

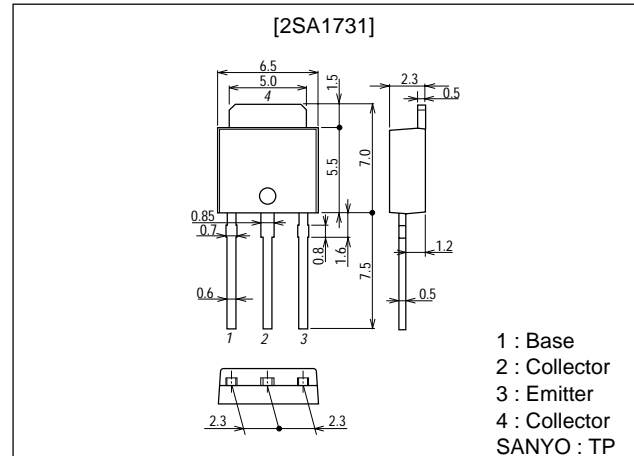
**High-Speed Switching Applications****Features**

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

**Package Dimensions**

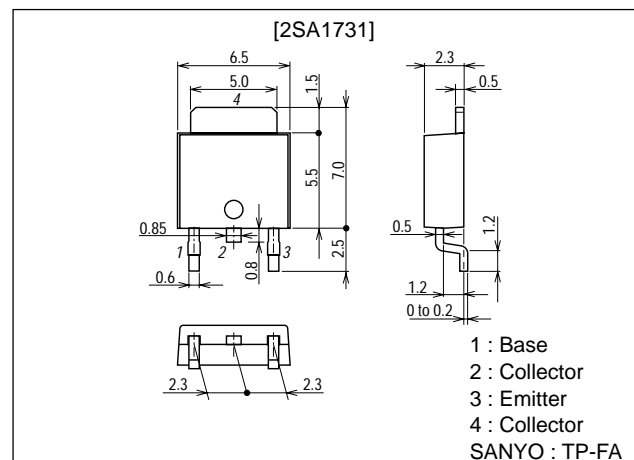
unit:mm

2045B



unit:mm

2044B



■ Any and all SANYO products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your SANYO representative nearest you before using any SANYO products described or contained herein in such applications.

■ SANYO assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all SANYO products described or contained herein.

## Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		-50	V
Collector-to-Emitter Voltage	$V_{CEO}$		-40	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-5	A
Collector Current (Pulse)	$I_{CP}$		-8	A
Collector Dissipation	$P_C$		1	W
		$T_c=25^\circ\text{C}$	15	W
Junction Temperature	$T_J$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

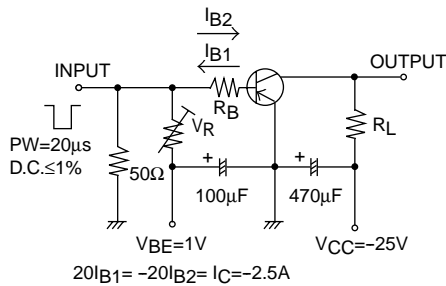
**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-40\text{V}, I_E=0$			-1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-3\text{V}, I_C=0$			-1	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$	70*		280*	
	$h_{FE2}$	$V_{CE}=-2\text{V}, I_C=-5\text{A}$	25			
Gain-Bandwidth Product	$f_T$	$V_{CE}=-2\text{V}, I_C=-500\text{mA}$		300		MHz
Output Capacitance	$C_{ob}$	$V_{CB}=-10\text{V}, f=1\text{MHz}$		60		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-2.5\text{A}, I_B=-125\text{mA}$	-0.3		-0.8	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=-2.5\text{A}, I_B=-125\text{mA}$	-0.95		-1.3	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=-100\mu\text{A}, I_E=0$	-50			V
Collector-to-Emitter Saturation Voltage	$V_{(BR)CEO}$	$I_C=-1\text{mA}, R_{BE}=\infty$	-40			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=-100\mu\text{A}, I_C=0$	-5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit		50	100	ns
Storage Time	$t_{stg}$	See specified Test Circuit		120	220	ns
Turn-OFF Time	$t_{off}$	See specified Test Circuit		150	300	ns

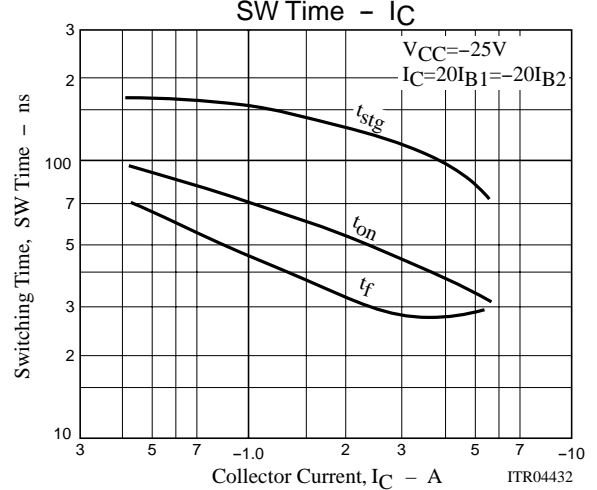
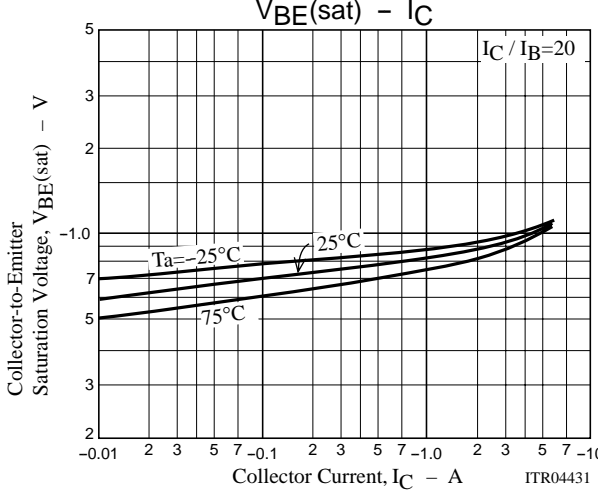
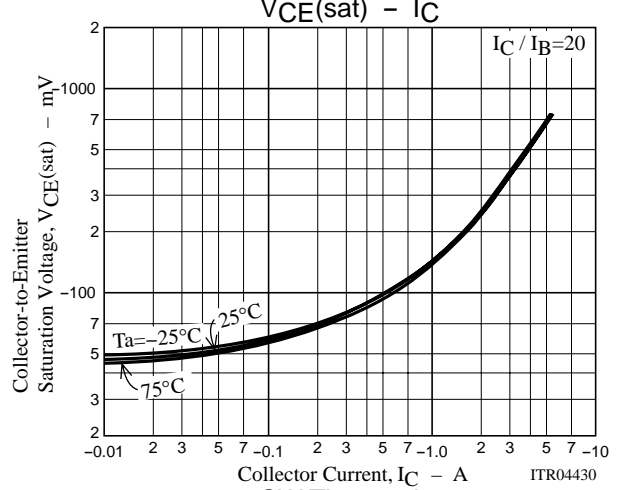
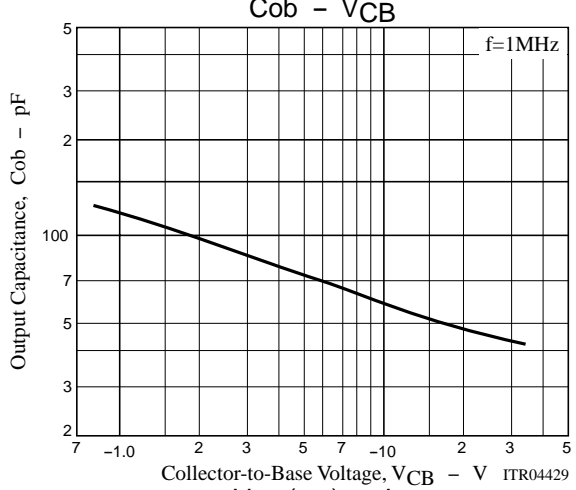
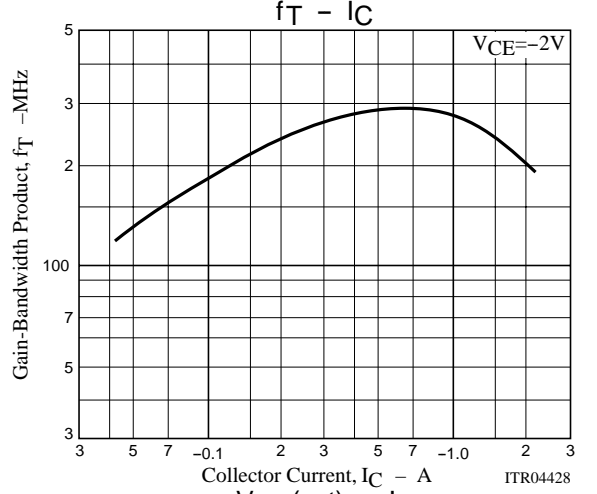
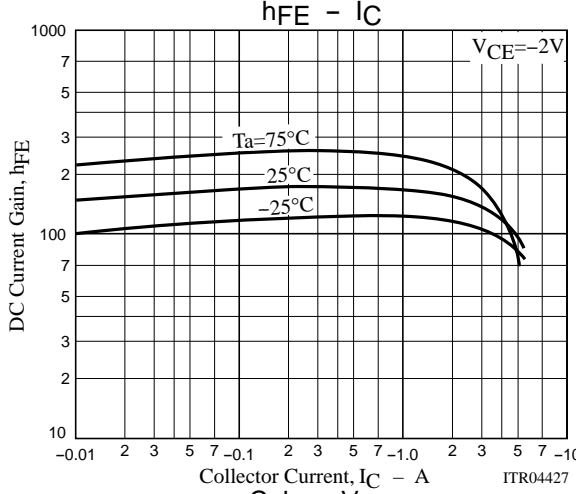
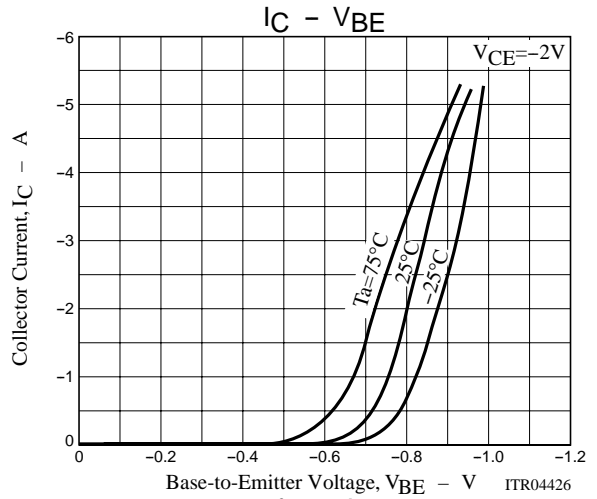
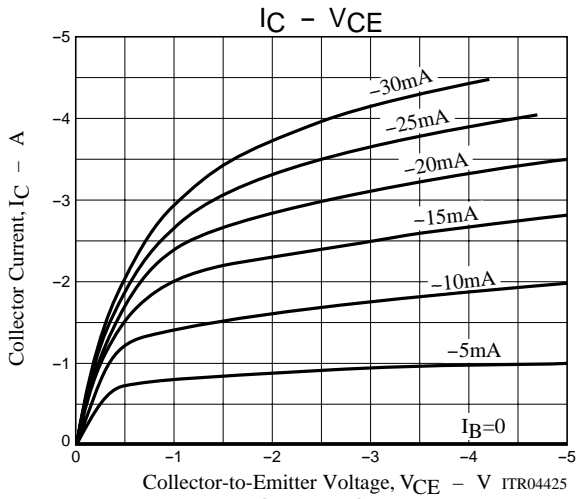
\* : The 2SA1731 is classified by 500mA  $h_{FE}$  as follows :

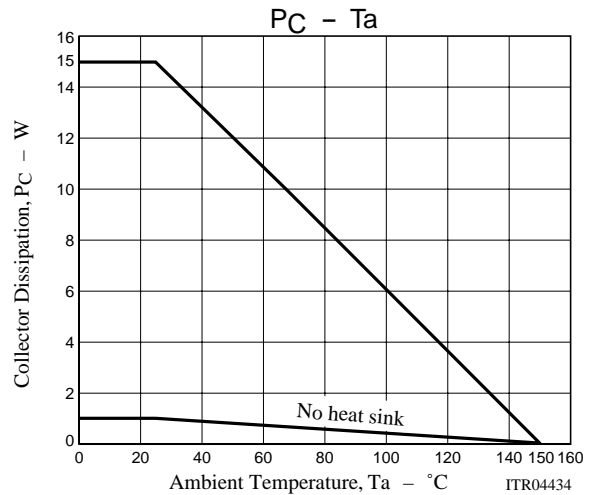
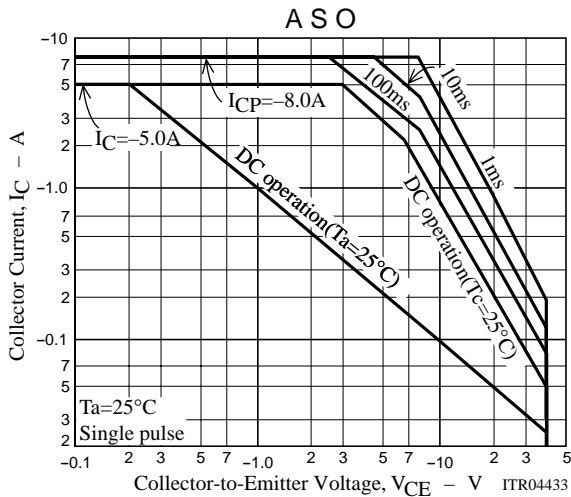
Rank	Q	R	S
$h_{FE}$	70 to 140	100 to 200	140 to 280

## Switching Time Test Circuit



**2SA1731**





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