



SANYO Semiconductors

# DATA SHEET

An ON Semiconductor Company

## 2SA2099 / 2SC5888 — PNP / NPN Epitaxial Planar Silicon Transistors High-Current Switching Applications

### Applications

- Relay drivers, lamp drivers, motor drivers.

### Features

- Adoption of MBIT process.
- High 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>CBO</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

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**SANYO Semiconductor Co., Ltd.**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

# 2SA2099 / 2SC5888

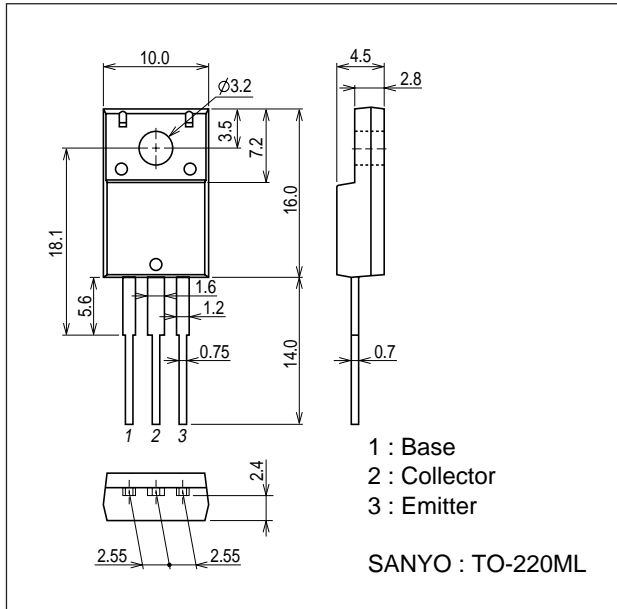
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)40V, I_E = 0A$			(-) $10$	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0A$			(-) $10$	$\mu A$
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	$V_{(BR)CBO}$	$I_C = (-)100\mu A, I_E = 0A$	(-50)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)100\mu A, I_C = 0A$	(-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

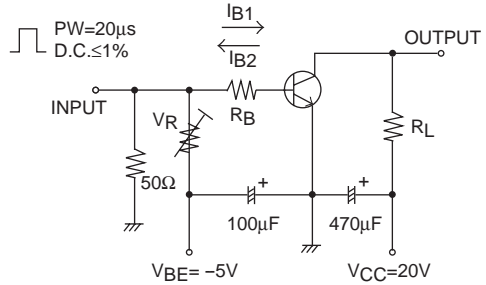
## Package Dimensions

unit : mm (typ)

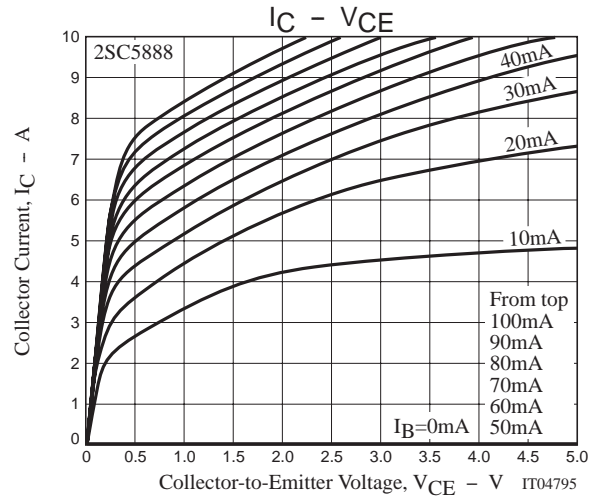
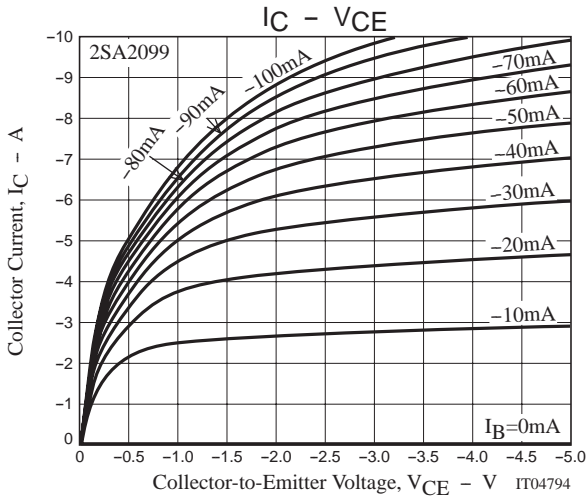
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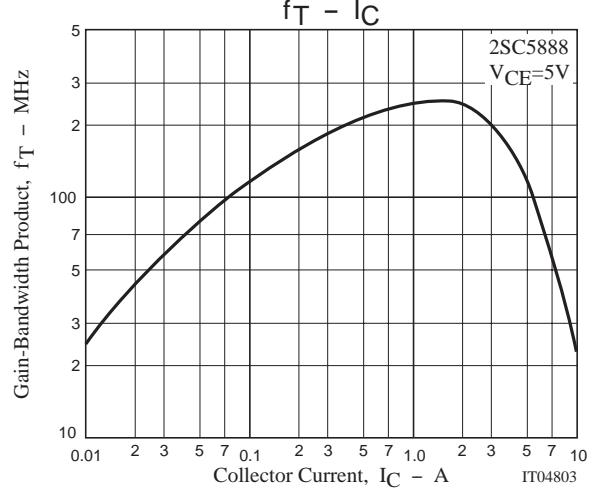
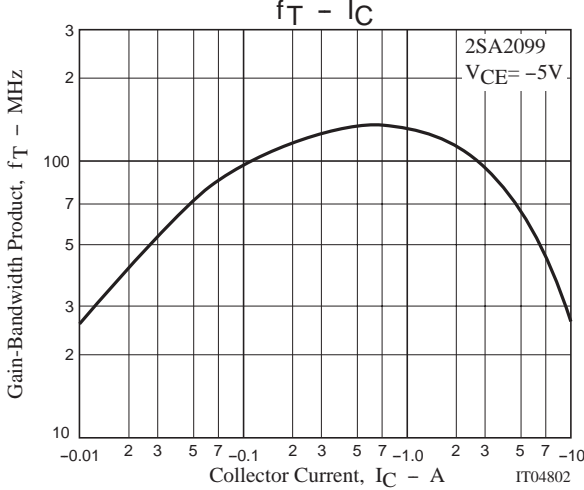
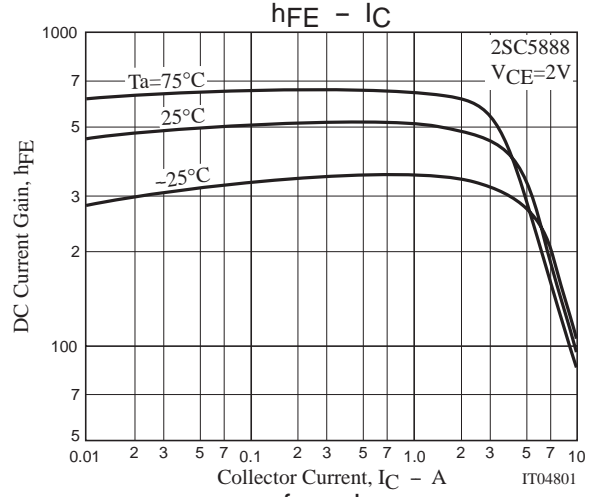
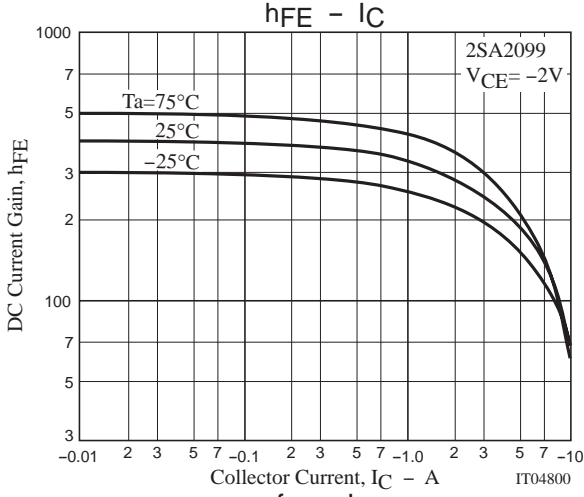
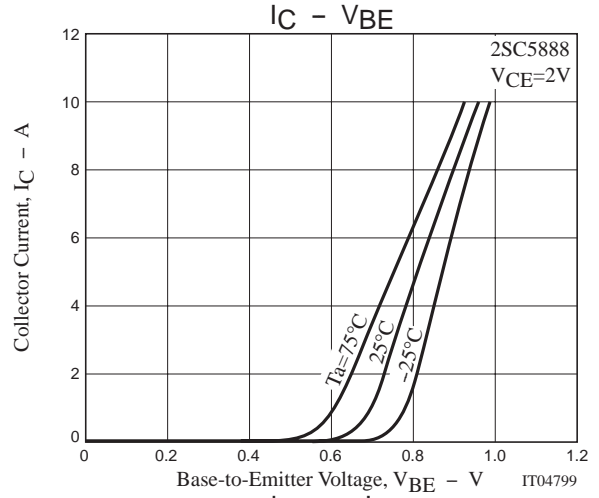
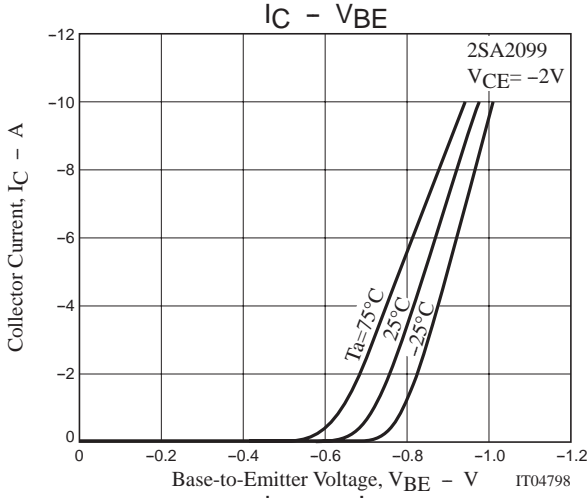
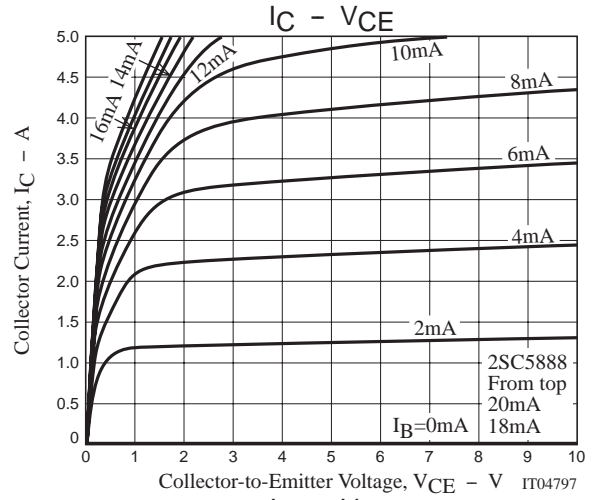
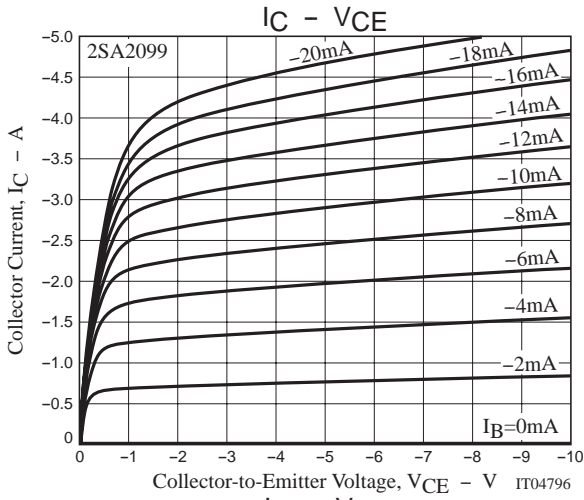
## Switching Time Test Circuit

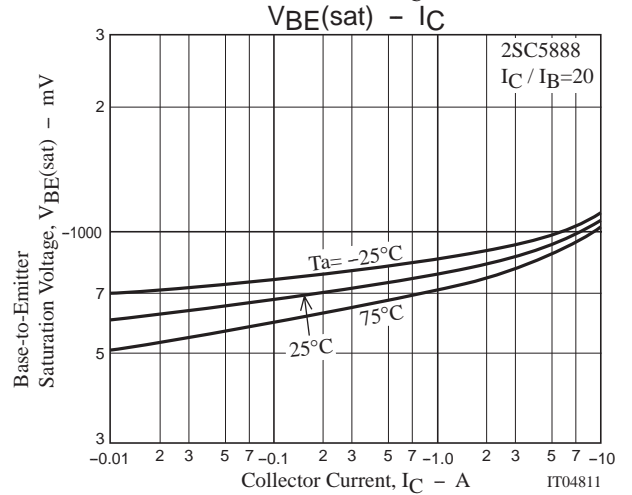
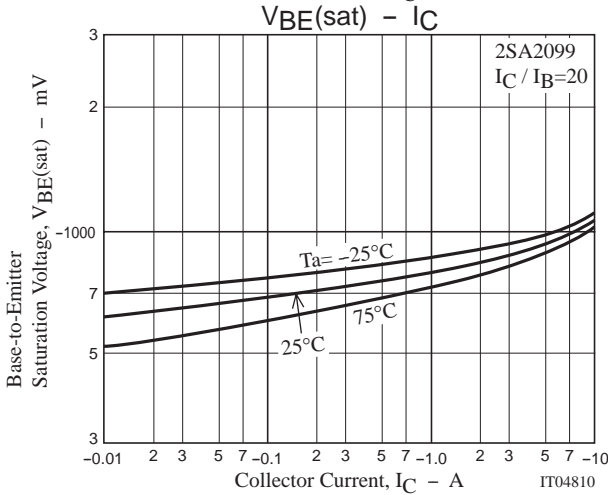
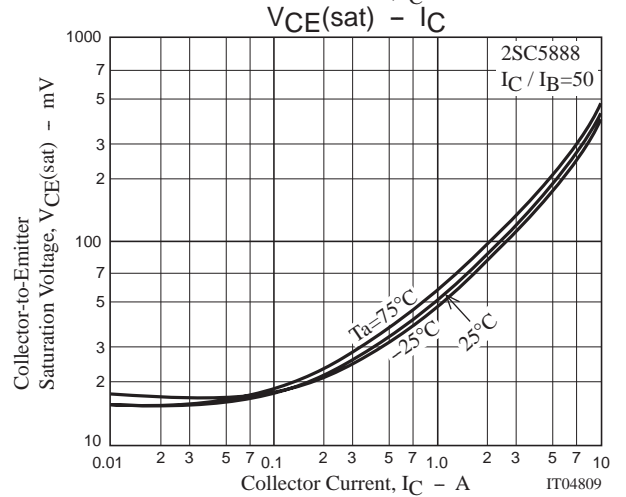
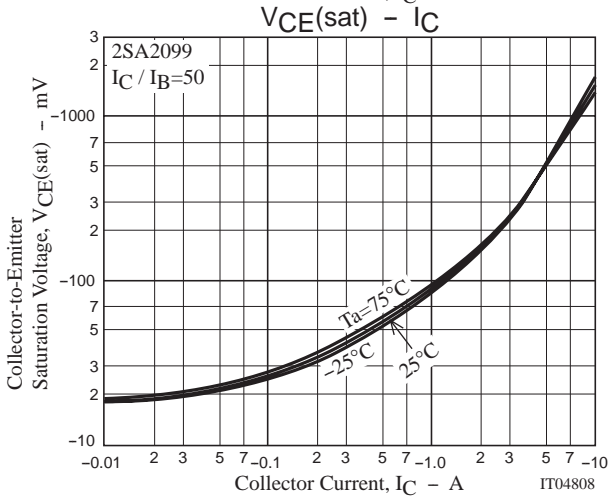
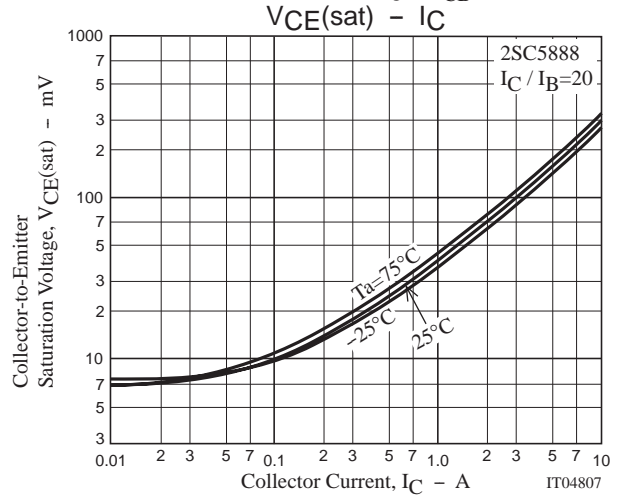
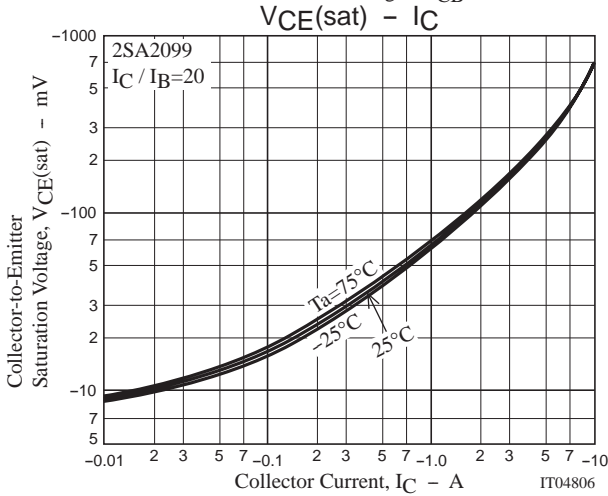
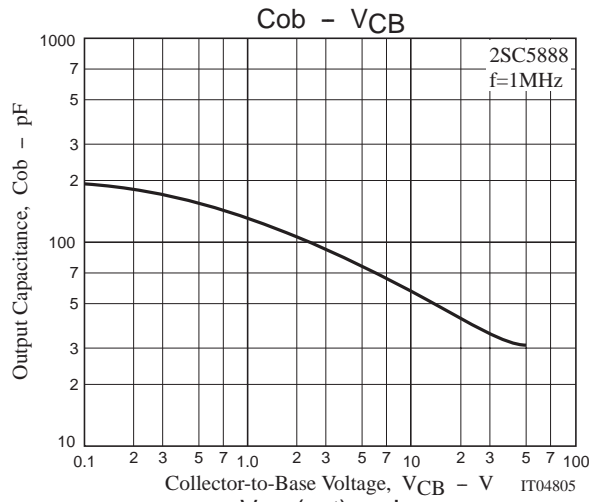
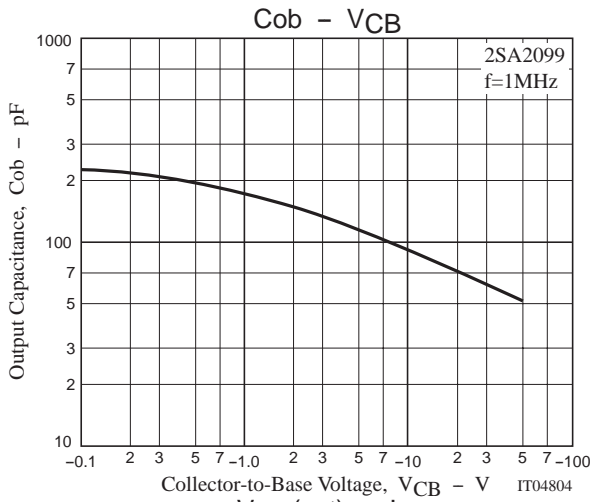


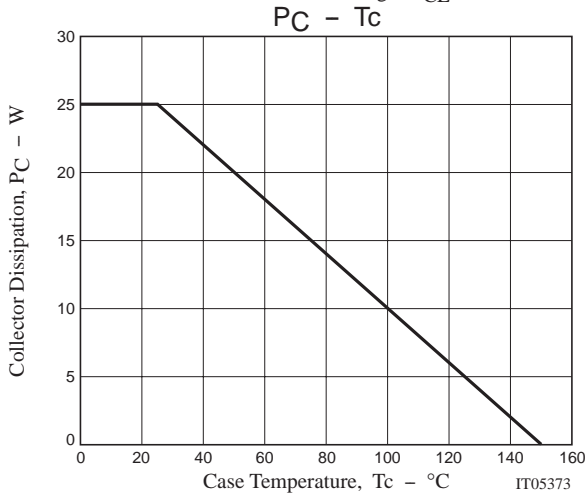
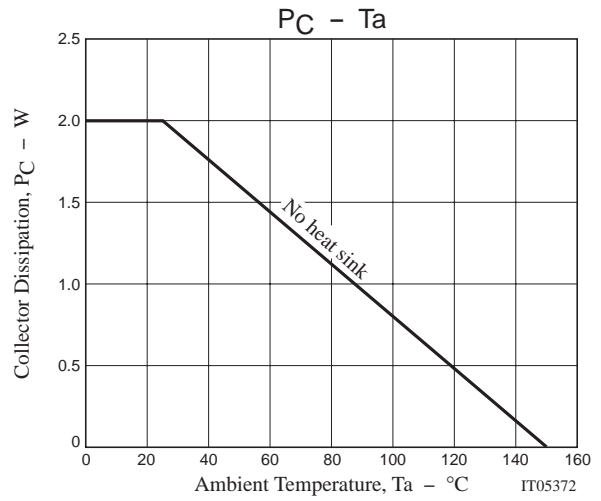
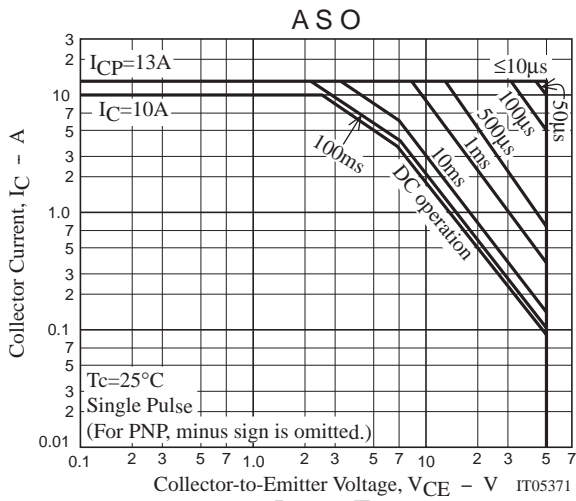
$I_C = 20I_{B1} = -20I_{B2} = 3A$   
(For PNP, the polarity is reversed.)



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