



Spectrum Devices Corporation

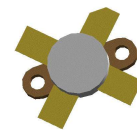
Semiconductor Engineering and Manufacturing

RF & MICROWAVE TRANSISTORS HF SSB APPLICATIONS

HF12-125

FEATURES:

- 30 MHz
- 12.5 Volts
- IMD -30 dB
- Common Emitter
- Gold Metallization
- P_{out} = 125W PEP Min. with 12 dB Gain
- **Improved Collector-Base Breakdown Voltage: 60 Volts Min.**
- **Equivalent to the ST SD1487, with Enhanced Output Power**



**0.500" DIAMETER
SOE PACKAGE**

DESCRIPTION:

The HF12-125 is a 12.5V epitaxial silicon NPN planar transistor designed primarily for HF communications. This device utilizes emitter ballasting to achieve extreme ruggedness under severe operating conditions. The HF12-series 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	20	A
P_{DISS}	Total Dissipation	290	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	0.6	$^{\circ}C/W$
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ELECTRICAL SPECIFICATIONS ($T_{CASE} = 25^{\circ}C$)

DC CHARACTERISTICS

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
BV_{CBO}	$I_C = 100\text{ mA}$ $I_E = 0\text{ mA}$	60	--	--	V
BV_{CES}	$I_C = 100\text{ mA}$ $V_{BE} = 0\text{ V}$	60	--	--	V
BV_{CEO}	$I_C = 100\text{ mA}$ $I_B = 0\text{ mA}$	18	--	--	V
BV_{EBO}	$I_E = 20\text{ mA}$ $I_C = 0\text{ mA}$	4.0	--	--	V
I_{CES}	$V_{CE} = 15\text{ V}$ $I_E = 0\text{ mA}$	--	--	20	mA
h_{FE}	$V_{CE} = 5\text{ V}$ $I_C = 5\text{ A}$	10	--	200	--

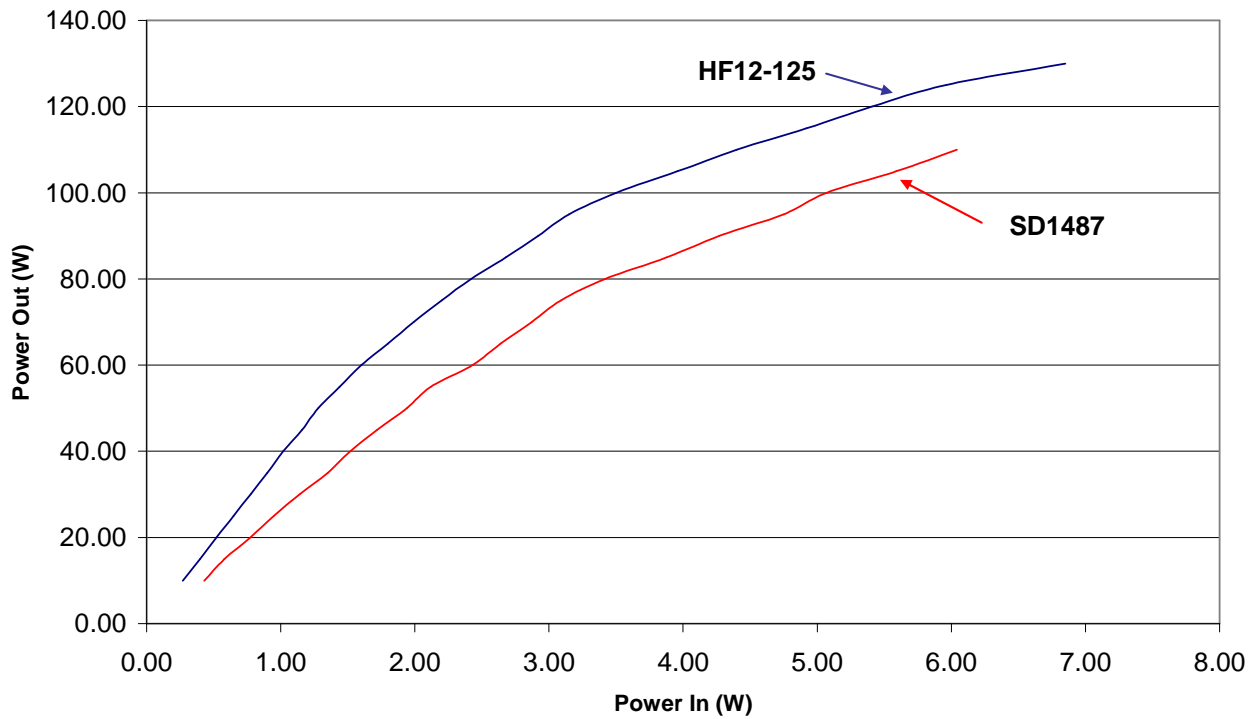
RF CHARACTERISTICS

Symbol	Test Conditions	Value			Unit
		Min.	Typ.	Max.	
P_{OUT}	$f = 30\text{ MHz}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 150\text{ mA}$	125	--	--	W
G_P	$P_{out} = 125\text{ W PEP}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 150\text{ mA}$	12	--	--	dB
IMD^*	$P_{out} = 125\text{ W PEP}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 150\text{ mA}$	--	--	-30	dBc
η_C	$P_{out} = 125\text{ W PEP}$ $V_{CC} = 12.5\text{ V}$ $I_{CQ} = 150\text{ mA}$	40	--	--	%
C_{OB}	$f = 1\text{ MHz}$ $V_{CB} = 12.5\text{ V}$	--	400	--	pF

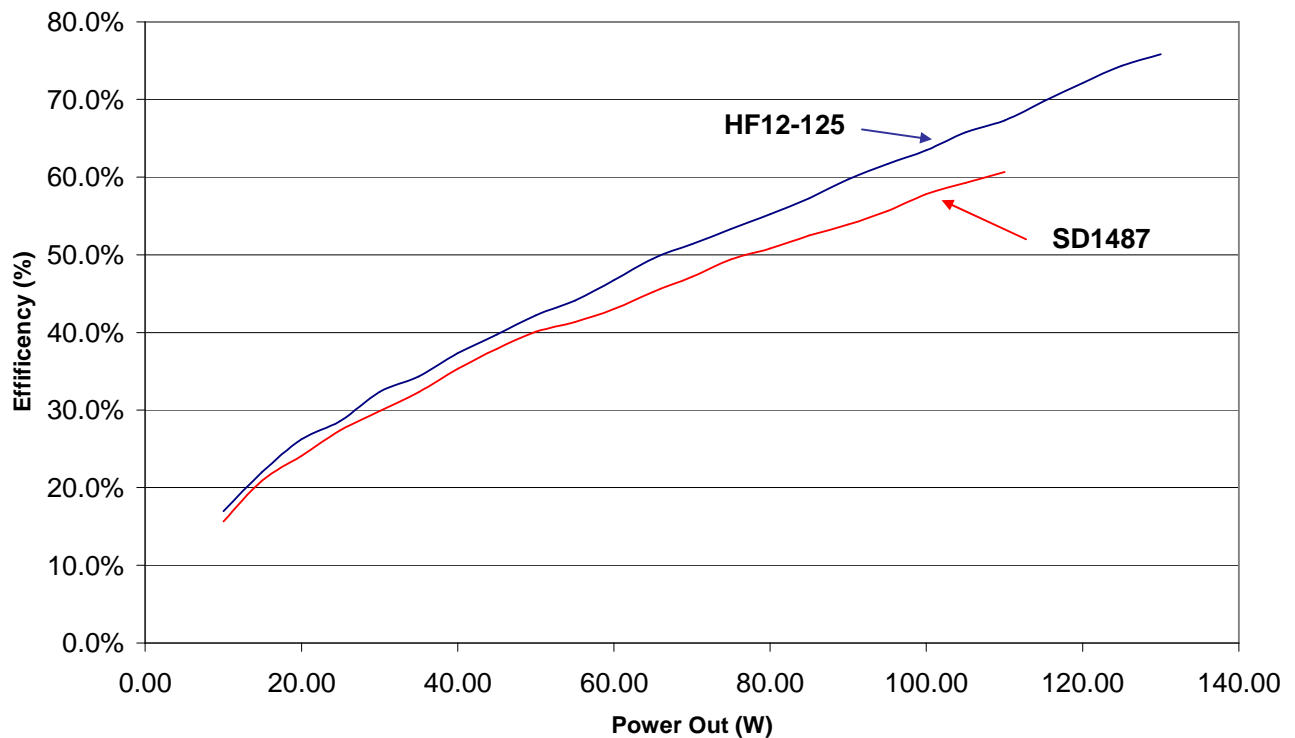
*Conditions $f_1 = 30.00\text{MHz}$ $f_2 = 30.001\text{MHz}$

TYPICAL PERFORMANCE

Power In vs. Power Out
Frequency = 30 MHz, Vcc = 12.5 Volts

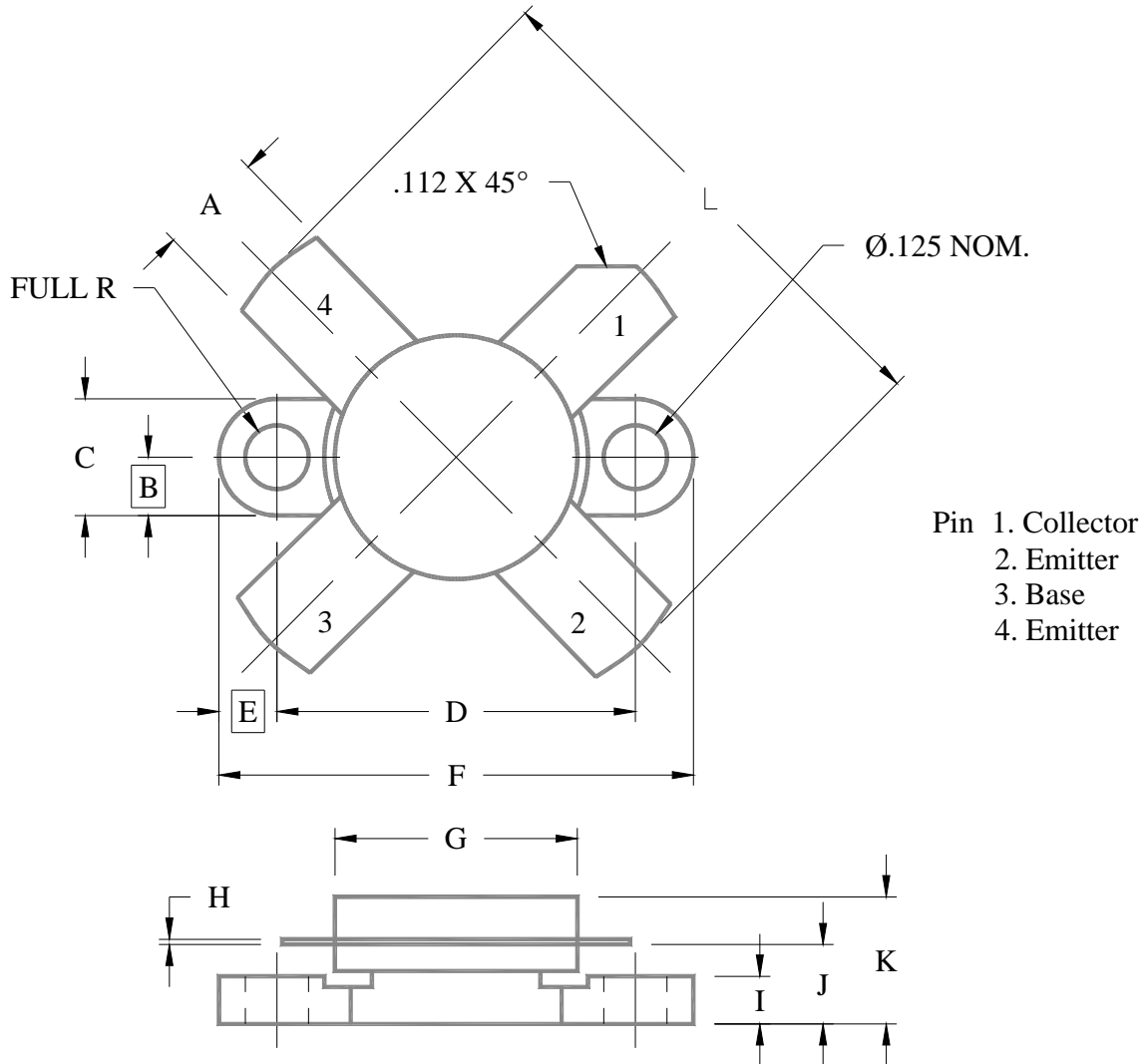


Efficiency vs Power Out
Frequency = 30 MHz, Vcc = 12.5 Volts



PACKAGE MECHANICAL DATA

SOE - 500



	Minimum Inches/MM	Maximum Inches/MM		Minimum Inches/MM	Maximum Inches/MM
A	.220/5.59	.230/5.84	G	.495/12.57	.505/12.83
B	.125/3.18		H	.003/0.08	.007/0.18
C	.245/6.22	.255/6.48	I	.090/2.29	.110/2.79
D	.720/18.28	.730/18.54	J	.160/4.06	.175/4.45
E	.125/3.18		K		.280/7.11
F	.970/24.64	.980/24.89	L		1.050/26.67

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