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MPSL51

Silicon PNP Transistor

High Voltage, General Purpose Amplifier

TO-92 Type Package

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	100V
Collector-Base Voltage, V_{CBE}	100V
Emitter-Base Voltage, V_{EBO}	4V
Continuous Collector Current, I_C	600mA
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}	$+83.3^\circ\text{C}/\text{mW}$

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 1	100	-	-	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	100	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$, $I_C = 0$	4	-	-	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 50\text{V}$, $I_E = 0$	-	-	1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 3\text{V}$, $I_C = 0$	-	-	100	nA

Note 1. Pulse Test: Pulse Width = 300 μs , Duty Cycle = 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 1)						
DC Current Gain	h_{FE}	$I_C = 50\text{mA}, V_{CE} = 5\text{V}$	40	-	250	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	-	-	0.25	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	-	-	0.30	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 10\text{mA}, I_B = 1\text{mA}$	-	-	1.2	V
		$I_C = 50\text{mA}, I_B = 5\text{mA}$	-	-	1.2	V
Small-Signal Characteristics						
Current Gain – Bandwidth Product	f_T	$I_C = 10\text{mA}, V_{CE} = 10\text{V}, f = 20\text{MHz}$	60	-	-	MHz
Output Capacitance	C_{obo}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	8	pF
Small-Signal Current Gain	h_{fe}	$I_C = 1\text{mA}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	20	-	-	

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

