



# 2SA1481/2SC2960

## High-Speed Switching Applications

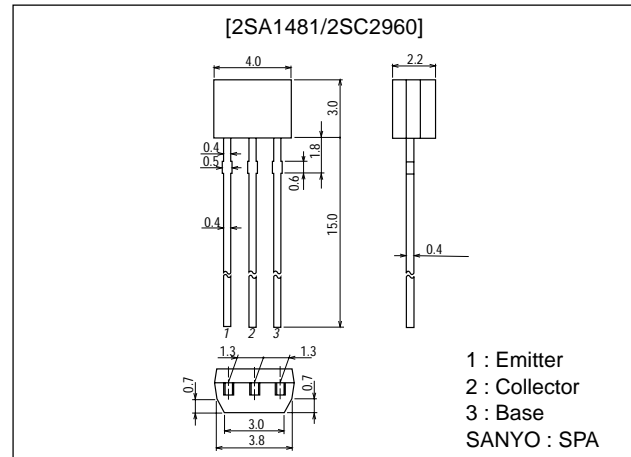
### Features

- Fast switching speed.
- High breakdown voltage.

### Package Dimensions

unit:mm

2033A



() : 2SA1481

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		(-)60	V
Collector-to-Emitter Voltage	$V_{CEO}$		(-)50	V
Emitter-to-Base Voltage	$V_{EBO}$		(-)5	V
Collector Current	$I_C$		(-)150	mA
Peak Collector Current	$I_{CP}$		(-)400	mA
Collector Dissipation	$P_C$		250	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)400\text{V}, I_E = 0$			(-)0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4\text{V}, I_C = 0$			(-)0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE} = (-)6\text{V}, I_C = (-)1\text{mA}$	100*		560*	
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)6\text{V}, I_C = (-)1\text{mA}$		100		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = (-)6\text{V}, f = 1\text{MHz}$		2.7		pF
				(4.0)		pF

\* ; The 2SA1481/2SC2960 are classified by 1mA  $h_{FE}$  as follows :

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Rank	E	F	G
$h_{FE}$	100 to 200	160 to 320	280 to 560

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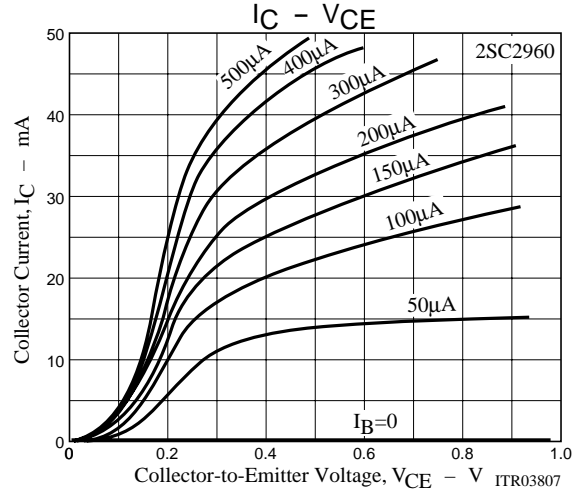
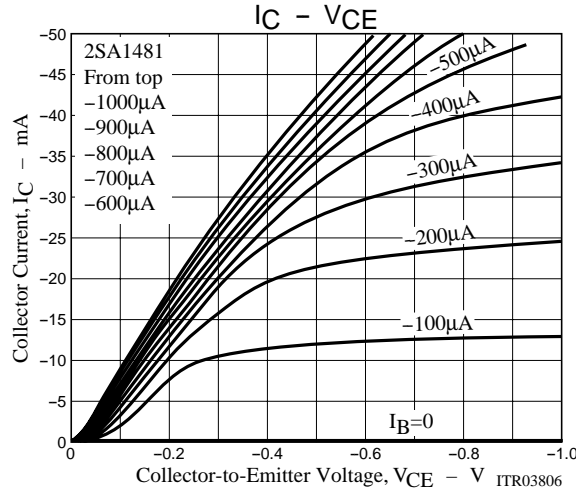
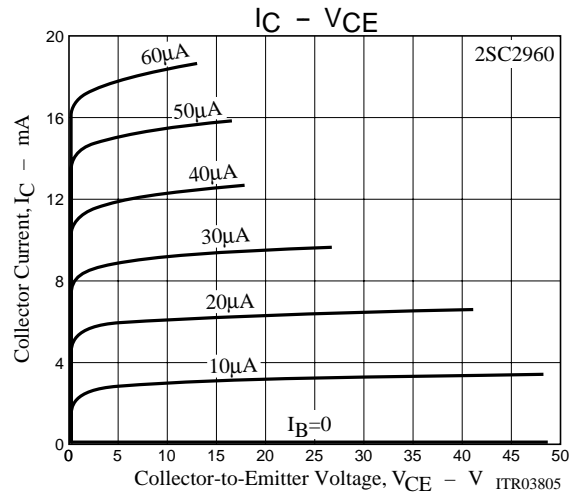
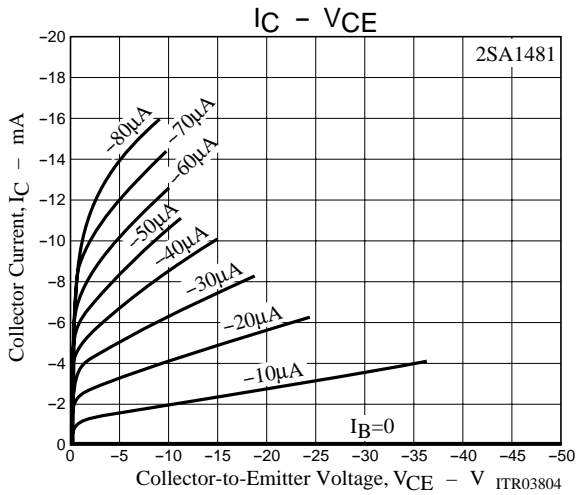
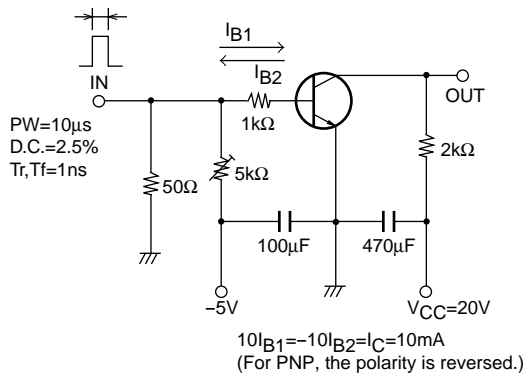
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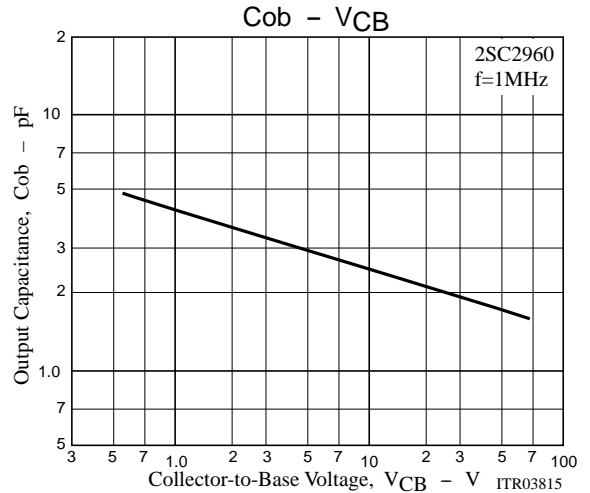
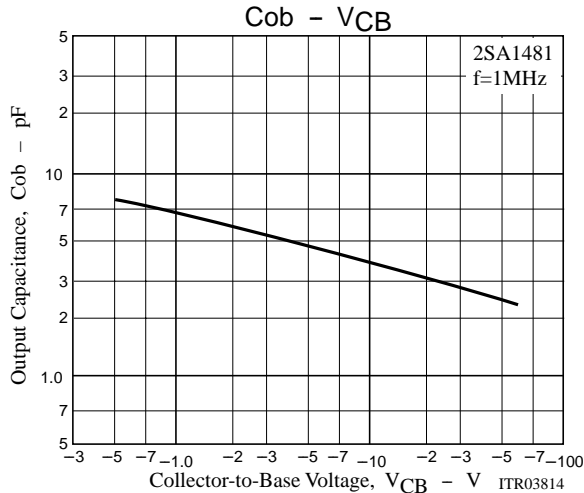
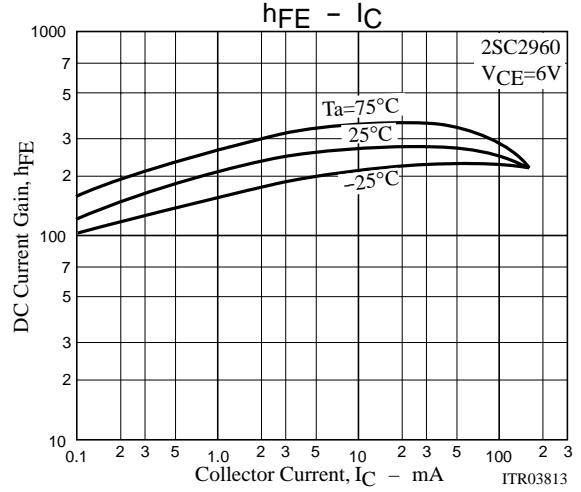
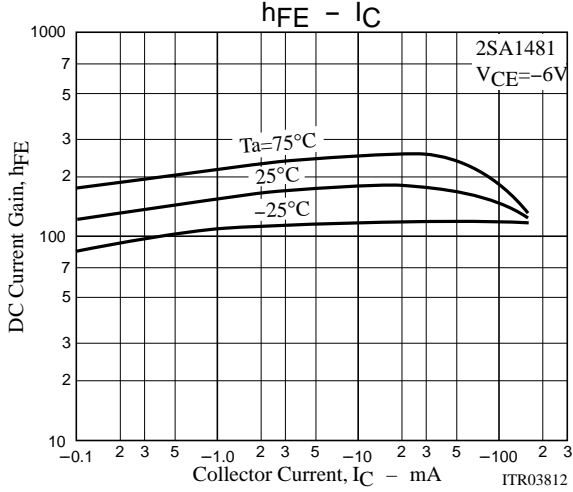
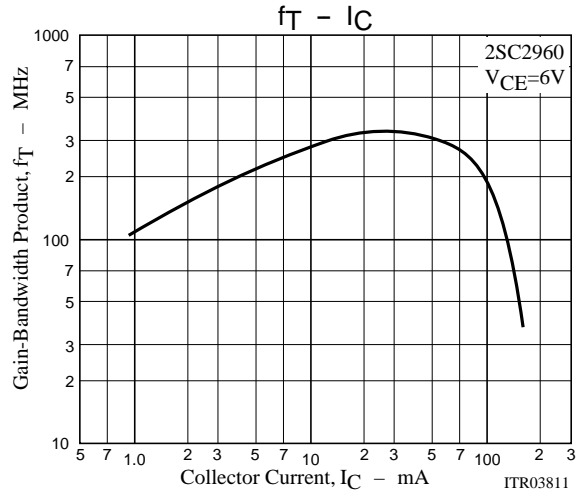
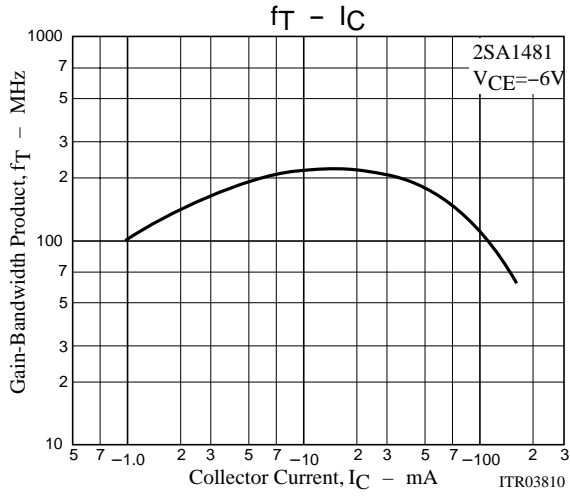
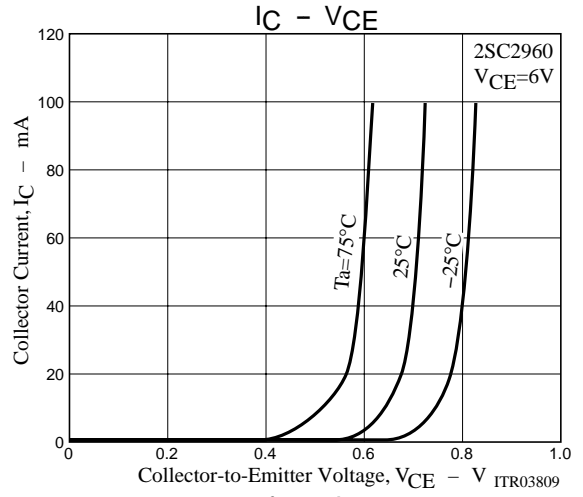
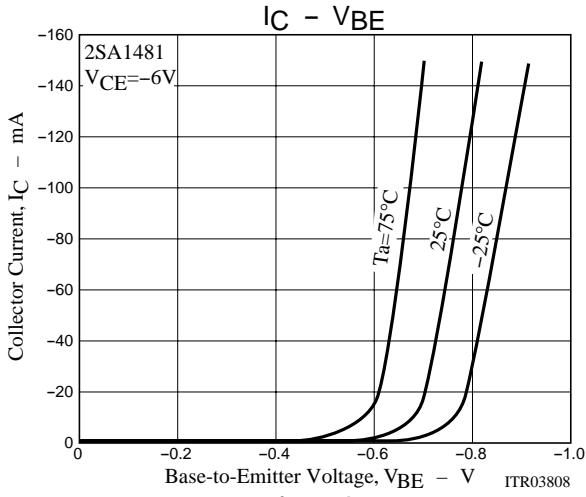
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		(-)0.1	(-)0.4	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)10mA, I_B=(-)1mA$		(-)0.75	(-)1.1	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5			V
Delay Time	$t_d$	See specified Test Circuit		40	60	ns
Rise Time	$t_r$	See specified Test Circuit		80	130	ns
				(120)	(230)	ns
Storage Time	$t_{stg}$	See specified Test Circuit		230	450	ns
				(190)	(700)	ns
Fall Time	$t_f$	See specified Test Circuit		160	250	ns
				(240)	(390)	ns

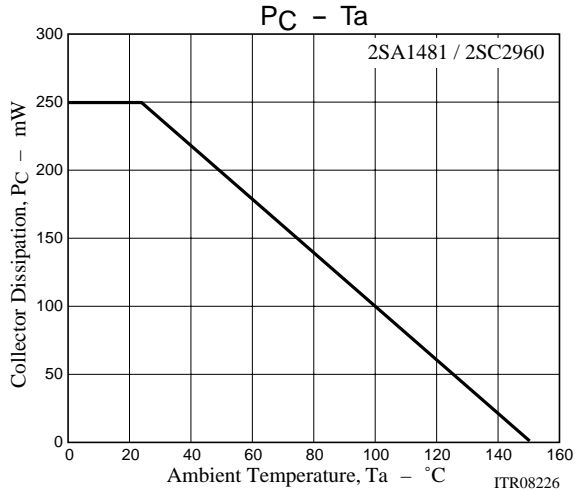
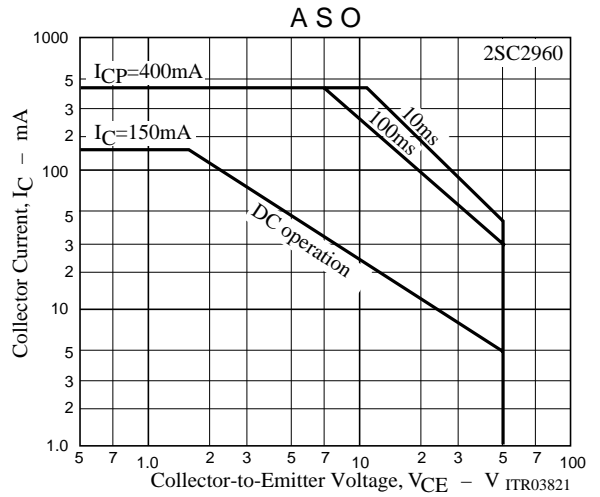
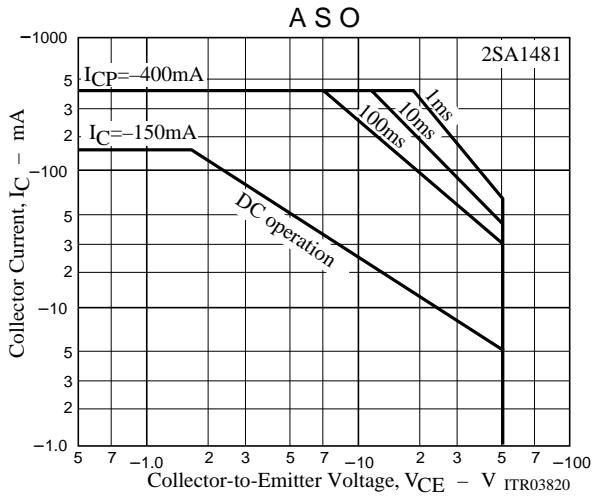
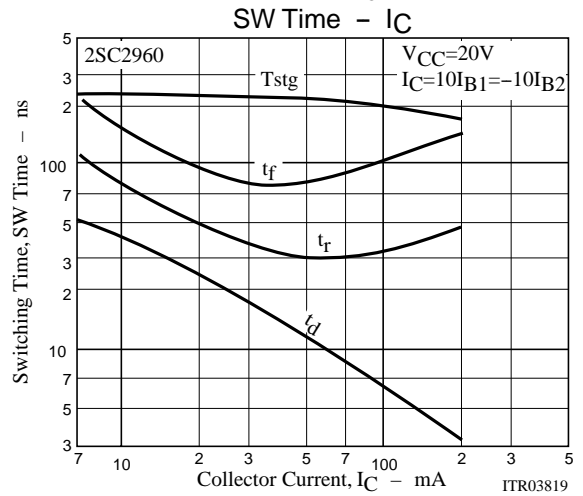
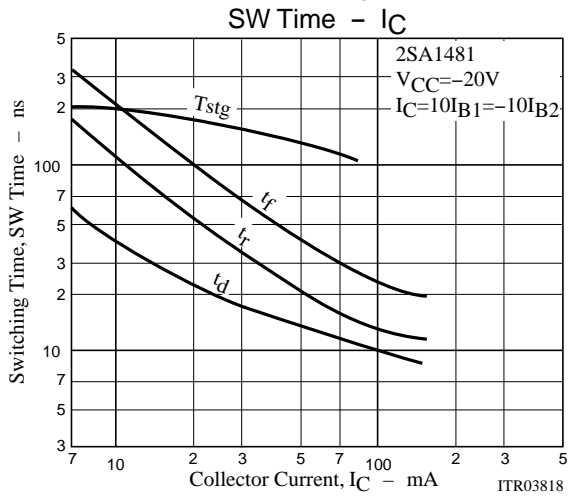
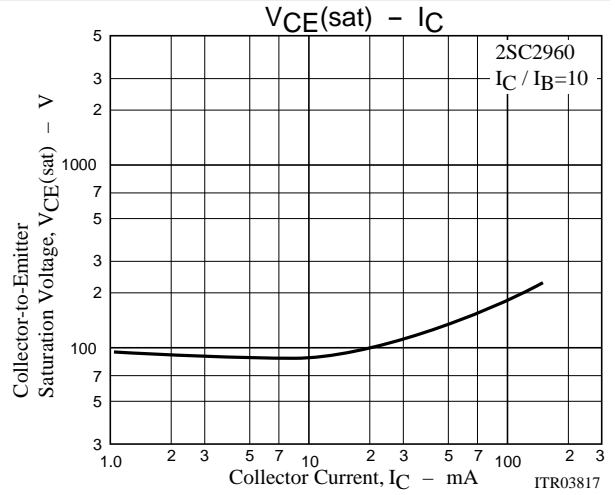
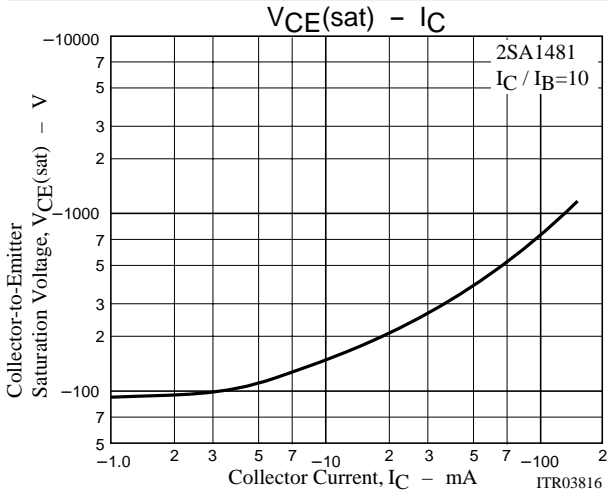
## Switching Time Test Circuit



# 2SA1481/2SC2960



# 2SA1481/2SC2960



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