

# 2SB1508 / 2SD2281 — PNP / NPN Epitaxial Planar Silicon Transistors

## High-Current Switching Applications

### Applications

- Relay drivers, high-speed inverters, converters.

### Features

- Low collector-to-emitter saturation voltage:  $V_{CE(sat)} = -0.5V$  (PNP),  $0.4V$  (NPN) max.
- Wide ASO and highly resistant to breakdown.
- Micaless package facilitating easy mounting.

### Specifications ( ) : 2SB1508

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

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	$V_{EBO}$		(-)6	V
Collector Current	$I_C$		(-)12	A
Collector Current (Pulse)	$I_{CP}$		(-)25	A
Collector Dissipation	$P_C$		3.0	W
		$T_c = 25^\circ C$	45	W
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB} = (-)40V, I_E = 0A$			(-)0.1	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0A$			(-)0.1	mA
DC Current Gain	$h_{FE1}$	$V_{CE} = (-)2V, I_C = (-)1A$	70*		280*	
	$h_{FE2}$	$V_{CE} = (-)2V, I_C = (-)5A$	30			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)5V, I_C = (-)1A$		10		MHz

Continued on next page.

\* : The 2SBB1508 / 2SD2281 are classified by  $1A h_{FE}$  as follows :

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

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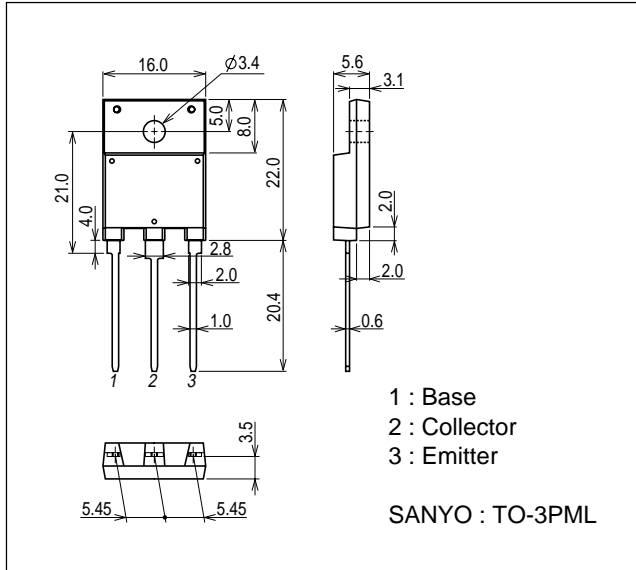
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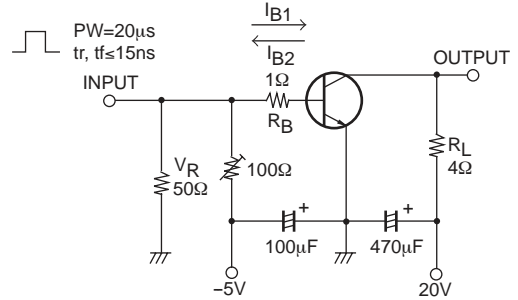
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)6A, I_B = (-)0.3A$			(-0.5)0.4	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)1mA, I_E = 0A$	(-)60			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)50			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)1mA, I_C = 0A$	(-)6			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		(0.2)0.1		$\mu s$
Storage Time	$t_{stg}$	See specified Test Circuit.		(0.4)1.2		$\mu s$
Fall Time	$t_f$	See specified Test Circuit.		(0.1)0.5		$\mu s$

## Package Dimensions

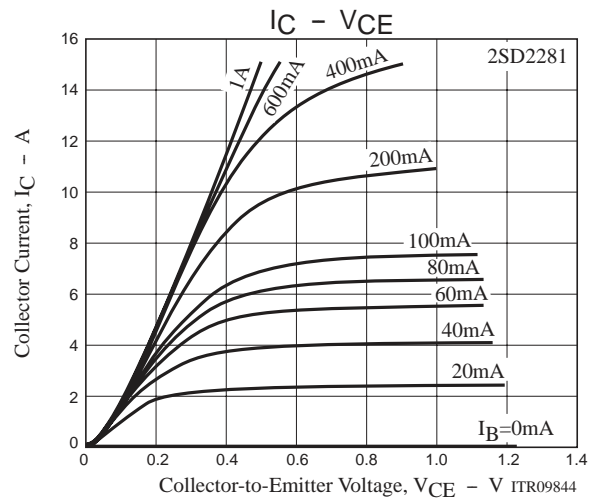
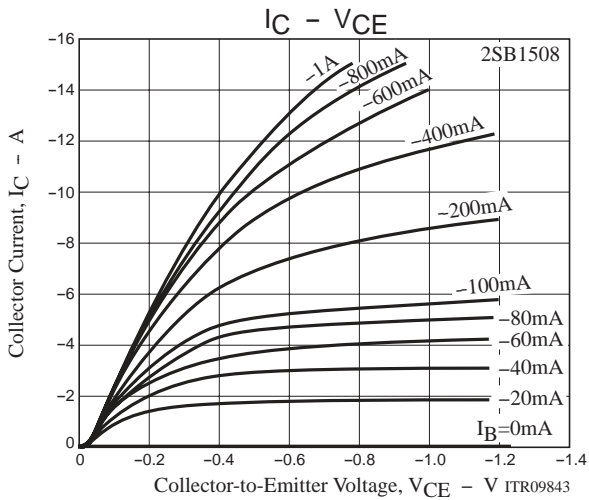
unit : mm (typ)  
7505-002



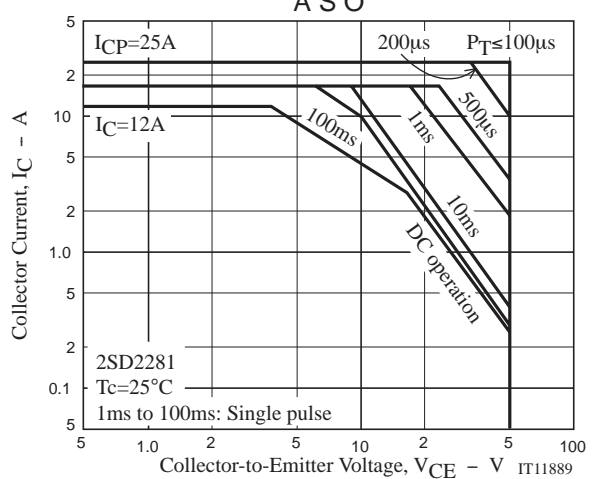
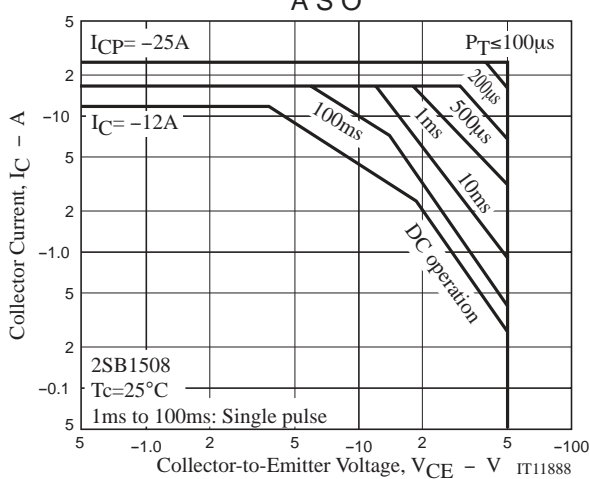
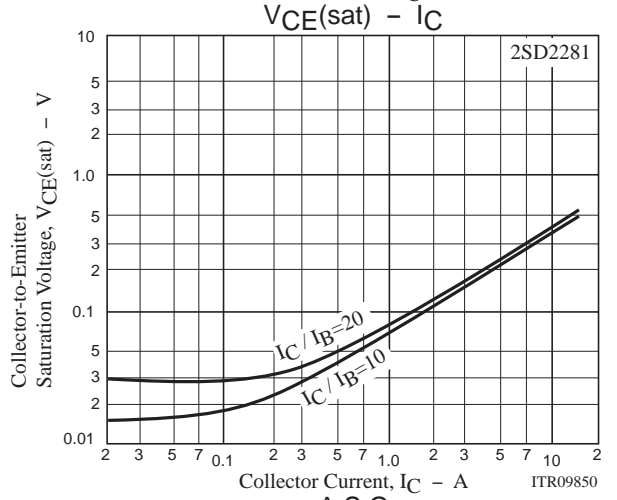
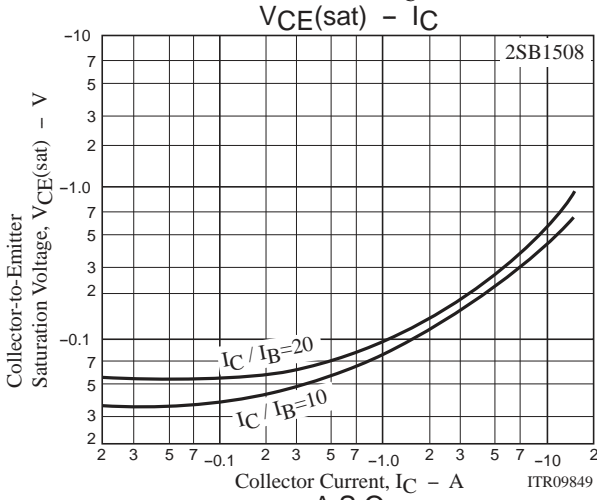
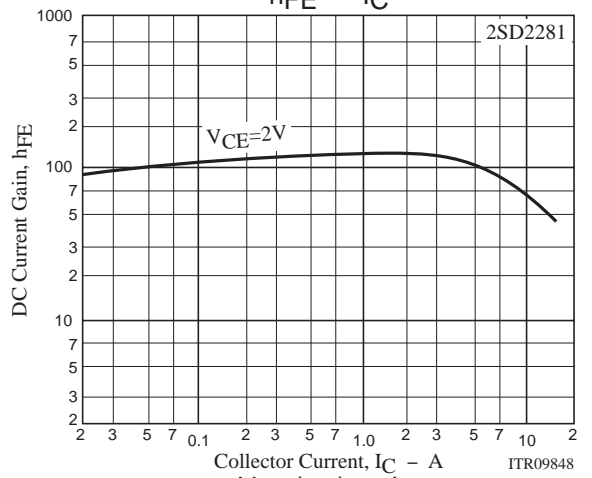
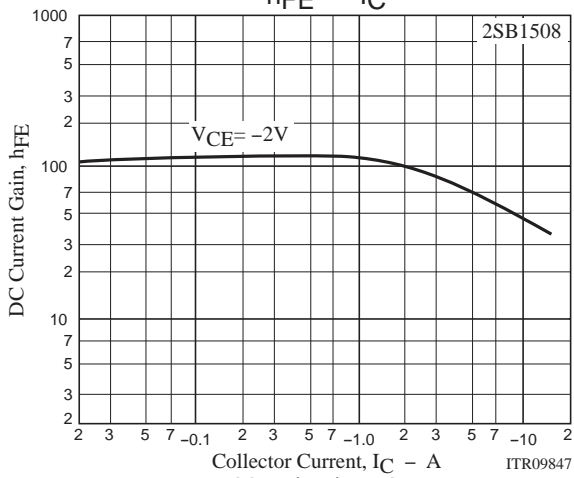
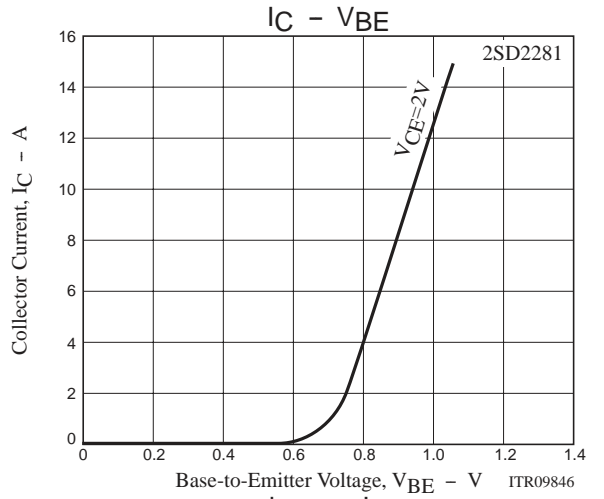
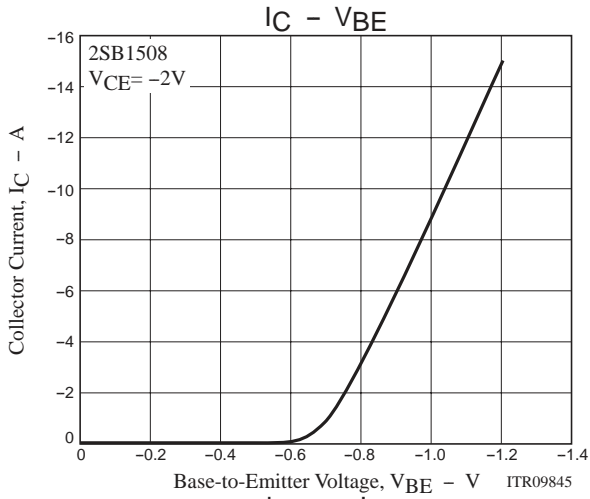
## Switching Time Test Circuit

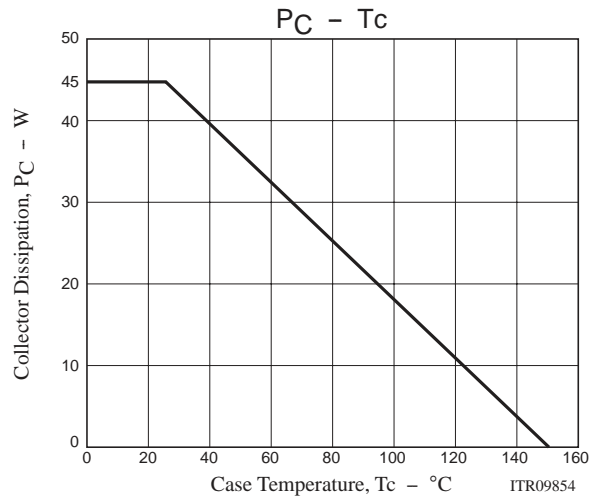
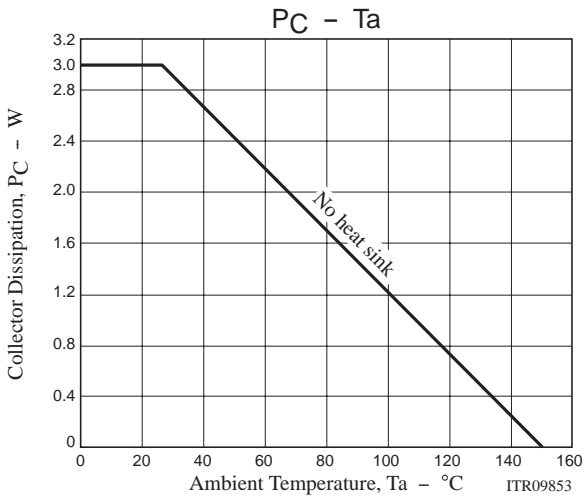


$10I_{B1} = -10I_{B2} = I_C = 5A$   
For PNP, the polarity is reversed.



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