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MPSA05 (NPN) & MPSA06 (PNP) Silicon Complementary Transistors High Voltage, General Purpose Amplifier TO-92 Type Package

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CE0}	
MPSA05	60V
MPSA06	80V
Collector-Base Voltage, V_{CBO}	
MPSA05	60V
MPSA06	80V
Emitter-Base Voltage, V_{EBO}	4V
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 (Note 1), R_{thJA}	200 $^\circ\text{C}/\text{mW}$
Thermal Resistance, Junction-to-Case, R_{thJC}	83.3 $^\circ\text{C}/\text{mW}$

Note 1. R_{thJA} is measured with the device soldered into a typical printed circuit board.

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 MPSA05	$V_{(BR)CEO}$	$I_B = 1\text{mA}, I_C = 0$	60	-	-	V
MPSA06			80	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}, I_C = 0$	4	-	-	V
Collector Cutoff Current	I_{CES}	$V_{CE} = 60\text{V}, I_B = 0$	-	-	0.1	μA
Collector Cutoff Current MPSA05	I_{CBO}	$V_{CB} = 60\text{V}, I_E = 0$	-	-	0.1	μA
MPSA06			$V_{CB} = 80\text{V}, I_E = 0$	-	-	0.1

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						
DC Current Gain	h_{FE}	$I_C = 10\text{mA}, V_{CE} = 1\text{V}$	100	-	-	
		$I_C = 100\text{mA}, V_{CE} = 1\text{V}$	100	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 100\text{mA}, I_B = 10\text{mA}$	-	-	0.25	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 100\text{mA}, V_{CE} = 1\text{V}$	-	-	1.2	V
Small-Signal Characteristics						
Current Gain – Bandwidth Product MPSA05	f_T	$I_C = 10\text{mA}, V_{CE} = 2\text{V},$ $f = 100\text{MHz}, \text{Note 3}$	100	-	-	MHz
			MPSA06	100	-	-

Note 3. f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.

