



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

2SA2039 / 2SC5706 — PNP / NPN Epitaxial Planar Silicon Transistors High Current Switching Applications

Applications

- DC / DC converter, relay drivers, lamp drivers, motor drivers, flash.

Features

- Adoption of FBET and MBIT processes.
- Large current capacitance.
- Low collector-to-emitter saturation voltage.
- High-speed switching.
- High allowable power dissipation.

Specifications () : 2SA2039

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V _{CB0}		(-50)100	V
Collector-to-Emitter Voltage	V _{CES}		(-50)100	V
Collector-to-Emitter Voltage	V _{CEO}		(-)50	V
Emitter-to-Base Voltage	V _{EBO}		(-)6	V
Collector Current	I _C		(-)5	A
Collector Current (Pulse)	I _{CP}		(-)7.5	A
Base Current	I _B		(-)1.2	A
Collector Dissipation	P _C	T _C =25°C	0.8	W
			15	W
Junction Temperature	T _J		150	°C
Storage Temperature	T _{stg}		-55 to +150	°C

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			(-)1	μA
Emitter Cutoff Current	I _{EBO}	V _{EB} =(-)4V, I _C =0A			(-)1	μA
DC Current Gain	h _{FE}	V _{CE} =(-)2V, I _C =(-)500mA	200		560	
Gain-Bandwidth Product	f _T	V _{CE} =(-)10V, I _C =(-)500mA		(360)400		MHz

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SANYO Electric Co., Ltd. Semiconductor Company

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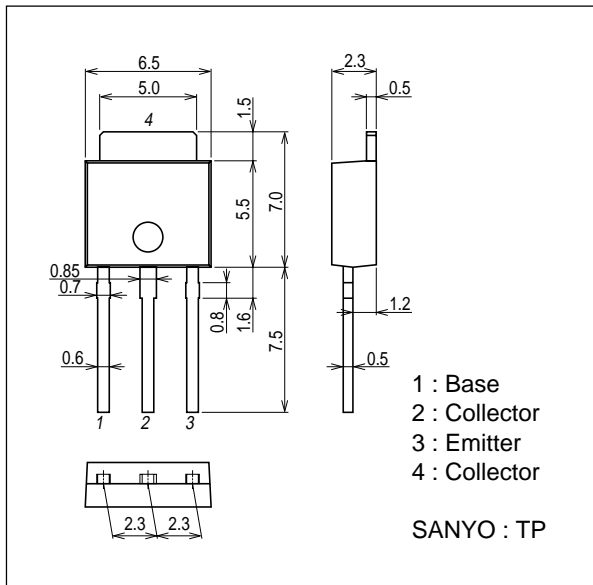
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V _{CB} =(-)10V, f=1MHz		(24)15		pF
Collector-to-Emitter Saturation Voltage	V _{CE(sat)1}	I _C =(-)1A, I _B =(-)50mA		(-115)90	(-195)135	mV
	V _{CE(sat)2}	I _C =(-)2A, I _B =(-)100mA		(-255)160	(-430)240	mV
Base-to-Emitter Saturation Voltage	V _{BE(sat)}	I _C =(-)2A, I _B =(-)100mA		(-)0.89	(-)1.2	V
Collector-to-Base Breakdown Voltage	V _{(BR)CBO}	I _C =(-)10μA, I _E =0A	(-50)100			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CES}	I _C =(-)100μA, R _{BE} =0Ω	(-50)100			V
Collector-to-Emitter Breakdown Voltage	V _{(BR)CEO}	I _C =(-)1mA, R _{BE} =∞	(-)50			V
Emitter-to-Base Breakdown Voltage	V _{(BR)EBO}	I _E =(-)10μA, I _C =0A	(-)6			V
Turn-On Time	t _{on}	See specified Test Circuit.		(30)35		ns
Storage Time	t _{stg}	See specified Test Circuit.		(230)300		ns
Fall Time	t _f	See specified Test Circuit.		(15)20		ns

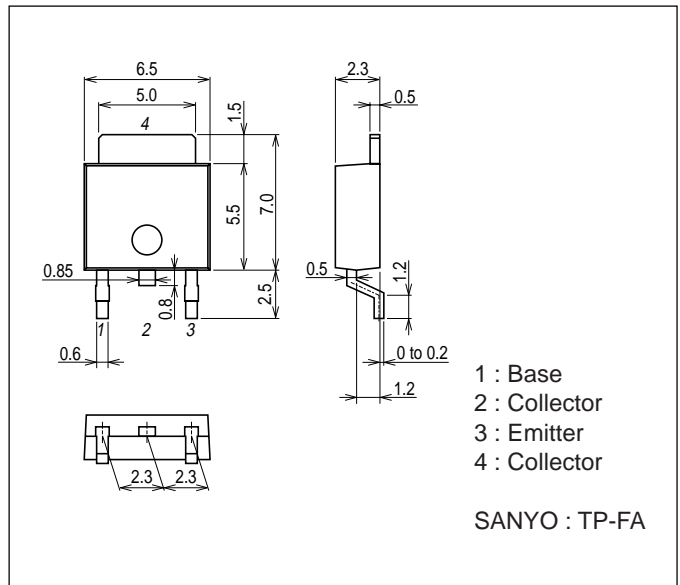
Package Dimensions

unit : mm
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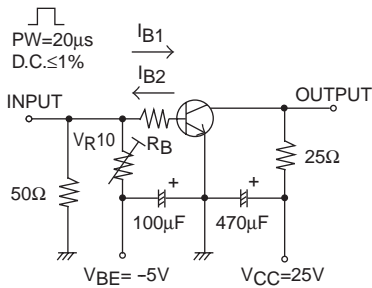


Package Dimensions

unit : mm
7003-003

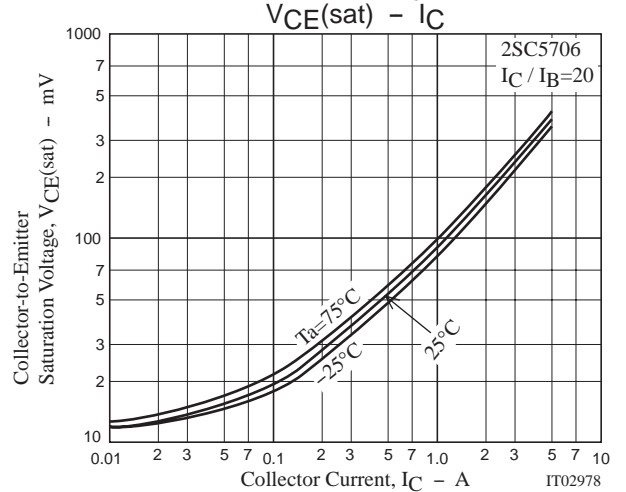
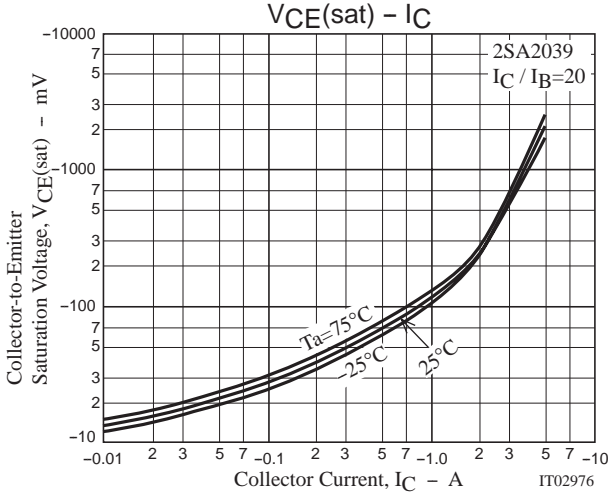
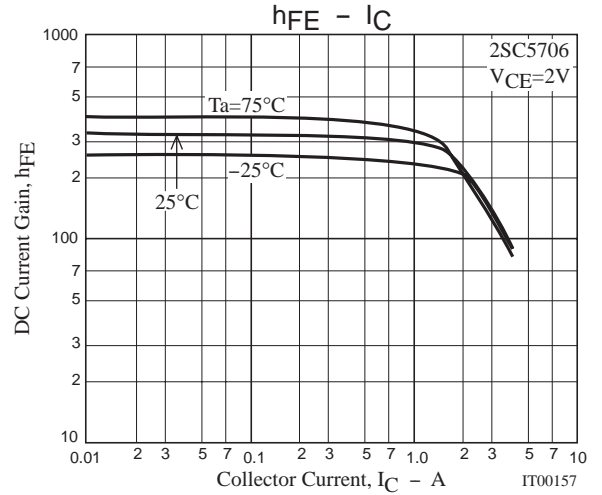
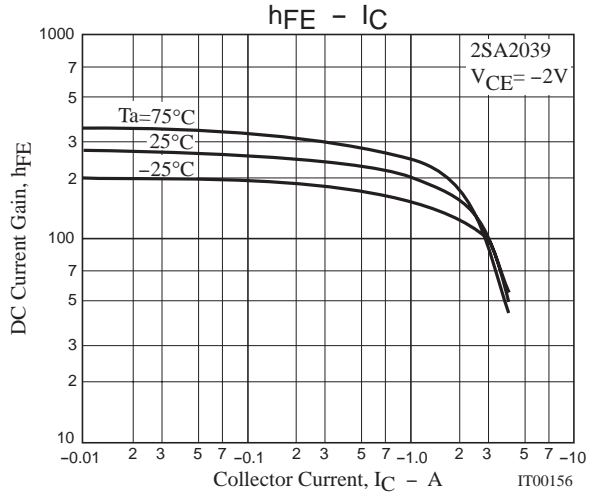
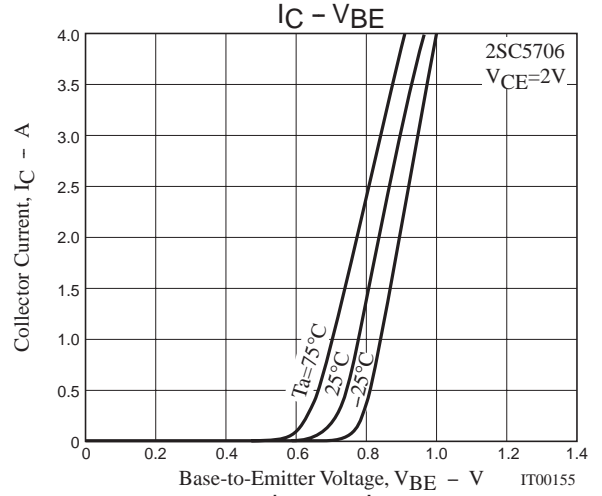
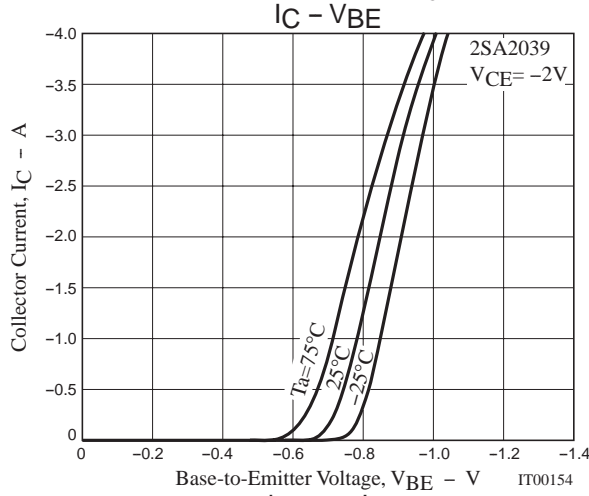
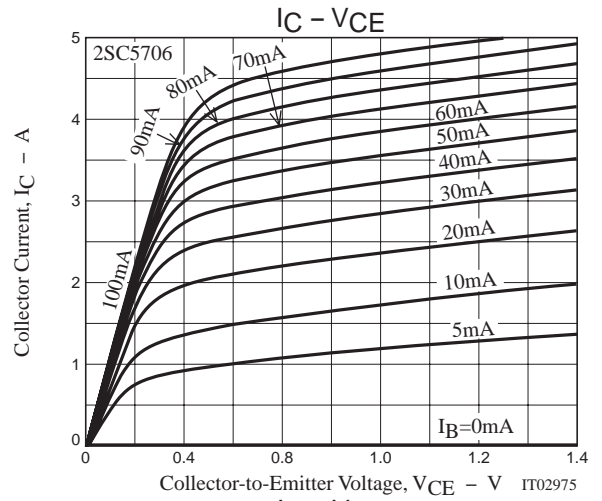
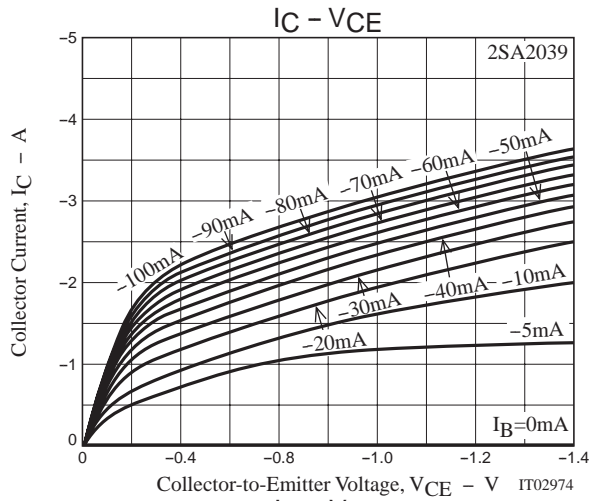


Switching Time Test Circuit

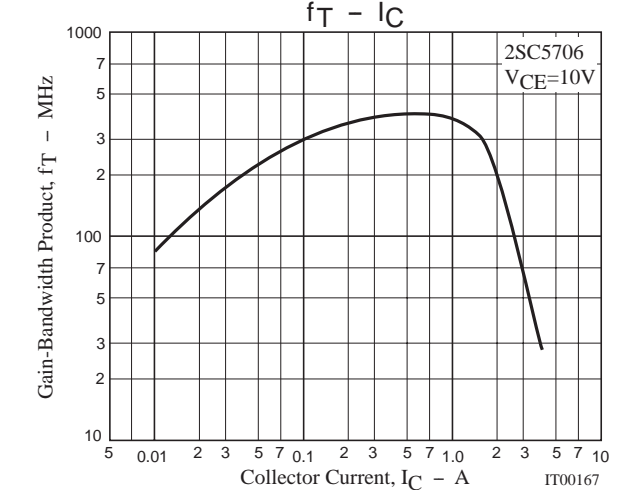
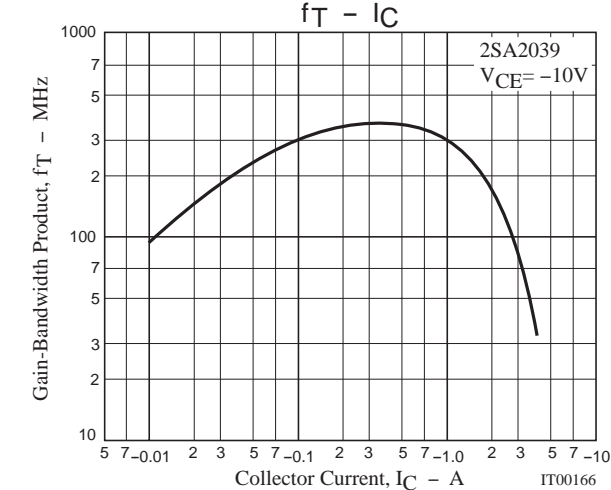
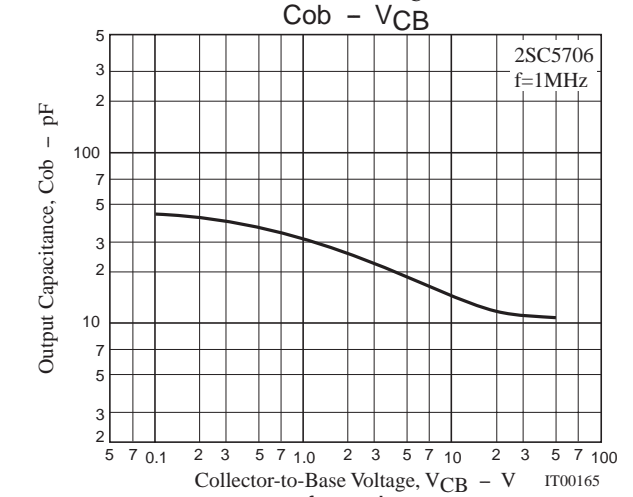
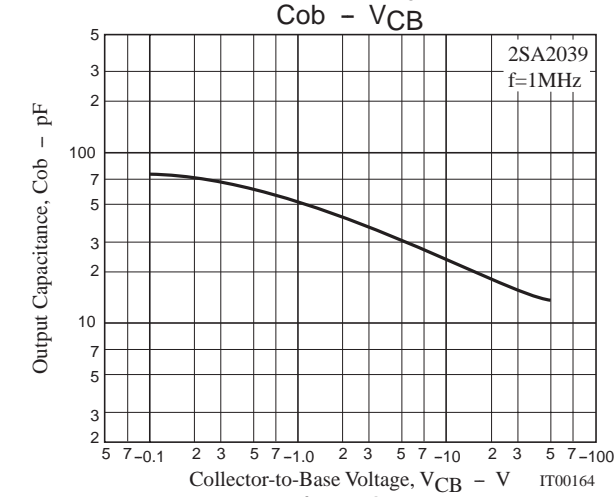
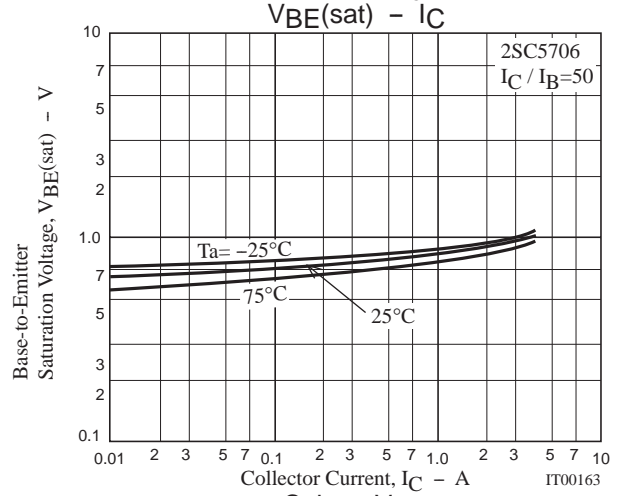
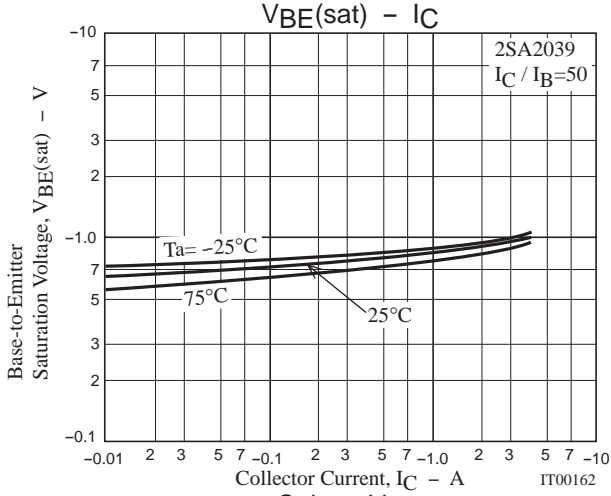
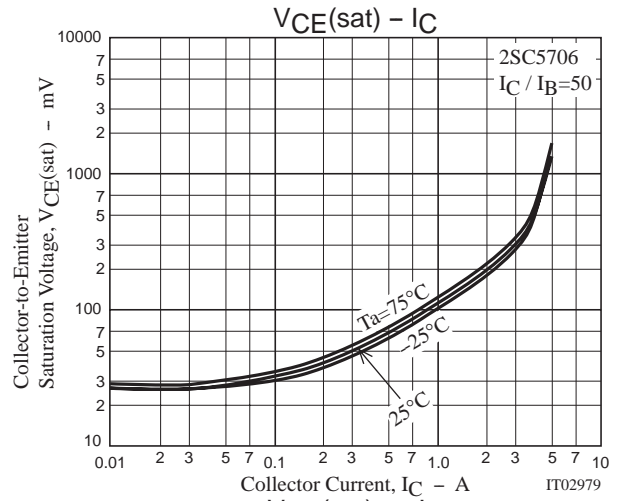
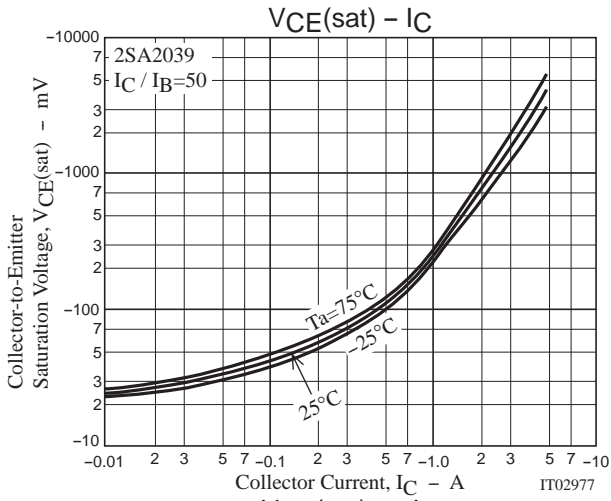


$$10I_{B1} = -10I_{B2} = I_C = 1A$$

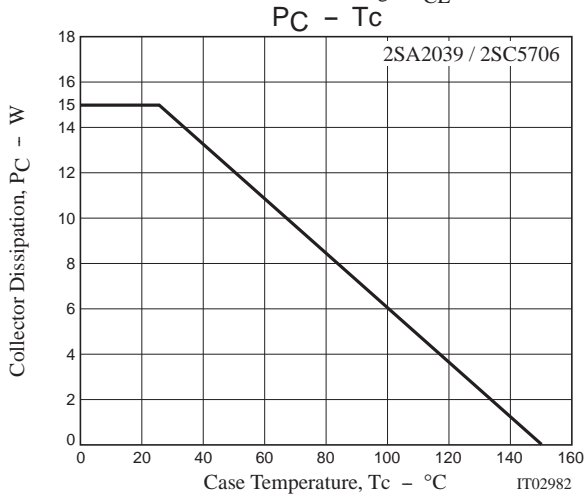
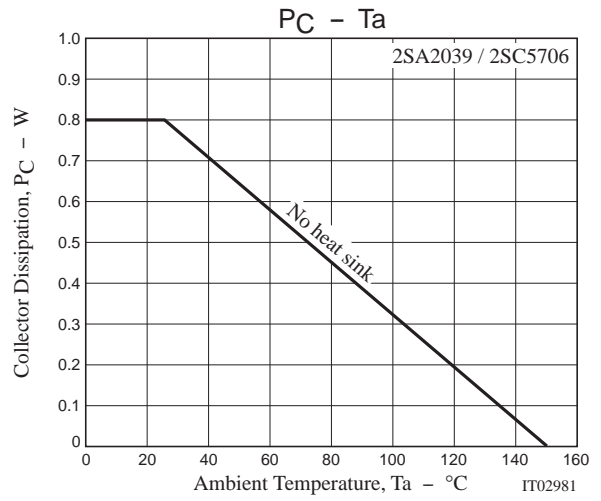
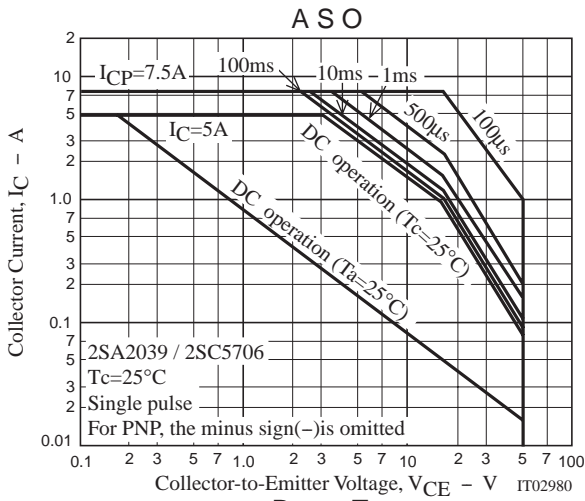
For PNP, the polarity is reversed.



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