



## 2SA1405/2SC3599

### Ultrahigh-Definition CRT Display Video Output Applications

#### Applications

- Ultrahigh-definition CRT display.
- Video output.
- Color TV chroma output.
- Wide-band amp.

#### Features

- High  $f_T$  :  $f_T$  typ=500MHz.
- High breakdown voltage :  $V_{CEO} \geq 120V$ .
- Small reverse transfer capacitance and excellent high-frequency characteristic  
:  $C_{re} = 2.5pF$  (NPN), 3.8pF (PNP).
- Complementary pair with the 2SA1405/2SC3599.
- Adoption of FBET process.

( ) : 2SA1405

#### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)120	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)120	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)4	V
Collector Current	$I_C$		(-)300	mA
Collector Current (Pulse)	$I_{CP}$		(-)600	mA
Collector Dissipation	$P_C$		1.2	W
		$T_c = 25^\circ C$	8	W
Junction Temperature	$T_j$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

##### Electrical Characteristics at $T_a = 25^\circ C$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = (-)80V, I_E = 0$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)2V, I_C = 0$			(-)1.0	$\mu A$
DC Current Gain	$h_{FE1}$	$V_{CB} = (-)10V, I_C = (-)50mA$	40*		320*	
	$h_{FE2}$	$V_{CE} = (-)10V, I_C = 250mA$	20			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)50mA$		500		MHz

\* : The 2SA1405/2SC3599 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

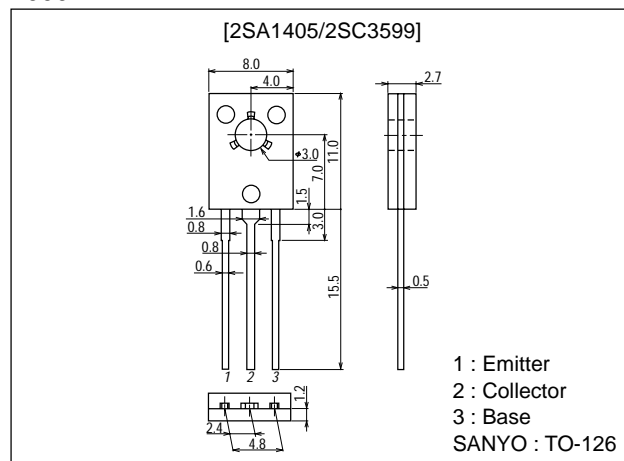
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#### Package Dimensions

unit:mm

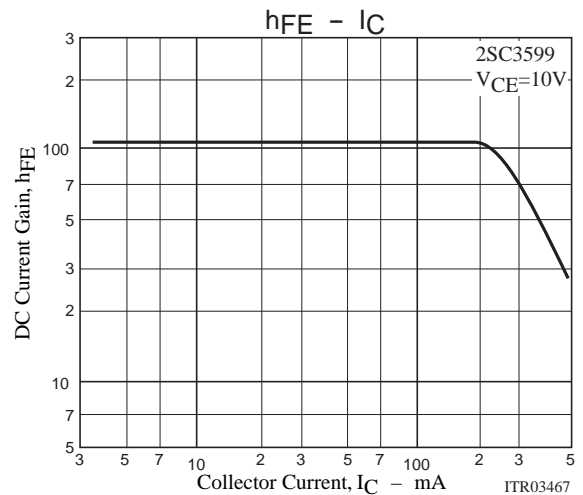
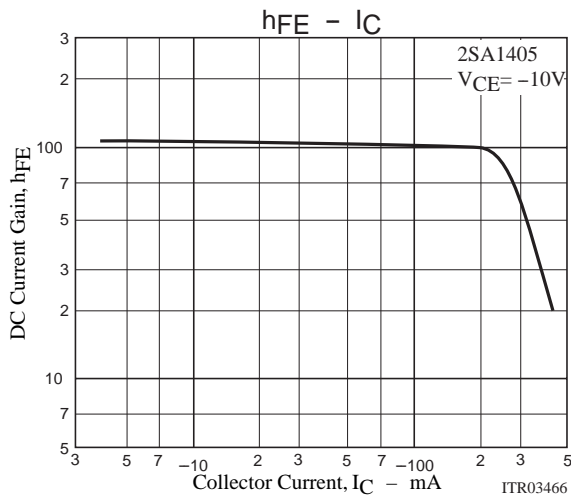
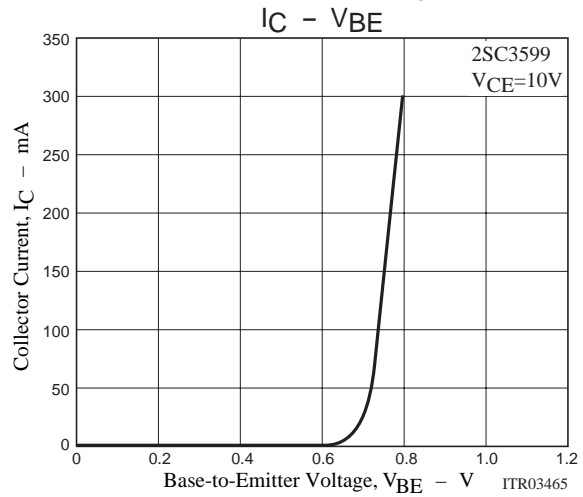
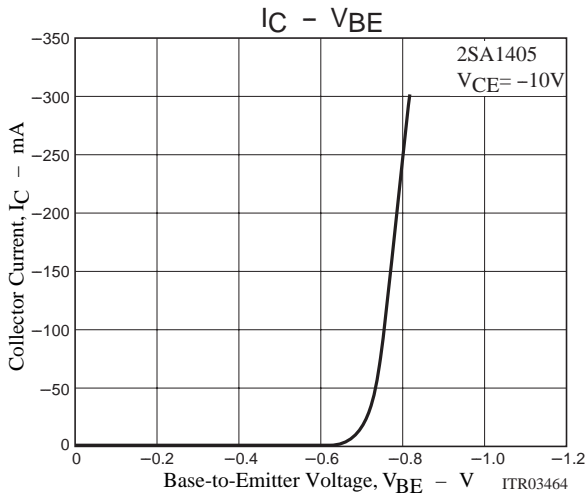
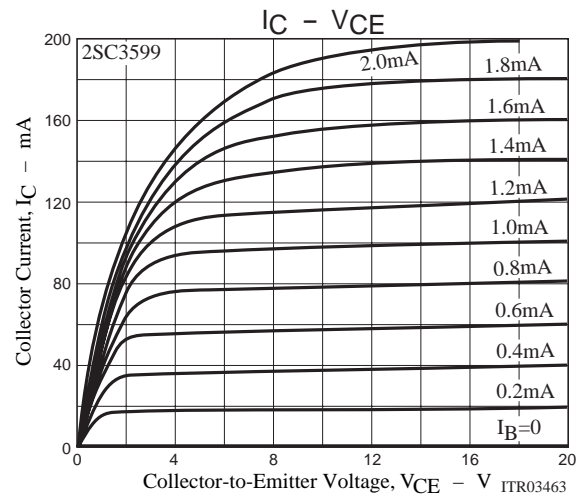
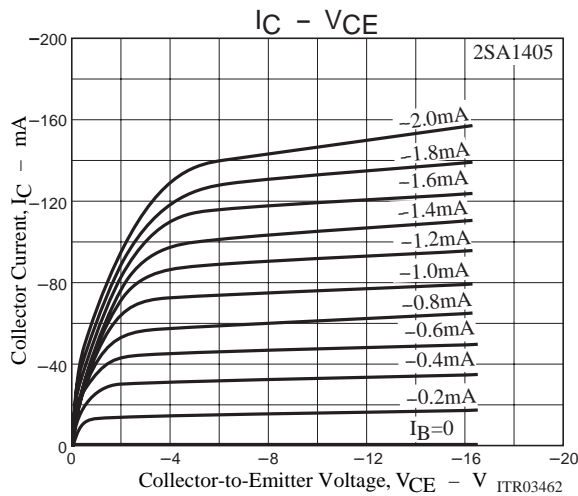
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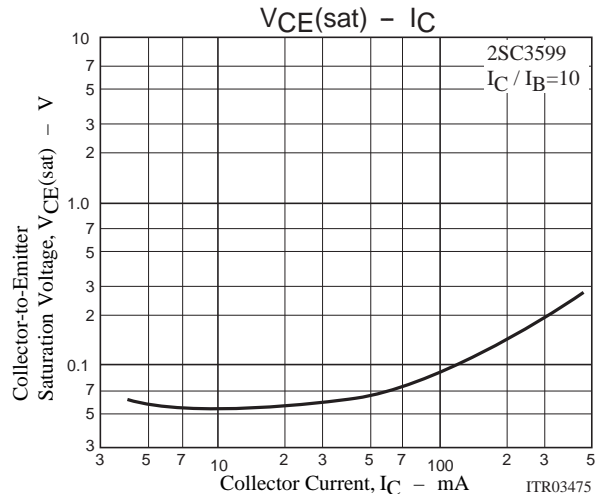
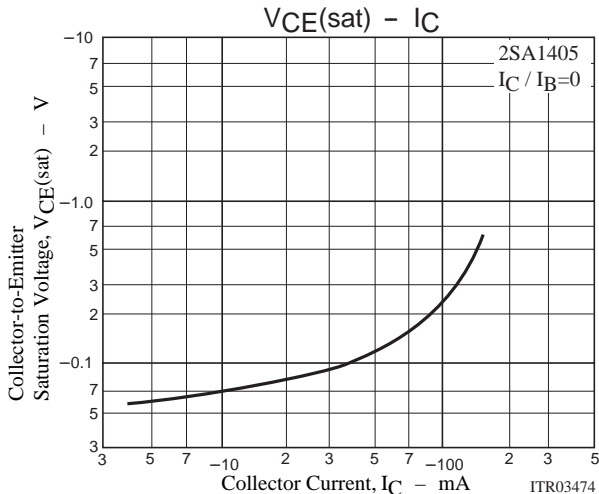
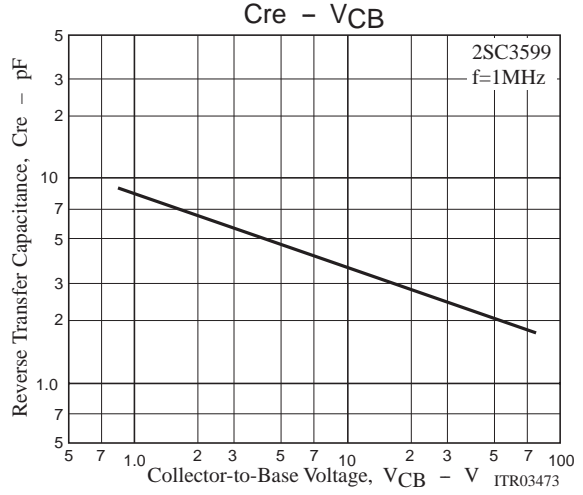
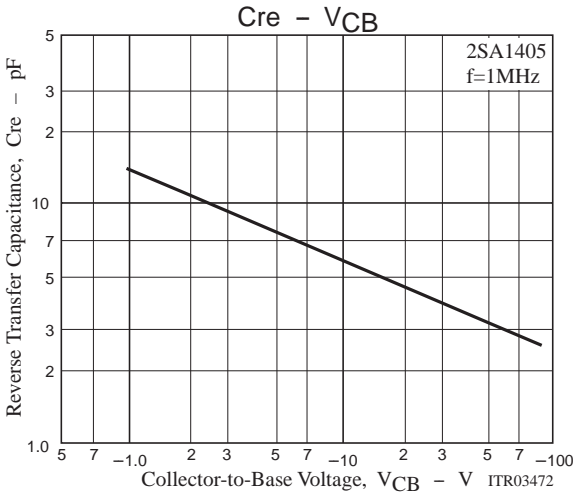
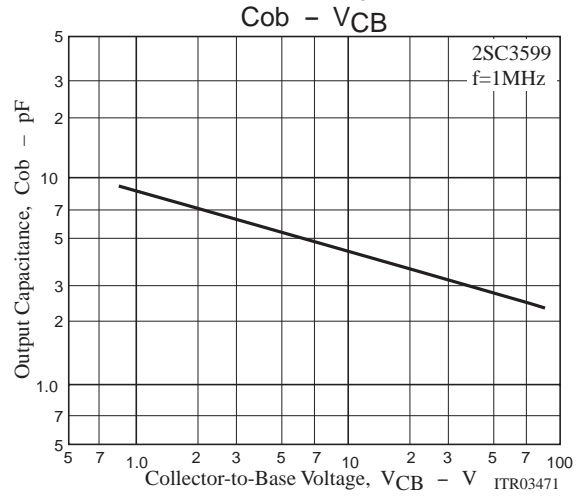
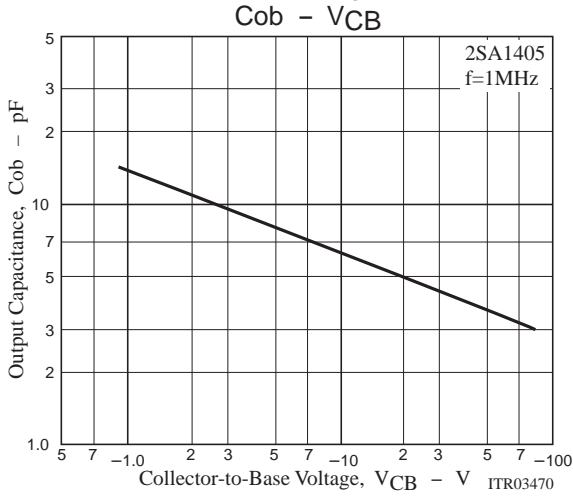
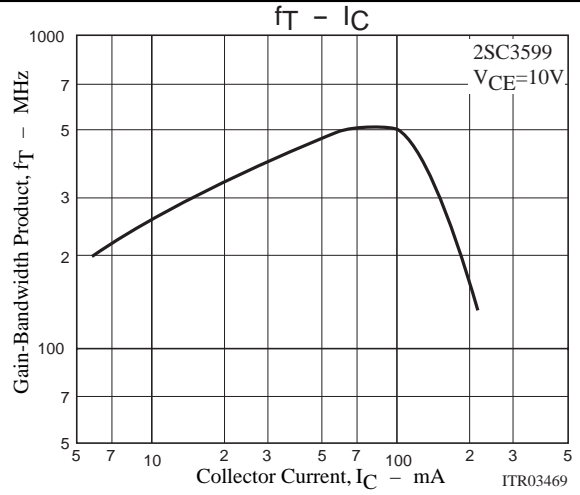
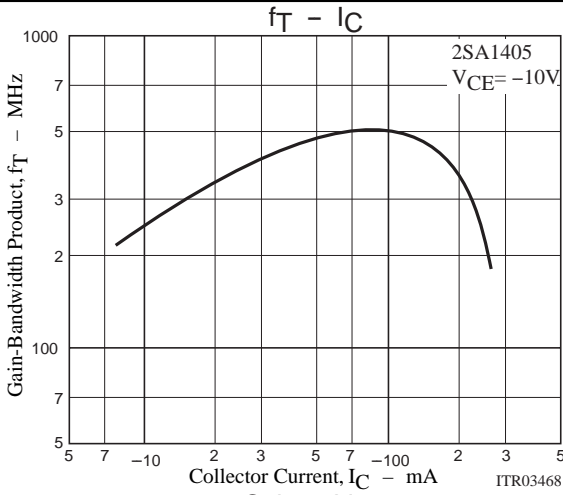
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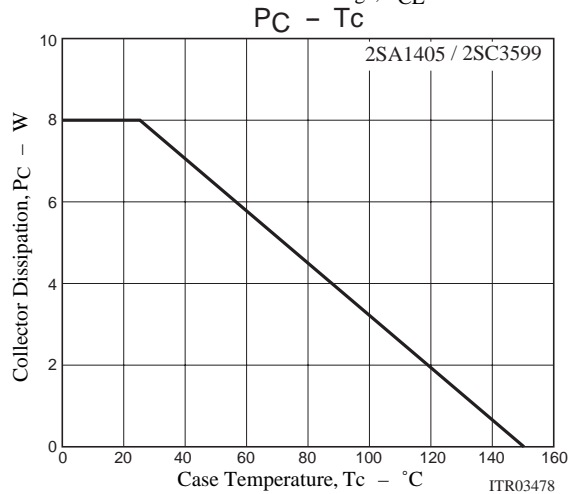
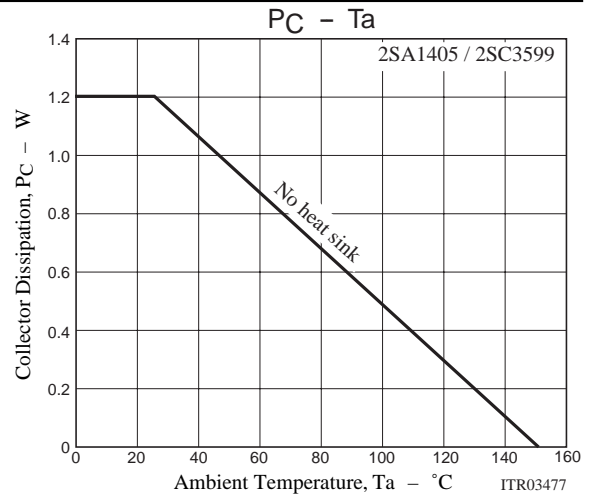
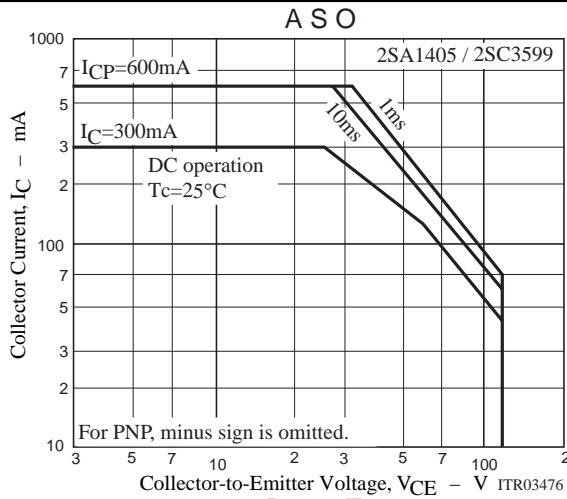
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)70mA, I_B=(-)7mA$			0.6	V
					(-)0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)70mA, I_B=(-)7mA$			(-)1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)120			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)120			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)100\mu A, I_C=0$	(-)4			V
Output Capacitance	$C_{ob}$	$V_{CB}(-)30V, f=1MHz$		2.9		pF
				(4.3)		pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CB}(-)30V, f=1MHz$		2.5		pF
				(3.8)		pF



# 2SA1405/2SC3599



## 2SA1405/2SC3599



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