

# 2SA2040 / 2SC5707



## High Current Switching Applications

### Applications

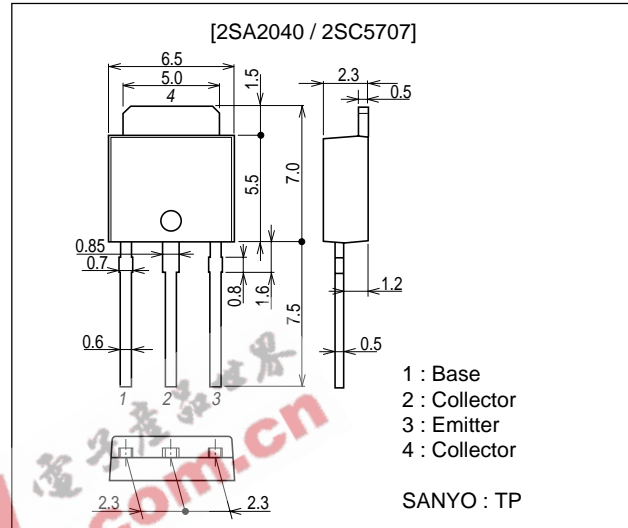
- DC-DC converter, relay drivers, lamp drivers, motor drivers, strobes.

### Features

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

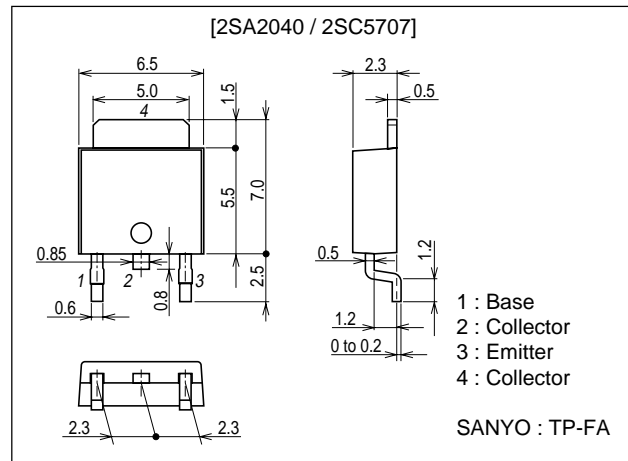
### Package Dimensions

unit : mm  
2045B



### Package Dimensions

unit : mm  
2044B



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### Specifications

Note\*( ) : 2SA2040

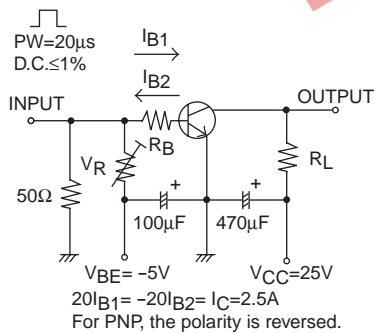
Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		(-50)80	V
Collector-to-Emitter Voltage	V <sub>CES</sub>		(-50)80	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>		(-)8	A
Collector Current (Pulse)	I <sub>CP</sub>		(-)11	A
Base Current	I <sub>B</sub>		(-)2	A
Collector Dissipation	P <sub>C</sub>		1.0	W
		T <sub>c</sub> =25°C	15	W
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

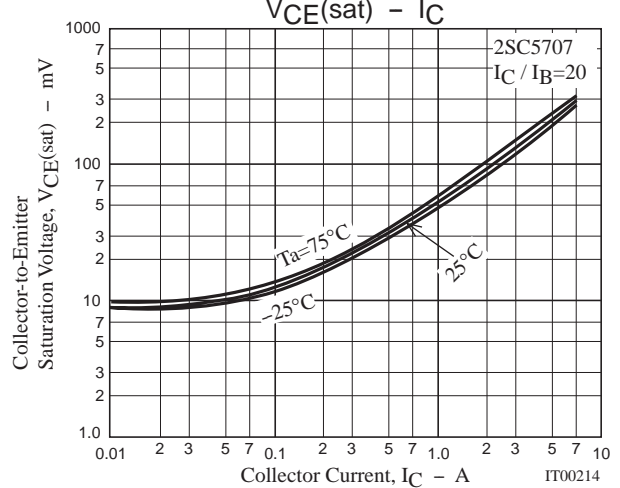
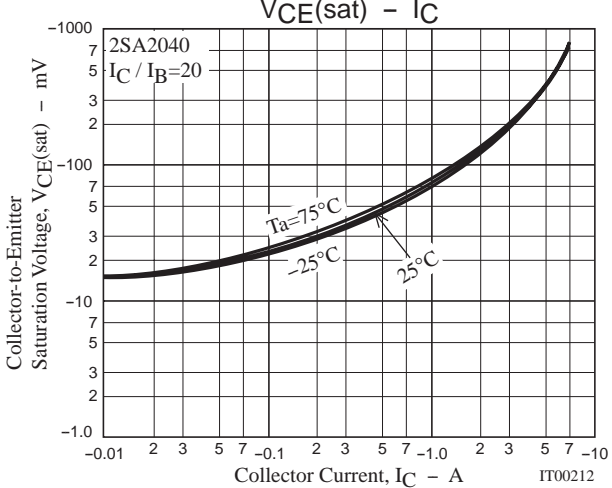
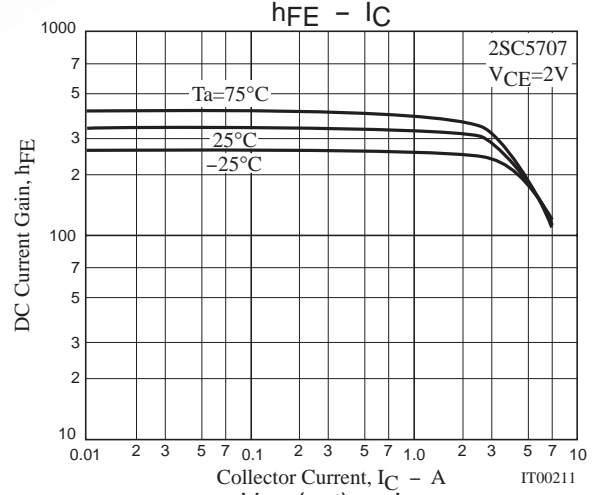
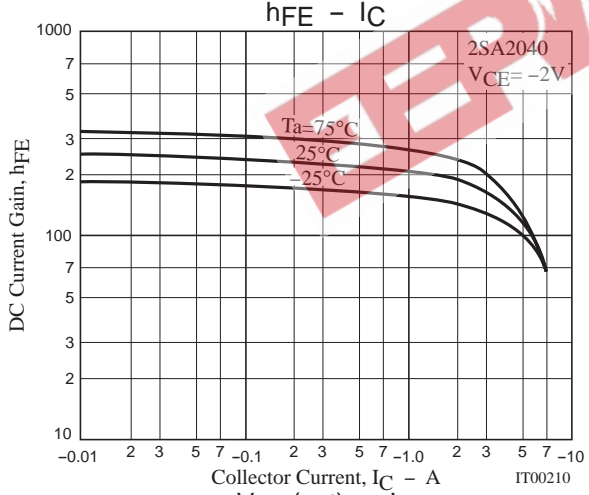
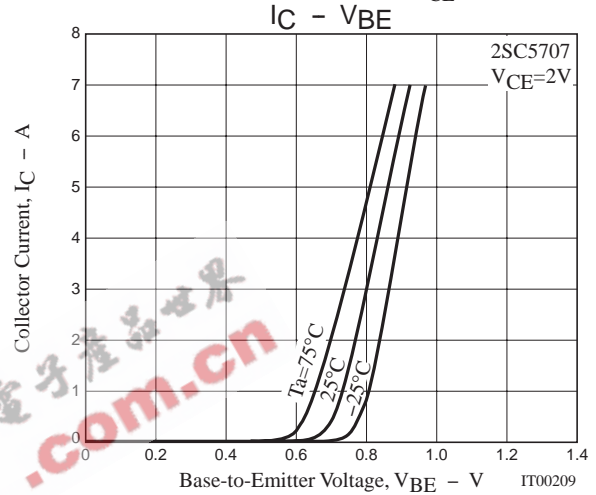
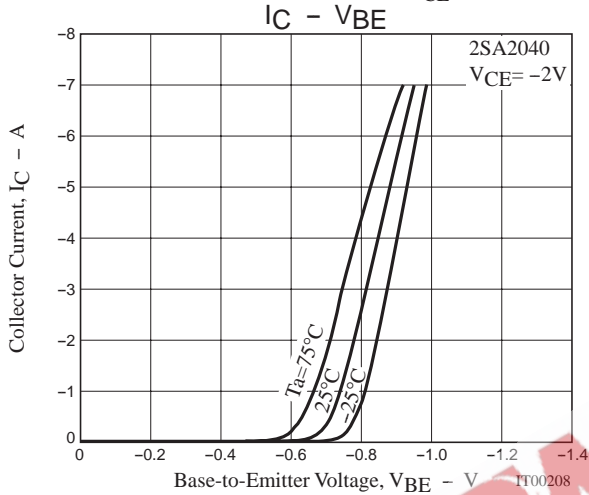
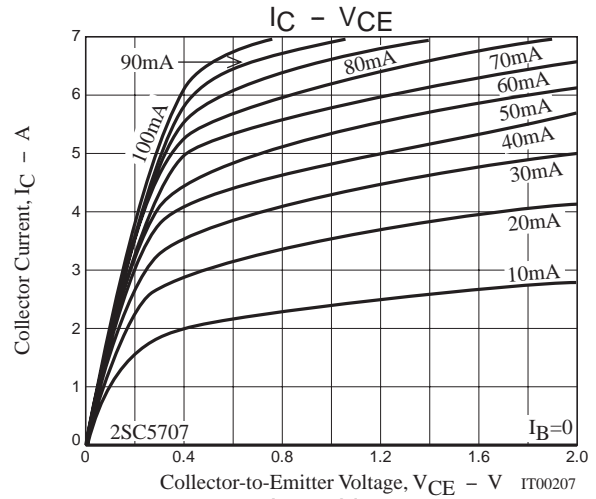
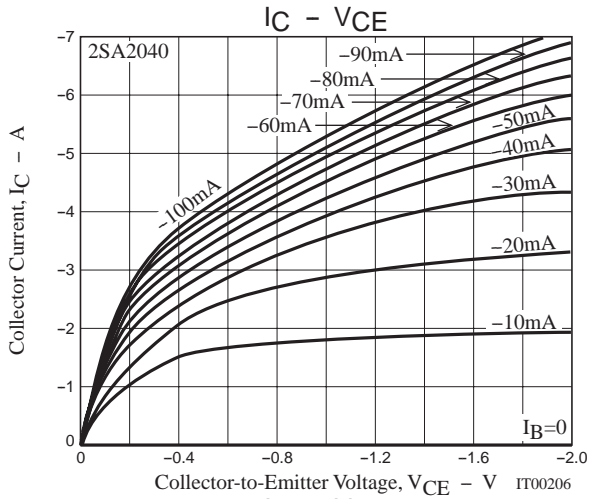
Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =(-)40V, I <sub>E</sub> =0			(-)0.1	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =(-)4V, I <sub>C</sub> =0			(-)0.1	μA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =(-)2V, I <sub>C</sub> =(-)500mA	200		560	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =(-)10V, I <sub>C</sub> =(-)500mA		(290)330		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =(-)10V, f=1MHz		(50)28		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =(-)3.5A, I <sub>B</sub> =(-)175mA		(-230)160	(-390)240	mV
		I <sub>C</sub> =(-)2A, I <sub>B</sub> =(-)40mA		(-240)110	(-400)170	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =(-)2A, I <sub>B</sub> =(-)40mA		(-)0.83	(-)1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =(-)10μA, I <sub>E</sub> =0	(-50)80			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CES</sub>	I <sub>C</sub> =(-)100μA, R <sub>BE</sub> =∞	80			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =(-)1mA, R <sub>BE</sub> =∞	(-)50			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =(-)10μA, I <sub>C</sub> =0	(-)6			V
Turn-On Time	t <sub>on</sub>	See specified test circuit.		(40)30		ns
Storage Time	t <sub>stg</sub>	See specified test circuit.		(225)420		ns
Fall Time	t <sub>f</sub>	See specified test circuit.		25		ns

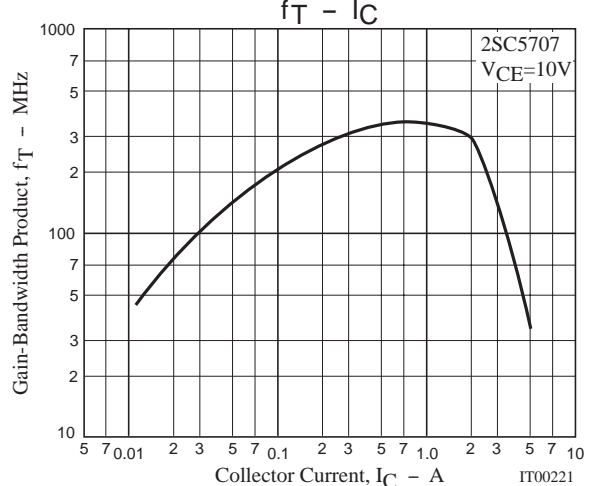
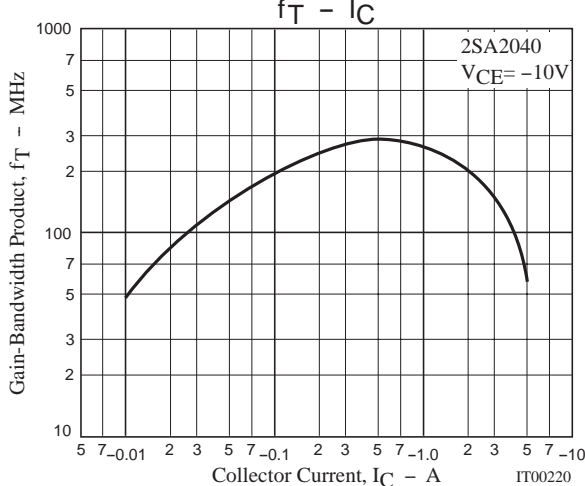
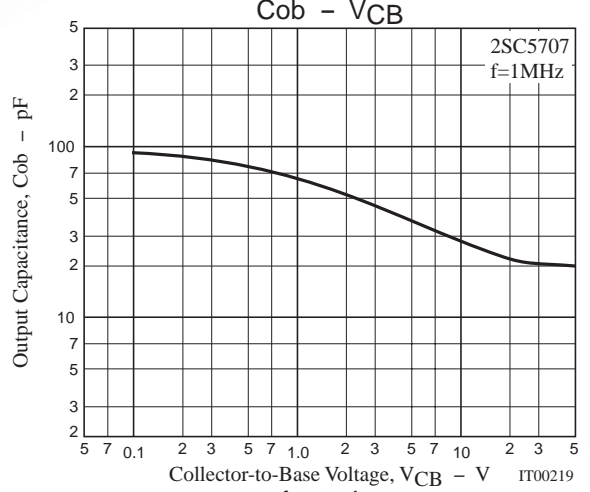
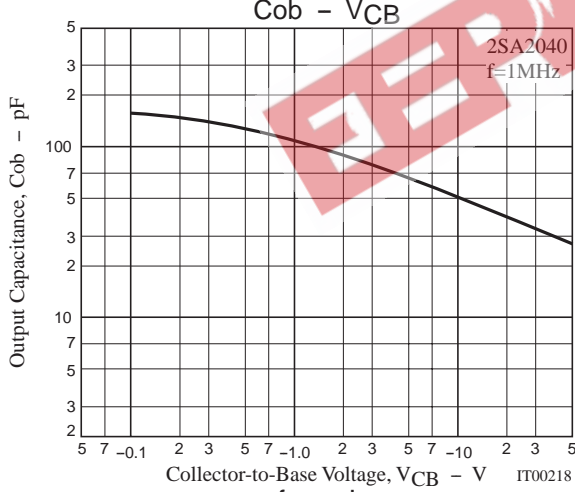
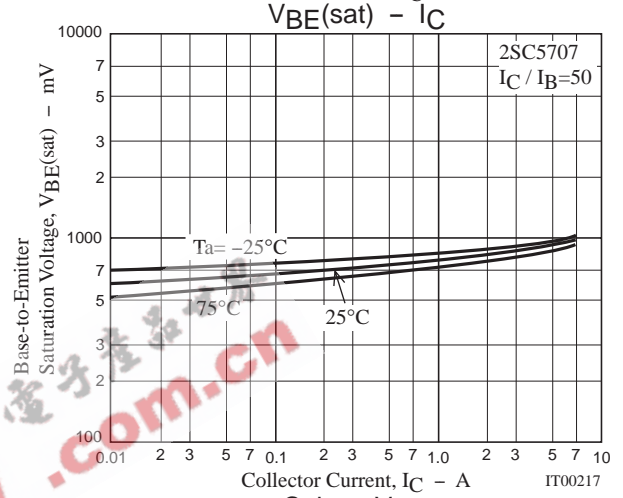
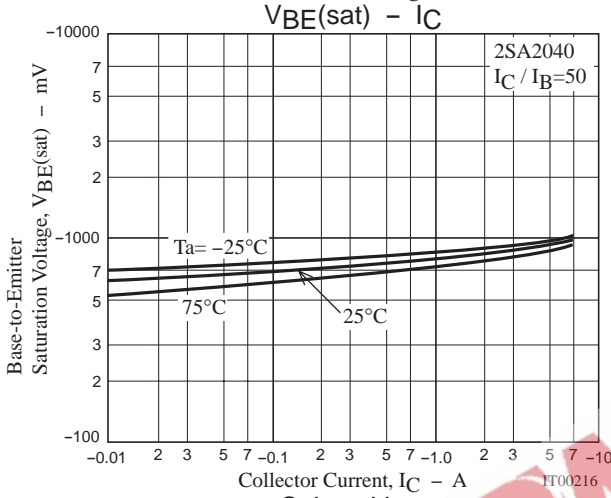
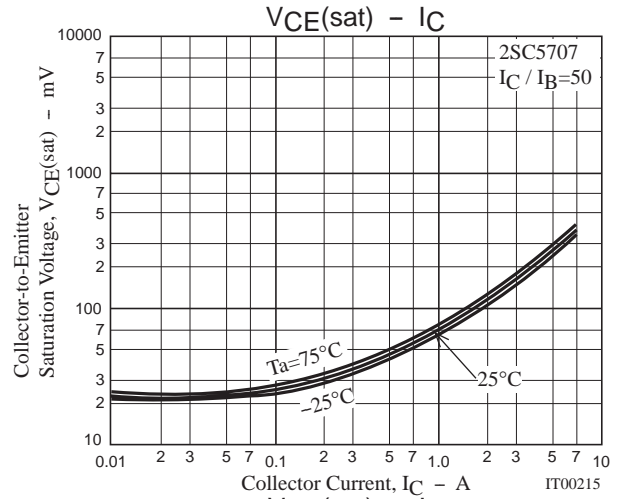
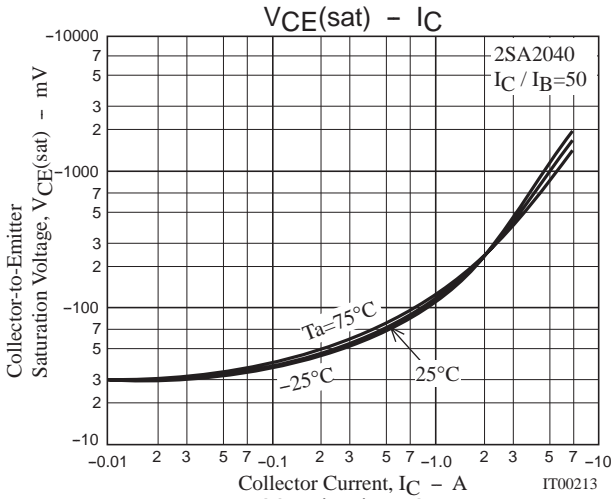
### Switching Time Test Circuit



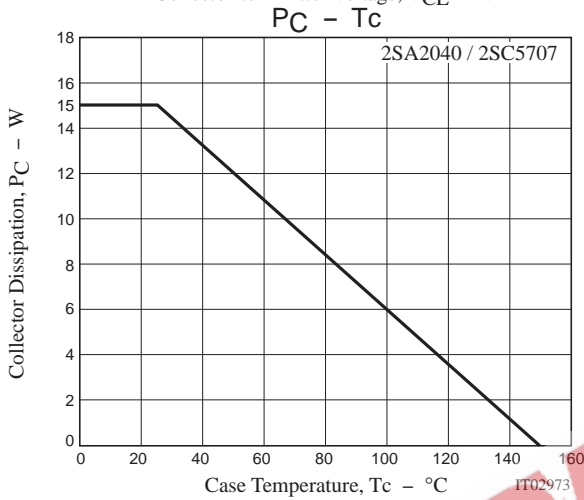
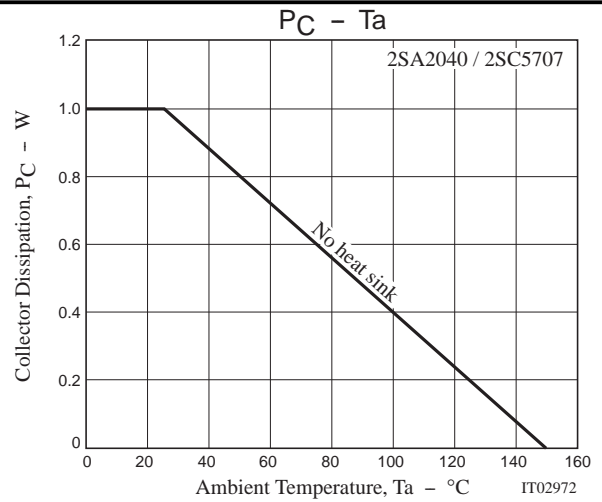
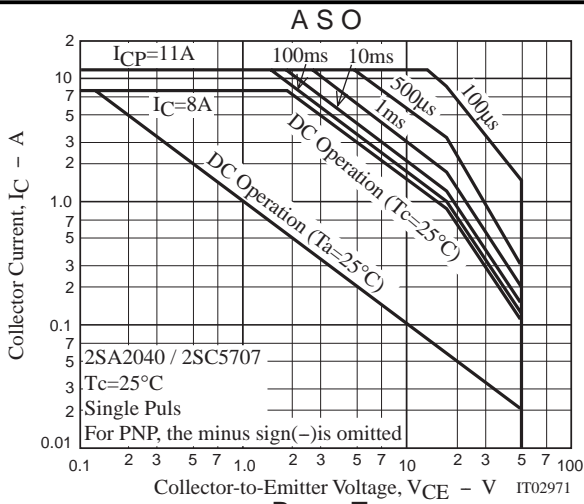
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