

PNP SILICON EPITAXIAL POWER TRANSISTOR  
FOR HIGH-SPEED SWITCHING

The 2SB1453 is a power transistor that can directly drive from the IC output. This transistor is ideal for motor drivers and solenoid drivers in such as OA and FA equipment.

In addition, a small resin-molded insulation type package contributes to high-density mounting and reduction of mounting cost.

FEATURES

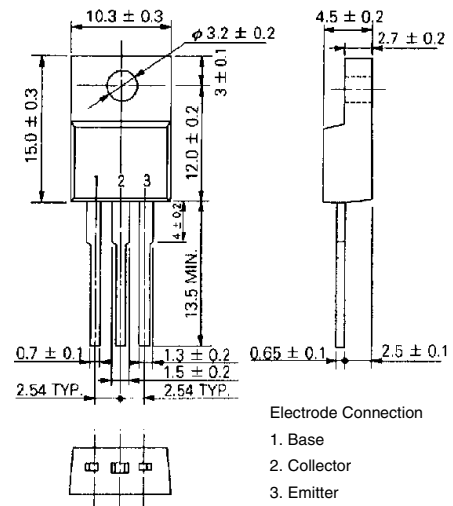
- High DC current amplifier ratio  
 $h_{FE} \geq 100$  ( $V_{CE} = -5\text{ V}$ ,  $I_C = -0.5\text{ A}$ )
- Mold package that does not require an insulating board or insulation bushing

ABSOLUTE MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Ratings	Unit
Collector to base voltage	$V_{CBO}$	-60	V
Collector to emitter voltage	$V_{CEO}$	-60	V
Emitter to base voltage	$V_{EBO}$	-7.0	V
Collector current (DC)	$I_{C(DC)}$	-3.0	A
Collector current (pulse)	$I_{C(pulse)^*}$	-6.0	A
Base current (DC)	$I_{B(DC)}$	-1.0	A
Total power dissipation	$P_T$ ( $T_C = 25^\circ\text{C}$ )	25	W
Total power dissipation	$P_T$ ( $T_a = 25^\circ\text{C}$ )	2.0	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

\*  $PW \leq 10\text{ ms}$ , duty cycle  $\leq 50\%$

PACKAGE DRAWING (UNIT: mm)



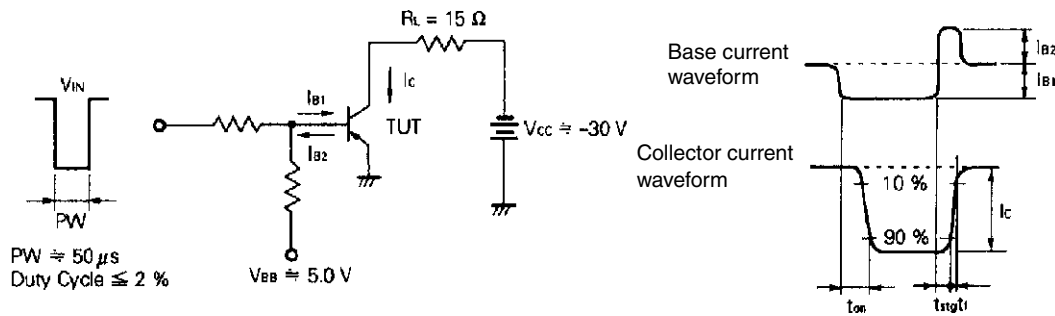
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**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

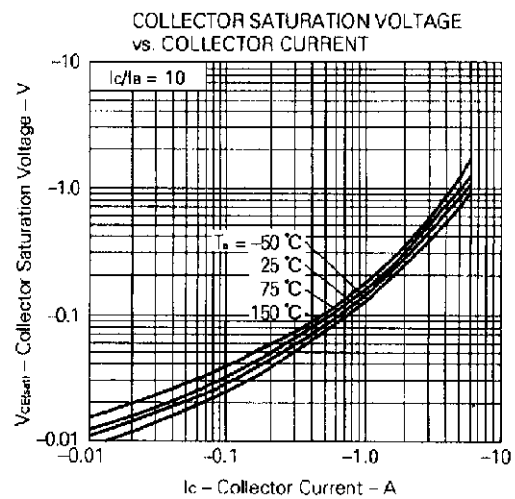
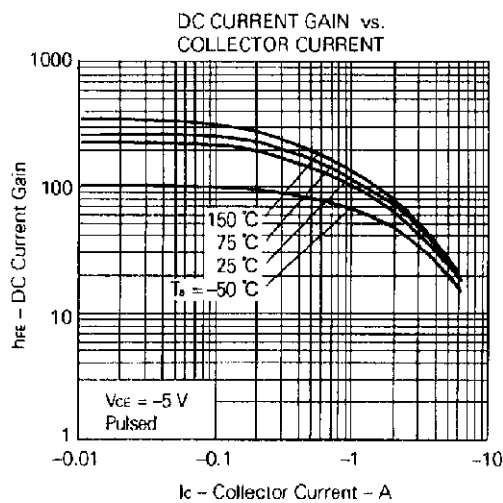
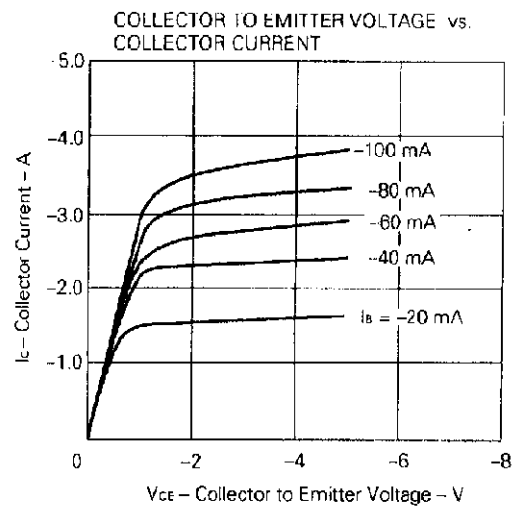
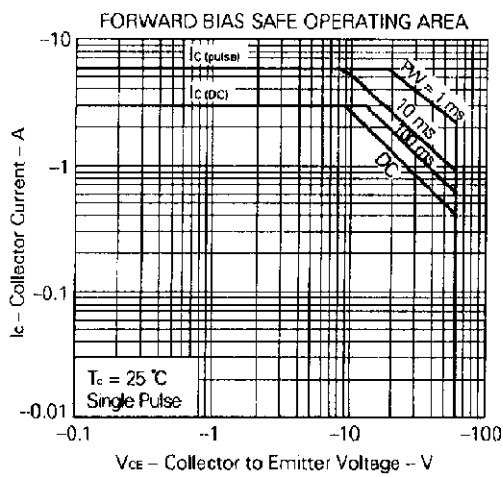
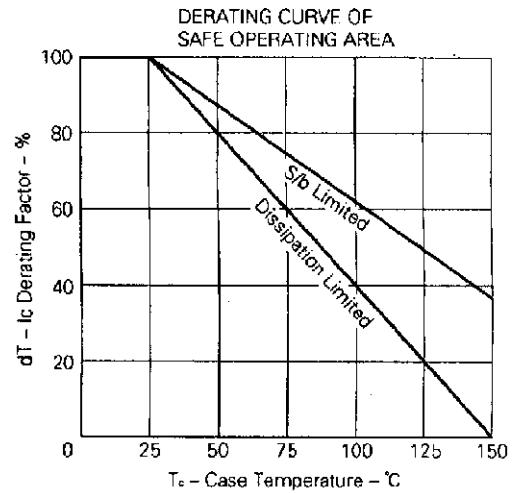
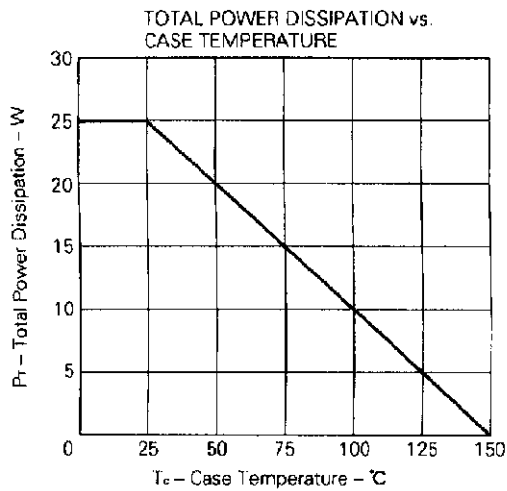
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	$I_{CBO}$	$V_{CB} = -60\text{ V}, I_E = 0$			-10	$\mu\text{A}$
DC current gain	$h_{FE1}^{**}$	$V_{CE} = -5.0\text{ V}, I_C = -0.5\text{ A}$	100		400	-
DC current gain	$h_{FE2}^{**}$	$V_{CE} = -5\text{ V}, I_C = -3\text{ A}$	20			-
Collector saturation voltage	$V_{CE(sat)}^{**}$	$I_C = -3.0\text{ A}, I_B = -300\text{ mA}$			-1.0	V
Base saturation voltage	$V_{BE(sat)}^{**}$	$I_C = -3.0\text{ A}, I_B = -300\text{ mA}$			-2.0	V
Gain bandwidth product	$f_T$	$V_{CE} = -5.0\text{ V}, I_C = -0.5\text{ A}$		5		MHz
Collector capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1.0\text{ MHz}$		80		pF
Turn-on time	$t_{on}$	$I_C = -2.0\text{ A}, I_{B1} = -I_{B2} = -200\text{ mA},$ $R_L = 15\ \Omega, V_{CC} \cong -30\text{ V}$ Refer to the test circuit.		0.4		$\mu\text{s}$
Storage time	$t_{stg}$			1.7		$\mu\text{s}$
Fall time	$t_f$			0.5		$\mu\text{s}$

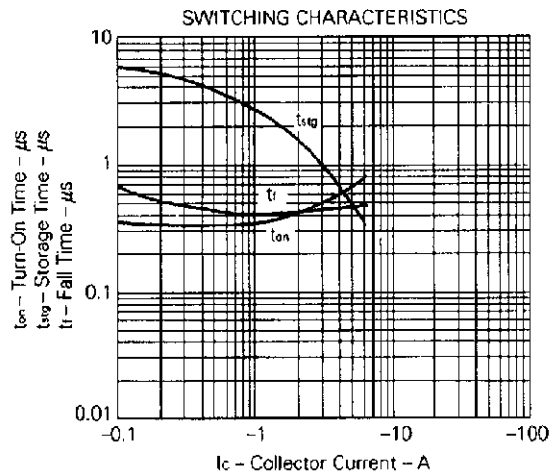
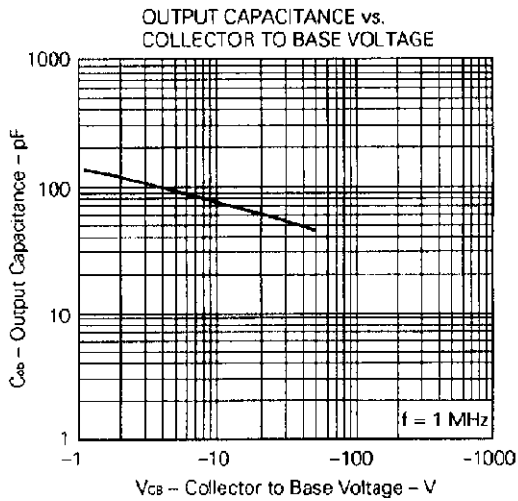
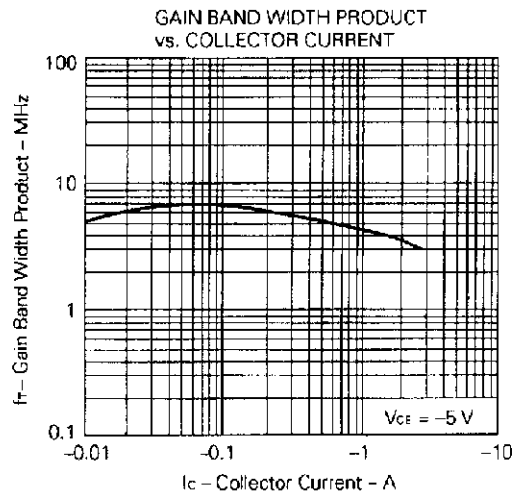
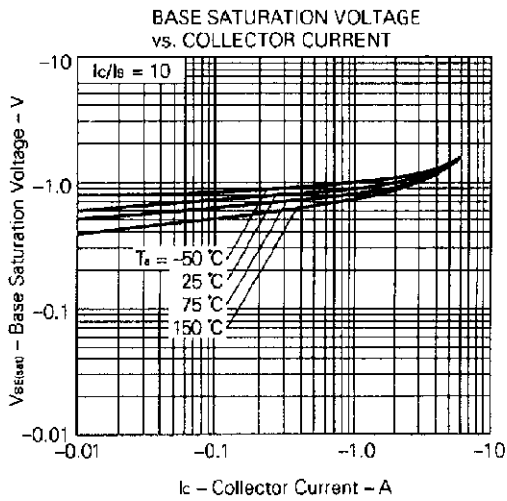
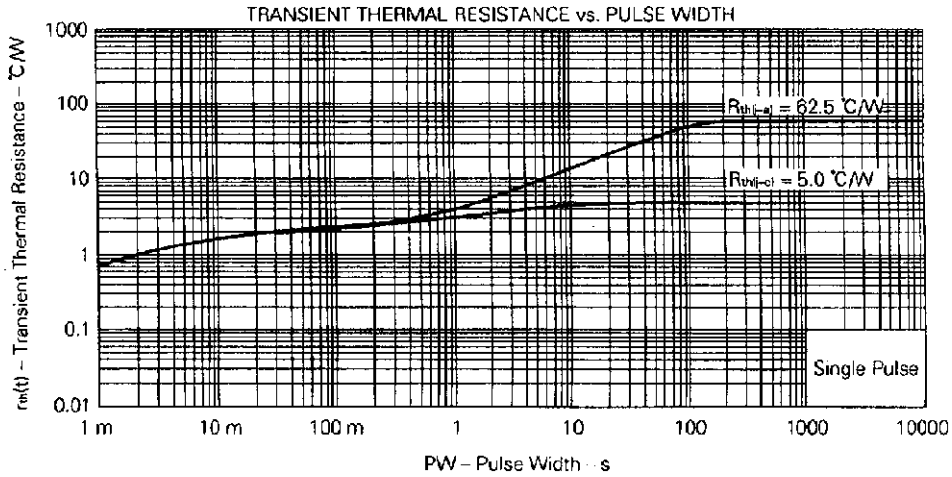
\*\* Pulse test  $PW \leq 350\ \mu\text{s}$ , duty cycle  $\leq 2\%$

**SWITCHING TIME ( $t_{on}$ ,  $t_{stg}$ ,  $t_f$ ) TEST CIRCUIT**



TYPICAL CHARACTERISTICS (Ta = 25°C)





[MEMO]

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