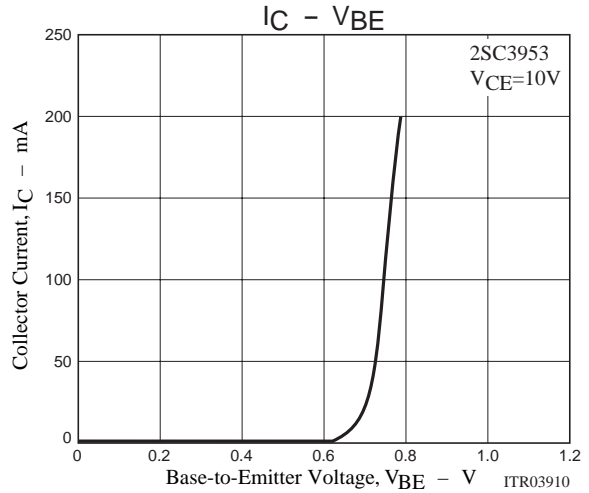
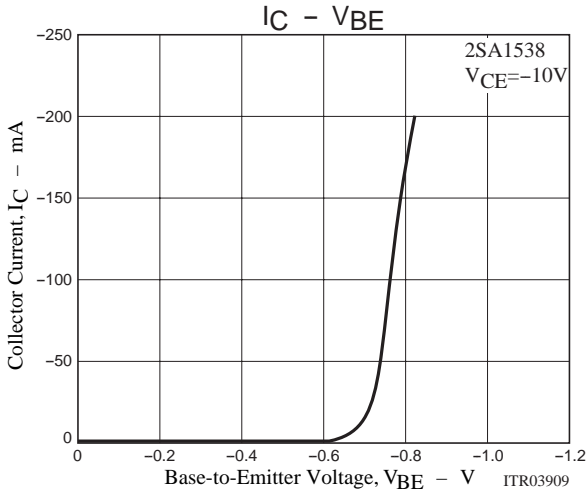
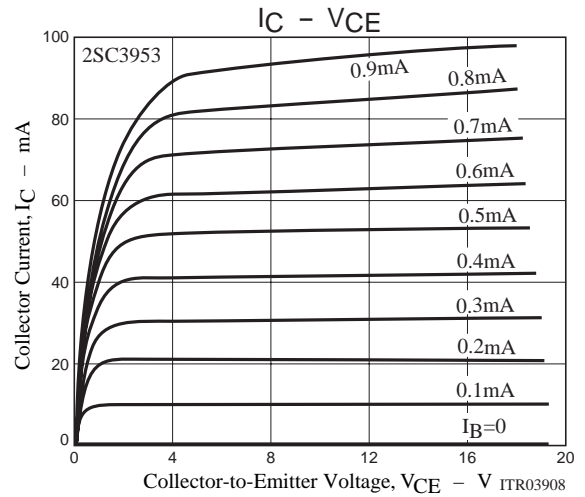
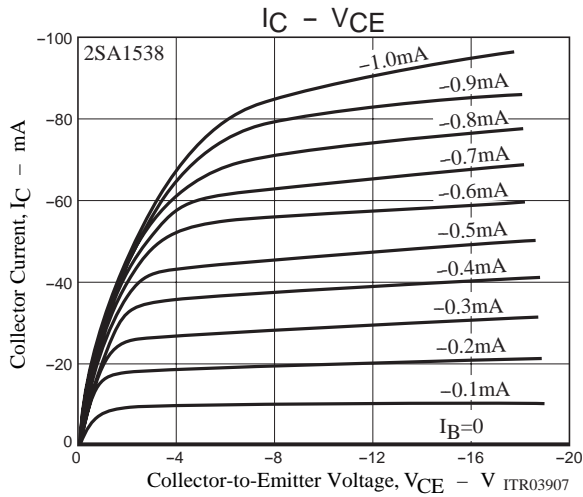
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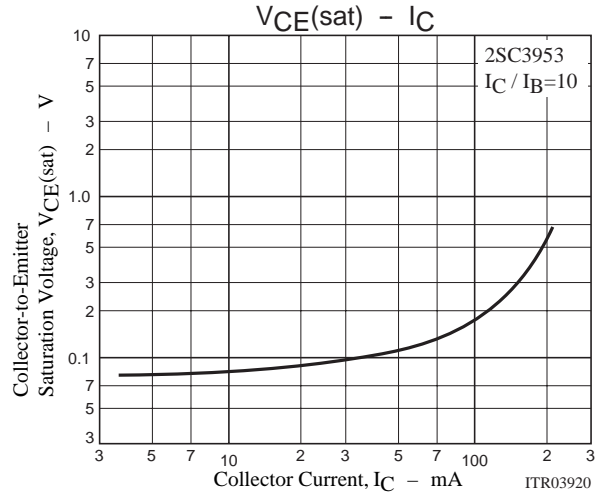
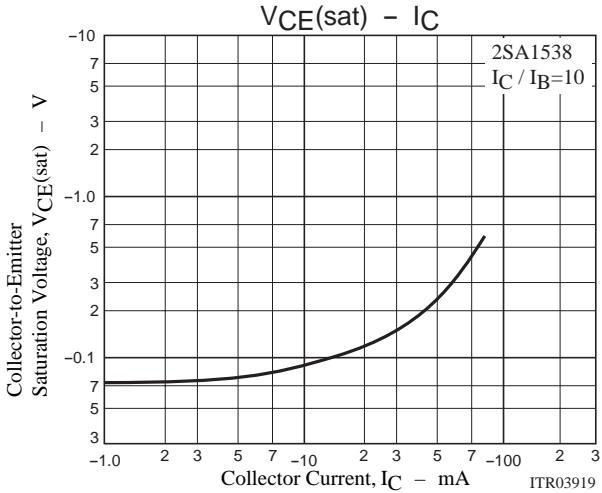
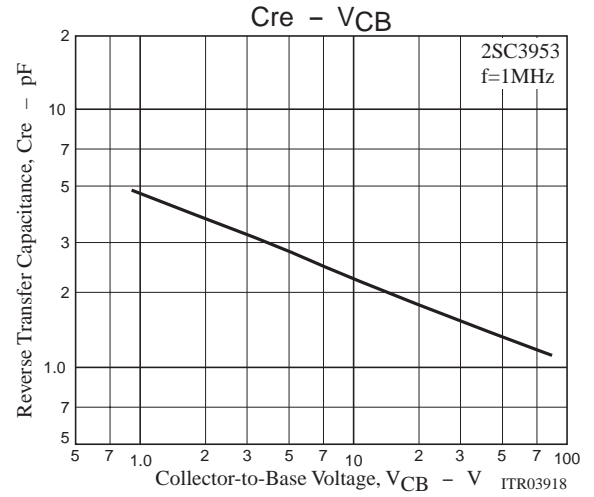
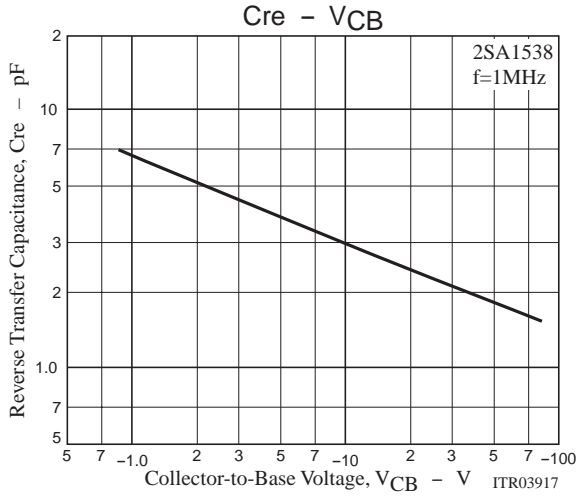
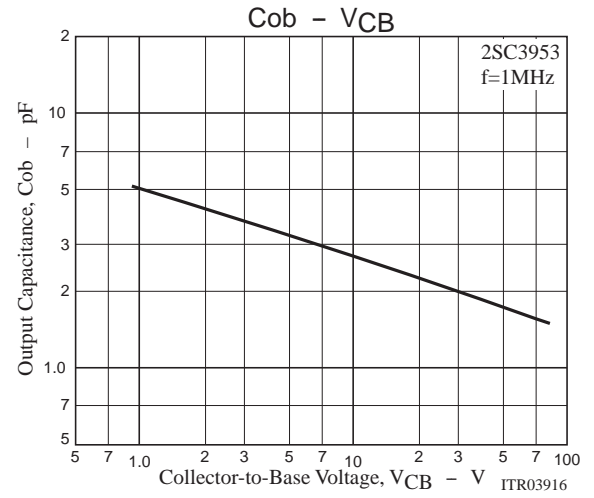
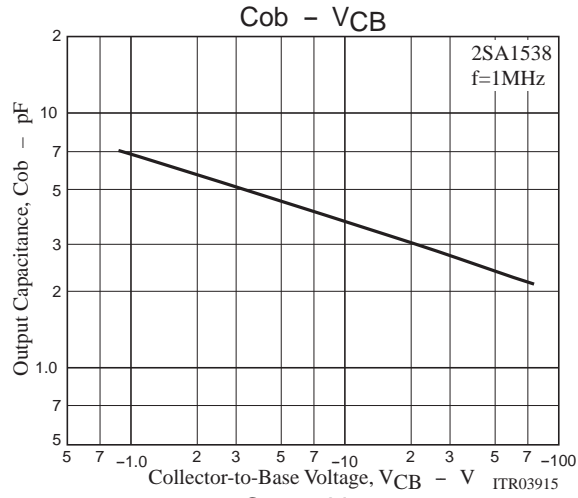
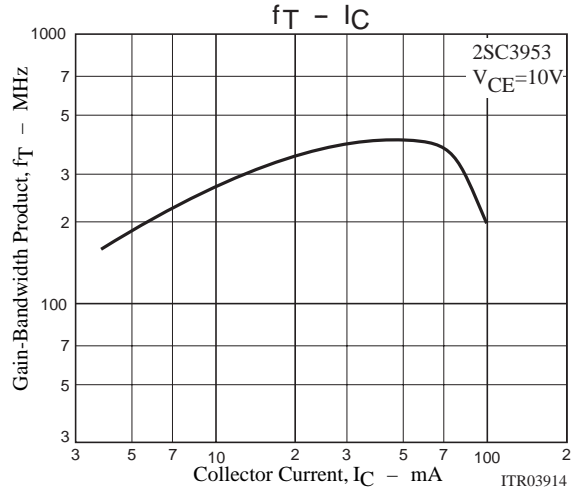
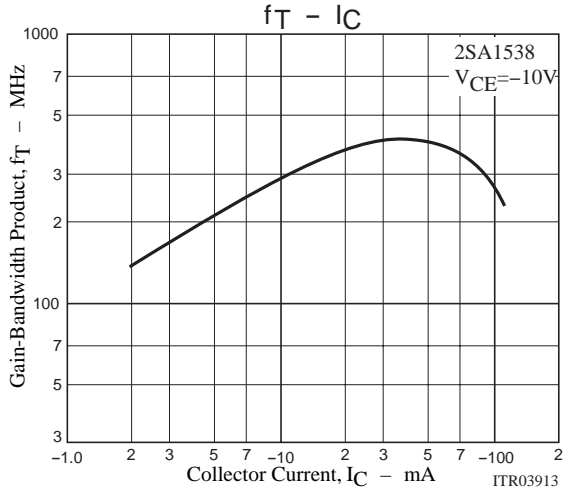
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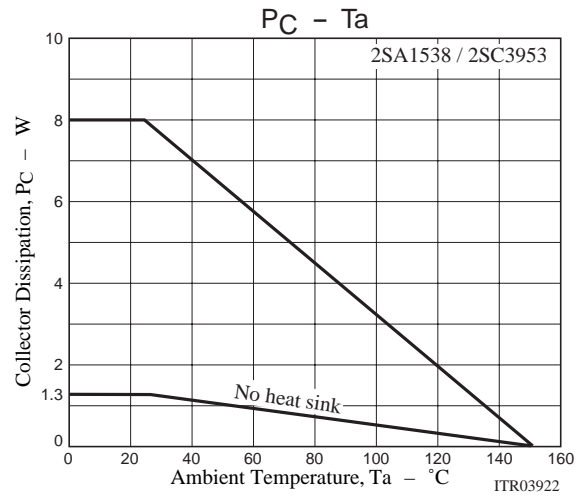
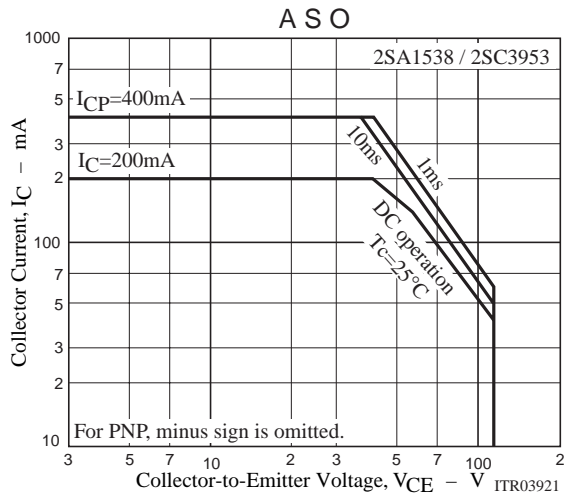
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	$C_{ob}$	$V_{CB} = (-)30V, f = 1MHz$		2.1		pF
				(2.8)		pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB} = (-)30V, f = 1MHz$		1.7		pF
				(2.2)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)30mA, I_B = (-)3mA$			(-1.0)	V
Emitter-to-Base Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)30mA, I_B = (-)3mA$			(-1.0)	V



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