



# Spectrum Devices Corporation

Semiconductor Engineering and Manufacturing

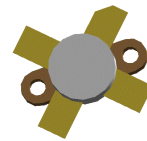
## RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS –

**PRELIMINARY INFORMATION**

**HF12-20**

### FEATURES:

- 30 MHz
- 12.5 Volts
- IMD –30 dB
- Common Emitter
- $P_{out}$  = 20W PEP Min. with 15 dB Gain
- **Improved Collector-Base Breakdown Voltage: 60 Volts Min.**
- **Direct replacement for SD1285**



**0.380" DIAMETER  
SOE PACKAGE**

### DESCRIPTION:

The HF12-20 is a 12.5V epitaxial silicon NPN planar transistor designed primarily for SSB communications. This device utilizes emitter ballasting to achieve extreme ruggedness under severe operating conditions. The HF12-20 products utilize the unique Spectrum Devices' Bipolar process which offers a 67% improvement in collector-base breakdown voltage, enhancing reliability while maintaining RF performance.

### ABSOLUTE MAXIMUM RATINGS: ( $T_{CASE} = 25^{\circ}C$ )

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	60	V
$V_{CEO}$	Collector-Emitter Voltage	18	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	4.5	A
$P_{DISS}$	Power Dissipation	80	W
$T_J$	Junction Temperature	+200	$^{\circ}C$
$T_{STG}$	Storage Temperature	-65 to +150	$^{\circ}C$

### THERMAL DATA:

$R_{TH(J-C)}$	Thermal Resistance Junction-case	2.2	$^{\circ}C/W$
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## ELECTRICAL SPECIFICATIONS ( $T_{CASE} = 25^{\circ}C$ )

### DC CHARACTERISTICS

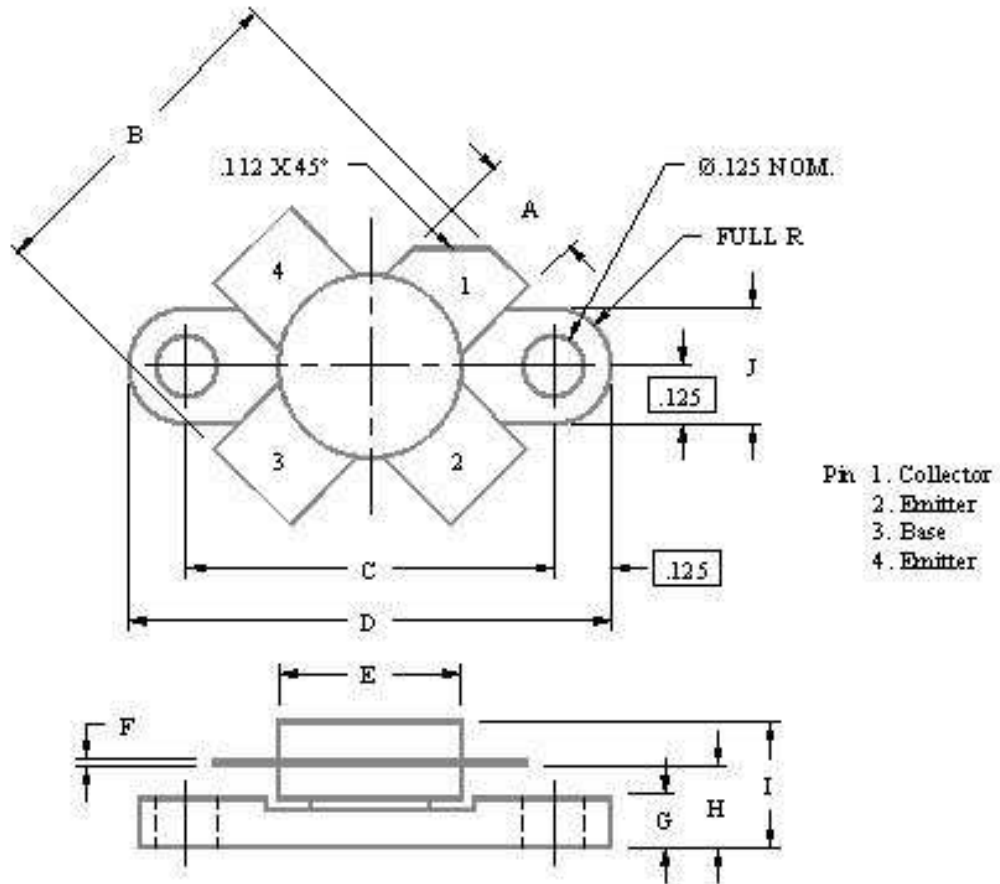
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 50\text{ mA}$ $I_E = 0\text{ mA}$	60	--	--	V
$BV_{CES}$	$I_C = 50\text{ mA}$ $V_{BE} = 0\text{ V}$	60	--	--	V
$BV_{CEO}$	$I_C = 50\text{ mA}$ $I_B = 0\text{ mA}$	18	--	--	V
$BV_{EBO}$	$I_E = 5\text{ mA}$ $I_C = 0\text{ mA}$	4.0	--	--	V
$I_{CES}$	$V_{CE} = 15\text{ V}$ $I_E = 0\text{ mA}$	--	--	5	mA
$h_{FE}$	$V_{CE} = 5\text{ V}$ $I_C = 1\text{ A}$	10	--	200	--

### RF CHARACTERISTICS

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$P_{OUT}$	$f = 30\text{ MHz}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 25\text{ mA}$	20	--	--	W
$G_P$	$f = 30\text{ MHz}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 25\text{ mA}$	15	18	--	dB
IMD	$f = 30\text{ MHz}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 25\text{ mA}$	--	--	-30	dBc
$C_{OB}$	$f = 1\text{ MHz}$ $V_{CB} = 12.5\text{ V}$	--	100	--	pF

# PACKAGE MECHANICAL DATA

## SOE-380



	Minimum Inches/MM	Maximum Inches/MM		Minimum Inches/MM	Maximum Inches/MM
A	.220/5.59	.230/5.84	G	.085/2.16	.105/2.67
B	.785/19.94		H	.160/4.06	.180/4.57
C	.720/18.29	.730/18.54	I	.260/7.11	
D	.970/24.64	.980/24.89	J	.240/6.10	.255/6.48
E	.385/9.78				
F	.004/0.10	.006/0.15			

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### **Life Support Applications**

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