



## 2SA2099 / 2SC5888

### High-Current Switching Applications

#### Applications

- Relay drivers, lamp drivers, motor drivers.

#### Features

- Adoption of MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.

#### Specifications

( ) : 2SA2099

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-50)60	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		(-)50	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		(-)6	V
Collector Current	I <sub>C</sub>		(-)10	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)13	A
Base Current	I <sub>B</sub>		(-)2	A
Collector Dissipation	P <sub>C</sub>		2	W
		T <sub>c</sub> =25°C	25	W
Junction Temperature	T <sub>j</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings		Unit	
			min	typ		max
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0			(-)10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-)10	μA

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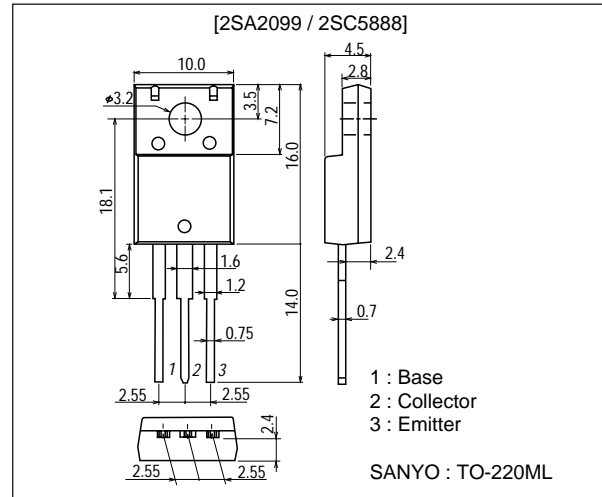
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D2502 TS IM TA-3711 No.7331-1/5

#### Package Dimensions

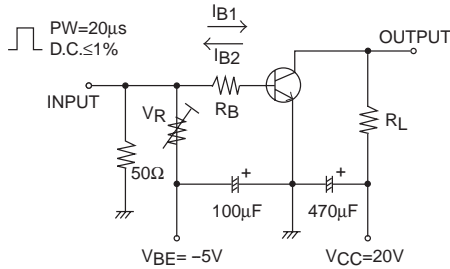
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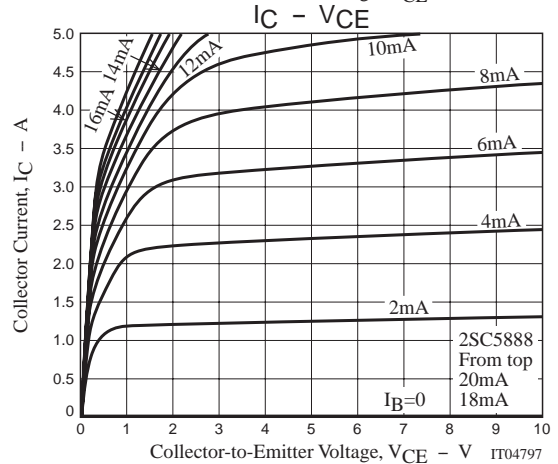
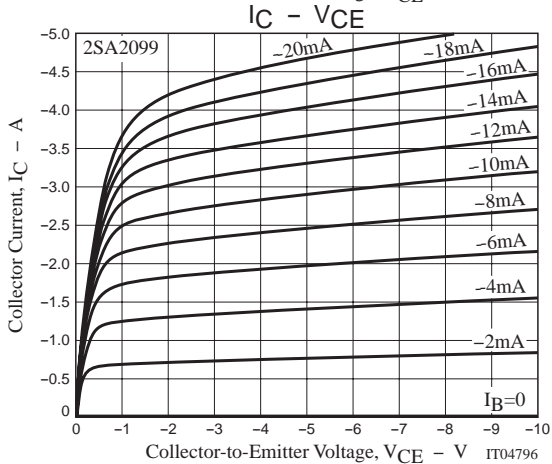
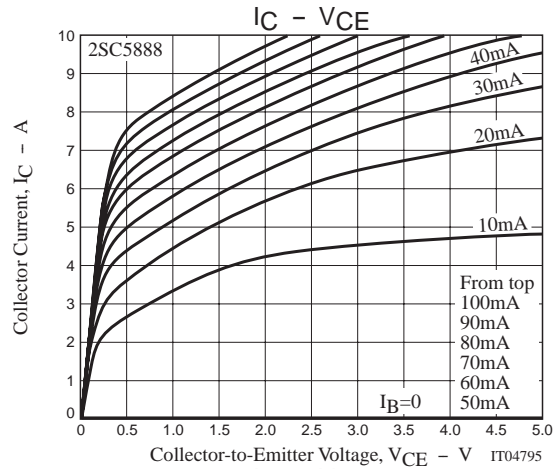
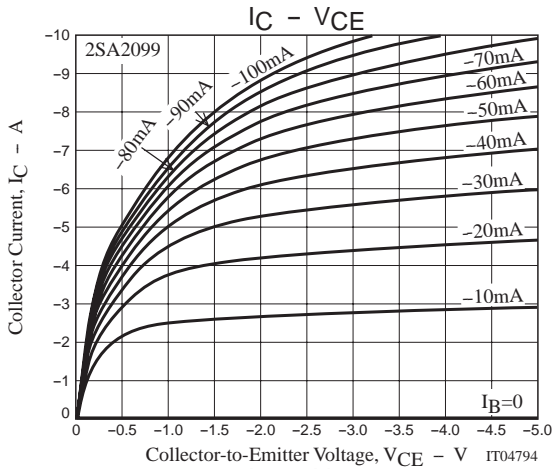
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
DC Current Gain	$h_{FE}$	$V_{CE}=(-)2V, I_C=(-)1A$	200		(560)700	
Gain-Bandwidth Product	$f_T$	$V_{CE}=(-)5V, I_C=(-)1A$		(130)200		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=(-)10V, f=1MHz$		90(60)		pF
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$	$I_C=(-)5A, I_B=(-)250mA$		(-250)180	(-500)360	mV
Base-to-Emitter Saturation Voltage	$V_{BE}(sat)$	$I_C=(-)5A, I_B=(-)250mA$		(-0.93)	(-1.4)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)100\mu A, I_E=0$	(-50)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)100\mu A, I_C=0$	(-6)			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		(70)40		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		(650)1000		ns
Fall Time	$t_f$	See specified Test Circuit.		(60)80		ns

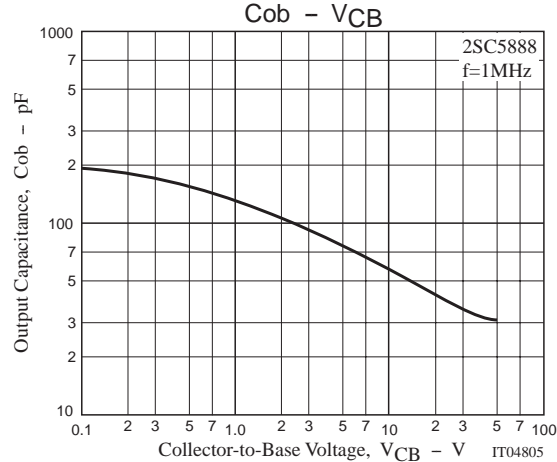
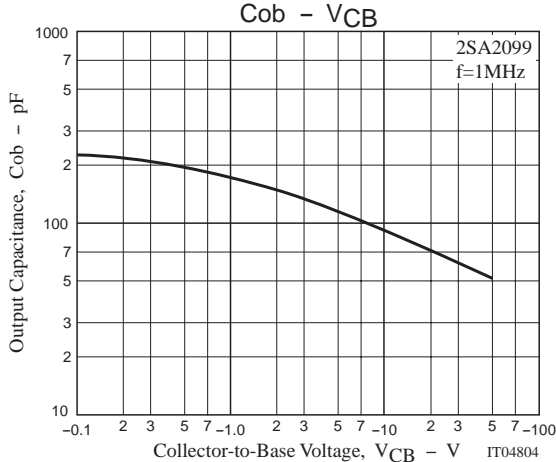
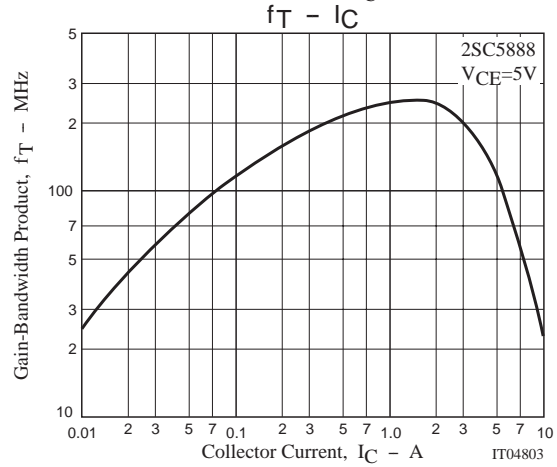
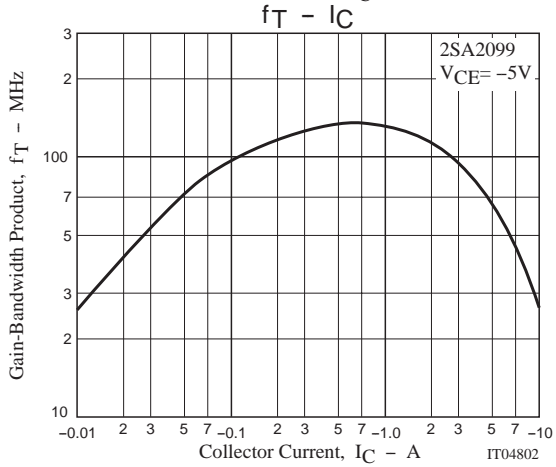
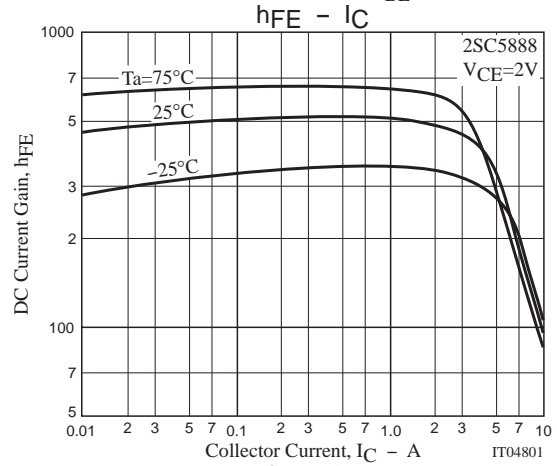
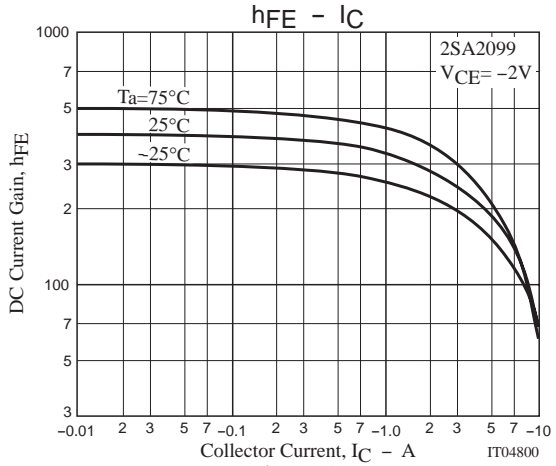
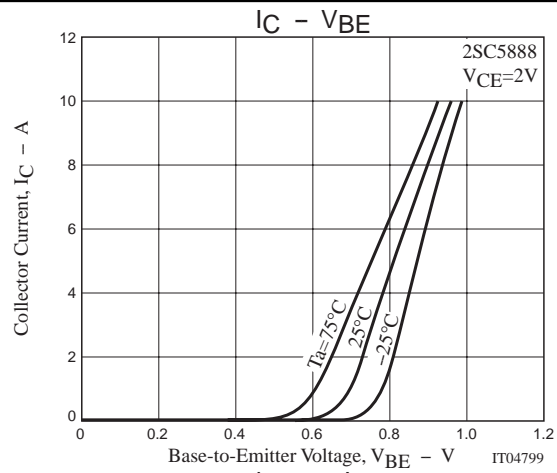
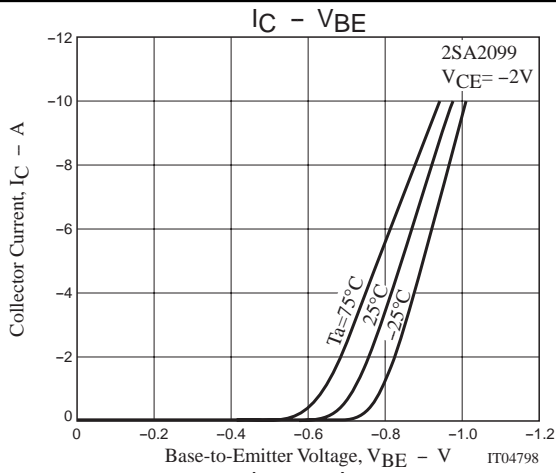
Switching Time Test Circuit



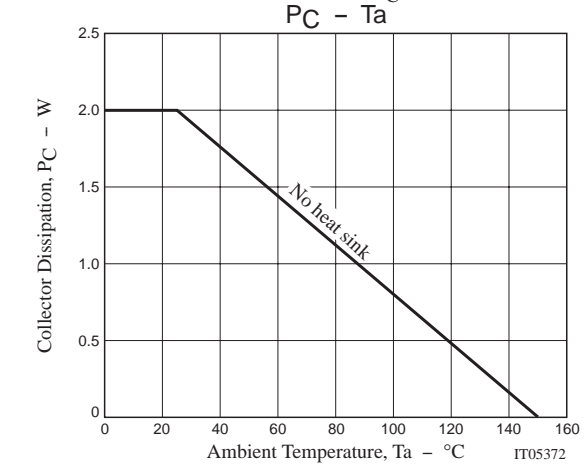
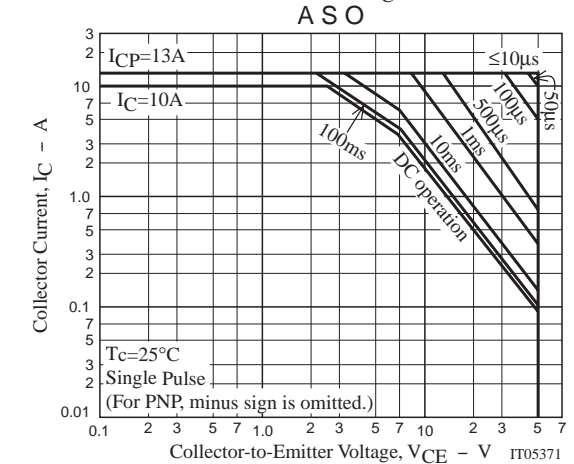
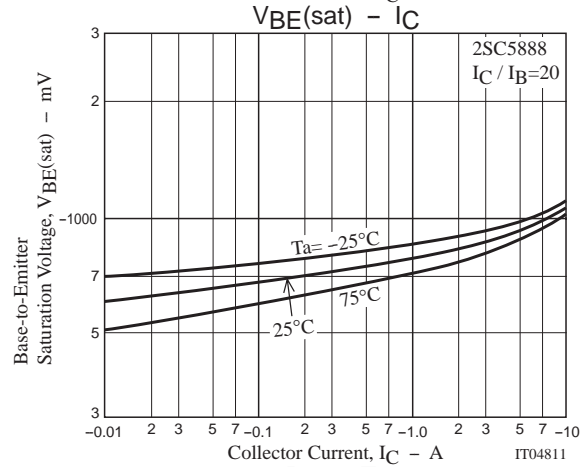
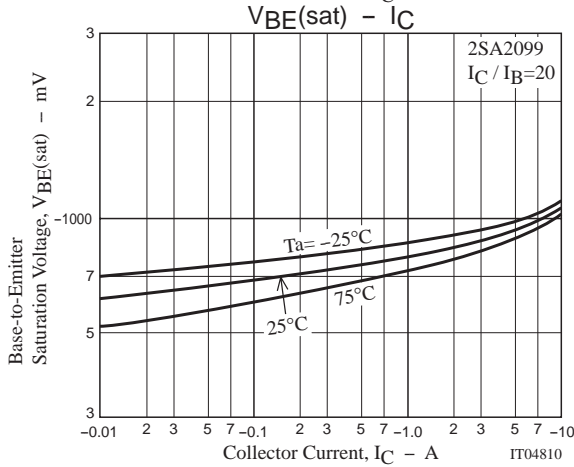
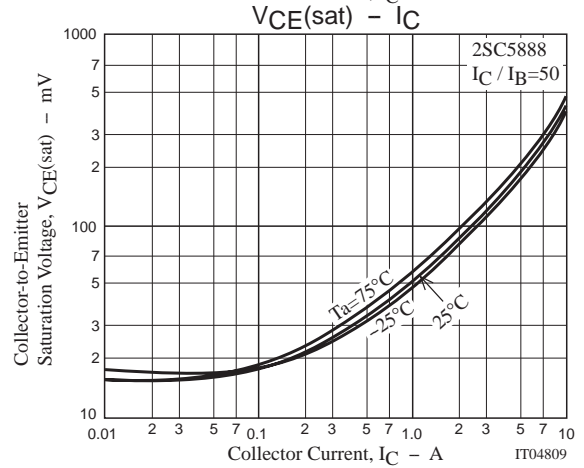
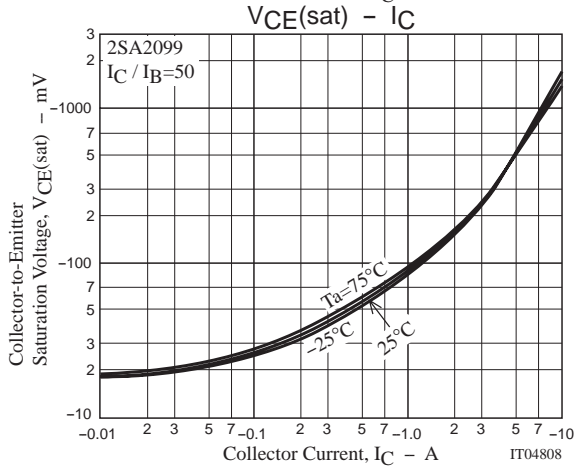
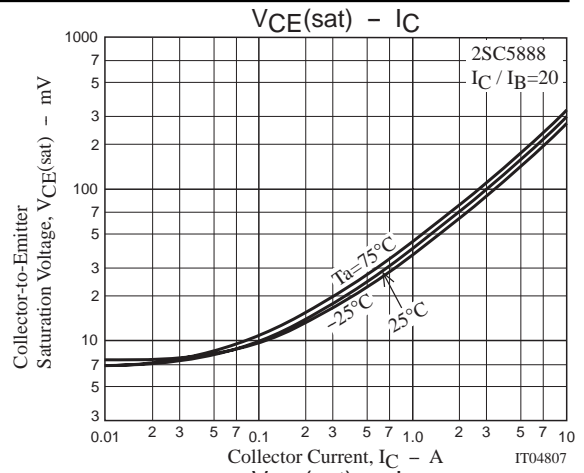
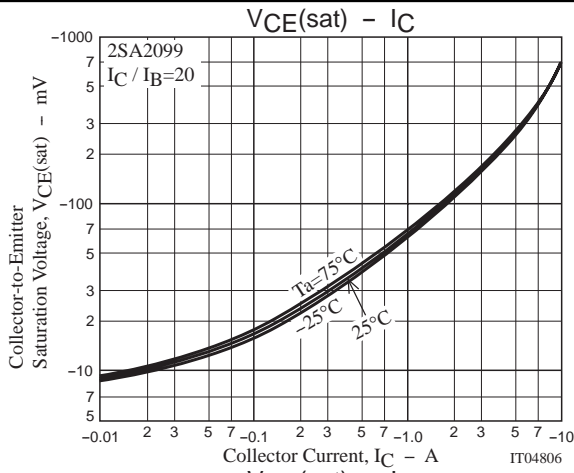
$I_C = 20I_{B1} = -20I_{B2} = 3A$   
 (For PNP, the polarity is reversed.)

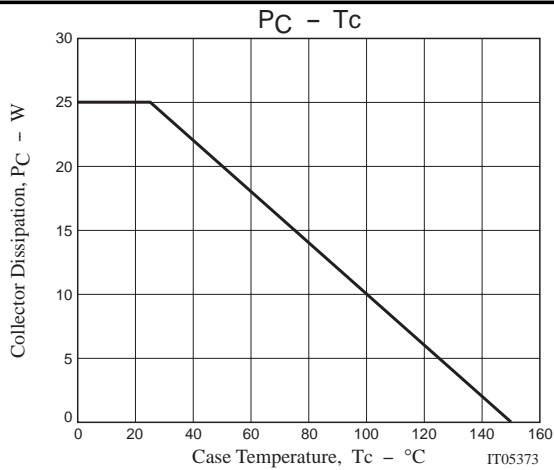


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