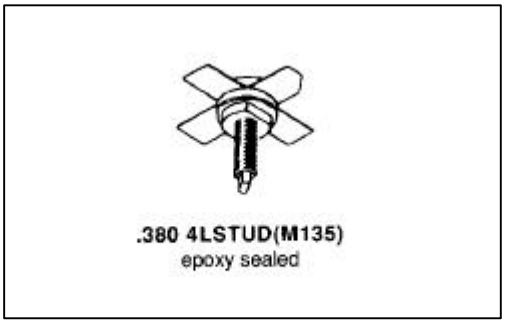
ADVANCED POWER TECHNOLOGY RF®

140 COMMERCE DRIVE
MONTGOMERYVILLE, PA
18936-1013
PHONE: (215) 631-9840
FAX: (215) 631-9855

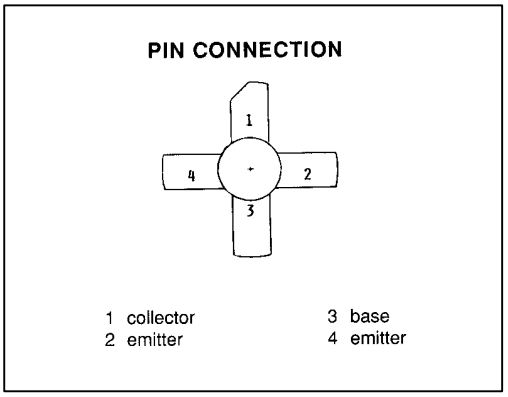
SD1143

RF AND MICROWAVE TRANSISTORS VHF MOBILE APPLICATIONS



Features

- **175 MHz**
- **12.5 Volts**
- **Common Emitter**
- **P_{OUT} = 10 W Min.**
- **G_P = 10 dB Gain**



DESCRIPTION:

The SD1143 is a 12.2 V Class C epitaxial silicon NPN planar transistor designed primarily for VHF Communications. It withstands very high VSWR under operating conditions.

ABSOLUTE MAXIMUM RATINGS (Tcase = 25°C)

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	36	V
V_{CEO}	Collector-Emitter Voltage	18	V
V_{CES}	Collector-Emitter Voltage	36	V
V_{EBO}	Emitter-Base Voltage	4.0	V
I_C	Device Current	2.0	A
P_{DISS}	Power Dissipation	20	W
T_J	Junction Temperature	+200	°C
T_{STG}	Storage Temperature	-65 to +150	°C

THERMAL DATA

$R_{TH(j-c)}$	Junction-Case Thermal Resistance	8.75	°C/W

ELECTRICAL SPECIFICATIONS (Tcase = 25°C)

STATIC

Symbol	Test Conditions		Value			Units
			Min.	Typ.	Max.	
BV_{CES}	I_C = 50 mA	V_{BE} = 0 V	36			V
BV_{CEO}	I_C = 15 mA	I_B = 0 mA	18			V
BV_{EBO}	I_E = 2.5 mA	I_C = 0 mA	4.0			V
I_{CBO}	V_{CB} =15 V	I_E = 0 mA			1	mA
h_{FE}	V_{CE} = 5 V	I_C = 250 mA	5			

DYNAMIC

Symbol	Test Conditions			Value			Units
				Min.	Typ.	Max.	
P_{OUT}	f = 175 MHz	P_{IN} = 1 W	V_{CE} = 12.5 V	10			W
G_P	f = 175 MHz	P_{IN} = 1 W	V_{CE} = 12.5 V	10			dB
C_{OB}	f = 1 MHz	V_{CB} = 15 V				45	pF

IMPEDANCE DATA

Frequency (MHz)	Z_{IN} (Ω)	Z_{OUT} (Ω)
135	1.5 - j1.7	6.2 - j1.0
140	1.5 - j1.4	5.9 - j0.8
150	1.5 - j0.9	5.2 + j0.4
160	1.3 - j0.8	5.0 + j1.5
170	1.3 - j0.8	5.0 + j3.0
175	1.3 - j0.9	5.0 + j3.5

Conditions:

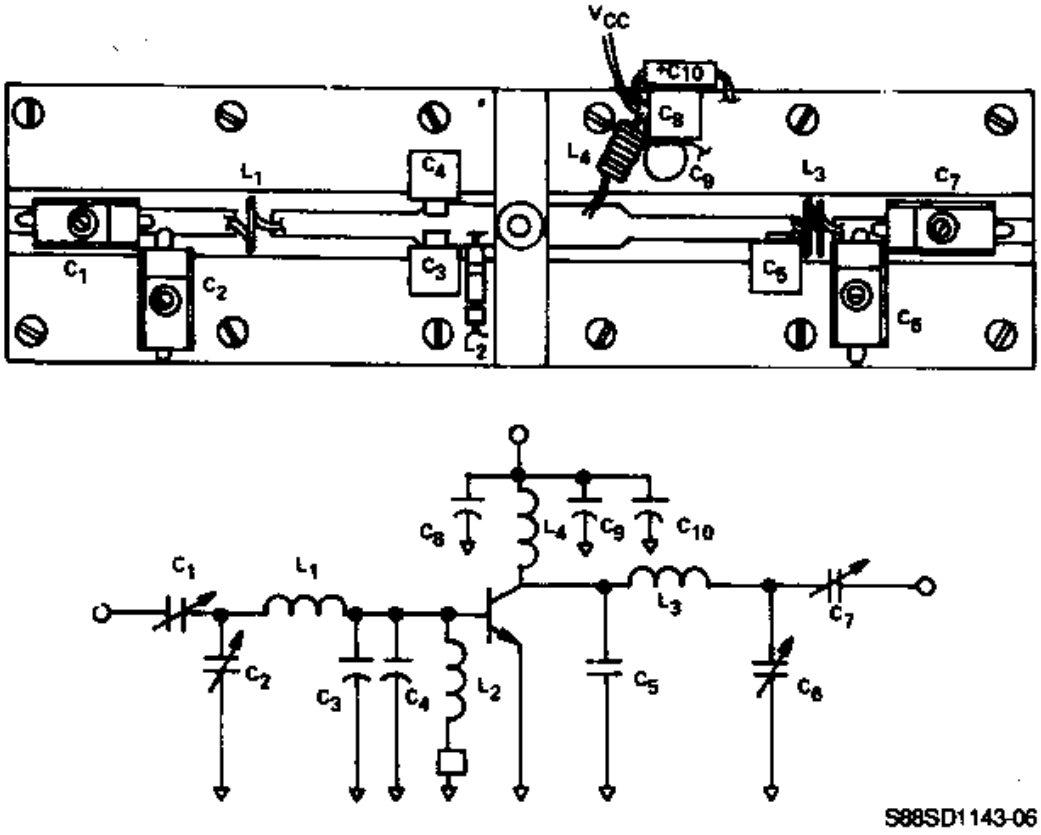
Z_{IN}: V_{CC} = 12.5V, P_{OUT} = 10W

Z_{OUT}: V_{CC} = 12.5V, P_{IN} = 1W

ADVANCED POWER TECHNOLOGY RF®

SD1143

TEST CIRCUIT



S88SD1143-06

COMPONENT LIST

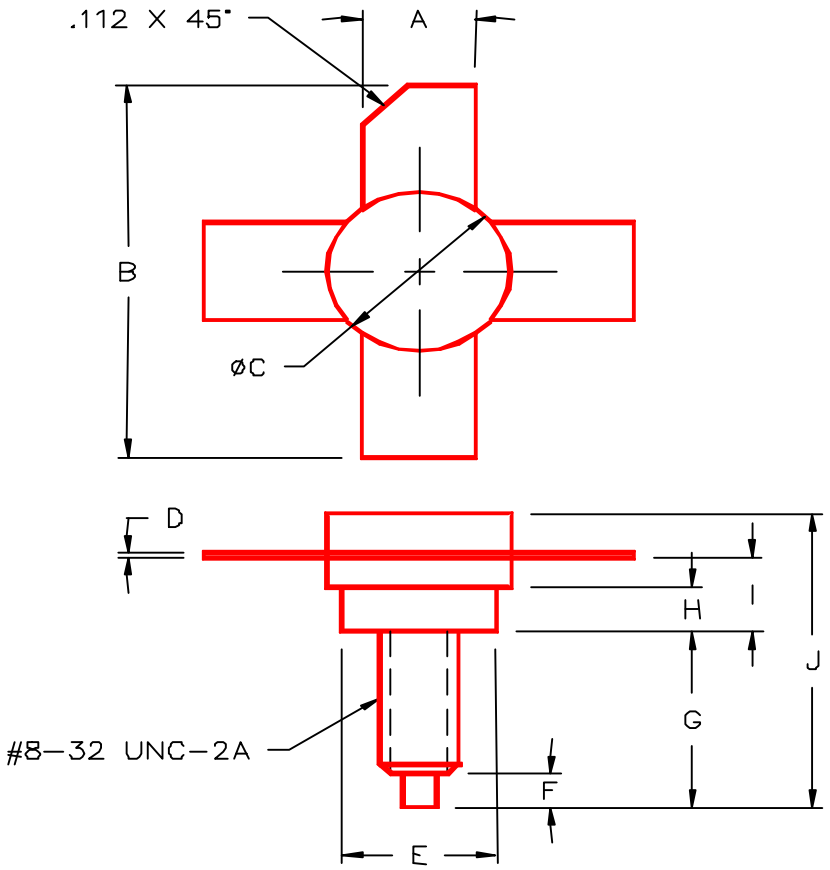
C_1	- ARCO 423
C_2 , C_6	- ARCO 422
C_3	- UNELCO 82pf
C_4	- UNELCO 120pf
C_5	- UNELCO 56pf
C_7	- ARCO 425
C_8	- UNELCO 1000pf
C_9	- .01µf DISC
C_{10}	- 5.6µf TANTALUM
L_1	- 1 TURN #16 AWG 3/8 DIA
L_2	- .33µh MOLDED CHOKE
L3	- 2 TURNS #16 AWG 1/4 DIA
L4	- 10 TURNS #22 AWG 1/8 DIA CLOSE WOUND

ADVANCED POWER TECHNOLOGY RF®

SD1143

PACKAGE MECHANICAL DATA

PACKAGE STYLE M135



	MINIMUM INCHES/MM	MAXIMUM INCHES/MM		MINIMUM INCHES/MM	MAXIMUM INCHES/MM
A	.220/5,59	.230/5,84	I	.155/3,94	.175/4,45
B	.980/24,89		J		.750/19,05
C	.370/9,40	.385/9,78			
D	.004/0,10	.007/0,18			
E	.320/8,13	.330/8,38			
F	.100/2,54	.130/3,30			
G	.450/11,43	.490/12,45			
H	.090/2,29	.100/2,54			