

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

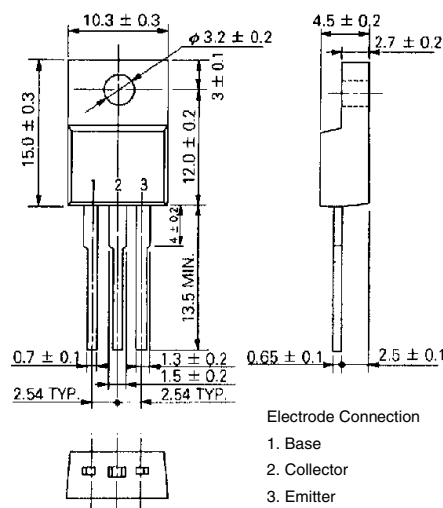
- High DC current amplifier ratio
 $h_{FE} \geq 100$ ($V_{CE} = -5\text{ V}$, $I_C = -0.5\text{ A}$)
- Mold package that does not require an insulating board or insulation bushing

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)



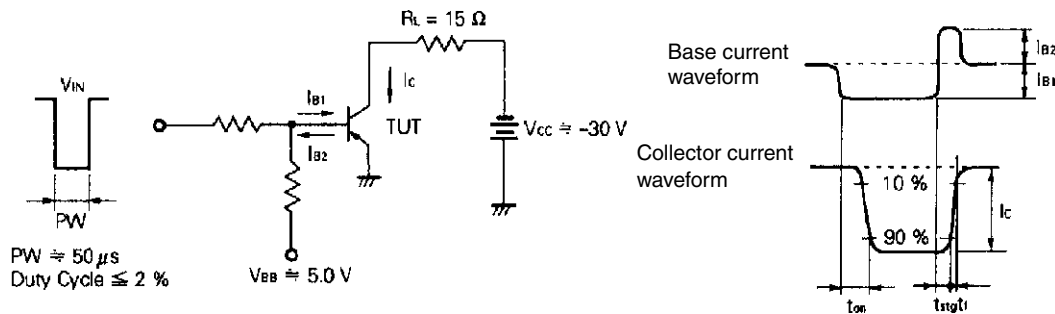
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

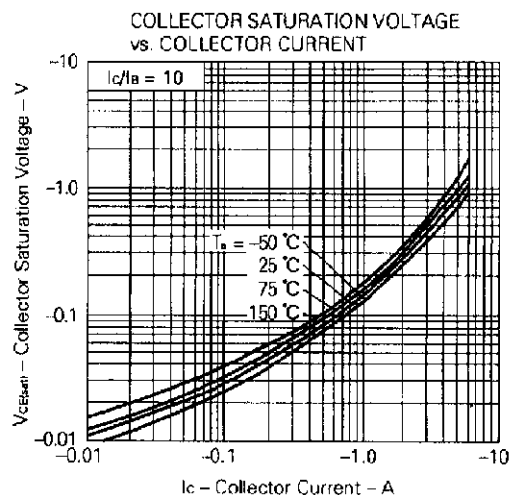
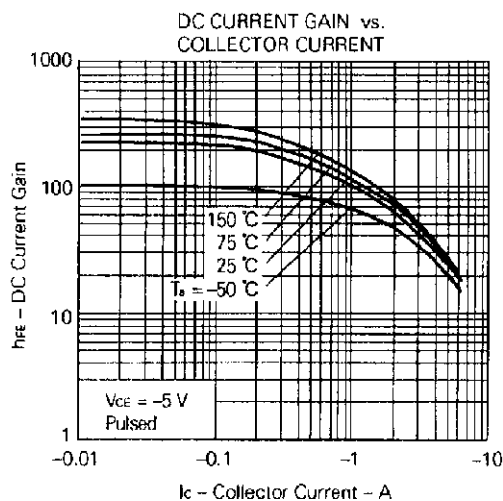
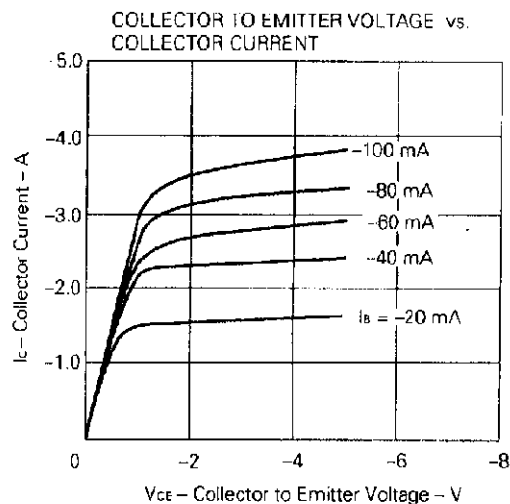
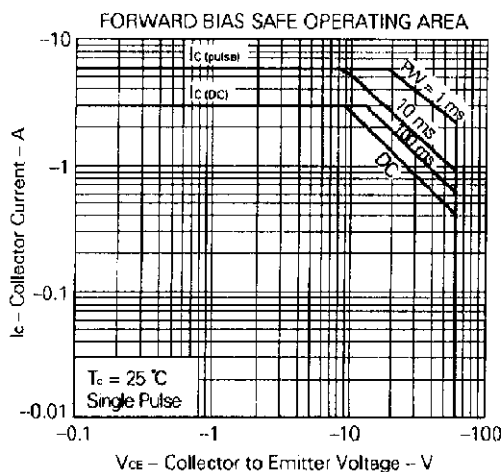
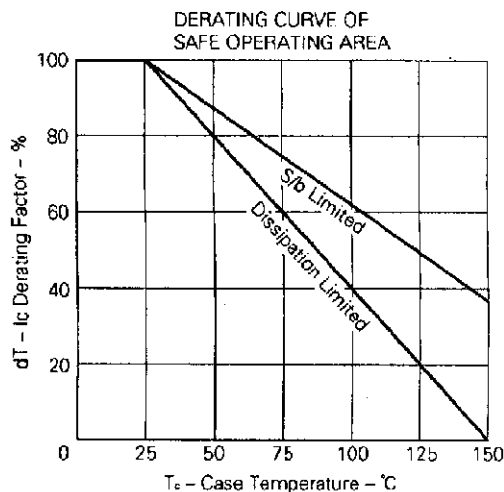
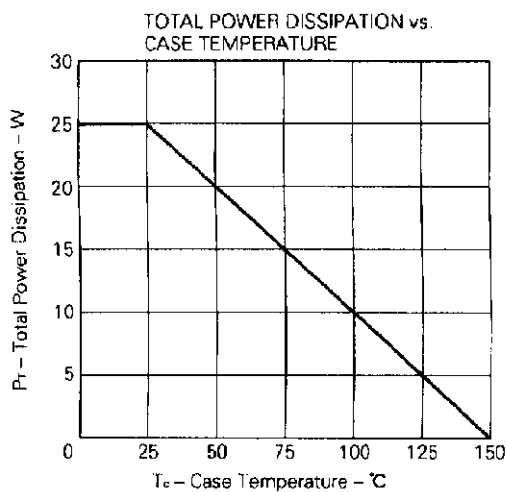
Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Collector cutoff current	I_{CBO}	$V_{CB} = -60\text{ V}$, $I_E = 0$			-10	μA
DC current gain	h_{FE1}^{**}	$V_{CE} = -5.0\text{ V}$, $I_C = -0.5\text{ A}$	100		400	—
DC current gain	h_{FE2}^{**}	$V_{CE} = -5\text{ V}$, $I_C = -3\text{ A}$	20			—
Collector 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		μs
Storage time	t_{stg}			1.7		μs
Fall time	t_f			0.5		μs

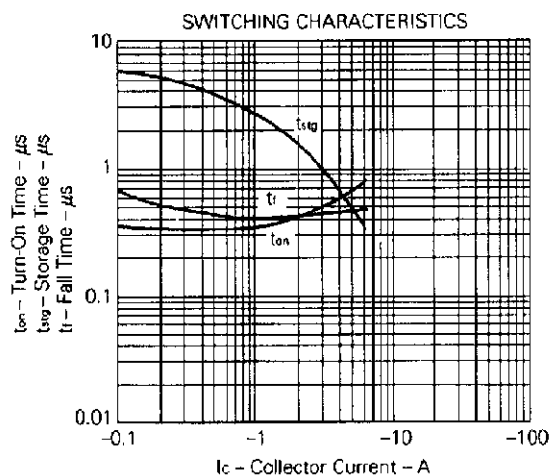
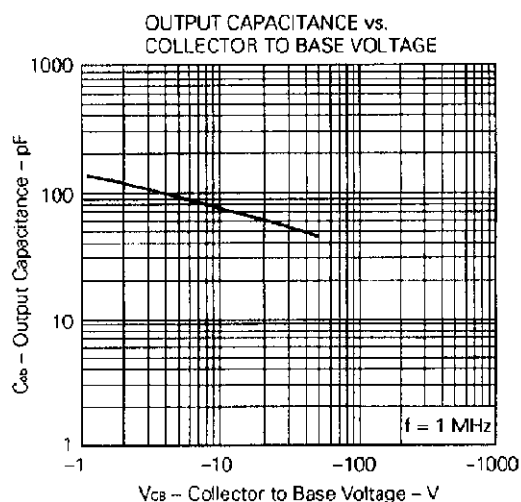
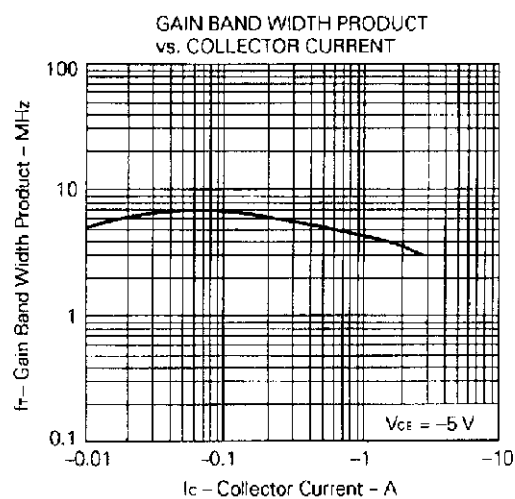
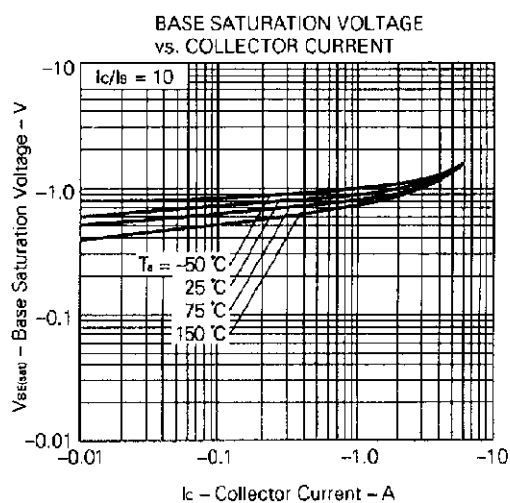
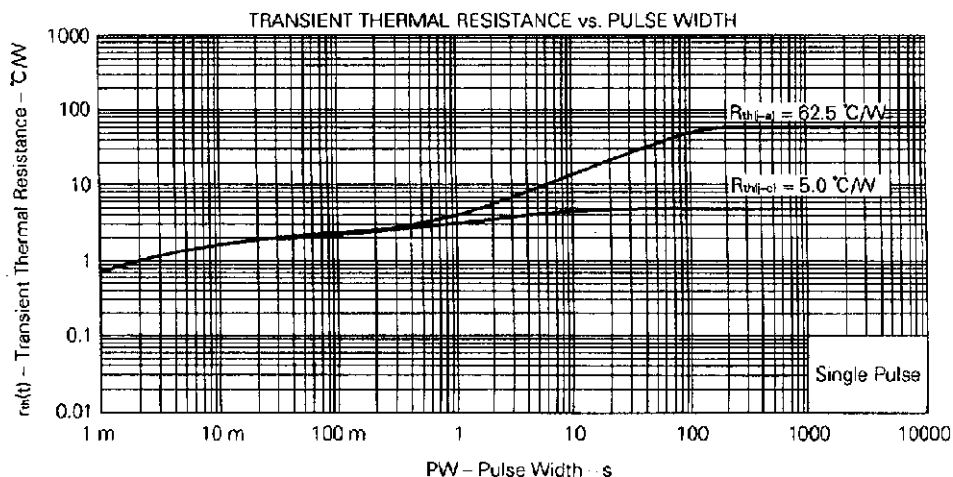
** Pulse test $PW \leq 350\ \mu\text{s}$, duty cycle $\leq 2\%$

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



TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)





[MEMO]

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