

PNP high-voltage transistors**2N5400; 2N5401****FEATURES**

- Low current (max. 300 mA)
- High voltage (max. 150 V).

APPLICATIONS

- General purpose switching and amplification
- Telephony applications.

DESCRIPTION

PNP high-voltage transistor in a TO-92; SOT54 plastic package. NPN complements: 2N5550 and 2N5551.

PINNING

PIN	DESCRIPTION
1	collector
2	base
3	emitter

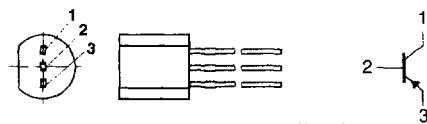


Fig.1 Simplified outline (TO-92; SOT54)
and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage 2N5400	open emitter	—	-130	V
	2N5401			-160	V
V_{CEO}	collector-emitter voltage 2N5400	open base	—	-120	V
	2N5401			-150	V
I_{CM}	peak collector current		—	-600	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25^\circ C$	—	630	mW
h_{FE}	DC current gain 2N5400	$I_C = 10 \text{ mA}; V_{CE} = -5 \text{ V}$	40	—	
	2N5401		60	—	
f_T	transition frequency 2N5400	$I_C = -10 \text{ mA}; V_{CE} = -10 \text{ V}; f = 100 \text{ MHz}$	100	400	MHz
	2N5401		100	300	MHz

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LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage 2N5400	open emitter	–	–130	V
	2N5401			–160	V
V_{CEO}	collector-emitter voltage 2N5400	open base	–	–120	V
	2N5401			–150	V
V_{EBO}	emitter-base voltage	open collector	–	–5	V
I_C	collector current (DC)		–	–300	mA
I_{CM}	peak collector current		–	–600	mA
I_{BM}	peak base current		–	–100	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25^\circ\text{C}$	–	630	mW
T_{stg}	storage temperature		–65	+150	$^\circ\text{C}$
T_j	junction temperature		–	150	$^\circ\text{C}$
T_{amb}	operating ambient temperature		–65	+150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	200	K/W

Note

- Transistor mounted on an FR4 printed-circuit board.

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CHARACTERISTICS

 $T_{amb} = 25^\circ\text{C}$ unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector cut-off current 2N5400	$I_E = 0; V_{CB} = -100 \text{ V}$	-	-100	nA
		$I_E = 0; V_{CB} = -100 \text{ V}; T_{amb} = 100^\circ\text{C}$	-	-100	μA
I_{CBO}	collector cut-off current 2N5401	$I_E = 0; V_{CB} = -120 \text{ V}$	-	-50	nA
		$I_E = 0; V_{CB} = -120 \text{ V}; T_{amb} = 100^\circ\text{C}$	-	-50	μA
I_{EBO}	emitter cut-off current	$I_C = 0; V_{EB} = -4 \text{ V}$	-	-50	nA
h_{FE}	DC current gain 2N5400 2N5401	$I_C = -1 \text{ mA}; V_{CE} = -5 \text{ V}$; see Fig.2	30	-	
			50	-	
h_{FE}	DC current gain 2N5400 2N5401	$I_C = -10 \text{ mA}; V_{CE} = -5 \text{ V}$; see Fig.2	40	180	
			60	240	
h_{FE}	DC current gain 2N5400 2N5401	$I_C = -50 \text{ mA}; V_{CE} = -5 \text{ V}$; see Fig.2	40	-	
			50	-	
V_{CEsat}	collector-emitter saturation voltage	$I_C = -10 \text{ mA}; I_B = -1 \text{ mA}$	-	-200	mV
		$I_C = -50 \text{ mA}; I_B = -5 \text{ mA}$	-	-500	mV
C_c	collector capacitance	$I_E = i_e = 0; V_{CB} = -10 \text{ V}; f = 1 \text{ MHz}$	-	6	pF
f_T	transition frequency 2N5400 2N5401	$I_C = -10 \text{ mA}; V_{CE} = -10 \text{ V}; f = 100 \text{ MHz}$	100	400	MHz
			100	300	MHz
F	noise figure	$I_C = -200 \mu\text{A}; V_{CE} = -5 \text{ V}; R_S = 2 \text{ k}\Omega; f = 10 \text{ Hz to } 15.7 \text{ kHz}$	-	8	pF

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