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MPSA20

Silicon NPN Transistor General Purpose Amplifier, TO-92 Type Package

Absolute Maximum Ratings: (Note 1)

Collector-Emitter Voltage, V_{CEO}	40V
Collector-Base Voltage, V_{CBO}	4V
Continuous Collector Current, I_C	100mA
Total Device Dissipation ($T_A = +25^\circ\text{C}$), P_D	625mW
Derate Above 25°C	5mW/ $^\circ\text{C}$
Total Device Dissipation ($T_C = +25^\circ\text{C}$), P_D	1.5W
Derate Above 25°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-Case, R_{thJC}	83.3 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient (Note 2), R_{thJA}	200 $^\circ\text{C}/\text{W}$

Note 1. Maximum Ratings are those values beyond which device damage can occur. Maximum Ratings applied to the device are individual stress level values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur, and reliability may be affected.

Note 2. 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	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$, Note 3	40	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$, $I_C = 0$	4	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 30\text{V}$, $I_E = 0$	-	-	100	nA
ON Characteristics						
DC Current Gain	h_{FE}	$I_C = 5\text{mA}$, $V_{CE} = 10\text{V}$, Note 3	40	-	400	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}$, $I_B = 1\text{mA}$	-	-	0.25	V
Small-Signal Characteristics						
Current-Gain - Bandwidth Product	f_T	$I_C = 5\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$, Note 3	125	-	-	MHz
Output Capacitance	C_{obo}	$V_{CB} = 10\text{V}$, $I_E = 0$, $f = 1\text{MHz}$	-	-	4	pF

Note 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$

