



ON Semiconductor®

**ON Semiconductor**  
**DATA SHEET****SOP8501**PNP Epitaxial Planar Silicon Transistor  
NPN Triple Diffused Planar Silicon Transistor**High-Voltage Driver Applications****Features**

- High breakdown voltage. ( $V_{CE0} \geq 400V$ )
- Excellent  $h_{FE}$  linearity.

**Specifications****Absolute Maximum Ratings** at  $T_a = 25^\circ C$ 

Parameter	Symbol	Conditions	PNP	NPN	Unit
Collector-to-Base Voltage	$V_{CBO}$		-400	400	V
Collector-to-Emitter Voltage	$V_{CEO}$		-400	400	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	5	V
Collector Current	$I_C$		-1	0.2	A
Collector Current (Pulse)	$I_{CP}$		-2	0.4	A
Collector Dissipation	$P_C$	Mounted on a ceramic board (2000mm <sup>2</sup> ×0.8mm) 1unit	1.3		W
	$P_T$	Mounted on a ceramic board (2000mm <sup>2</sup> ×0.8mm) 1unit	1.6		W
Junction Temperature	$T_J$		150		°C
Storage Temperature	$T_{stg}$		-55 to +150		°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[PNP]						
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = -300V, I_E = 0$			-1.0	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = -4V, I_C = 0$			-1.0	μA
DC Current Gain	$h_{FE}$	$V_{CE} = -10V, I_C = -100mA$	40		200	
Gain-Bandwidth Product	$f_T$	$V_{CE} = -10V, I_C = -50mA$		50		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -200mA, I_B = -20mA$			-1.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -200mA, I_B = -20mA$			-1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu A, I_E = 0$	-400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1mA, R_{BE} = \infty$	-400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0$	-5			V
Output Capacitance	$C_{ob}$	$V_{CB} = -30V, f = 1MHz$		12		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit.		0.25		μs
Storage Time	$t_{stg}$	See specified Test Circuit.		3.0		μs
Fall Time	$t_f$	See specified Test Circuit		0.3		μs

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# SOP8501

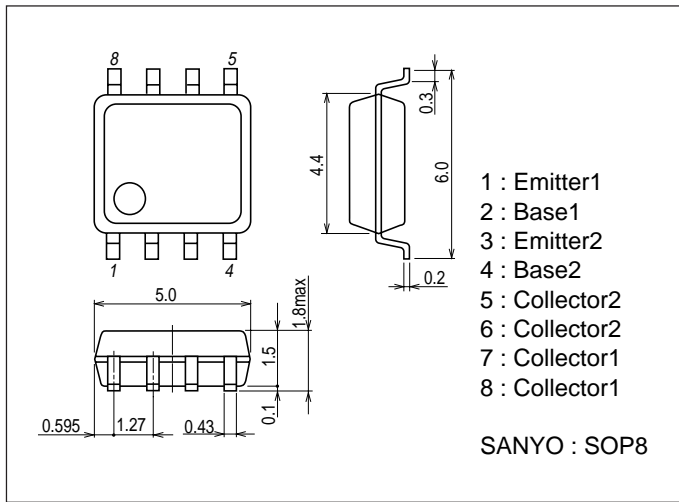
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[NPN]						
Collector Cutoff Current	$I_{CBO}$	$V_{CE}=300V, I_E=0$			1.0	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4V, I_C=0$			1.0	$\mu A$
DC Current Gain	$h_{FE}$	$V_{CE}=10V, I_C=50mA$	60		200	
Gain-Bandwidth Product	$f_T$	$V_{CE}=30V, I_C=10mA$		70		MHz
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=50mA, I_B=5mA$			0.6	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=50mA, I_B=5mA$			1.0	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	400			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	400			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Output Capacitance	$C_{ob}$	$V_{CE}=30V, f=1MHz$		4		pF
Reverse Transfer Capacitance	$C_{re}$	$V_{CE}=30V, f=1MHz$		3		pF
Turn-ON Time	$t_{on}$	See specified Test Circuit.		0.25		$\mu s$
Turn-OFF Time	$t_{off}$	See specified Test Circuit.		5.0		$\mu s$

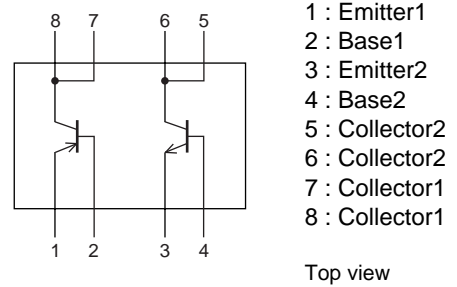
## Package Dimensions

unit : mm

2233

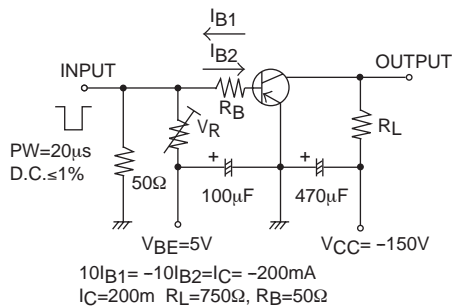


## Electrical Connection

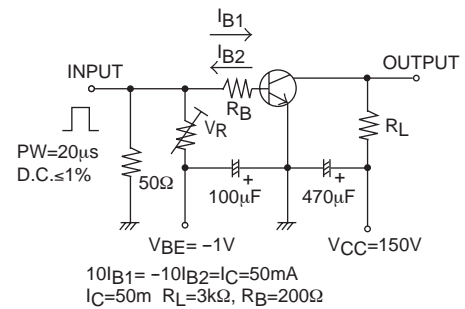


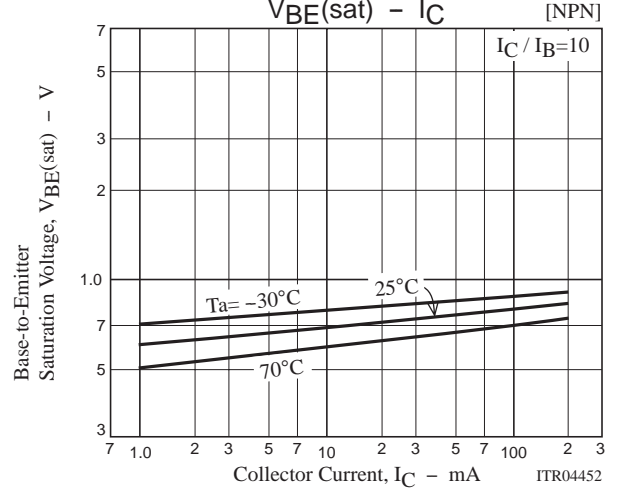
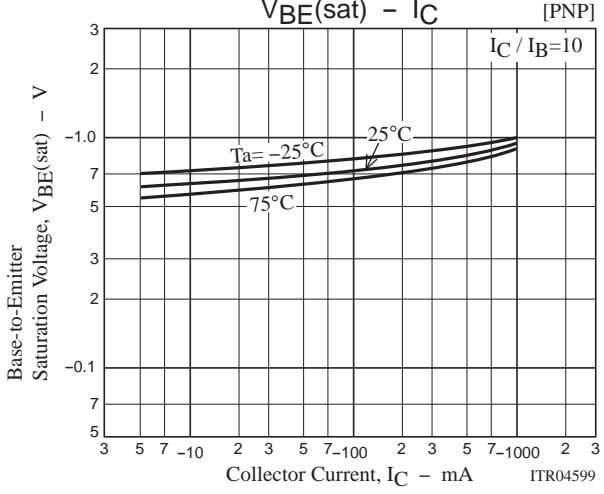
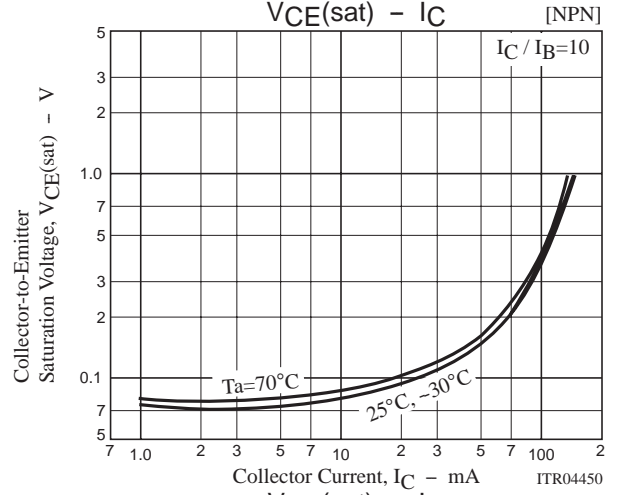
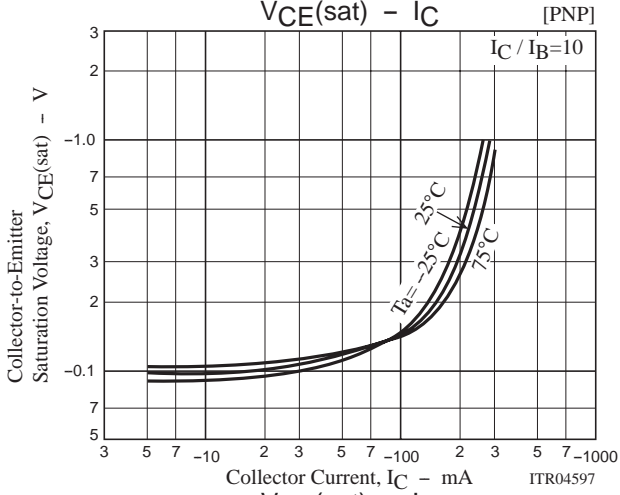
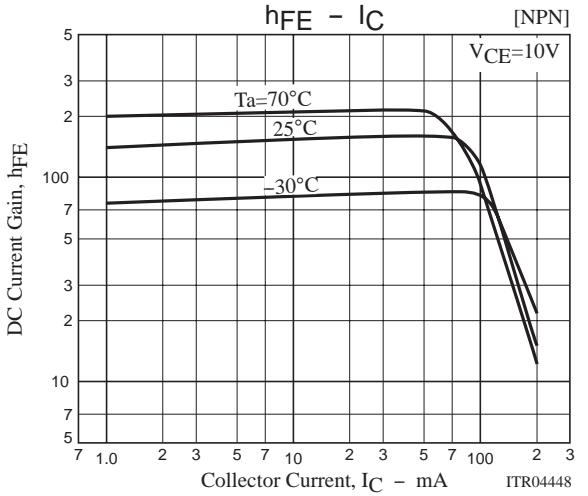
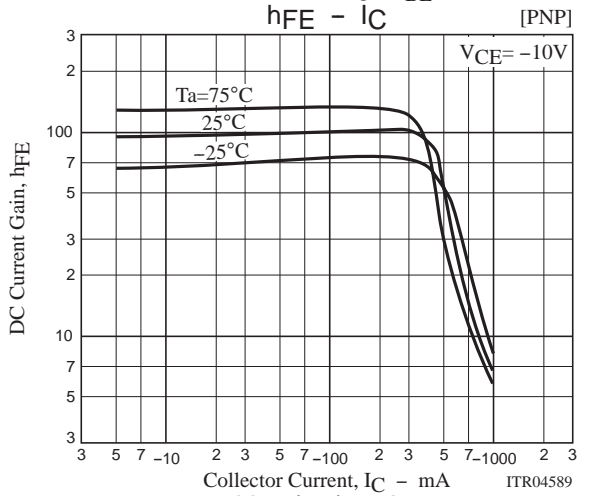
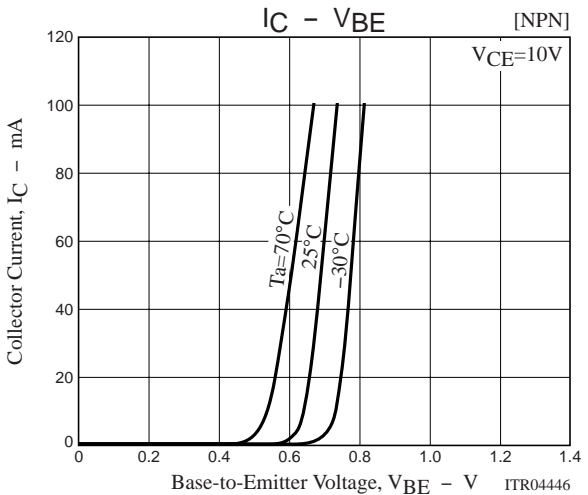
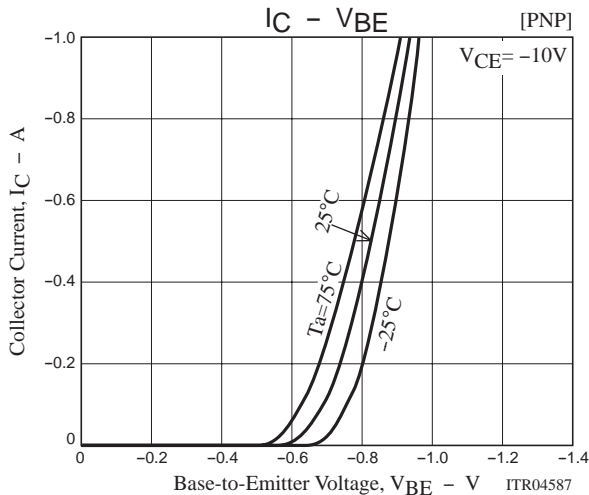
## Switching Time Test Circuit

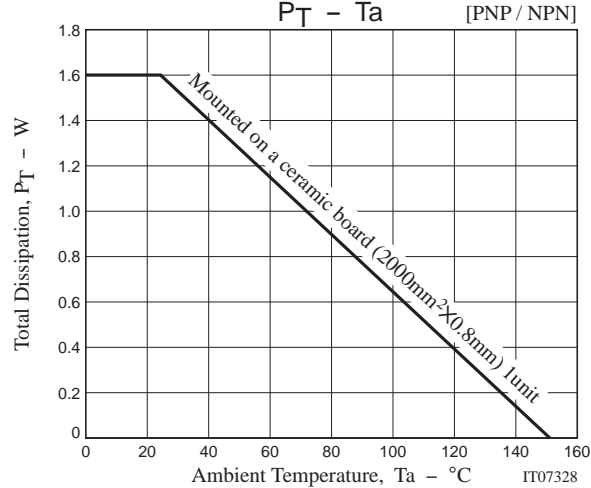
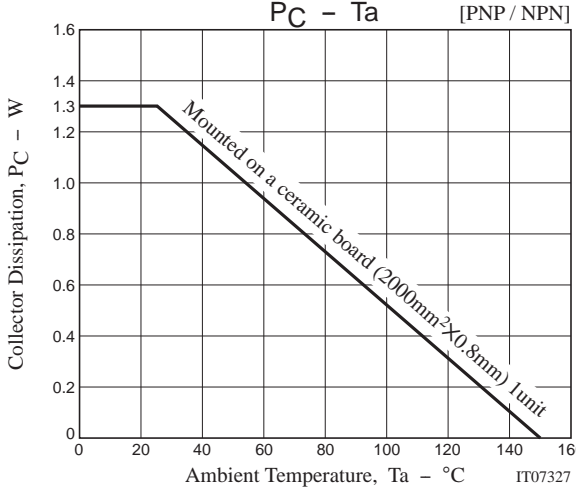
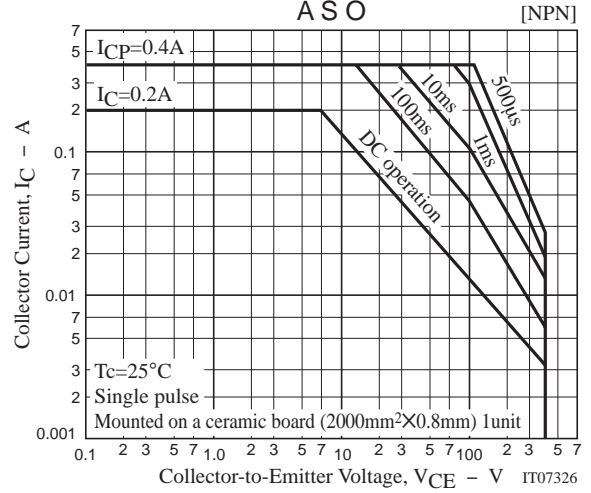
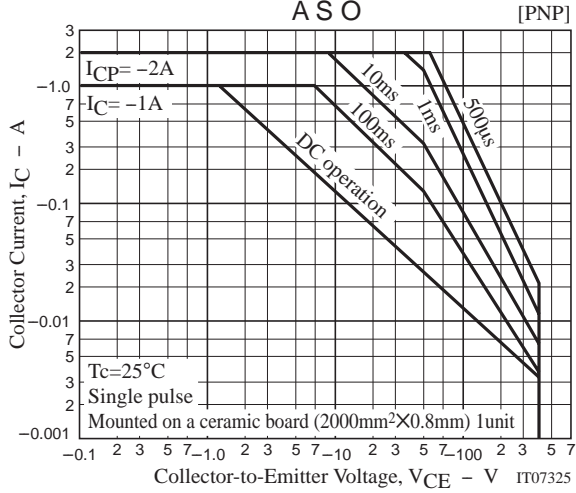
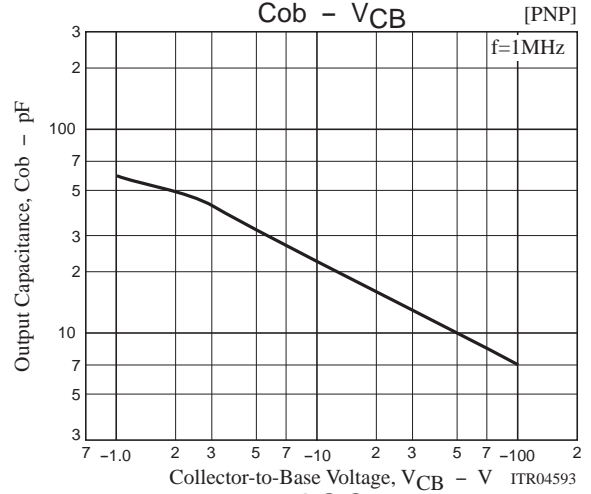
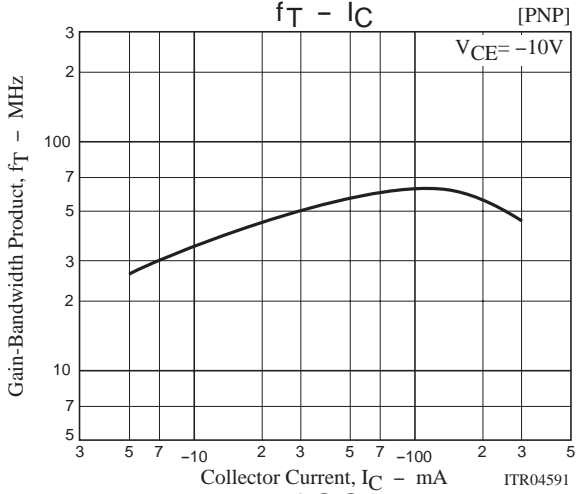
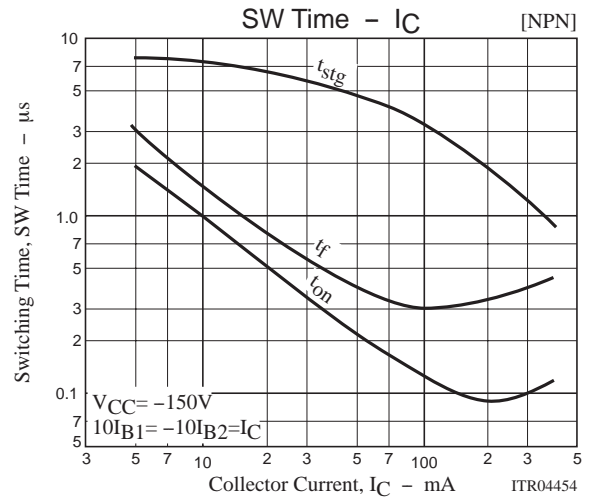
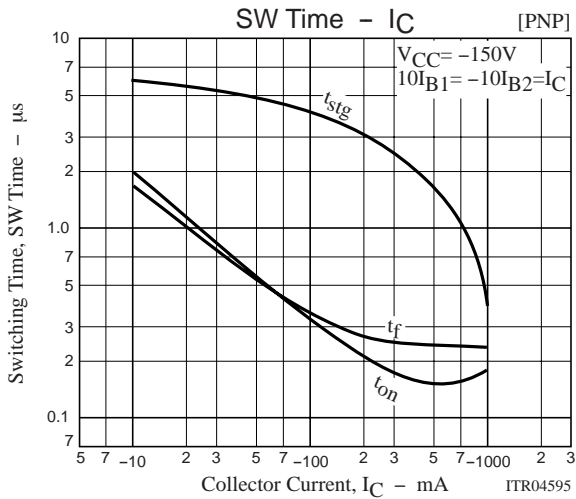
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