



# 2SA1209/2SC2911

## 160V/140mA High-Voltage Switching and AF 100W Predriver Applications

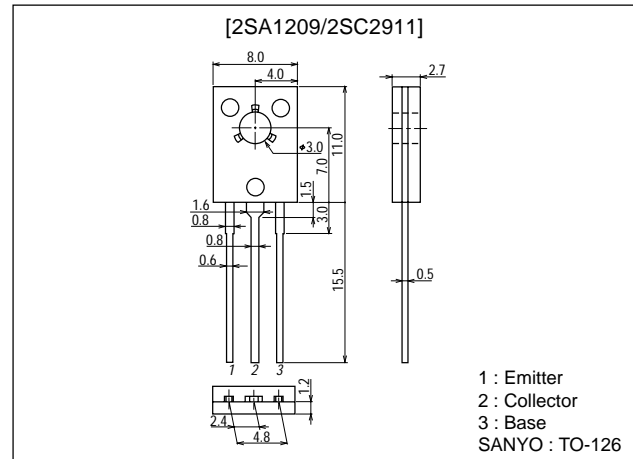
### Features

- Adoption of FBET process.
- High breakdown voltage.
- Good linearity of  $h_{FE}$  and small  $C_{ob}$ .
- Fast switching speed.

### Package Dimensions

unit:mm

2009B



( ) : 2SA1209

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)180	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)160	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)5	V
Collector Current	$I_C$		(-)140	mA
Collector Current (Pulse)	$I_{CP}$		(-)200	mA
Collector Dissipation	$P_C$		1	W
		$T_c=25^\circ\text{C}$	10	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	$I_{CB0}$	$V_{CB}=(-)80\text{V}, I_E=0$			(-)0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=(-)4\text{V}, I_C=0$			(-)0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=(-)5\text{V}, I_C=(-)10\text{mA}$	100*		400*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)10\text{V}, I_C=(-)10\text{mA}$		150		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10\text{V}, f=1\text{MHz}$		(4.0)3.0		pF

\*: The 2SA1209/2SC2911 are classified by 10mA  $h_{FE}$  as follows :

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Rank	R	S	T
$h_{FE}$	100 to 200	140 to 280	200 to 400

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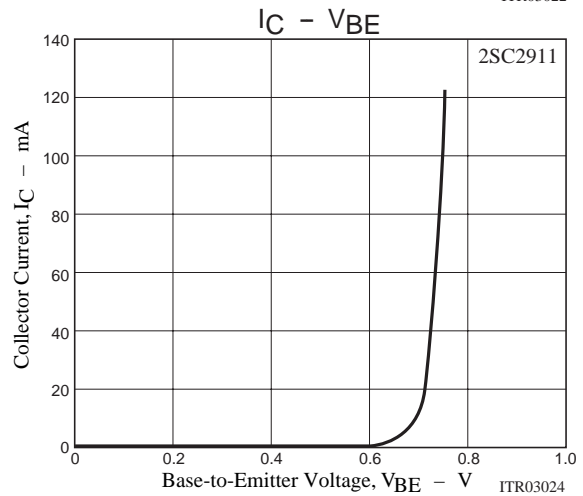
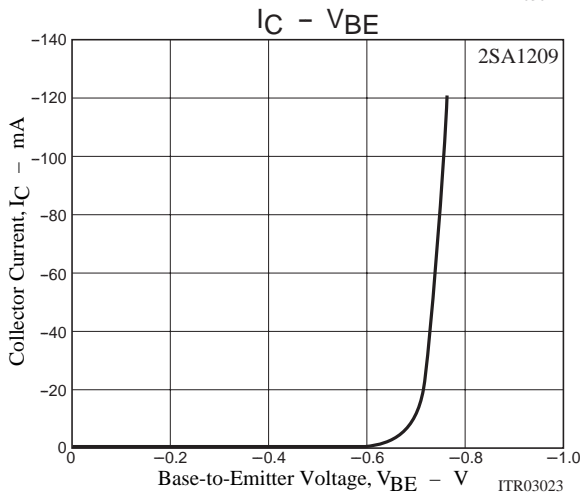
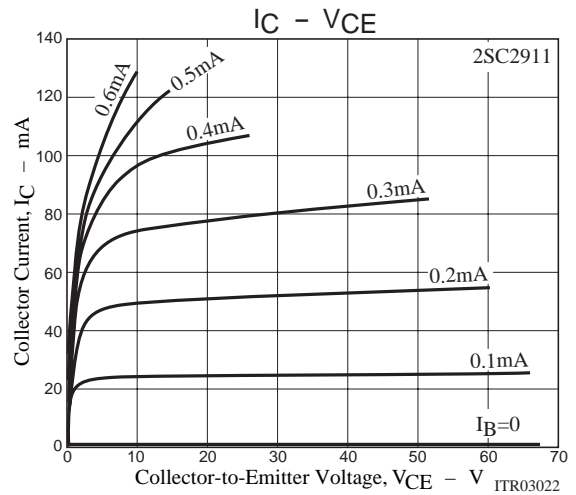
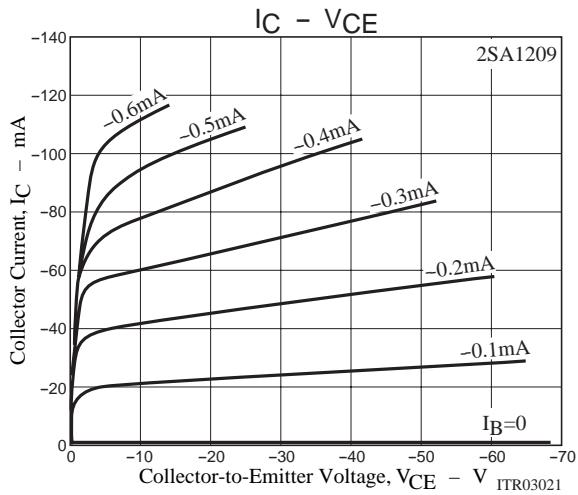
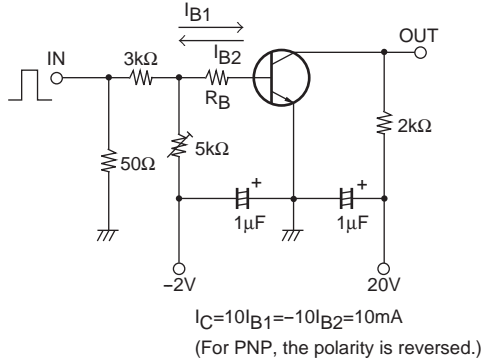
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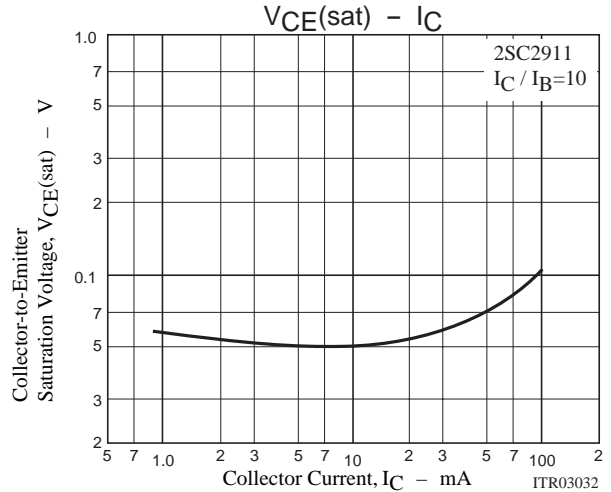
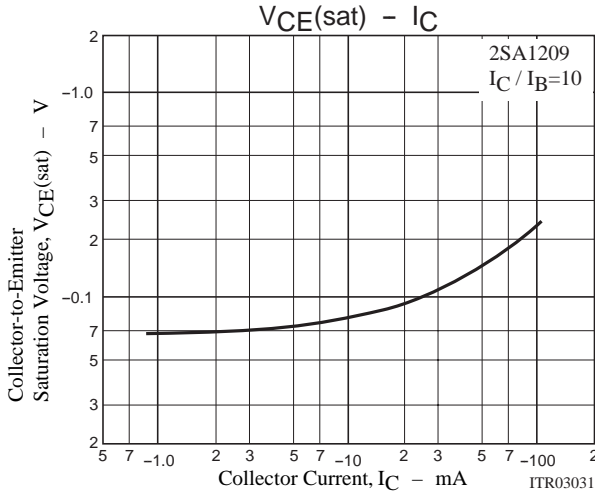
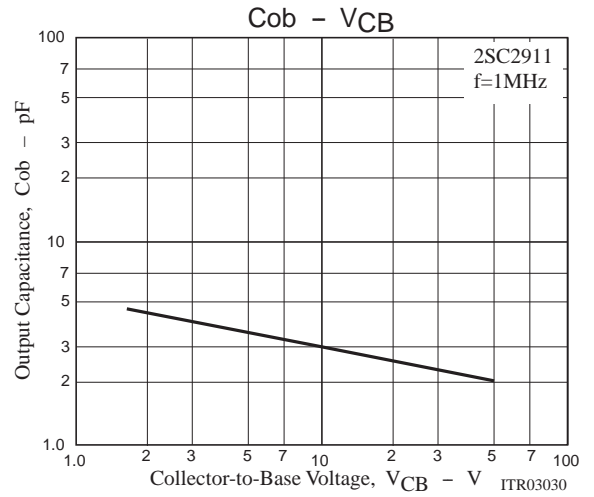
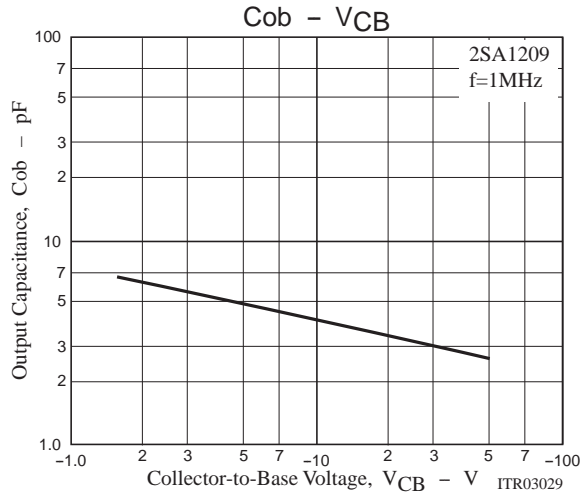
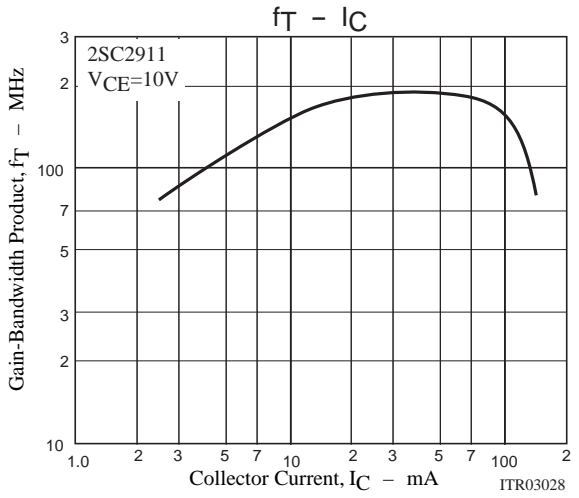
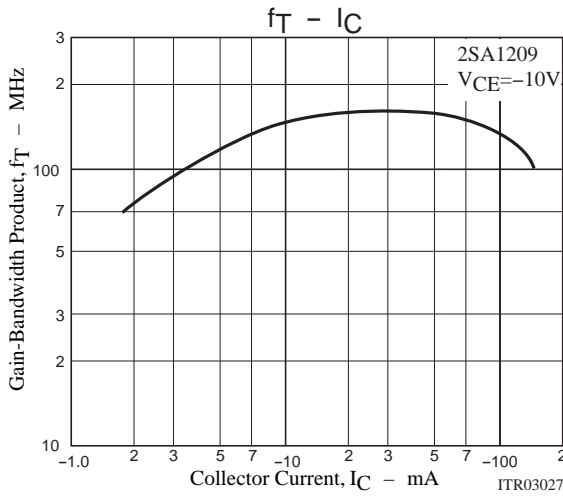
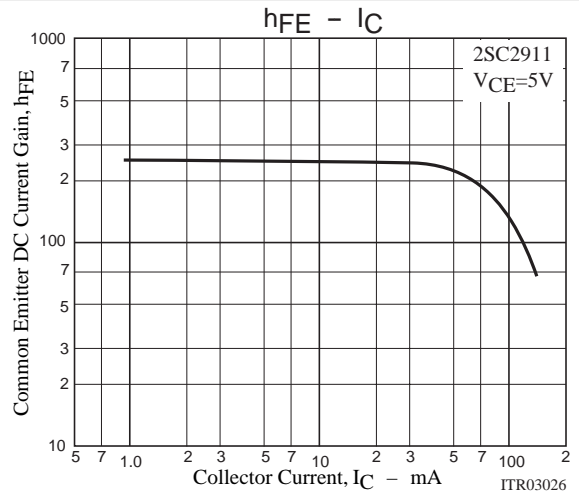
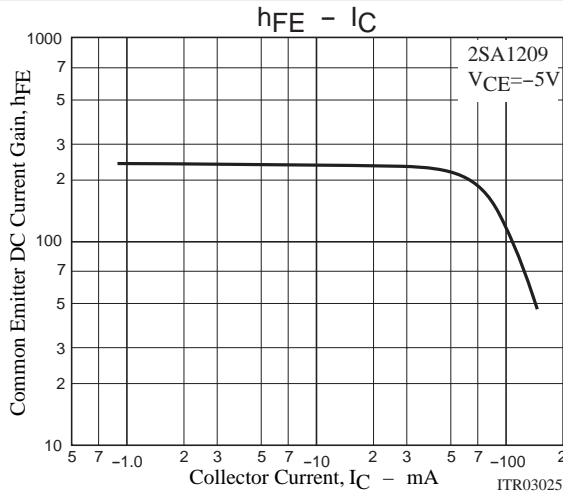
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)50mA, I_B=(-)5mA$		0.07 (-0.14)	0.3 (-0.4)	V
Turn-ON Time	$t_{on}$	See specified Test Circuit		0.1		$\mu s$
Fall Time	$t_f$	See specified Test Circuit		0.1		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit		1.5		$\mu s$

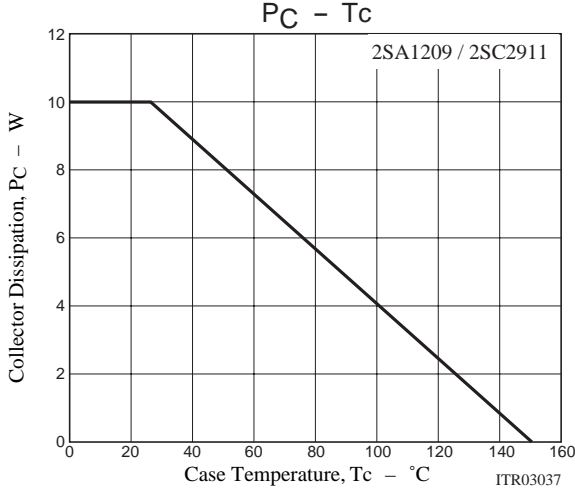
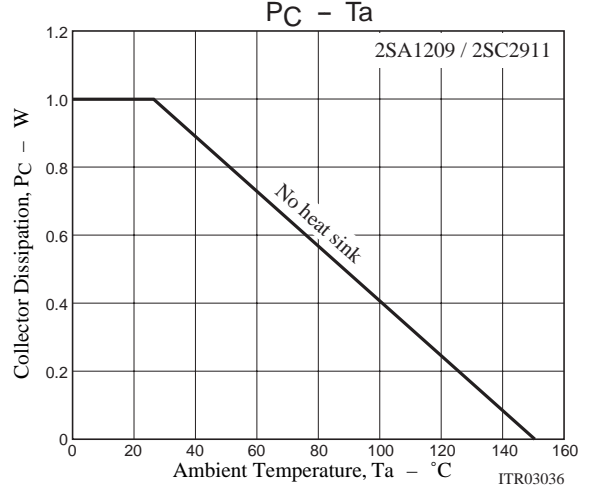
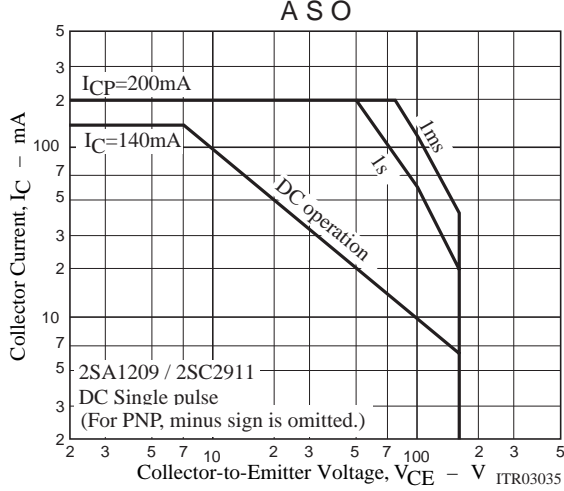
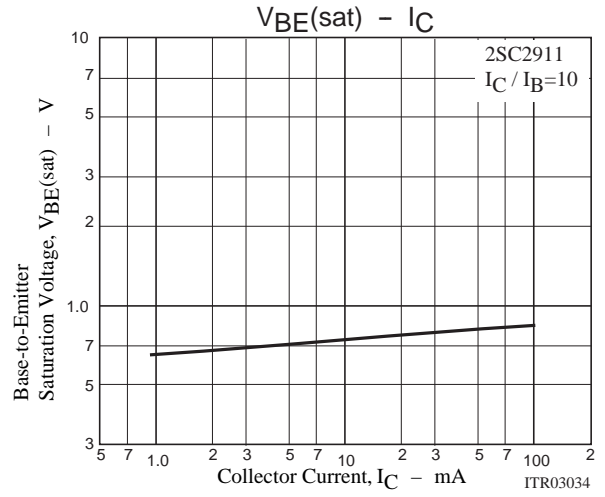
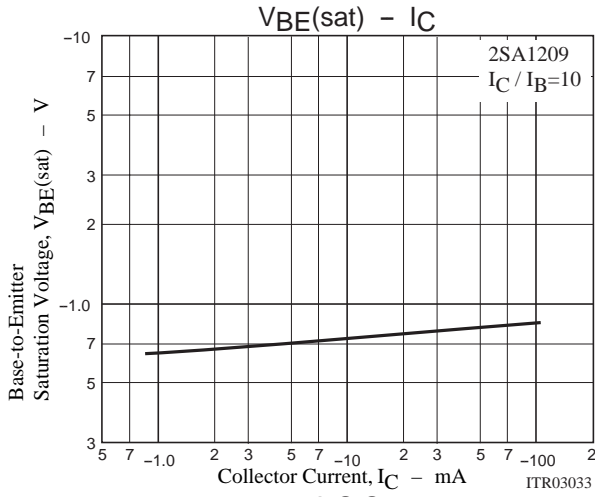
## Switching Test Circuit



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