

## MPSH24/MMBTH24

### **NPN General Purpose Amplifier**

- This device is designed for common-emitter low noise amplifier and mixer applications with collector currents in the 100mA to 20mA range to 300MHz, and low frequency drift common-base VHF oscillator applications with high output levels for driving FET mixers.
- 1 TO-92

1. Base 2. Emitter 3. Collector



1. Base 2. Emitter 3. Collector

- Sourced from process 47.
- See MPSH11 for characteristics.

## **Absolute Maximum Ratings** T<sub>C</sub>=25°C unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CEO}$	Collector-Emitter Voltage	30	V
V <sub>CBO</sub>	Collector-Base Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	4.0	V
I <sub>C</sub>	Collector current - Continuous	50	mA
T <sub>J</sub> , T <sub>stg</sub>	Junction and Storage Temperature	-55 ~ +150	°C

### Electrical Characteristics T<sub>C</sub>=25°C unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Тур.	Max.	Units	
Off Characte	Off Characteristics						
V <sub>(BR)CEO</sub>	Collector-Emitter Sustaining Voltage *	$I_C = 1.0 \text{mA}, I_B = 0$	30			V	
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	$I_C = 100 \mu A, I_E = 0$	40				
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	$I_E = 10\mu A, I_C = 0$	4.0			VV	
I <sub>CBO</sub>	Collector Cutoff Current	$V_{CB} = 15V, I_{E} = 0$			50	nA	
On Characte	On Characteristics						
h <sub>FE</sub>	DC Current Gain	$I_C = 8.0 \text{mA}, V_{CE} = 10 \text{V}$	30				
Small Signal Characteristics							
f <sub>T</sub>	Current Gain Bandwidth Product	I <sub>C</sub> = 8.0mA, V <sub>CE</sub> = 10V, f = 100MHz	400			MHz	
C <sub>cb</sub>	Collector-Base Capacitance	$V_{CB} = 10V, I_E = 0, f = 1.0MHz$			0.36	pF	

<sup>\*</sup> Pulse Test: Pulse Width  $\leq 300 \mu s$ , Duty Cycle  $\leq 2.0\%$ 

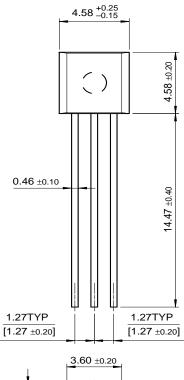
### Thermal Characteristics T<sub>A</sub>=25°C unless otherwise noted

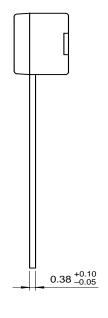
Symbol	Parameter	Ma	Units	
	Farameter	MPSH24	*MMBTH24	Units
P <sub>D</sub>	Total Device Dissipation	625	225	mW
	Derate above 25°C	5.0	1.8	mW/°C
$R_{ heta JC}$	Thermal Resistance, Junction to Case	83.3		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	556	°C/W

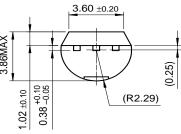
 $<sup>^{\</sup>star}$  Device mounted on FR-4 PCB 1.6"  $\times$  1.6"  $\times$  0.06"

# **Package Dimensions**

TO-92



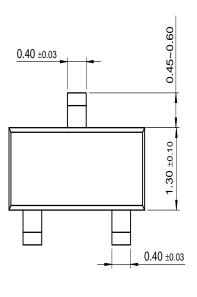


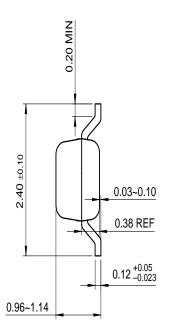


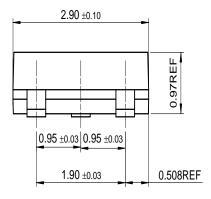
Dimensions in Millimeters

# Package Dimensions (Continued)

## **SOT-23**







Dimensions in Millimeters

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EnSigna™	I <sup>2</sup> C <sup>TM</sup>	$OCX^{TM}$	RapidConfigure™	UHC™
Across the board.	. Around the world.™	OCXPro™	RapidConnect™	UltraFET <sup>®</sup>
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