

CLASS C, 900 MHz 28 VOLT POWER TRANSISTOR

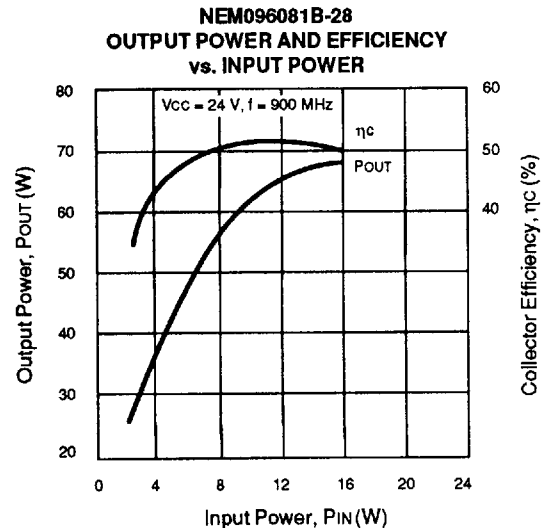
NEM092081B-28
NEM094081B-28
NEM096081B-28

FEATURES

- HIGH POWER
- HIGH GAIN
- TITANIUM/PLATINUM/GOLD METALLIZATION FOR HIGH RELIABILITY
- SUPERIOR RF PERFORMANCE
- RUGGED VSWR $\infty : 1$ at $V_{CC} = 24$ V
- LOW COST PACKAGES
- COMMON BASE

DESCRIPTION

NEC's NEM0900 series of NPN epitaxial UHF power transistors is designed specifically for base stations in the 800 & 960 MHz band. The series is available in a low cost metal-ceramic stripline package offering power levels of 20, 40, and 60 watts. Internal matching is incorporated to simplify circuit design. The series provides high gain, high efficiency, and high tolerance to load mismatch.



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ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$)

PART NUMBER EIAJ ¹ REGISTERED NUMBER PACKAGE OUTLINE			NEM092081B-28 2SC3537 81B			NEM094081B-28 2SC3538 81B			NEM096081B-28 2SC3539 81B		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
P_{OUT}	Output Power at $V_{CC} = 24$ V, $f = 900$ MHz, $P_{IN} = 2.5$ W $P_{IN} = 6.3$ W $P_{IN} = 10$ W	W W W	15.8	20		32	40		50	63	
η_c	Collector Efficiency at $V_{CC} = 24$ V, $f = 900$ MHz, $P_{IN} = 2.5$ W $P_{IN} = 6.3$ W $P_{IN} = 10$ W	% % %	50	60		50	60		45	50	
I_{CBO}	Collector Cutoff Current at $V_{CB} = 30$ V, $I_E = 0$	mA			2			4			8
I_{EBO}	Emitter Cutoff Current at $V_{EB} = 2$ V, $I_C = 0$	mA			2			4			8
h_{FE}	DC Forward Current Gain at $V_{CE} = 10$ V, (pulsed) $I_C = 1$ A $I_C = 2$ A $I_C = 3$ A		20	60	200	20	60	200	20	60	200
C_{OB}	Output Capacitance ² at $V_{CB} = 28$ V, $I_E = 0$, $f = 1$ MHz	pF		25	40		50	80		80	140

Notes:

- Electronic Industrial Association of Japan.
- Emitter and Case is grounded.

NEM092081B-28, NEM094081B-28, NEM096081B-28

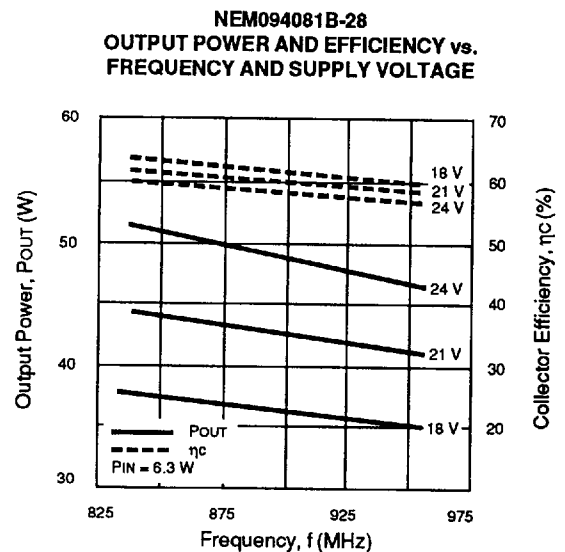
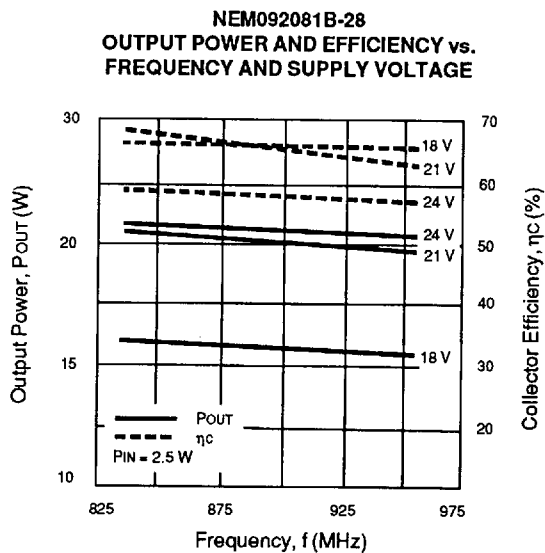
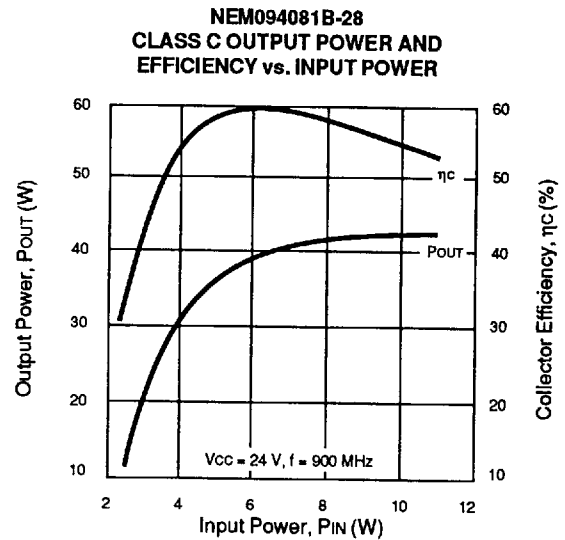
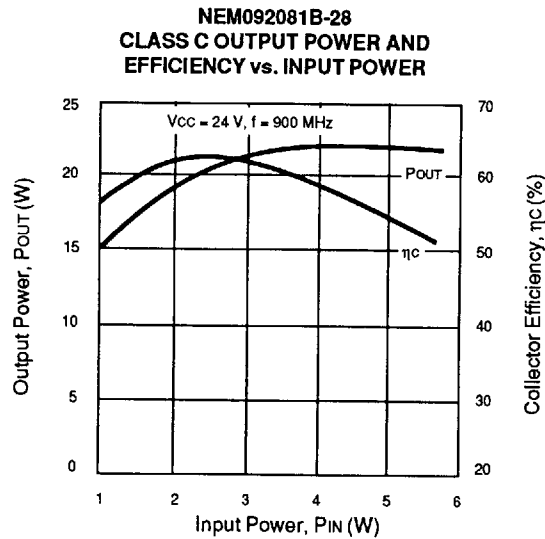
ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25°C)

PART NUMBER EIAJ ² REGISTERED NUMBER PACKAGE OUTLINE			NEM092081B-28 2SC3537 81B	NEM094081B-28 2SC3538 81B	NEM096081B-28 2SC3539 81B
SYMBOLS	PARAMETERS	UNITS	RATINGS	RATINGS	RATINGS
V _{CB0}	Collector to Base Voltage	V	50	50	50
V _{CER} ³	Collector to Emitter Voltage	V	50	50	50
V _{EB0}	Emitter to Base Voltage	V	3	3	3
I _c	Collector Current	A	3	6	9
R _{TH}	Thermal Resistance (Junction-to-Case)	°C/W	4	1.6	1.1
P _T	Total Power Dissipation (T _c = 25°C)	W	50	110	170
T _J	Junction Temperature	°C	200	200	200
T _{STG}	Storage Temperature	°C	-65 to +150	-65 to +150	-65 to +150

Notes:

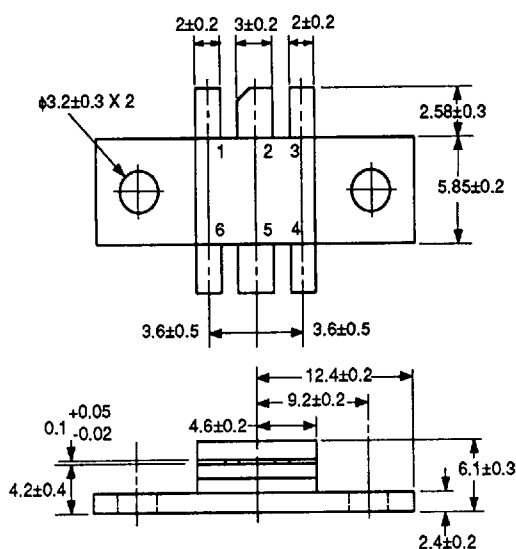
1. Operation in excess of any one of these parameters may result in permanent damage.
2. Electronic Industrial Association of Japan.
3. R_{BE} = 10 Ω.

TYPICAL PERFORMANCE CURVES (T_A = 25°C)

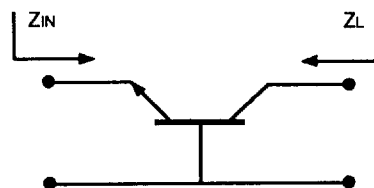


OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE 81B



All dimensions typical unless noted.



ZL is optimum load impedance at rated output power.

TYPICAL INPUT/OUTPUT IMPEDANCE LOAD¹

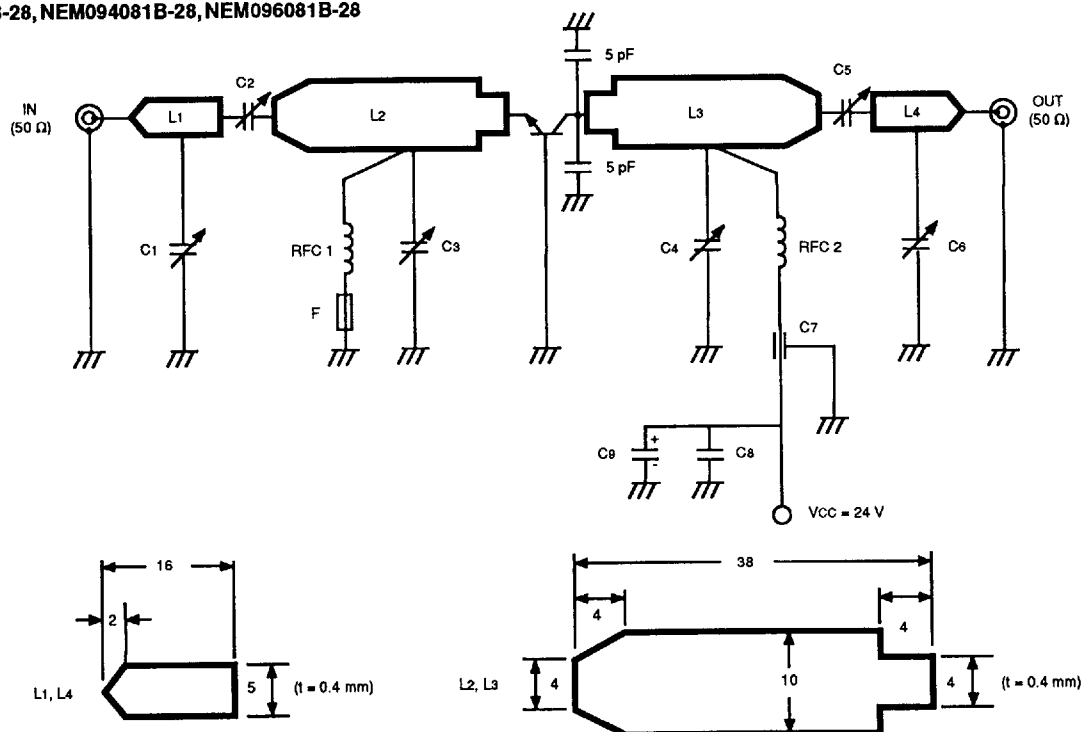
PART NUMBER	INPUT POWER P _{IN} (dBm)	OUTPUT POWER P _{OUT} (dBm)	Z _{IN} (Ω)	Z _L (Ω)
NEM092081B-28	34	43	4.09 + j6.31	4.03 - j1.74
NEM094081B-28	38	46	2.93 + j7	2.87 - j0.43
NEM096081B-28	40	48.3	0.8 + j1.75	2.25 + j0.4

Note:

1. Typical Large Signal Impedances at V_{CC} = 24V, f = 900 MHz.

TEST CIRCUIT DIAGRAM¹

NEM092081B-28, NEM094081B-28, NEM096081B-28



Note:

1. Application Note TEA-561 is available upon request. This note describes a microstrip design using the NEM096081B-28 in the 860 to 920 MHz band.