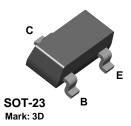


MPSH81

MMBTH81





PNP RF Transistor

This device is designed for general RF amplifier and mixer applications to 250 mHz with collector currents in the 1.0 mA to 30 mA range. Sourced from Process 75.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V _{CEO}	Collector-Emitter Voltage	20	V
V _{CBO}	Collector-Base Voltage	20	V
V _{EBO}	Emitter-Base Voltage	3.0	V
I _C	Collector Current - Continuous	50	mA
T _J , T _{stg}	Operating and Storage Junction Temperature Range	-55 to +150	°C

^{*}These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

- 1) These ratings are based on a maximum junction temperature of 150 degrees C.
 2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.
 3) All voltages (V) and currents (A) are negative polarity for PNP transistors.

Thermal Characteristics

TA = 25°C unless otherwise noted

Symbol	Characteristic	М	Units	
		MPSH81	*MMBTH81	
P_D	Total Device Dissipation Derate above 25°C	350 2.8	225 1.8	mW mW/∘C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	125		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	357	556	°C/W

^{*}Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

PNP RF Transistor

(continued)

Electrica	l Char	acteri	stics
-----------	--------	--------	-------

TA = 25°C unless otherwise noted

Symbol	Parameter	Min	Max	Units	
OFF CHARACTERISTICS					_
V _{(BR)CEO}	Collector-Emitter Breakdown Voltage*	$I_C = 1.0 \text{ mA}, I_B = 0$	20		V
V _{(BR)CBO}	Collector-Base Breakdown Voltage	$I_C = 10 \mu A, I_E = 0$	20		V
V _{(BR)EBO}	Emitter-Base Breakdown Voltage	$I_E = 10 \mu A, I_C = 0$	3.0		V
I _{CBO}	Collector Cutoff Current	$V_{CB} = 10 \text{ V}, I_{E} = 0$		100	nA
I _{EBO}	Emitter Cutoff Current	$V_{EB} = 2.0 \text{ V}, I_{C} = 0$		100	nA

ON CHARACTERISTICS

h _{FE}	DC Current Gain	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V}$	60		
V _{CE(sat)}	Collector-Emitter Saturation Voltage	$I_C = 5.0 \text{ mA}, I_B = 0.5 \text{ mA}$		0.5	V
V _{BE(on)}	Base-Emitter On Voltage	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V}$		0.9	V

SMALL SIGNAL CHARACTERISTICS

f _T	Current Gain - Bandwidth Product	$I_C = 5.0 \text{ mA}, V_{CE} = 10 \text{ V},$ f = 100 MHz	600		MHz
C _{cb}	Collector-Base Capacitance	$V_{CB} = 10 \text{ V}, I_{E} = 0, f = 1.0 \text{ MHz}$		0.85	pF
C _{ce}	Collector Emitter Capcitance	$V_{CB} = 10 \text{ V}, I_{B} = 0, f = 1.0 \text{ MHz}$		0.65	pF

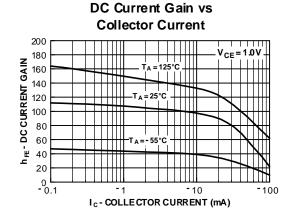
^{*}Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

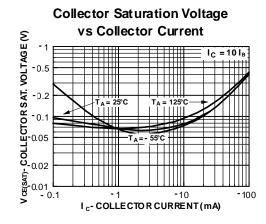
NOTE: All voltages (V) and currents (A) are negative polarity for PNP transistors.

Spice Model

PNP(Is=10f Xti=3 Eg=1.11 Vaf=100 Bf=133.8 Ise=1.678p Ne=2.159 Ikf=.1658 Nk=.901 Xtb=1.5 Var=100 Br=1 Isc=9.519n Nc=3.88 Ikr=5.813 Rc=7.838 Cjc=2.81p Mjc=.1615 Vjc=.8282 Fc=.5 Cje=2.695p Mje=.3214 Vje=.7026 Tr=11.32n Tf=97.83p Itf=69.29 Xtf=599u Vtf=10)

Typical Characteristics

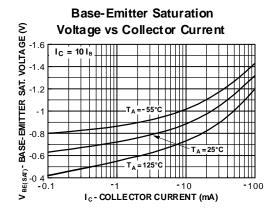


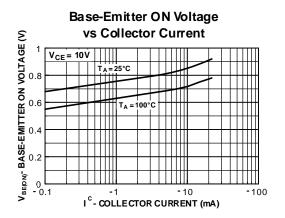


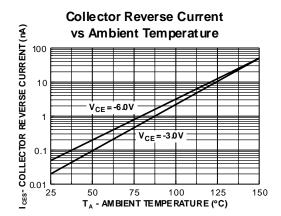
PNP RF Transistor

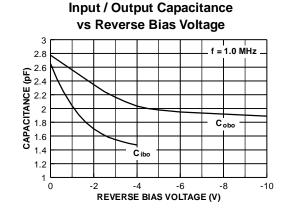
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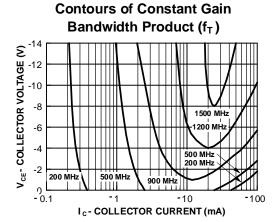
Typical Characteristics (continued)

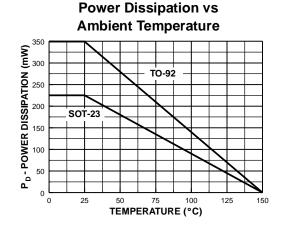












TO-92 Tape and Reel Data FAIRCHILD SEMICONDUCTOR TM **TO-92 Packaging** Configuration: Figure 1.0 **TAPE and REEL OPTION** FSCINT Label sample See Fig 2.0 for various Reeling Styles CBVK//418019 **FSCINT** Label 5 Reels per Intermediate Box Customized F63TNR Label sample Label F63TNR LOT: CBVK741B019 QTY: 2000 FSID: PN222N Customized QTY1: QTY2: Label 375mm x 267mm x 375mm Intermediate Box TO-92 TNR/AMMO PACKING INFROMATION **AMMO PACK OPTION** See Fig 3.0 for 2 Ammo Packing Style Quantity EOL code **Pack Options** 2,000 D26Z Е 2,000 D27Z Ammo М 2,000 D74Z D75Z 2,000 **FSCINT** Unit weight = 0.22 gm Reel weight with components = 1.04 kg Ammo weight with components = 1.02 kg Max quantity per intermediate box = 10,000 units Label 5 Ammo boxes per Intermediate Box 327mm x 158mm x 135mm Immediate Box Customized F63TNR Customized Label Label 333mm x 231mm x 183mm Intermediate Box (TO-92) BULK PACKING INFORMATION **BULK OPTION** See Bulk Packing DESCRIPTION QUANTITY Information table J18Z TO-18 OPTION STD 2.0 K / BOX Anti-static Bubble Sheets TO-5 OPTION STD NO LEAD CLIP 1.5 K / BOX J05Z **FSCINT Label** NO EOL TO-92 STANDARD STRAIGHT FOR: PKG 92, NO LEADCLIP 2.0 K / BOX 94 (NON PROELECTRON SERIES), 96 TO-92 STANDARD STRAIGHT FOR: PKG 94 (PROELECTRON SERIES BCXXX, BFXXX, BSRXXX), 97, 98 L34Z NO LEADCLIP 2.0 K / BOX 2000 units per 114mm x 102mm x 51mm EO70 box for std option Immediate Box 5 EO70 boxes per intermediate Box 530mm x 130mm x 83mm Customized Intermediate box Label FSCINT Label 10,000 units maximum per intermediate box for std option

TO-92 Tape and Reel Data, continued

TO-92 Reeling Style Configuration: Figure 2.0

Machine Option "A" (H)



Style "A", D26Z, D70Z (s/h)

Machine Option "E" (J)

Style "E", D27Z, D71Z (s/h)

TO-92 Radial Ammo Packaging Configuration: Figure 3.0



FIRST WIRE OFF IS EMITTER (ON PKG. 92) ADHESIVE TAPE IS ON BOTTOM SIDE FLAT OF TRANSISTOR IS ON BOTTOM



FIRST WIRE OFF IS COLLECTOR (ON PKG. 92) ADHESIVE TAPE IS ON BOTTOM SIDE FLAT OF TRANSISTOR IS ON TOP



TO-92 Package Dimensions



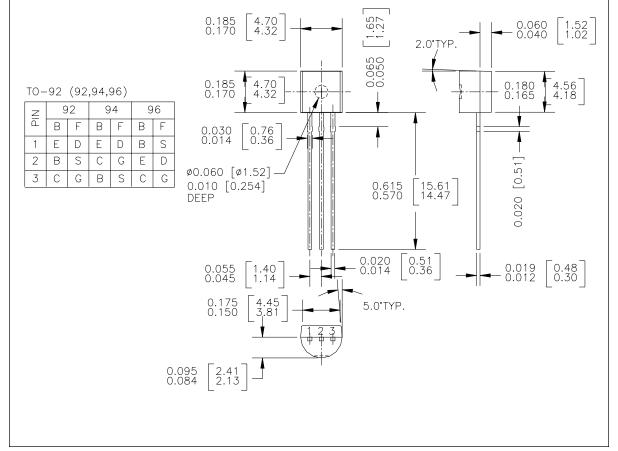
TO-92 (FS PKG Code 92, 94, 96)





Scale 1:1 on letter size paper
Dimensions shown below are in:
inches [millimeters]

Part Weight per unit (gram): 0.1977

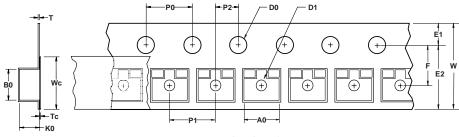




SOT-23 Tape and Reel Data, continued

SOT-23 Embossed Carrier Tape

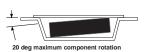
Configuration: Figure 3.0



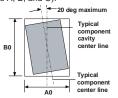
User Direction of Feed	

					Di	mension	s are in n	nillimete	r					
Pkg type	Α0	В0	w	D0	D1	E1	E2	F	P1	P0	K0	Т	Wc	Тс
SOT-23 (8mm)	3.15 +/-0.10	2.77 +/-0.10	8.0 +/-0.3	1.55 +/-0.05	1.125 +/-0.125	1.75 +/-0.10	6.25 min	3.50 +/-0.05	4.0 +/-0.1	4.0 +/-0.1	1.30 +/-0.10	0.228 +/-0.013	5.2 +/-0.3	0.06 +/-0.02

Notes: A0, B0, and K0 dimensions are determined with respect to the EIA/Jedec RS-481 rotational and lateral movement requirements (see sketches A, B, and C).



Sketch A (Side or Front Sectional View)
Component Rotation

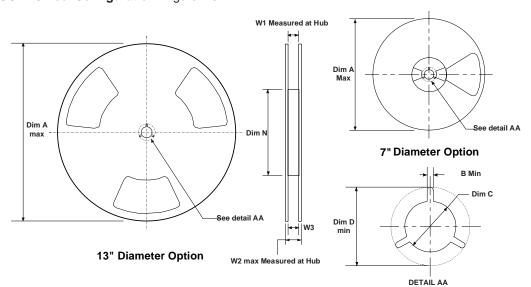


Sketch B (Top View)
Component Rotation



Sketch C (Top View)
Component lateral movement

SOT-23 Reel Configuration: Figure 4.0



	Dimensions are in inches and millimeters								
Tape Size	Reel Option	Dim A	Dim B	Dim C	Dim D	Dim N	Dim W1	Dim W2	Dim W3 (LSL-USL)
8mm	7" Dia	7.00 177.8	0.059 1.5	512 +0.020/-0.008 13 +0.5/-0.2	0.795 20.2	2.165 55	0.331 +0.059/-0.000 8.4 +1.5/0	0.567 14.4	0.311 - 0.429 7.9 - 10.9
8mm	13" Dia	13.00 330	0.059 1.5	512 +0.020/-0.008 13 +0.5/-0.2	0.795 20.2	4.00 100	0.331 +0.059/-0.000 8.4 +1.5/0	0.567 14.4	0.311 - 0.429 7.9 - 10.9



SOT-23 (FS PKG Code 49)

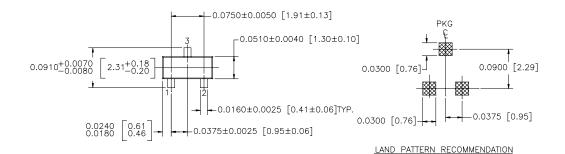


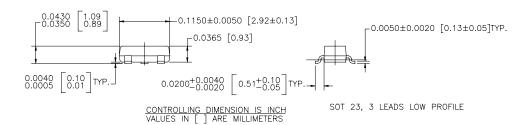


Scale 1:1 on letter size paper

Dimensions shown below are in: inches [millimeters]

Part Weight per unit (gram): 0.0082





NOTE: UNLESS OTHERWISE SPECIFIED

- 1. STANDARD LEAD FINISH 150 MICROINCHES / 3.81 MICROMETERS MINIMUM TIN / LEAD (SOLDER) ON ALLOY 42
- 2. REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE G, DATED JUL 1993

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DOME™ ISOPLANAR™ Quiet Series™

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No Identification Needed	Full Production	This datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice in order to improve design.
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