

80143

1.0 Watts, 15 Volts, Class A
Linear to 2300 MHz

GENERAL DESCRIPTION

The 80143 is a COMMON EMITTER transistor capable of providing 1.0 Watts of Class A, RF output power to 2300 MHz. This transistor is specifically designed for general Class A amplifier applications. It utilizes gold metalization and diffused ballasting to provide high reliability and supreme ruggedness. The transistor uses a fully hermetic High Temperature Solder Sealed package.

ABSOLUTE MAXIMUM RATINGS

Maximum Power Dissipation @ 25°C 4.5 Watts

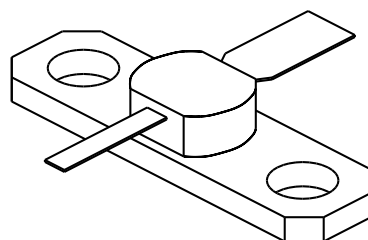
Maximum Voltage and Current

BVces	Collector to Emitter Voltage	50 Volts
BVebo	Emitter to Base Voltage	3.5 Volts
Ic	Collector Current	0.6 Amps

Maximum Temperatures

Storage Temperature	- 65 to + 200°C
Operating Junction Temperature	+ 200°C

CASE OUTLINE 55BT, STYLE 2



ELECTRICAL CHARACTERISTICS @ 25 °C

SYMBOL	CHARACTERISTICS	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Pout	Power Out	F = 2.3 GHz	1.0			Watts
Pin	Power Input	Ic = 200 mA			0.125	Watts
Pg	Power Gain	Vcc = 15 Volts	9.0	10.0		dB
Ft	Transition Frequency	Vce = 15V, Ic = 200 mA	4.2	4.5		GHz
VSWR	Load Mismatch Tolerance				10:1	

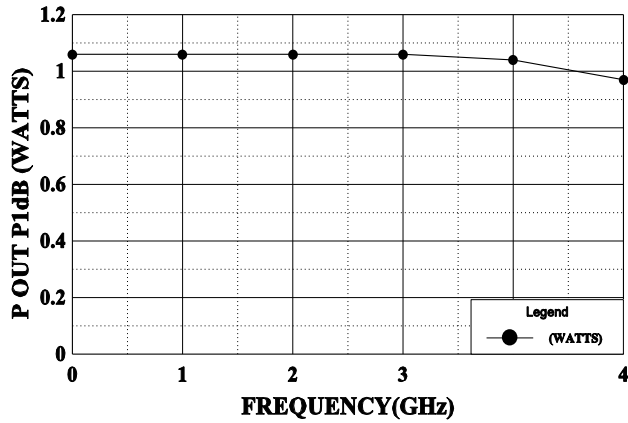
BVebo	Emitter to Base Breakdown	Ie = 2 mA	3.5			Volts
BVces	Collector to Emitter Breakdown	Ic = 20 mA	50			Volts
BVceo	Collector to Emitter Breakdown	Ic = 20 mA	20			Volts
hFE	DC Current Gain	Vce = 5 V, Ic = 200 mA	20			
Cob	Capacitance	Vcb = 28V, f = 1 MHz		3.4		pF
θjc	Thermal Resistance				30	°C/W

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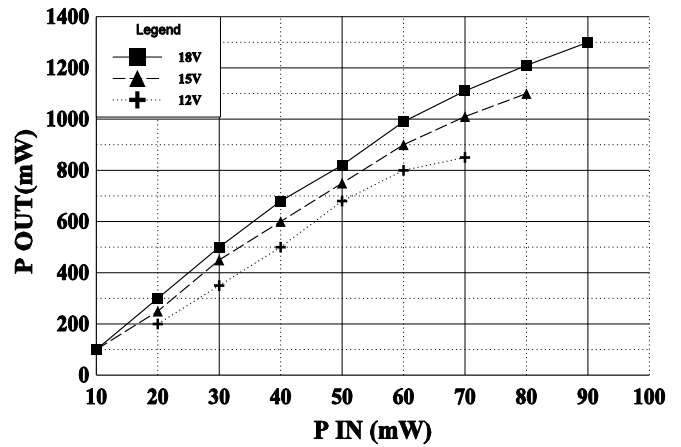
POWER OUTPUT vs FREQUENCY

$V_{cc}=15V$

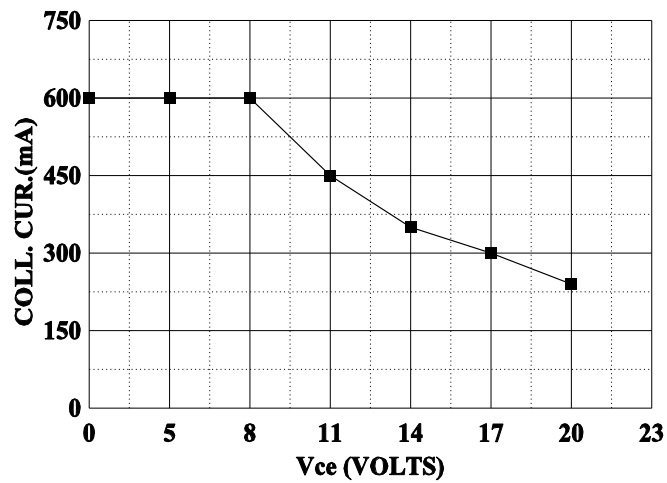


POWER OUTPUT vs POWER INPUT

$V_{ce}=12,15,18 \text{ Volts}; I_c=200mA$



DC SAFE OPERATING AREA



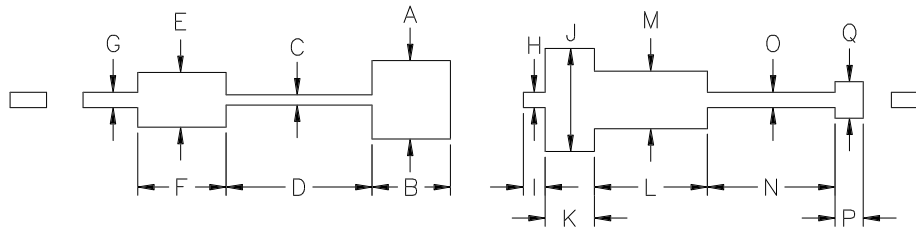
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CIRCUIT: MES

FREQ	--- S11 ---		--- S21 ---		--- S12 ---		--- S22 ---	
MHz	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
0.100	0.74523	-139.072	23.1569	122.888	0.02130	38.6374	0.63665	-59.3430
0.200	0.83904	-160.387	13.2482	102.204	0.02481	21.9060	0.41262	-79.9929
0.300	0.86349	-169.532	9.16285	88.7446	0.02580	16.4347	0.33897	-90.5201
0.400	0.86945	-175.151	6.95469	80.6123	0.02656	14.7851	0.31507	-97.6573
0.500	0.87126	-179.220	5.58335	74.7734	0.02687	14.2935	0.31273	-103.182
0.600	0.87258	177.456	4.65226	68.6924	0.02714	13.6292	0.32109	-107.892
0.700	0.87336	174.600	3.98221	61.9474	0.02780	13.7272	0.33588	-112.258
0.800	0.87406	172.167	3.47879	56.5060	0.02858	14.7467	0.35353	-116.149
0.900	0.87451	169.727	3.09034	51.3262	0.02910	14.9821	0.37354	-119.802
1.000	0.87453	167.348	2.78319	46.4507	0.02988	15.5773	0.39486	-123.289
1.100	0.87250	165.042	2.52784	41.6152	0.03071	15.8776	0.41654	-126.688
1.200	0.87116	162.788	2.31762	36.8549	0.03160	15.8605	0.43867	-129.991
1.300	0.86967	160.535	2.13966	32.1575	0.03283	16.4435	0.45927	-133.270
1.400	0.86986	158.314	1.98768	27.4928	0.03400	16.6297	0.47936	-136.529
1.500	0.86824	155.918	1.85641	22.8336	0.03539	17.2656	0.49878	-139.661
1.600	0.86604	153.421	1.74081	18.2254	0.03715	17.0624	0.51780	-142.847
1.700	0.86184	150.901	1.63766	13.6683	0.03858	17.1415	0.53552	-145.989
1.800	0.85937	148.379	1.54533	9.18261	0.04023	16.2272	0.55225	-149.096
1.900	0.85612	145.720	1.46274	4.78123	0.04221	16.4217	0.56783	-152.155
2.000	0.85458	143.071	1.39093	0.39241	0.04425	15.7298	0.58247	-155.087
2.100	0.85286	140.202	1.32681	-4.05113	0.04756	14.6697	0.59834	-158.056
2.200	0.84763	137.149	1.26508	-8.50524	0.04983	12.8878	0.61184	-161.166
2.300	0.84009	133.993	1.20767	-12.7453	0.05193	10.6982	0.62395	-163.961
2.400	0.83220	131.013	1.15845	-16.8963	0.05368	8.83368	0.63750	-166.655
2.500	0.82465	128.048	1.11640	-20.9442	0.05551	7.95492	0.65178	-169.272
2.600	0.82067	124.938	1.07896	-25.1542	0.05751	6.83706	0.66487	-172.024
2.700	0.81483	121.427	1.04441	-29.3750	0.06047	5.84021	0.67664	-174.598
2.800	0.80880	117.847	1.01308	-33.6115	0.06346	4.53989	0.68926	-177.140
2.900	0.79979	114.017	0.98350	-37.9183	0.06665	2.84239	0.70128	-179.771
3.000	0.79177	110.076	0.95667	-42.2425	0.07059	1.12060	0.71196	177.606

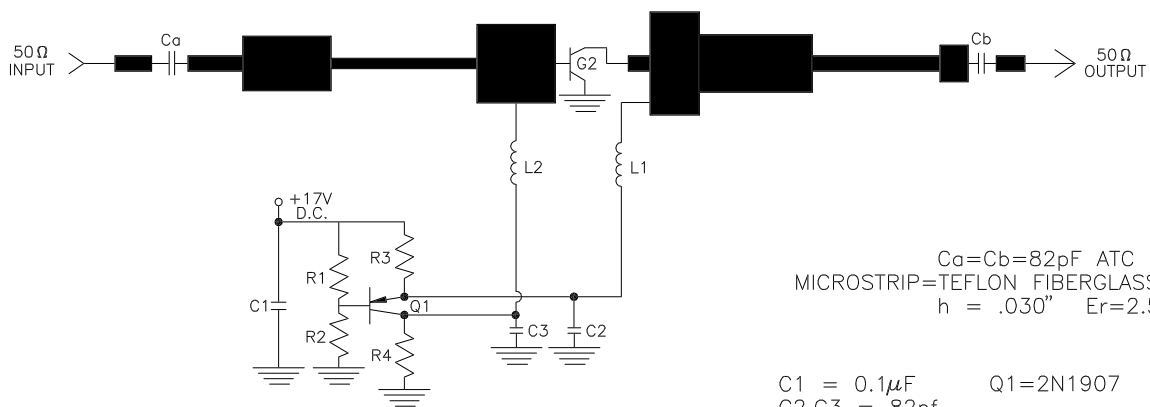
REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
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DIM	INCHES
A	.430
B	.430
C	.055
D	.800
E	.300
F	.485
G	.085
H	.085
I	.120
J	.565
K	.270
L	.620
M	.315
N	.700
O	.085
P	.155
Q	.200

80143 TEST CIRCUIT
2.3 GHz



$C_a = C_b = 82\text{pF}$ ATC CASE A
MICROSTRIP=TEFLON FIBERGLASS BOARD
 $h = .030"$ $E_r = 2.55$

$C1 = 0.1\mu\text{F}$ $Q1 = 2\text{N}1907$
 $C2, C3 = 82\text{pF}$
 $R1 = 1.8\text{K}\Omega$
 $R2 = 10\text{K}\Omega$
 $R3 = 9.1\Omega$
 $R4 = 200\Omega$
 $\text{RFC} = L1 = L2 = 6 \text{ turns } \#20 \text{ AWG } 0.060 \text{ dia}$



CAGE OPJR2	DWG NO. 80143	REV A
SCALE 1/1	SHEET	