

NPN high voltage transistor

MPSA44; MPSA45

FEATURES

- High voltage
- High current.

DESCRIPTION

High voltage NPN transistor in a SOT54 (TO-92) package, especially suitable for use in telecommunications applications.

PINNING - SOT54

PIN	DESCRIPTION
1	collector
2	base
3	emitter

PIN CONFIGURATION

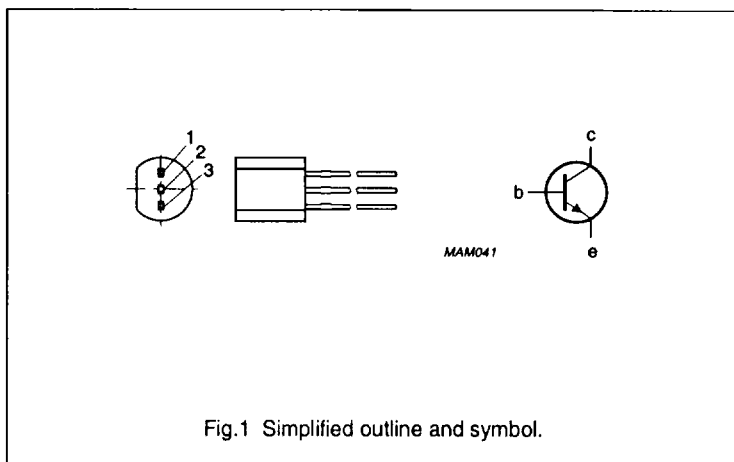


Fig.1 Simplified outline and symbol.

QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_{CBO}	collector-base voltage	open emitter	—	500	V
	MPSA44		—	400	V
	MPSA45		—	400	V
V_{CEO}	collector-emitter voltage	open base	—	400	V
	MPSA44		—	350	V
	MPSA45		—	350	V
$V_{CE(sat)}$	collector-emitter saturation voltage	$I_C = 50\text{ mA}; I_B = 5\text{ mA}$	—	750	mV
h_{FE}	DC current gain	$I_C = 100\text{ mA}; V_{CE} = 10\text{ V}$	40	—	
I_C	DC collector current		—	300	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ °C}$	—	625	mW

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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	open emitter	—	500	V
	MPSA44		—	400	V
	MPSA45		—	400	V
V_{CEO}	collector-emitter voltage	open base	—	400	V
	MPSA44		—	350	V
	MPSA45		—	350	V
V_{EBO}	emitter-base voltage	open collector	—	6	V
I_C	DC collector current		—	300	mA
P_{tot}	total power dissipation	up to $T_{amb} = 25\text{ °C}$;	—	625	mW
T_{stg}	storage temperature		−65	150	°C
T_j	junction temperature		—	150	°C
T_{amb}	operating ambient temperature		−65	150	°C

THERMAL RESISTANCE

SYMBOL	PARAMETER	CONDITIONS	THERMAL RESISTANCE
$R_{th\ j-a}$	thermal resistance from junction to ambient	in free air	max. 200 K/W

CHARACTERISTICS

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

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$V_{(BR)CBO}$	collector-base breakdown voltage	open emitter; $I_C = 100\text{ }\mu\text{A}$; $I_E = 0$	500	—	V
	MPSA44		400	—	V
	MPSA45		400	—	V
$V_{(BR)CEO}$	collector-emitter breakdown voltage	open base; $I_C = 1\text{ mA}$; $I_B = 0$ (note 1)	400	—	V
	MPSA44		350	—	V
	MPSA45		350	—	V
$V_{(BR)CES}$	collector-emitter breakdown voltage	$R_{BE} = 0$; $I_C = 100\text{ }\mu\text{A}$; $V_{BE} = 0$	500	—	V
	MPSA44		400	—	V
	MPSA45		400	—	V
$V_{(BR)EBO}$	emitter-base breakdown voltage	open collector; $I_E = 10\text{ }\mu\text{A}$; $I_C = 0$	6	—	V
$V_{CE(sat)}$	collector-emitter saturation voltage	$I_C = 1\text{ mA}$; $I_B = 0.1\text{ mA}$	—	0.4	V
		$I_C = 10\text{ mA}$; $I_B = 1\text{ mA}$	—	0.5	V
		$I_C = 50\text{ mA}$; $I_B = 5\text{ mA}$ (note 1)	—	750	mV
$V_{BE(sat)}$	base-emitter saturation voltage	$I_C = 10\text{ mA}$; $I_B = 1\text{ mA}$	—	750	mV

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
I_{CBO}	collector-base cut-off current MPSA44	$I_E = 0$; $V_{CB} = 400$ V	—	100	nA
		$I_E = 0$; $V_{CB} = 400$ V; $T_J = 150$ °C	—	10	µA
	MPSA45	$I_E = 0$; $V_{CB} = 320$ V	—	100	nA
		$I_E = 0$; $V_{CB} = 320$ V; $T_J = 150$ °C	—	10	µA
I_{EBO}	emitter-base cut-off current	$I_C = 0$; $V_{EB} = 4$ V	—	100	nA
I_{CES}	collector-emitter cut-off current MPSA44 MPSA45	$V_{BE} = 0$; $V_{CE} = 400$ V	—	500	nA
		$V_{BE} = 0$; $V_{CE} = 320$ V	—	500	nA
h_{FE}	DC current gain	$I_C = 1$ mA; $V_{CE} = 10$ V	40	—	
		$I_C = 10$ mA; $V_{CE} = 10$ V	50	200	
		$I_C = 50$ mA; $V_{CE} = 10$ V (note 1)	45	—	
		$I_C = 100$ mA; $V_{CE} = 10$ V (note 1)	40	—	
f_T	transition frequency	$I_C = 10$ mA; $V_{CB} = 10$ V; $f = 100$ MHz	20	—	MHz
C_C	output capacitance	$I_E = 0$; $V_{CB} = 20$ V; $f = 1$ MHz	—	7	pF
C_e	input capacitance	$I_C = 0$; $V_{EB} = 0.5$ V; $f = 1$ MHz	—	180	pF

Note

1. Pulse test : $t_p \leq 300$ µs; $\delta \leq 0.02$.