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MPSA92 & MPSA93 **Silicon PNP Transistors** **High Voltage, General Purpose Amplifier** **TO-92 Type Package**

Absolute Maximum Ratings: (Note 1)

Collector-Emitter Voltage, V_{CEO}		
MPSA93		200V
MPSA92		300V
Collector-Base Voltage, V_{CBO}		
MPSA93		200V
MPSA92		300V
Emitter-Base Voltage, V_{EBO}		5V
Continuous Collector Current, I_C		500mA
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° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}		-55° to $+150^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient, R_{thJA}		200 $^\circ\text{C}/\text{mW}$
Thermal Resistance, Junction-to-Case, R_{thJC}		83.3 $^\circ\text{C}/\text{mW}$

Note 1. Stresses exceeding Absolute Maximum ratings may damage the device. Absolute Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Breakdown Voltage MPSA92	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$, Note 2	300	–	–	V
MPSA93			200	–	–	V
Collector-Base Breakdown Voltage MPSA92	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	300	–	–	V
MPSA93			200	–	–	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	5	–	–	V
Collector Cutoff Current MPSA92	I_{CBO}	$V_{CB} = 200\text{V}$, $I_E = 0$	–	–	0.25	μA
MPSA93		$V_{CB} = 160\text{V}$, $I_E = 0$	–	–	0.25	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 3\text{V}$, $I_C = 0$	–	–	0.1	μA

Note 2. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, 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
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$I_C = 1\text{mA}, V_{CE} = 10\text{V}$	25	–	–	
		$I_C = 10\text{mA}, V_{CE} = 10\text{V}$	40	–	–	
		$I_C = 30\text{mA}, V_{CE} = 10\text{V}$	25	–	–	
Collector–Emitter Saturation Voltage MPSA92	$V_{CE(sat)}$	$I_C = 20\text{mA}, I_B = 2\text{mA}$	–	–	0.5	V
MPSA93			–	–	0.4	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 20\text{mA}, I_B = 2\text{mA}$	–	–	0.9	V
Small–Signal Characteristics						
Current Gain – Bandwidth Product	f_T	$I_C = 10\text{mA}, V_{CE} = 20\text{V}, f = 100\text{MHz}$	50	–	–	MHz
Collector–Base Capacitance MPSA92	C_{cb}	$V_{CB} = 20\text{V}, I_E = 0, f = 1\text{MHz}$	–	–	6	pF
MPSA93			–	–	8	pF

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

