



# 2SA1731

## High-Speed Switching Applications

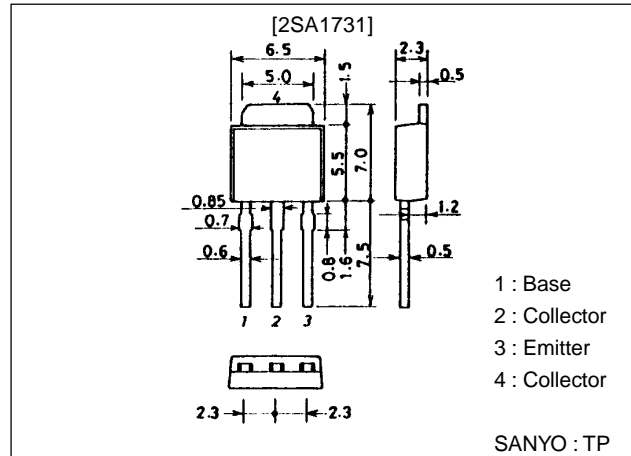
### Features

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

### Package Dimensions

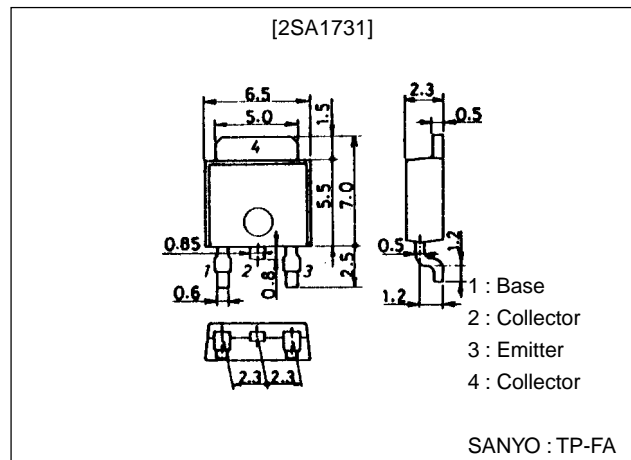
unit:mm

2045B



unit:mm

2044B



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# 2SA1731

## 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	$^\circ\text{C}$

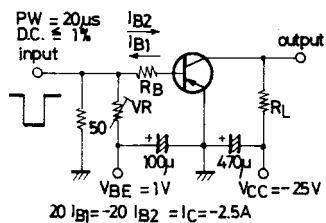
### Electrical Characteristics at $T_a = 25^\circ\text{C}$

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 Breakdown 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 :

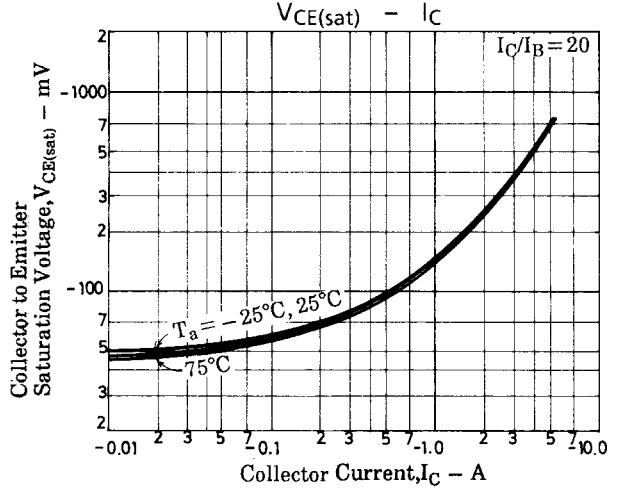
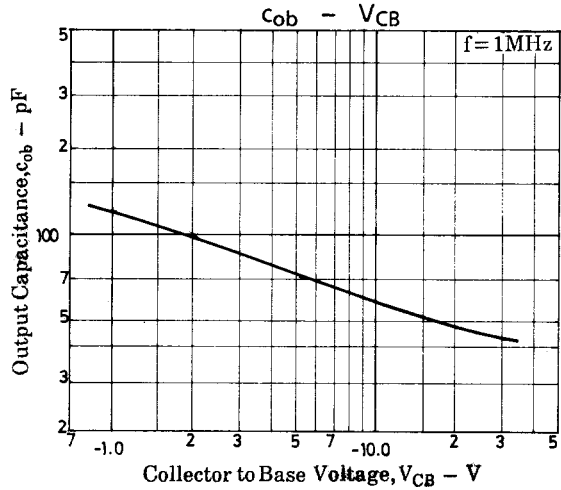
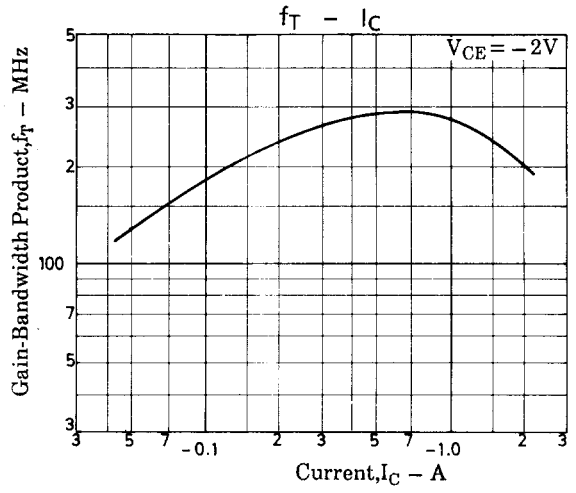
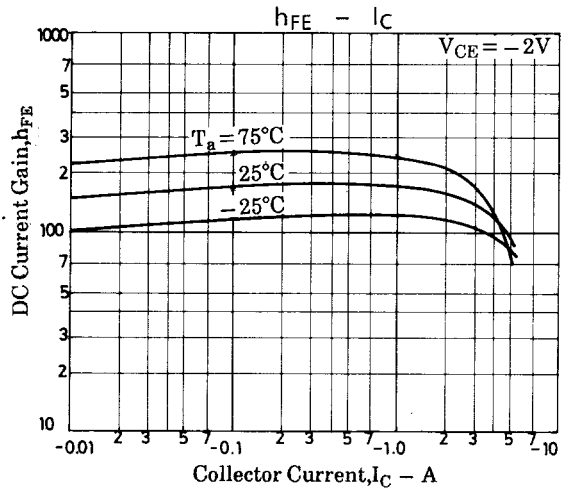
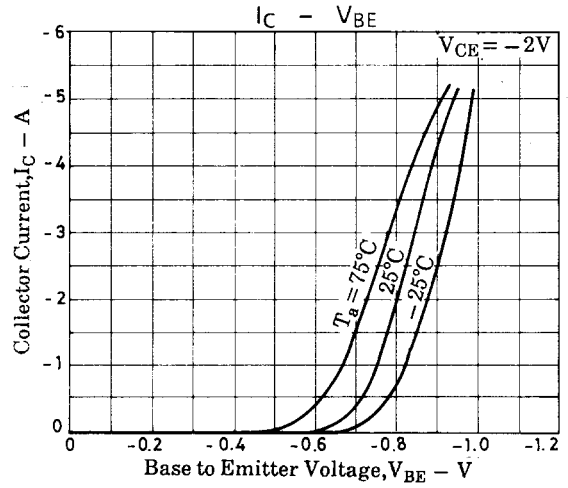
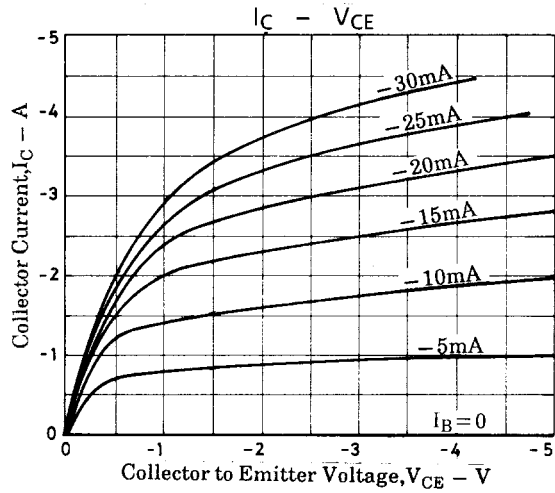
70	Q	140	100	R	200	140	S	280
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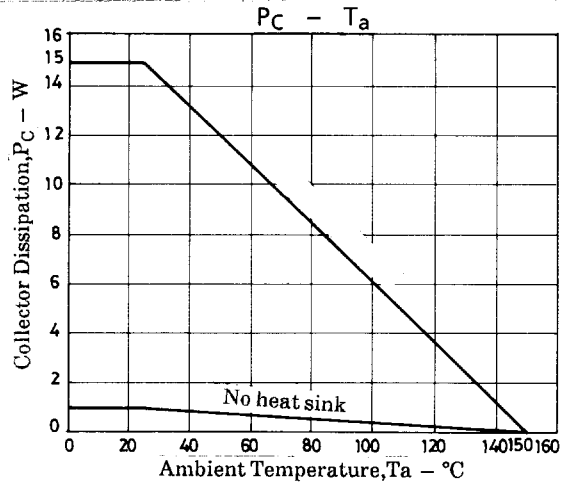
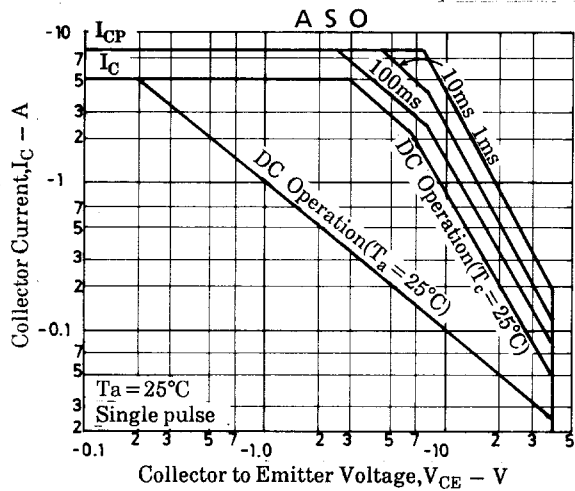
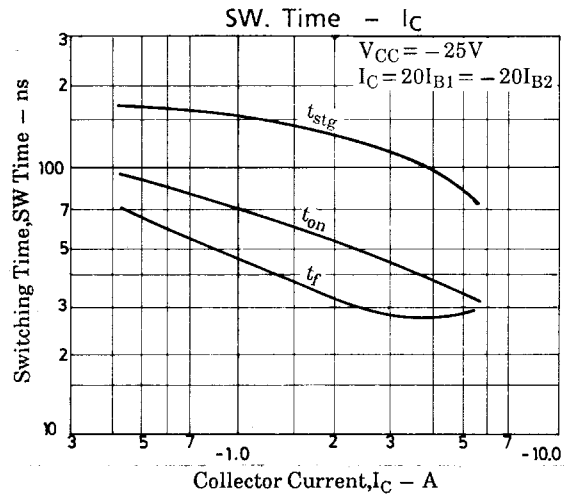
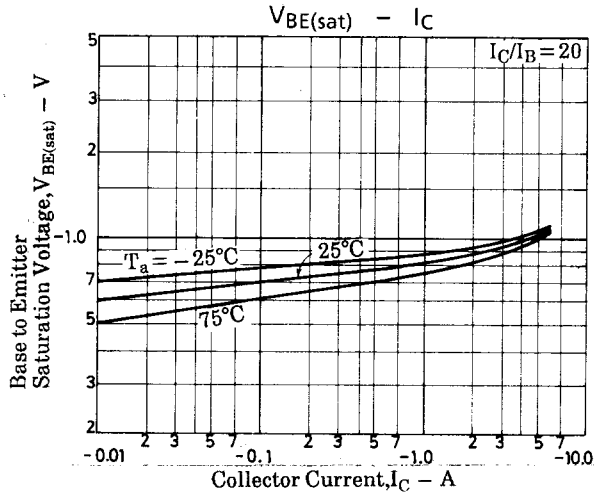
### Switching Time Test Circuit



Unit (resistance :  $\Omega$ , capacitance : F)

# 2SA1731





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