



# Spectrum Devices Corporation

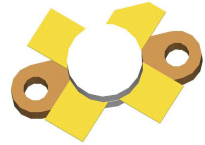
Semiconductor Engineering and Manufacturing

**RF & MICROWAVE TRANSISTORS  
HF SSB APPLICATIONS**

**HF28-35**

## FEATURES:

- 30 MHz
- 28 Volts
- IMD -30 dB
- Common Emitter
- Gold Metallization
- $P_{out}$  = 35W Min. with 18 dB Gain
- **Improved Collector-Base Breakdown Voltage: 110 Volts Min.**
- **Replacement for ST SD1224-10**



**0.380" DIAMETER  
SOE PACKAGE**

## DESCRIPTION:

The HF28-35 is a 28V epitaxial silicon NPN planar transistor designed primarily for SSB communications. This device utilizes emitter ballasting to achieve extreme ruggedness under severe operating conditions. The HF28-series products utilize the unique Spectrum Devices' Bipolar process which offers a 69% 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	110	V
$V_{CEO}$	Collector-Emitter Voltage	36	V
$V_{EBO}$	Emitter-Base Voltage	4.0	V
$I_C$	Device Current	7	A
$P_{DISS}$	Total Dissipation	90	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	2.5	$^{\circ}C/W$
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## ELECTRICAL SPECIFICATIONS ( $T_{CASE} = 25^{\circ}C$ )

### DC CHARACTERISTICS

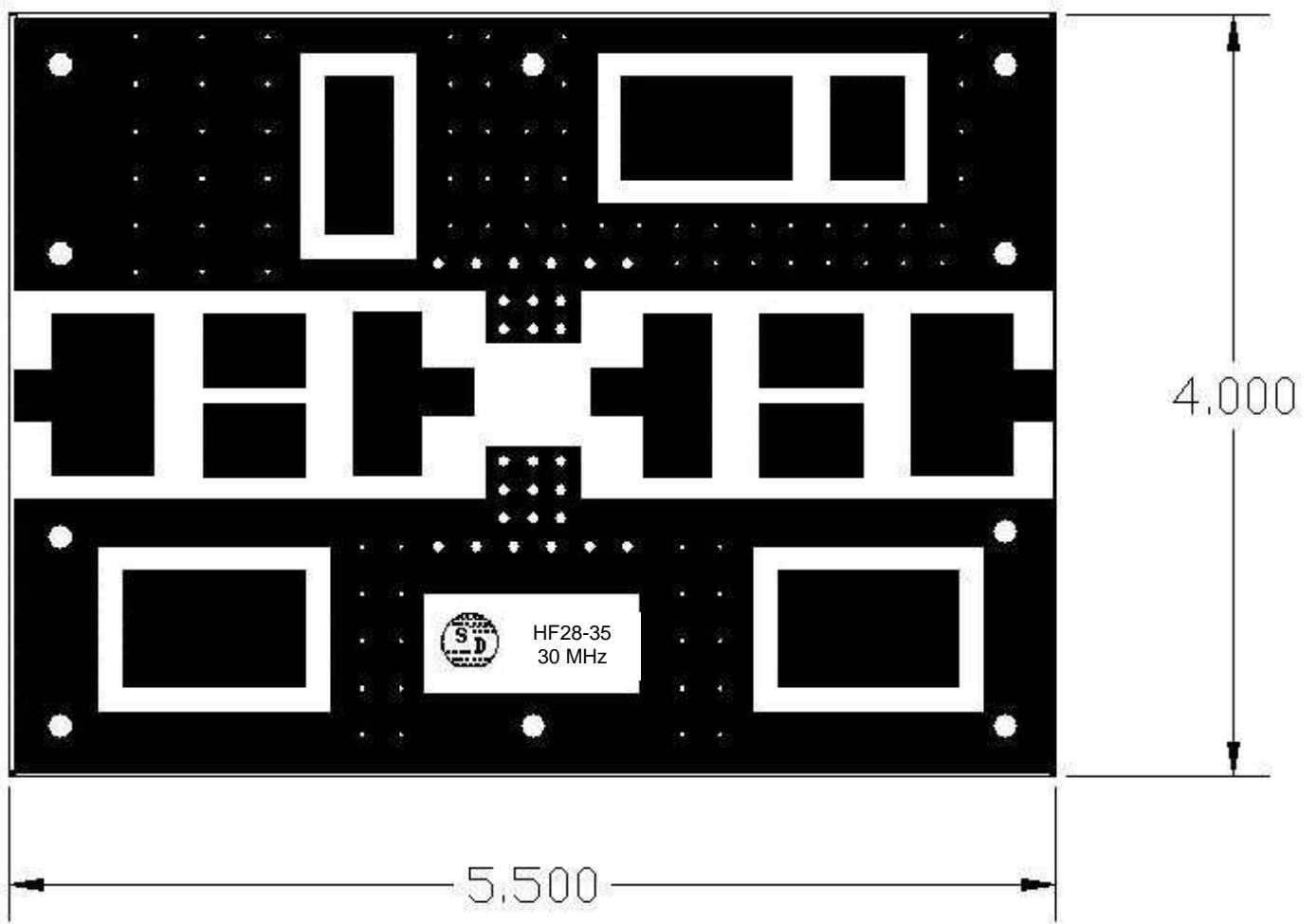
Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
$BV_{CBO}$	$I_C = 30\text{ mA}$ $I_E = 0\text{ mA}$	110	--	--	V
$BV_{CES}$	$I_C = 30\text{ mA}$ $V_{BE} = 0\text{ V}$	110	--	--	V
$BV_{CEO}$	$I_C = 30\text{ mA}$ $I_B = 0\text{ mA}$	35	--	--	V
$BV_{EBO}$	$I_E = 3\text{ mA}$ $I_C = 0\text{ mA}$	4.0	--	--	V
$I_{CES}$	$V_{CE} = 30\text{ V}$ $I_E = 0\text{ mA}$	--	--	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.	
$P_{OUT}$	$f = 30\text{ MHz}$ $V_{CC} = 28\text{ V}$	35	--	--	W
$G_P$	$P_{out} = 35\text{ W}$ $V_{CC} = 28\text{ V}$	18	--	--	dB
IMD*	$P_{out} = 35\text{ W PEP}$ $V_{CC} = 28\text{ V}$ $I_{CQ} = 100\text{ mA}$	--	--	-30	dBc
$C_{OB}$	$f = 1\text{ MHz}$ $V_{CB} = 30\text{ V}$	--	85	--	pF

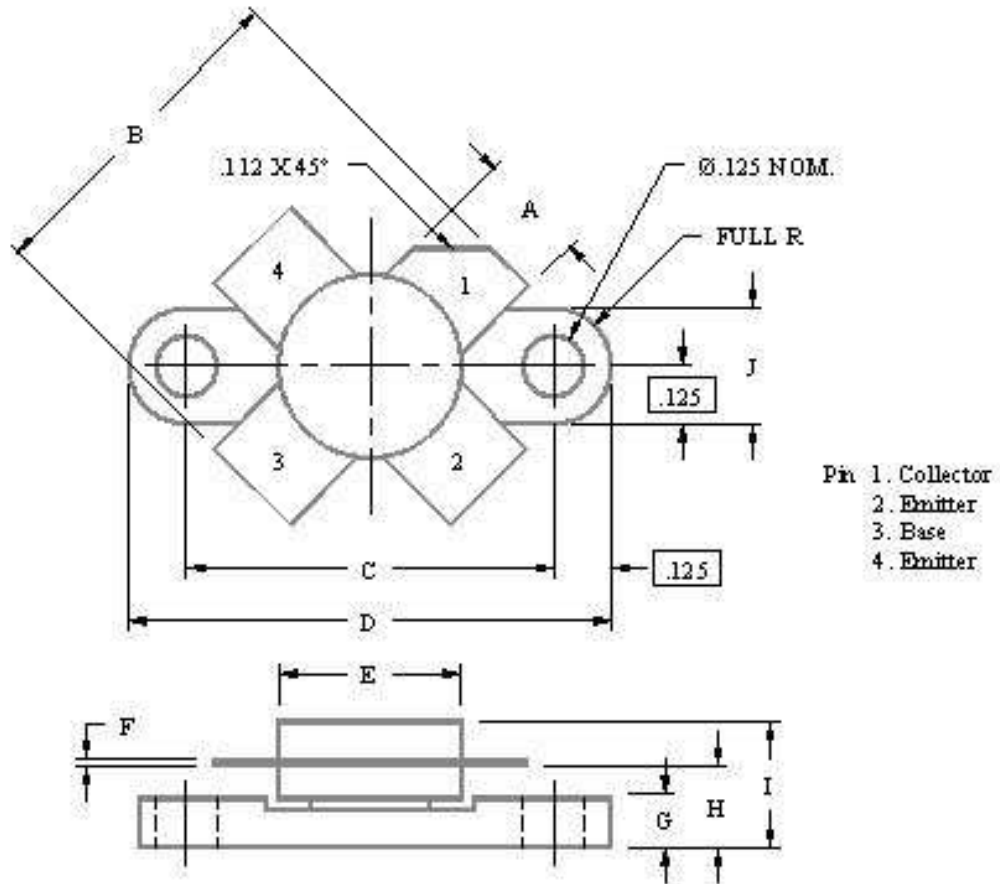
\*Conditions     $f_1 = 30.00\text{MHz}$      $f_2 = 30.001\text{MHz}$

# PCB BOARD LAYOUT



# 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			

Visit our website at [www.spectrumdevices.com](http://www.spectrumdevices.com) or contact our facility directly at Spectrum Devices Corp., 2880 Bergey Road, Suite C, Hatfield, PA 19440. Phone 215-997-7870 or FAX 215-997-7828

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Visit our website at [www.spectrumdevices.com](http://www.spectrumdevices.com) or contact our facility directly at  
Spectrum Devices Corp., 2880 Bergey Road, Suite C, Hatfield, PA 19440.  
Phone 215-997-7870 or FAX 215-997-7828