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## MPSA44 Silicon NPN Transistor High Voltage

### Absolute Maximum Ratings:

Collector–Emitter Voltage, $V_{CEO}$ .....	400V
Collector–Base Voltage, $V_{CBO}$ .....	500V
Emitter–Base Voltage, $V_{EBO}$ .....	6V
Continuous Collector Current, $I_C$ .....	300mA
Total Device Dissipation ( $T_A = 25^\circ\text{C}$ ), $P_D$ .....	625mW
Derate Above $25^\circ\text{C}$ .....	5mW/ $^\circ\text{C}$
Total Device Dissipation ( $T_C = 25^\circ\text{C}$ ), $P_D$ .....	1.5W
Derate Above $25^\circ\text{C}$ .....	12mW/ $^\circ\text{C}$
Operating Junction Temperature Range, $T_J$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Storage Temperature Range, $T_{stg}$ .....	$-55^\circ$ to $+150^\circ\text{C}$
Thermal Resistance, Junction–to–Case, $R_{thJC}$ .....	83.3 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Ambient, $R_{thJA}$ .....	200 $^\circ\text{C}/\text{W}$

### Electrical Characteristics: ( $T_A = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1.0\text{mA}$ , $I_B = 0$ , Note 1	400	–	–	V
	$V_{(BR)CES}$	$I_C = 100\leq\text{A}$ , $V_{BE} = 0$	500	–	–	V
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -100\leq\text{A}$ , $I_E = 0$	500	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\leq\text{A}$ , $I_C = 0$	6.0	–	–	V
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 400\text{V}$ , $I_E = 0$	–	–	0.1	$\leq\text{A}$
	$I_{CES}$	$V_{CE} = 400\text{V}$ , $V_{BE} = 0$	–	–	500	nA
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 10\text{V}$ , $I_C = 1\text{mA}$	40	–	–	
		$V_{CE} = 10\text{V}$ , $I_C = 10\text{mA}$	50	–	200	
		$V_{CE} = 10\text{V}$ , $I_C = 50\text{mA}$	45	–	–	
		$V_{CE} = 10\text{V}$ , $I_C = 100\text{mA}$	40	–	–	
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{mA}$ , $I_B = 0.1\text{mA}$	–	–	0.4	V
		$I_C = 10\text{mA}$ , $I_B = 1.0\text{mA}$	–	–	0.5	V
		$I_C = 50\text{mA}$ , $I_B = 5.0\text{mA}$	–	–	0.75	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}$ , $I_B = 1\text{mA}$	–	–	0.75	V

Note 1. Pulse Test: Pulse Width  $\leq 300\leq\text{s}$ , Duty Cycle  $\leq 2\%$ .

**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Small Signal Characteristics</b>						
Output Capacitance	$C_{obo}$	$V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	7	pF
Input Capacitance	$C_{ibo}$	$V_{EB} = 0.5\text{V}, I_C = 0, f = 1\text{MHz}$	-	-	130	pF
Small-Signal Current Gain	$h_{fe}$	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 20\text{MHz}$	1.0	-	-	-

Note 1. Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$ .

