

Ordering number : ENN6913

PNP / NPN Epitaxial Planar Silicon Transistors

2SA2040 / 2SC5707



High Current Switching Applications

Applications

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

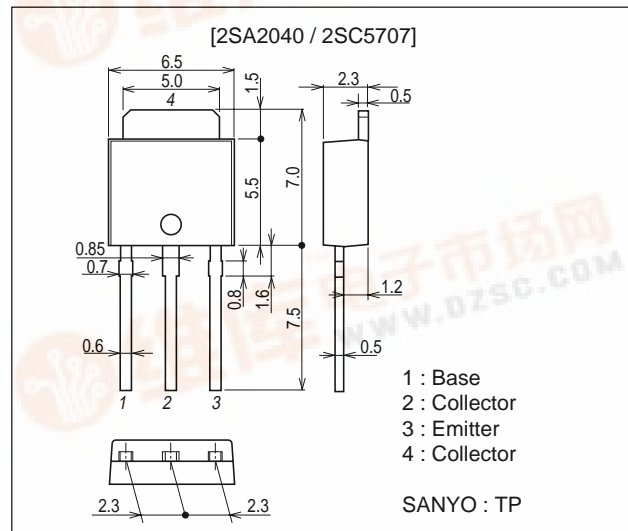
Features

- 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

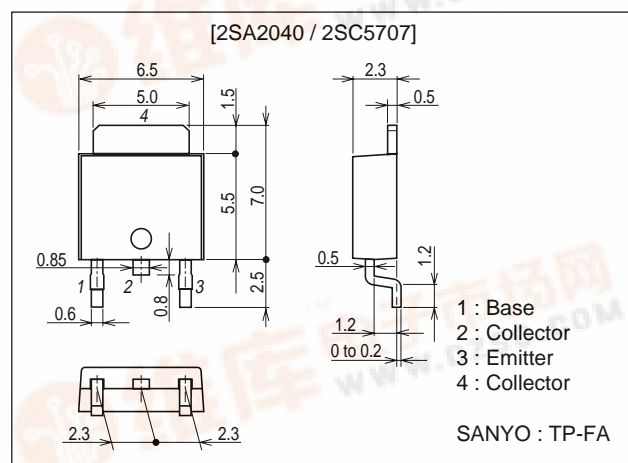
2045B



Package Dimensions

unit : mm

2044B



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Specifications

Note*() : 2SA2040

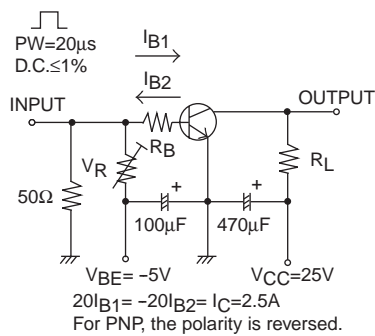
Absolute Maximum Ratings at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CB0}		(-50)80	V
Collector-to-Emitter Voltage	V_{CES}		(-50)80	V
Collector-to-Emitter Voltage	V_{CEO}		(-50)	V
Emitter-to-Base Voltage	V_{EBO}		(-6)	V
Collector Current	I_C		(-8)	A
Collector Current (Pulse)	I_{CP}		(-11)	A
Base Current	I_B		(-2)	A
Collector Dissipation	P_C	$T_c=25^\circ\text{C}$	1.0	W
			15	W
Junction Temperature	T_J		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

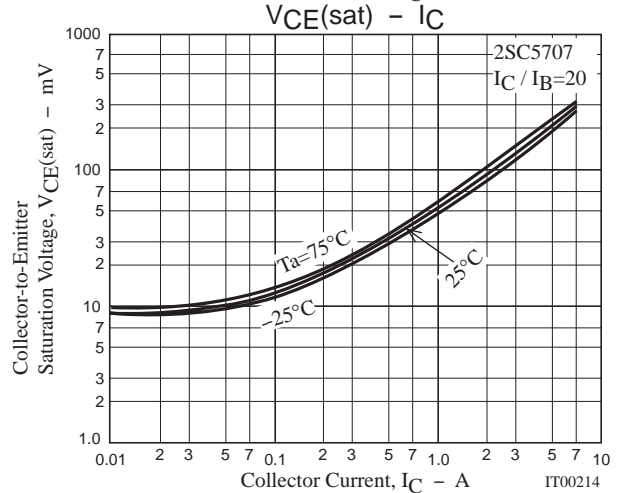
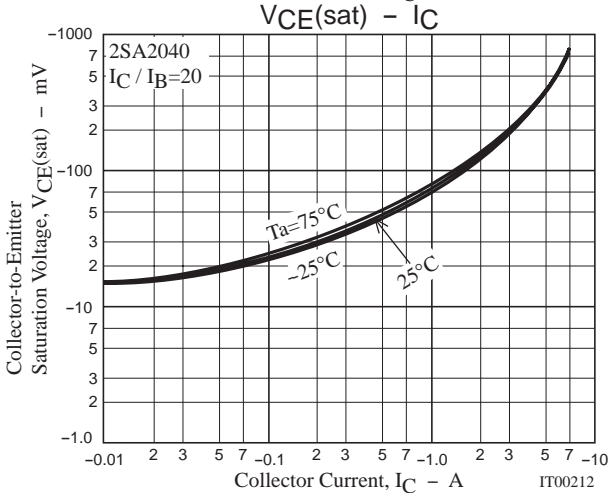
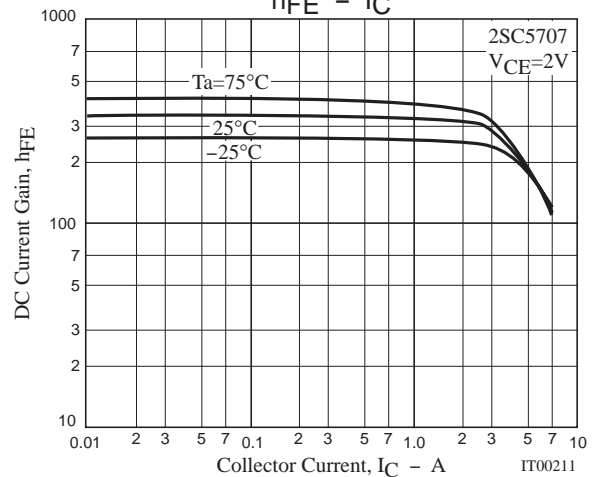
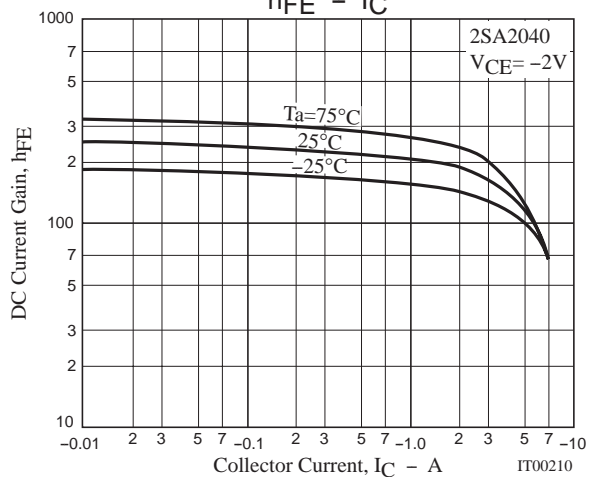
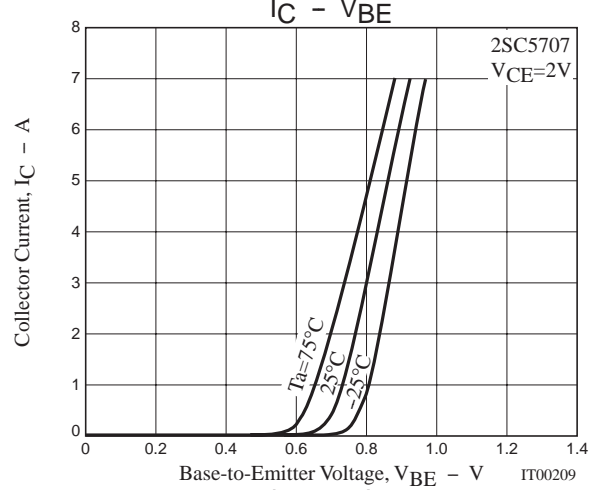
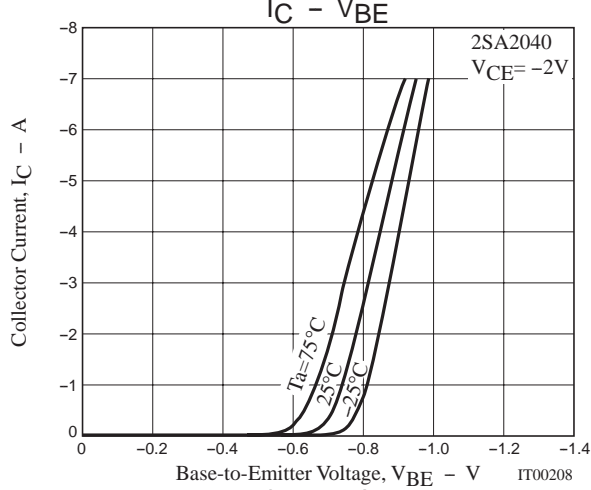
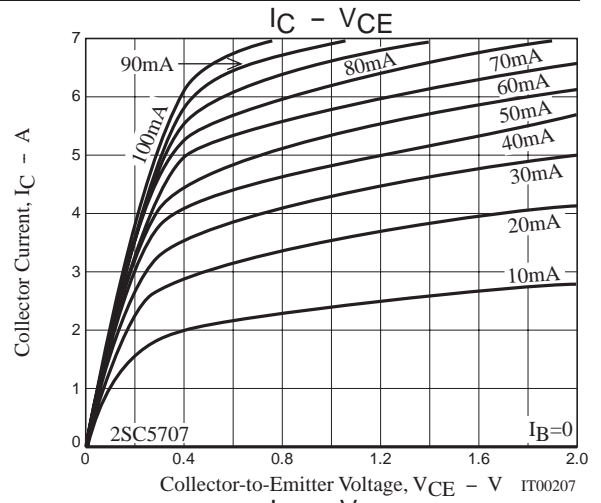
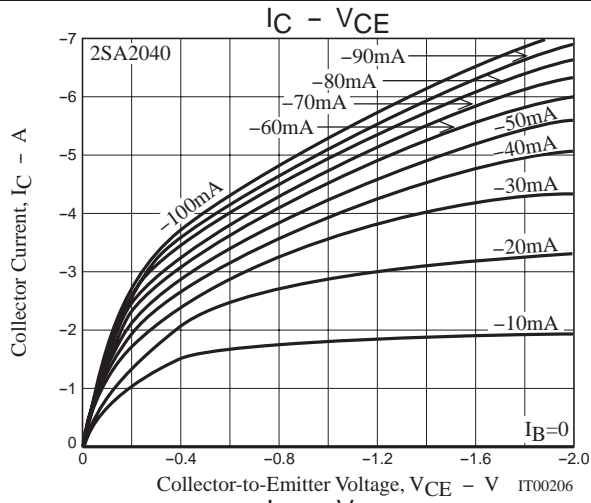
Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	$V_{CB}=-40\text{V}, I_E=0$			(-0.1)	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=-4\text{V}, I_C=0$			(-0.1)	μA
DC Current Gain	h_{FE}	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$	200		560	
Gain-Bandwidth Product	f_T	$V_{CE}=-10\text{V}, I_C=-500\text{mA}$		(290)330		MHz
Output Capacitance	C_{ob}	$V_{CB}=-10\text{V}, f=1\text{MHz}$		(50)28		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-3.5\text{A}, I_B=-175\text{mA}$		(-230)160	(-390)240	mV
		$I_C=-2\text{A}, I_B=-40\text{mA}$		(-240)110	(-400)170	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-2\text{A}, I_B=-40\text{mA}$		(-0.83)	(-1.2)	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-10\mu\text{A}, I_E=0$	(-50)80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CES}$	$I_C=-100\mu\text{A}, R_{BE}=\infty$	80			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	(-50)			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-10\mu\text{A}, I_C=0$	(-6)			V
Turn-On Time	t_{on}	See specified test circuit.		(40)30		ns
Storage Time	t_{stg}	See specified test circuit.		(225)420		ns
Fall Time	t_f	See specified test circuit.		25		ns

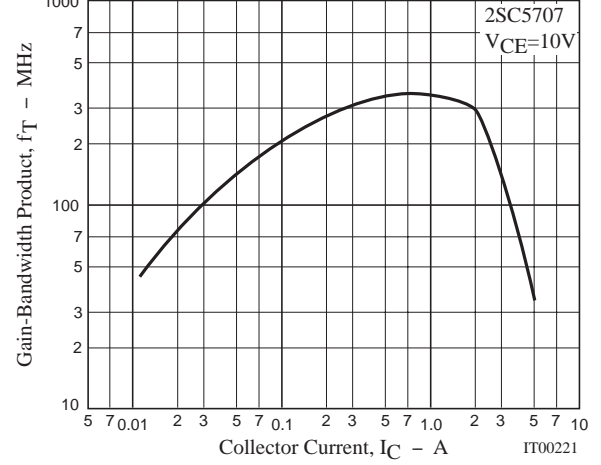
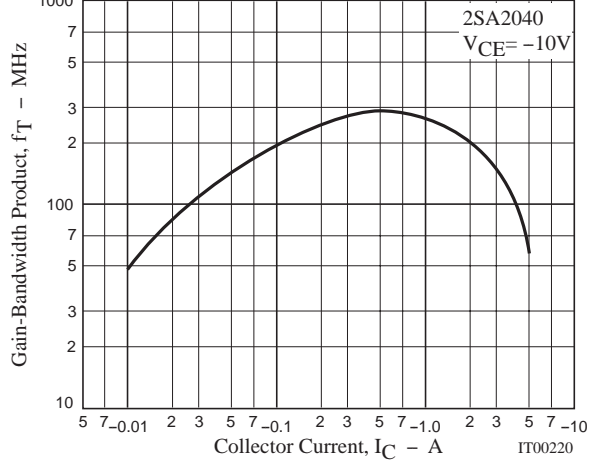
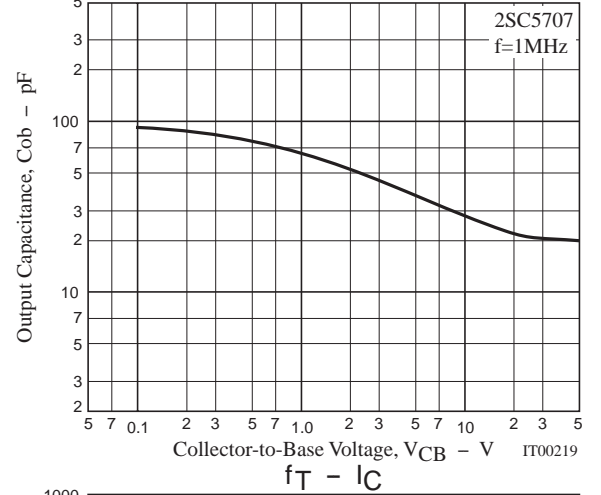
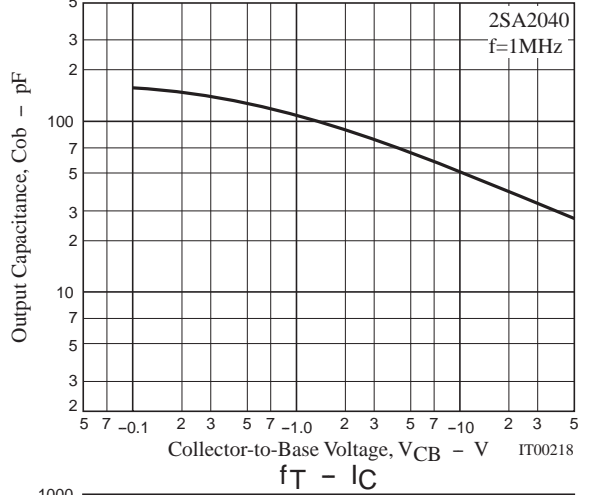
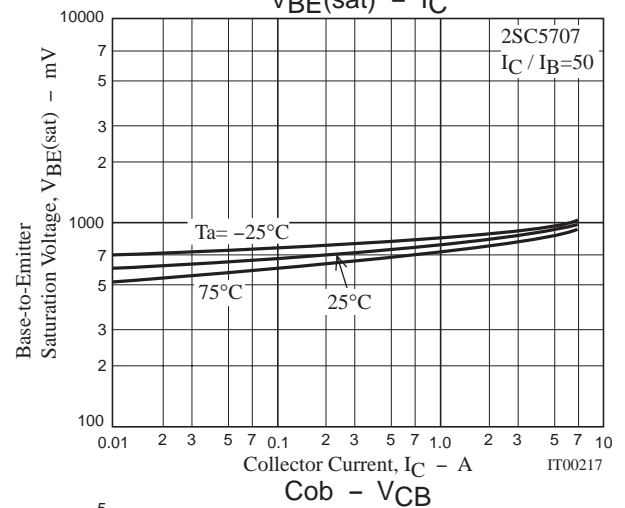
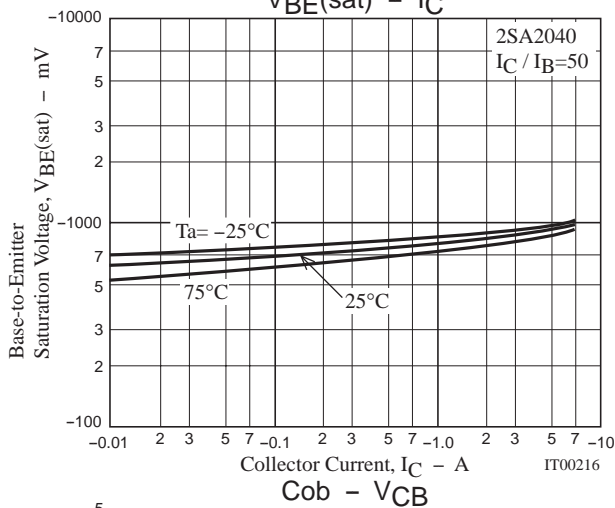
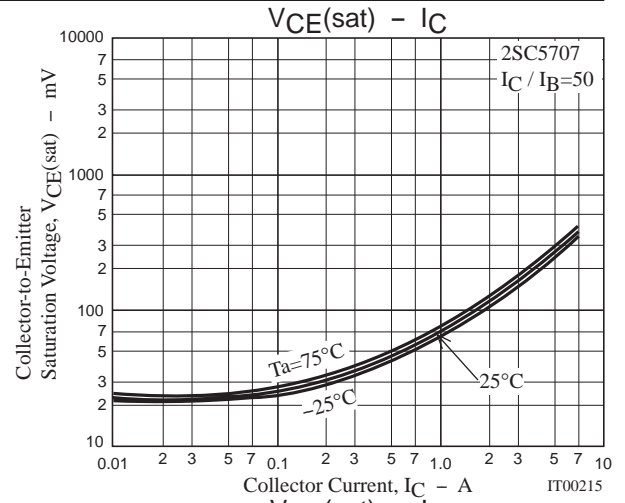
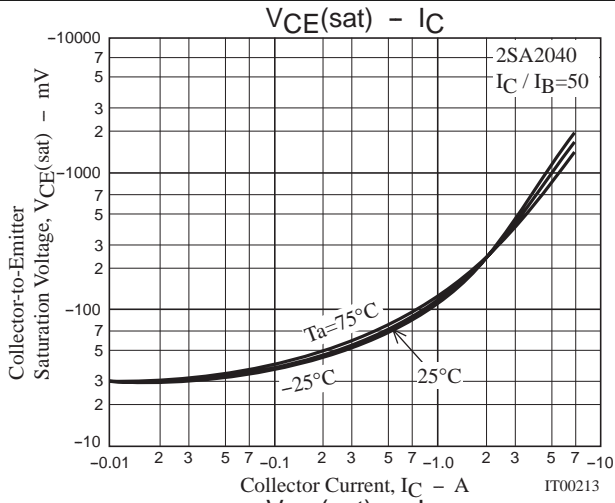
Switching Time Test Circuit



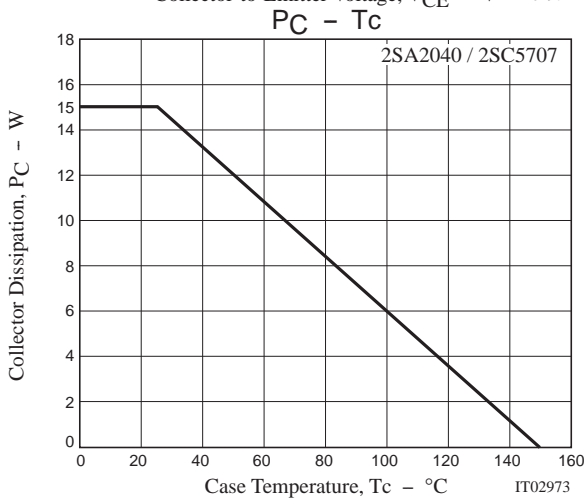
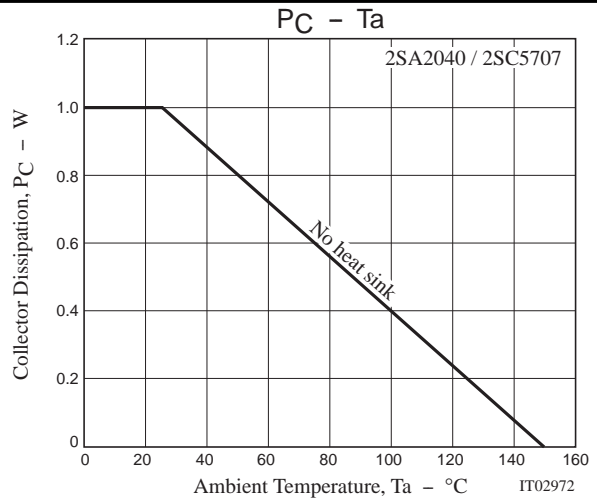
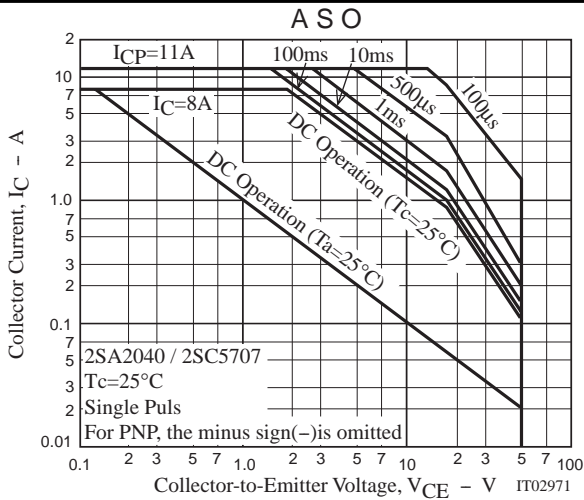
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