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MPSH10

Silicon NPN Transistor

VHF Oscillator, Mixer, IF Amp

TO-92 Type Package

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	25V
Collector-Base Voltage, V_{CBO}	30V
Emitter-Base Voltage, V_{EBO}	3V
Collector Current, I_C	50mA
Total Power Dissipation ($T_A = +25^\circ\text{C}$), P_D	350mW
Derate above $+25^\circ\text{C}$	2.8mW/ $^\circ\text{C}$
Total Power Dissipation ($T_C = +25^\circ\text{C}$), P_D	1W
Derate above $+25^\circ\text{C}$	8mW/ $^\circ\text{C}$
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}	$+357^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case, R_{thJC}	$+125^\circ\text{C/W}$

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	$V_{(BR)CEO}$	$I_C = 1\text{mA}$, $I_B = 0$	25	–	–	V
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$, $I_E = 0$	30	–	–	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}$, $I_C = 0$	3	–	–	V
Collector Cutoff Current	I_{CBO}	$V_{CB} = 25\text{V}$, $I_E = 0$	–	–	100	nA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 2\text{V}$, $I_C = 0$	–	–	100	nA
ON Characteristics						
DC Current Gain	h_{FE}	$I_C = 4\text{mA}$, $V_{CE} = 10\text{V}$	60	–	–	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4\text{mA}$, $I_B = 0.4\text{mA}$	–	–	0.5	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 4\text{mA}$, $V_{CE} = 10\text{V}$	–	–	0.95	V
Small-Signal Characteristics						
Current Gain-Bandwidth Product	f_T	$I_C = 4\text{mA}$, $V_{CE} = 10\text{V}$, $f = 100\text{MHz}$	650	–	–	MHz
Collector-Base Capacitance	C_{cb}	$I_E = 0$, $V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	–	–	0.7	pF
Common-Base Feedback Capacitance	C_{rb}	$I_E = 0$, $V_{CB} = 10\text{V}$, $f = 1\text{MHz}$	0.35	–	0.65	pF
Collector-Base Time Constant	$rb'C_c$	$I_C = 4\text{mA}$, $V_{CB} = 10\text{V}$, $f = 31.8\text{MHz}$	–	–	9.0	ps

