



NPN Transistor Bare Die – MPSH10

Rev 1.0
02/09/17

VHF / UHF RF transistor in bare die form Complement PNP MPSH81

Features:

- High f_T min = 650MHz
- Maximum capacitance 0.7pF
- High Reliability Gold Back Metal
- High Reliability tested grades for Military + Space

Ordering Information:

The following part suffixes apply:

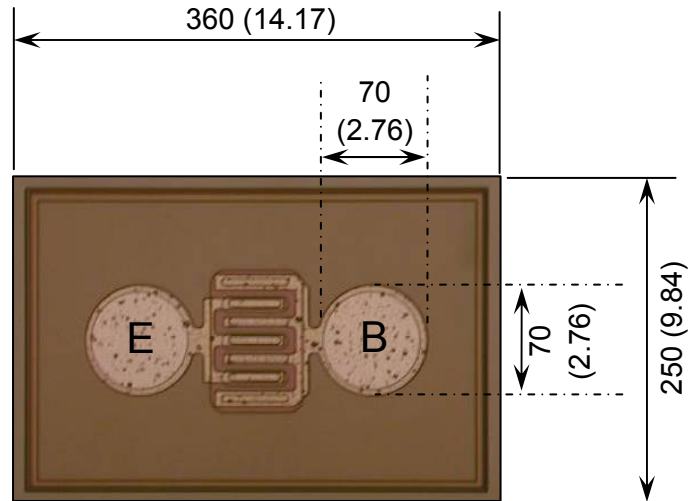
- No suffix - MIL-STD-750 /2072 Visual Inspection
- “H” - MIL-STD-750 /2072 Visual Inspection
+ MIL-STD-38534 Class H LAT
- “K” - MIL-STD-750 /2072 Visual Inspection
+ MIL-STD-38534 Class K LAT

LAT = Lot Acceptance Test.

For further information on LAT process flows see below.

www.siliconsupplies.com/quality/bare-die-lot-qualification

Die Dimensions in μm (mils)



E = EMITTER B = BASE

DIE BACK = COLLECTOR

Supply Formats:

- Default – Die in Waffle Pack (400 per tray capacity)
- Sawn Wafer on Tape – Specific request
- Unsawn Wafer – Specific request
- With additional electrical selection – Specific request
- Sawn as pairs or adjacent pair pick – Specific request

Mechanical Specification

Die Size (Excluding Saw Street)	360 x 250 14.17 x 9.84	μm mils
Emitter & Base Pad Size	70 x 70 2.95 x 3.74	μm mils
Die Thickness	180 (± 20) 7.09 (± 0.79)	μm mils
Top Metal Composition	Al - 1.3 μm	
Back Metal Composition	AuAs - 0.9 μm	





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Absolute Maximum Ratings $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	VALUE	UNIT
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	3	V
Collector Current	I_C	50	mA
Collector Power Dissipation	P_C	225	mW
Junction & Storage Temperature	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise stated

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}, I_E = 0$	30	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 1\text{mA}, I_B = 0$	25	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 10\mu\text{A}, I_C = 0$	3	-	-	V
Collector Cut-off Current	I_{CBO}	$V_{CB} = 25\text{V}, I_E = 0$	-	-	100	nA
		$V_{CB} = 25\text{V}, I_E = 0, T_A = 150^\circ\text{C}^{-1}$	-	-	1	μA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 2\text{V}$	-	-	100	nA
ON CHARACTERISTICS						
Forward-Current Transfer Ratio	h_{FE}	$V_{CE} = 10\text{V}, I_C = 4\text{mA}$	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	$V_{BE(on)}$	$V_{CE} = 10\text{V}, I_C = 4\text{mA}$	-	-	0.95	V
SMALL-SIGNAL CHARACTERISTICS¹						
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}	$V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$	-	-	0.7	pF
Common-Base Feedback Capacitance	C_{rb}		-	-	0.65	
Collector Base Time Constant	$rb'C_c$	$I_C = 1\text{mA}, V_{CB} = 10\text{V}, f = 31.8\text{MHz}$	-	-	9	ps

Note 1: Not production testing in die form, characterized by chip design.

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