

### FEATURES

- **LOW OPERATING VOLTAGE** ( $V_{CC} = 13.5$  V)
- **TITANIUM-PLATINUM-GOLD METALLIZATION FOR HIGH RELIABILITY**
- **SUPERIOR RF PERFORMANCE**
- **HIGH GAIN**
- **RUGGED VSWR**  $\infty: 1$  at  $V_{CC} = 16$  V
- **FOR 800 MHz BAND MOBILE RADIO APPLICATIONS**
- **LOW COST PACKAGES**
- **HIGH POWER**

### DESCRIPTION AND APPLICATIONS

NEC's NE0800 series of NPN epitaxial UHF power transistors is designed for large volume mobile radio applications in the 800 MHz band. The series is available in two low cost, rugged packages. High gain, power and efficiency, combined with low cost packages, make the NE0800 series an ideal choice for large volume applications in the 800 MHz mobile radio band.

The series solves the metal migration problem by using NEC's famous Pt-Si/Ti/Pt/Au system rather than conventional aluminum or tungsten-gold metallization. NEC's proprietary fabrication technique employed in the series features ion-implantation base regions, arsenic doped polysilicon emitter structure, porous SiO<sub>2</sub> under bonding pads to reduce parasitic capacitance and silicon nitride passivation (Si<sub>3</sub>N<sub>4</sub>). These unique systems provide levels of reliability and orders of magnitude greater than conventional systems, even at rated values.

The NE0800 series is a standard grade D device manufactured and screened to levels unique to standard parts. The series offers the engineer the very best in performance, ruggedness and reliability.

### ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ )

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CB0</sub>	Collector to Base Voltage	V	35
V <sub>CE0</sub>	Collector to Emitter Voltage	V	18
V <sub>EB0</sub>	Emitter to Base Voltage	V	3
I <sub>C</sub>	Collector Current NE080190,91 NE080490,91 NE081090,91	A A A	0.5 1.5 3
R $\theta_{JC}$	Thermal Resistance (Junction-to-Case) NE080190,91 NE080490,91 NE081090,91	$^\circ\text{C/W}$ $^\circ\text{C/W}$ $^\circ\text{C/W}$	21 10 5
P <sub>T</sub>	Total Power Dissipation ( $T_c = 25^\circ\text{C}$ ) NE080190,91 NE080490,91 NE081090,91	W W W	8.3 17.5 35
T <sub>J</sub>	Junction Temperature	$^\circ\text{C}$	200
T <sub>STG</sub>	Storage Temperature	$^\circ\text{C}$	-65 to +150

# NE0800-12 SERIES

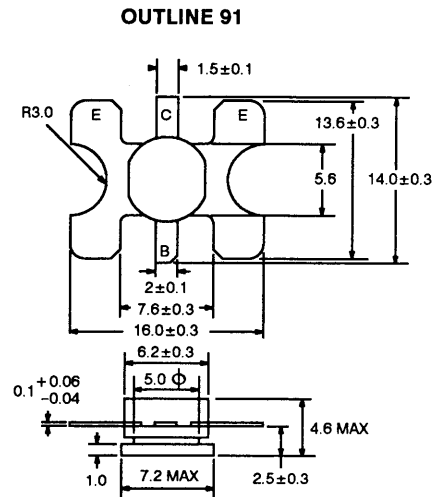
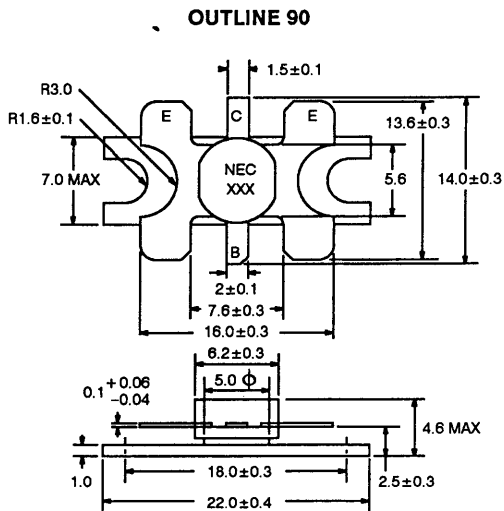
## PERFORMANCE SPECIFICATIONS (TA = 25°C)

PART NUMBER EIAJ <sup>1</sup> REGISTERED NUMBER PACKAGE OUTLINE			NE080190,91 2SC2558K,M 90,91			NE080490,91 2SC2559K,M 90,91			NE081090,91 2SC2850K,M 90,91		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
P <sub>OUT</sub>	Output Power at V <sub>CC</sub> = 13.5 V, f = 860 MHz P <sub>IN</sub> = 20 dBm P <sub>IN</sub> = 29.5 dBm P <sub>IN</sub> = 36 dBm	dBm dBm dBm	30	32.5		36	37.8		39.5	40.2	
η <sub>c</sub>	Collector Efficiency at V <sub>CC</sub> = 13.5 V, f = 860 MHz P <sub>IN</sub> = 20 dBm P <sub>IN</sub> = 29.5 dBm P <sub>IN</sub> = 36 dBm	% % %	50	55		55	60		65	75	
VSWR	Voltage Standing Wave Ratio at V <sub>CC</sub> = 13.5 V, f = 860 MHz P <sub>OUT</sub> = 32 dBm P <sub>OUT</sub> = 37.5 dBm P <sub>OUT</sub> = 41 dBm		∞			∞			∞		
BV <sub>CB0</sub>	Collector to Base Breakdown Voltage at I <sub>E</sub> = 0 I <sub>C</sub> = 100 μA I <sub>C</sub> = 1 mA I <sub>C</sub> = 2 mA	V V V	35			35			35		
BV <sub>CE0</sub>	Collector to Emitter Breakdown Voltage at I <sub>B</sub> = 0 I <sub>C</sub> = 1 mA I <sub>C</sub> = 10 mA I <sub>C</sub> = 20 mA	V V V	18			18			18		
BV <sub>EB0</sub>	Emitter to Base Breakdown Voltage at I <sub>C</sub> = 0 I <sub>E</sub> = 100 μA I <sub>E</sub> = 1 mA I <sub>E</sub> = 2 mA	V V V	3			3			3		
I <sub>CBO</sub>	Collector Cutoff Current at V <sub>CB</sub> = 20 V, I <sub>E</sub> = 0	mA			0.1			0.2			0.4
I <sub>EBO</sub>	Emitter Cutoff Current at V <sub>EB</sub> = 2 V, I <sub>C</sub> = 0	mA			0.1			0.2			0.4
h <sub>FE</sub>	DC Forward Current Gain at V <sub>CE</sub> = 10 V I <sub>C</sub> = 100 mA (pulsed) I <sub>C</sub> = 300 mA (pulsed) I <sub>C</sub> = 500 mA (pulsed)		20	60	200	20	60	200	20	60	200
C <sub>OB</sub>	Output Capacitance at V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1 MHz <sup>2</sup>	pF		2.3	3.5		7	10		14	20

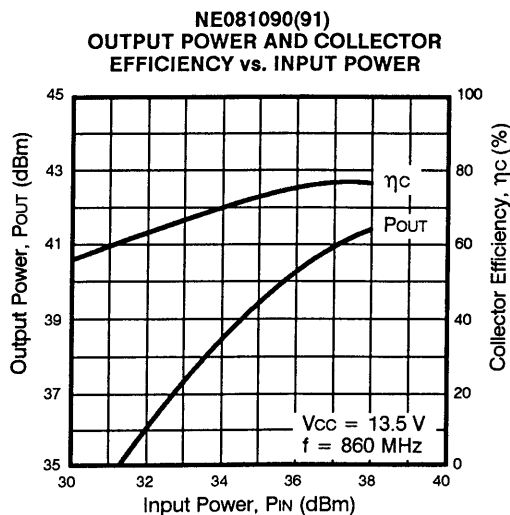
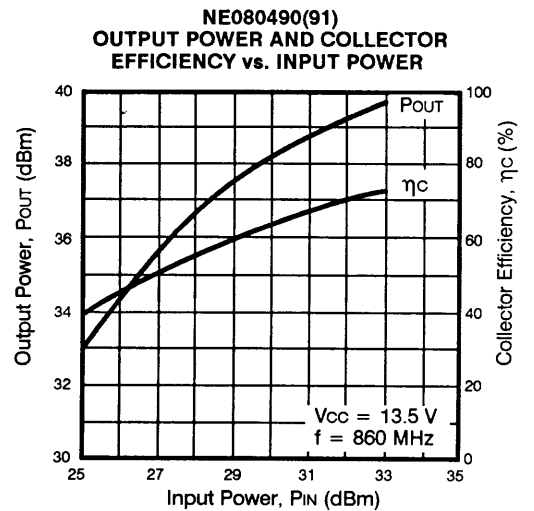
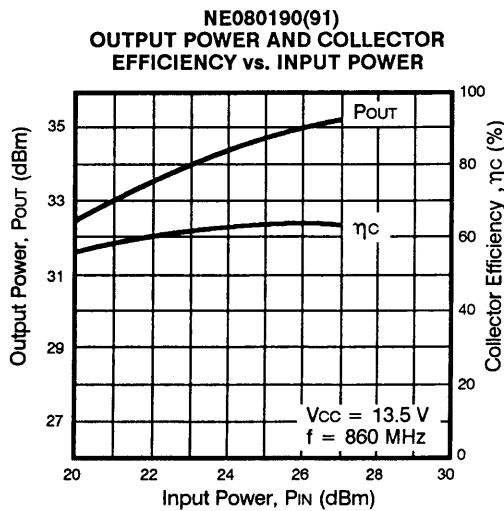
### Notes:

1. Electronic Industrial Association of Japan.
2. Emitter and Flange are grounded.

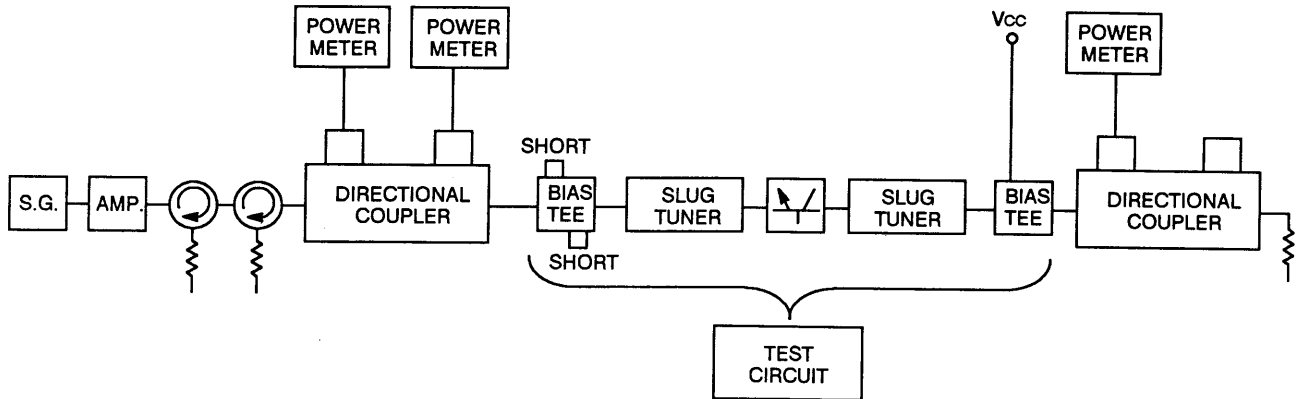
OUTLINE DIMENSIONS (Units in mm)



TYPICAL PERFORMANCE CHARACTERISTICS (T<sub>A</sub> = 25°C)

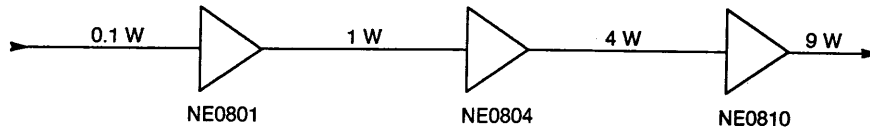


TEST CIRCUIT



APPLICATIONS

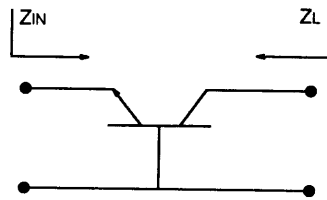
800 MHz MOBILE RADIO BAND ( $V_{CC} = 13.5\text{ V}$ )



TYPICAL INPUT/OUTPUT LOAD IMPEDANCE\*

PART NUMBER	$P_{IN}$ (dBm)	$Z_{IN}(\Omega)$	$Z_{out}(\Omega)$
NE080190(91)	20	$1.44 + j2.62$	$9.65 - j17.6$
NE080490(91)	29.5	$1.16 + j6.14$	$6.02 - j0.86$
NE081090(91)	36	$2.64 + j7$	$5.16 + j1.3$

\* $f = 860\text{ MHz}$ ,  $V_{CC} = 13.5\text{ V}$ ,  $Z_o = 50\ \Omega$



$Z_L$  is optimum load impedance at rated output power.

## CLASS A, 860 MHz, 24 VOLT POWER TRANSISTOR

NEL080120-28  
NEL080220-28  
NEL080525-28

### FEATURES

- HIGH LINEAR POWER
- HIGH GAIN
- WIDE BANDWIDTH
- INFINITE VSWR
- 24 VOLT OPERATION:  
NEL0801: 1.2 W  
NEL0802: 2.4 W  
NEL0805: 4.8 W

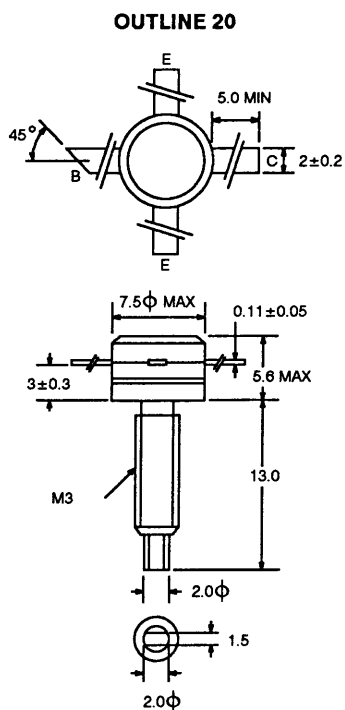
### DESCRIPTION AND APPLICATIONS

NEC's NEL0800 series of NPN epitaxial UHF power transistors is designed for linear operation in the 500 to 1000 MHz UHF band. The series is ideal for low power UHF TV transmitters. The series provides high gain and a high resistance to burnout with load mismatch.

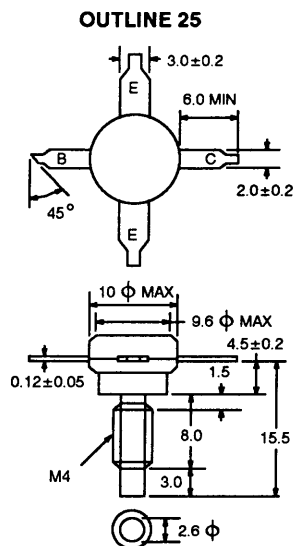
### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CB0</sub>	Collector to Base Voltage	V	50
V <sub>CE0</sub>	Collector to Emitter Voltage	V	30
V <sub>EB0</sub>	Emitter to Base Voltage	V	3
I <sub>C</sub>	Collector Current		
	NEL0801	A	1
	NEL0802	A	2
	NEL0805	A	5
T <sub>J</sub>	Junction Temperature	°C	200
T <sub>STG</sub>	Storage Temperature	°C	-65 to +200

### OUTLINE DIMENSIONS (Units in mm)



All leads insulated from stud.



All leads insulated from stud.

**PERFORMANCE SPECIFICATIONS** (TA = 25°C)

PART NUMBER EIAJ* REGISTERED NUMBER PACKAGE OUTLINE			NEL080120-28 2SC3139 20			NEL080220-28 2SC3140 20			NEL080525-28 2SC3141 25		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
PTEST	Output Power at Test Point at VCE = 24 V, f = 860 MHz, PIN = 20 dBm, IC = 200 mA PIN = 24 dBm, IC = 400 mA PIN = 26 dBm, IC = 600 mA	dBm dBm dBm	29.5	31		32.3	33.8		35.5	36.8	
P1dB	Output Power at 1 dB Compression Point at VCE = 24 V, f = 860 MHz, IC = 200 mA IC = 400 mA IC = 600 mA	dBm dBm dBm		33.9			36.3			37.8	
G1dB	Gain at 1 dB Compression Point at VCE = 24 V, f = 860 MHz IC = 200 mA IC = 400 mA IC = 600 mA	dB dB dB		10.3			9.3			9	

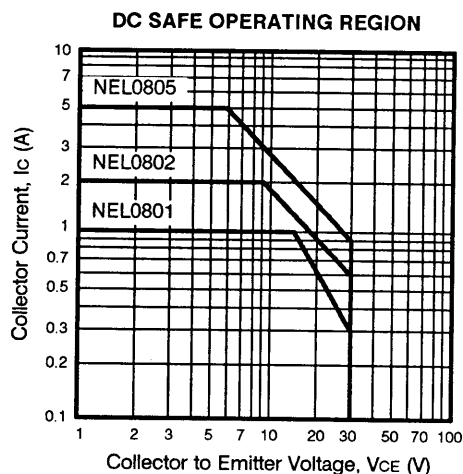
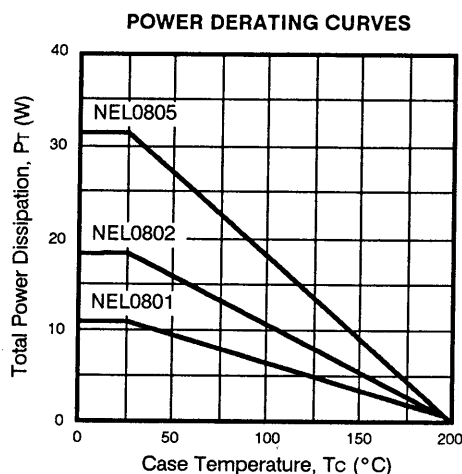
\*Electronic Industrial Association of Japan.

**ELECTRICAL CHARACTERISTICS** (TA = 25°C)

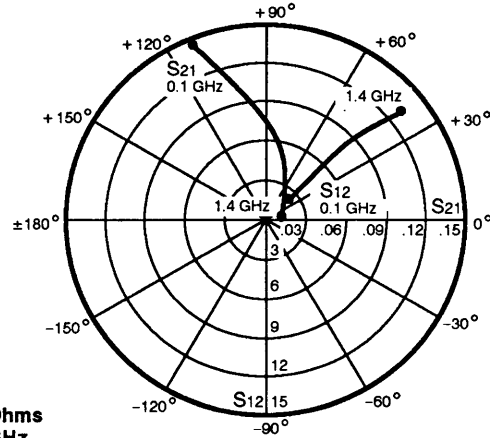
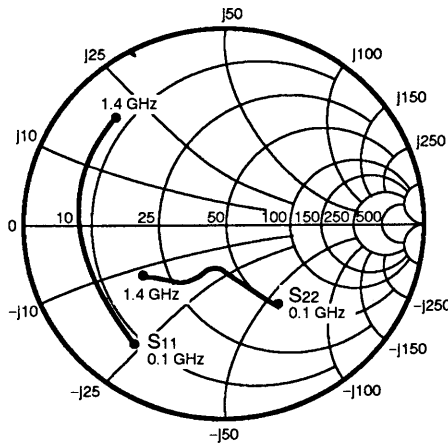
PART NUMBER EIAJ* REGISTERED NUMBER PACKAGE OUTLINE			NEL080120-28 2SC3139 20			NEL080220-28 2SC3140 20			NEL080525-28 2SC3141 25		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
ICBO	Collector Cutoff Current at VCB = 30 V, IE = 0	mA			0.1			0.2			0.4
IEBO	Emitter Cutoff Current at VEB = 2 V, IC = 0	mA			0.1			0.2			0.4
hFE	DC Forward Current Gain at VCE = 10 V, IC = 150 mA IC = 300 mA IC = 600 mA		20	60	200	20	60	200	20	60	200
COB	Output Capacitance at VCB = 28 V, f = 1 MHz, IE = 0	pF		2	3.5		4	6		8	12
RθJc	Thermal Resistance (Junction-to-Case)	°C/W			15			10			5.5
PT	Total Power Dissipation (Tc = 25°C)	W			12			17.5			32

\*Electronic Industrial Association of Japan.

**TYPICAL PERFORMANCE CHARACTERISTICS** (TA = 25°C)



**TYPICAL COMMON EMITTER SCATTERING PARAMETERS**



**NEL0801**  
Coordinates in Ohms  
Frequency in GHz  
(VCE = 24 V, IC = 200 mA)

**S-MAGN AND ANGLES:**

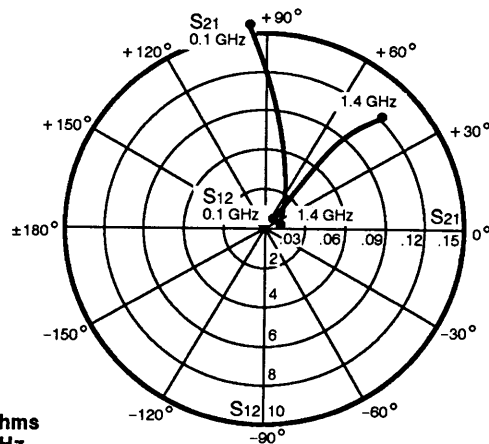
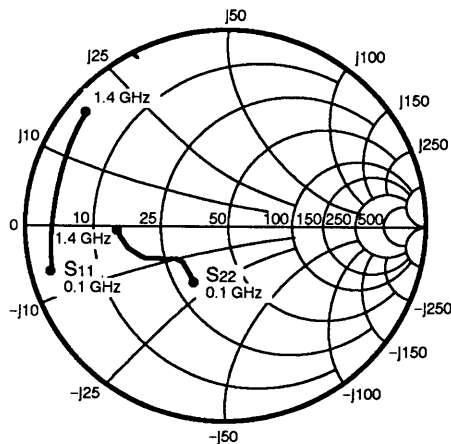
VCE = 24 V, IC = 100 mA

FREQUENCY (MHz)	S11		S21		S12		S22	
100	.72	-126	15.97	114	.02	39	.52	-64
200	.71	-158	8.62	95	.03	33	.33	-87
400	.73	179	4.58	75	.05	35	.25	-115
600	.74	166	3.05	60	.07	38	.25	-126
800	.74	156	2.31	48	.08	40	.31	-132
1000	.73	150	1.81	38	.10	41	.34	-141
1200	.74	144	1.52	28	.12	39	.36	-145
1400	.77	134	1.32	17	.14	37	.42	-152

VCE = 24 V, IC = 200 mA

100	.74	-128	14.89	112	.02	38	.49	-59
200	.72	-160	7.92	93	.04	31	.31	-74
400	.74	178	4.19	74	.05	33	.24	-99
600	.74	166	2.79	59	.07	37	.24	-109
800	.75	156	2.11	46	.08	40	.32	-120
1000	.73	150	1.65	35	.10	42	.35	-131
1200	.75	144	1.39	25	.12	41	.38	-136
1400	.78	133	1.21	14	.13	38	.44	-145

**TYPICAL COMMON EMITTER SCATTERING PARAMETERS**



**NEL0802**  
Coordinates in Ohms  
Frequency in GHz  
(Vce = 24 V, Ic = 400 mA)

**S-MAGN AND ANGLES:**

VCE = 24 V, IC = 300 mA

FREQUENCY (MHz)

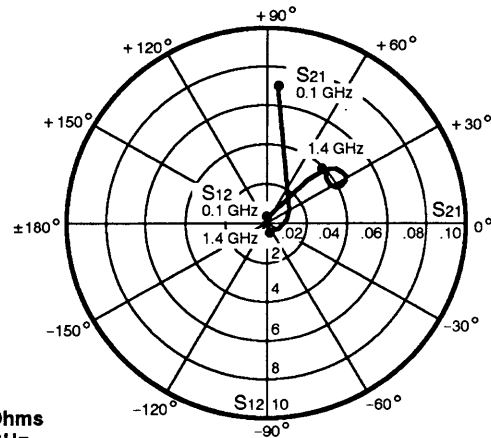
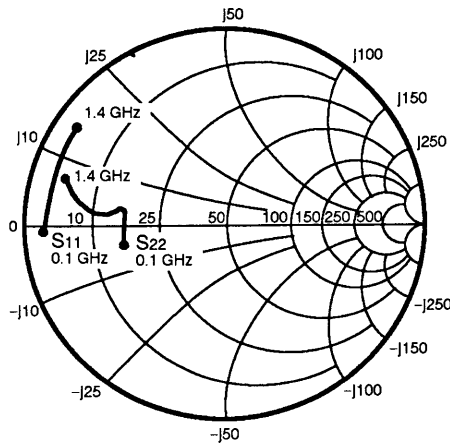
	S11		S21		S12		S22	
100	.85	-165	12.14	96	.01	26	.37	-134
200	.85	-177	5.97	85	.01	32	.34	-156
400	.87	171	3.09	69	.03	42	.38	-167
600	.87	163	2.02	56	.05	45	.40	-172
800	.86	157	1.53	45	.07	48	.44	-169
1000	.85	153	1.20	35	.09	49	.48	-174
1200	.86	150	1.01	26	.11	45	.48	-179
1400	.89	141	0.88	17	.13	43	.50	-179

VCE = 24 V, IC = 400 mA

100	.86	-166	10.36	95	.01	21	.29	-122
200	.86	-178	5.17	84	.01	34	.27	-143
400	.87	171	2.70	69	.03	40	.34	-156
600	.87	163	1.77	54	.05	46	.37	-162
800	.87	157	1.34	43	.07	50	.43	-161
1000	.85	154	1.04	32	.09	49	.48	-167
1200	.86	149	0.88	22	.10	47	.50	-173
1400	.90	141	0.75	14	.12	44	.51	-179



**TYPICAL COMMON EMITTER SCATTERING PARAMETERS**



**NEL0805**  
Coordinates in Ohms  
Frequency in GHz  
(VCE = 24 V, IC = 600 mA)

**S-MAGN AND ANGLES:**

VCE = 24 V, IC = 500 mA

FREQUENCY (MHz)	S11		S21		S12		S22	
100	.94	-179	7.33	87	.00	8	.52	-169
200	.94	176	3.64	77	.00	37	.52	-178
400	.95	166	1.97	58	.01	46	.55	177
600	.93	159	1.37	39	.02	42	.56	172
800	.91	153	1.17	21	.03	40	.59	175
1000	.86	150	1.06	-1	.05	33	.64	174
1200	.84	148	1.00	-32	.04	30	.70	171
1400	.91	146	0.81	-78	.04	43	.92	163

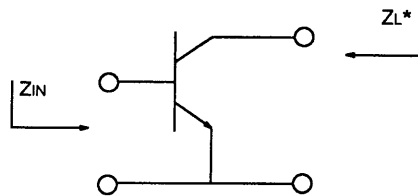
VCE = 24 V, IC = 600 mA

100	.94	-179	7.00	86	.00	15	.52	-169
200	.94	176	3.50	76	.00	38	.52	-178
400	.95	166	1.88	57	.01	41	.55	178
600	.93	159	1.31	38	.03	42	.56	172
800	.91	153	1.11	19	.03	40	.59	175
1000	.86	150	1.00	-3	.05	33	.64	174
1200	.85	149	0.95	-35	.03	28	.71	171
1400	.91	146	0.74	-80	.04	42	.92	162

**TYPICAL PERFORMANCE CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$ )

PART NUMBER	f = 500 MHz		f = 700 MHz		f = 860 MHz	
	Z <sub>IN</sub> (Ω)	*Z <sub>L</sub> (Ω)	Z <sub>IN</sub> (Ω)	*Z <sub>L</sub> (Ω)	Z <sub>IN</sub> (Ω)	*Z <sub>L</sub> (Ω)
NEL080120-28	5.8 + j6.1	52 - j41.0	5.8 + j4.3	37 - j48.0	5.84 + j6.9	25 - j43.0
NEL080220-28	2.9 + j7.0	31.1 - j28.0	3.5 + j4.3	26.6 - j27.9	3.2 + j6.6	21.3 - j23.7
NEL080525-28	2.3 + j4.8	18 - j10.5	2.9 + j8.3	14.2 - j5.65	1.5 + j9.7	8.6 - j4.7

**NEL0800-28 SERIES  
LARGE SIGNAL INPUT AND OUTPUT IMPEDANCES  
AT V<sub>CC</sub> = 24 V**



\*Z<sub>L</sub> is optimum load impedance at rated output power.



# CLASS C, 800-960 MHz, 12 VOLT POWER TRANSISTOR

**NEM080481-12**  
**NEM081081-12**  
**NEM082081B-12**  
**NEM084081B-12**

## FEATURES

- **LOW OPERATING VOLTAGE:** 13.5 V
- **TITANIUM/PLATINUM/GOLD METALLIZATION FOR HIGH RELIABILITY**
- **GAIN AS HIGH AS 7 dB**
- **RUGGED VSWR:**  $\infty$  at  $V_{CC} = 13.5$  V
- **IDEALLY SUITED FOR 800/960 MHz BAND MOBILE/CELLULAR RADIO APPLICATIONS**
- **LOW COST PACKAGES**
- **HIGH OUTPUT POWER:** 37 Watts at 860 MHz
- **COMMON BASE**

## DESCRIPTION AND APPLICATIONS

NEC's NEM0800 series of NPN epitaxial UHF power transistors are designed specifically for large volume mobile radio applications in the 800 & 960 MHz bands. The series is available in a low cost metal-ceramic stripline package offering power levels of 6, 12, 24, and 40 W. Internal matching is incorporated to simplify circuit design. The series provides high gain, high efficiency, and a high resistance to burn-out with load mismatch. The NEM0800 series is complementary to NEC's range of power amplifier modules offering total discrete/modular design flexibility.

## PERFORMANCE SPECIFICATIONS (TA = 25°C)

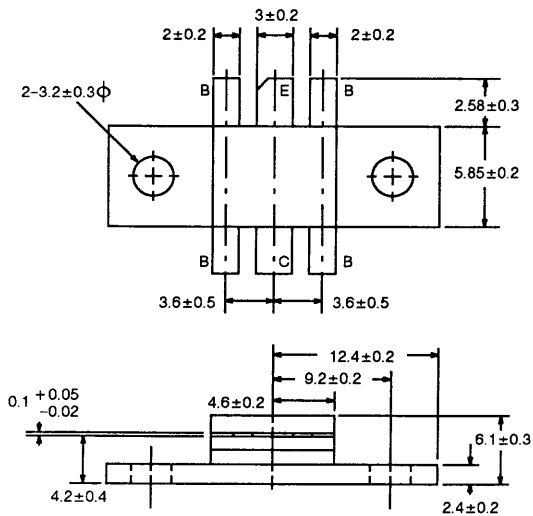
PART NUMBER EIAJ* REGISTERED NUMBER PACKAGE OUTLINE			NEM080481E-12			NEM081081E-12			NEM082081B-12 2SC3282A 81B			NEM084081B-12 2SC3283A 81B		
SYMBOLS	PARAMETERS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX
P <sub>OUT</sub>	Output Power at V <sub>CC</sub> = 13.5 V f = 950 MHz, P <sub>IN</sub> = 1.5 W f = 950 MHz, P <sub>IN</sub> = 3.5 W f = 860 MHz, P <sub>IN</sub> = 4 W f = 860 MHz, P <sub>IN</sub> = 8 W	W W W W	4	6		10	12.5		18	22		30	37	
η <sub>c</sub>	Collector Efficiency at V <sub>CC</sub> = 13.5 V f = 950 MHz, P <sub>IN</sub> = 1.5 W f = 950 MHz, P <sub>IN</sub> = 3.5 W f = 860 MHz, P <sub>IN</sub> = 4 W f = 860 MHz, P <sub>IN</sub> = 8 W	% % % %	55	60		55	65		50	58		50	55	
VSWR	Voltage Standing Wave Ratio at V <sub>CC</sub> = 13.5 V P <sub>OUT</sub> = 4 W P <sub>OUT</sub> = 10 W P <sub>OUT</sub> = 20 W P <sub>OUT</sub> = 40 W				∞			∞			∞			∞
I <sub>CBO</sub>	Collector Cutoff Current at V <sub>CB</sub> = 20 V, I <sub>E</sub> = 0	mA		0.2			0.3				2			4
I <sub>EBO</sub>	Emitter Cutoff Current at V <sub>EB</sub> = 20 V, I <sub>E</sub> = 0	mA		0.2			0.3				2			4
h <sub>FE</sub>	DC Forward Current Gain at V <sub>CC</sub> = 10 V I <sub>C</sub> = 0.3 A (pulsed) I <sub>C</sub> = 0.5 A (pulsed) I <sub>C</sub> = 1 A (pulsed) I <sub>C</sub> = 2 A (pulsed)		20	60	200	20	60	200	20	50	200	20	50	200
C <sub>OB</sub>	Output Capacitance at V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0 f = 1 MHz	pF		7	10		15	19.5		2.5	35		50	70

\*Electronic Industrial Association of Japan

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**OUTLINE DIMENSIONS** (Units in mm)

**OUTLINE 81B\***

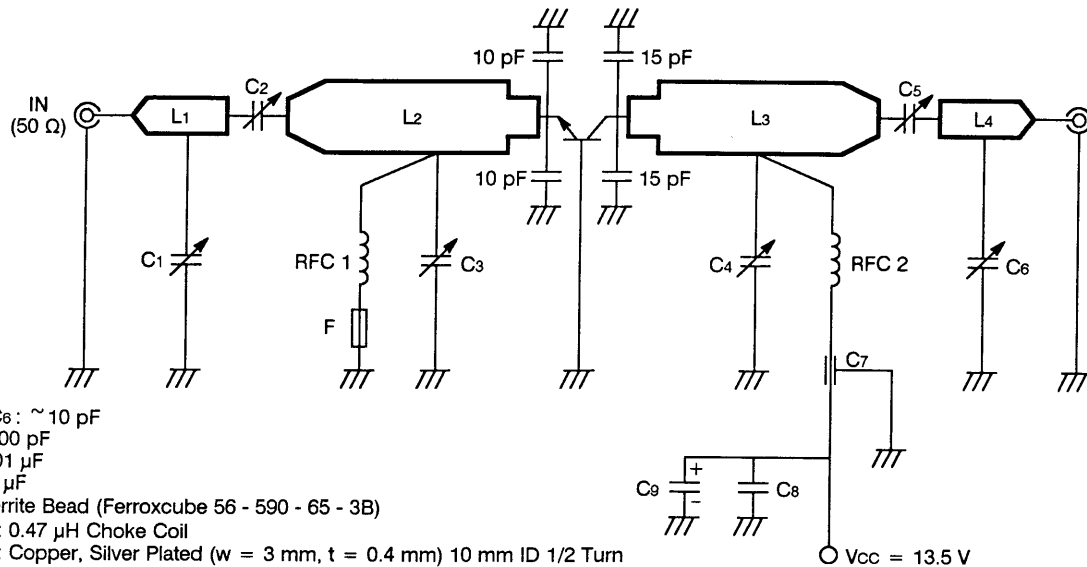


\*81E has emitter and base reversed.

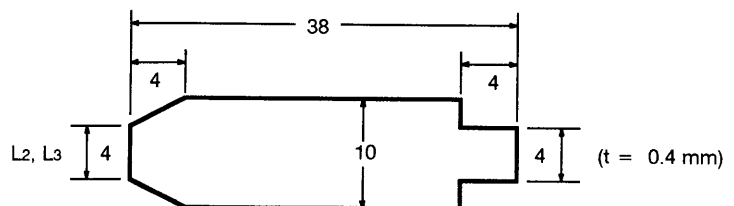
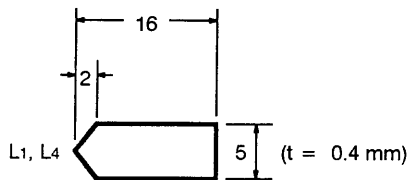
**ABSOLUTE MAXIMUM RATINGS** (T<sub>A</sub> = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CB0</sub>	Collector to Base Voltage	V	35
V <sub>CEO</sub>	Collector to Emitter Voltage	NEM080481E-12	18
		NEM081081E-12	18
		NEM082081B-12	16
		NEM084081B-12	16
V <sub>EB0</sub>	Emitter to Base Voltage	NEM080481E-12	3
		NEM081081E-12	3
		NEM082081B-12	2.5
		NEM084081B-12	2.5
I <sub>C</sub>	Collector Current	NEM080481E-12	1.5
		NEM081081E-12	3
		NEM082081B-12	7.5
		NEM084081B-12	15
R <sub>θJC</sub>	Thermal Resistance (Junction-to-Case)	NEM080481E-12	10 °C/W
		NEM081081E-12	5 °C/W
		NEM082081B-12	2.5 °C/W
		NEM084081B-12	1.5 °C/W
P <sub>D</sub>	Total Power Dissipation (T <sub>c</sub> = 25°C)	NEM080481E-12	17.5
		NEM081081E-12	35
		NEM082081B-12	70
		NEM084081B-12	120
T <sub>J</sub>	Junction Temperature	°C	200
T <sub>STG</sub>	Storage Temperature	°C	-65 to +150

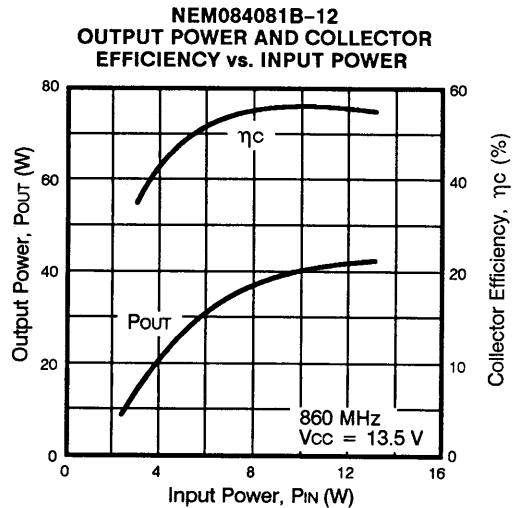
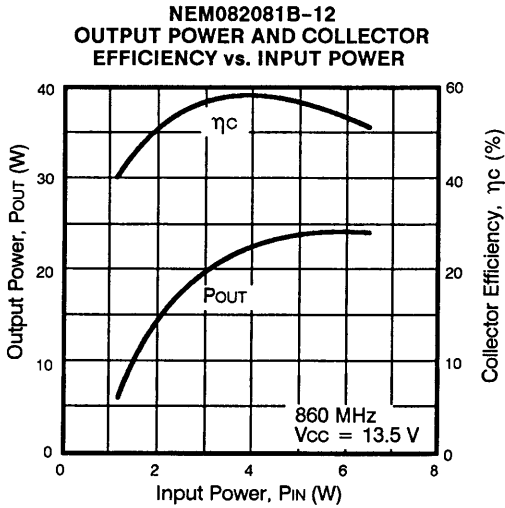
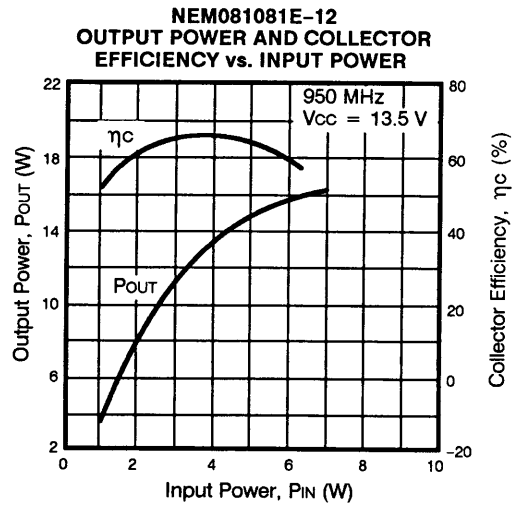
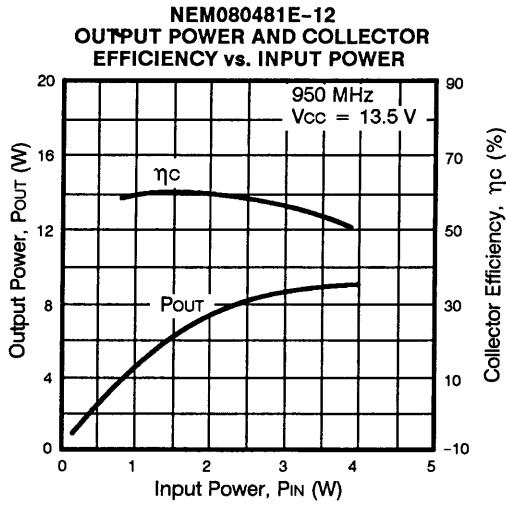
**TEST CIRCUIT DIAGRAM**



- C1 to C6: ~10 pF
- C7: 1000 pF
- C8: 0.01 μF
- C9: 10 μF
- F = Ferrite Bead (Ferrocube 56 - 590 - 65 - 3B)
- RFC 1 : 0.47 μH Choke Coil
- RFC 2 : Copper, Silver Plated (w = 3 mm, t = 0.4 mm) 10 mm ID 1/2 Turn

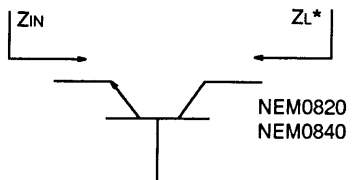
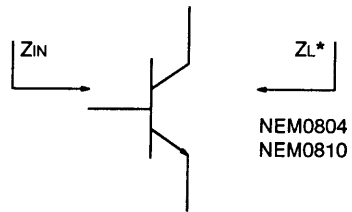


TYPICAL PERFORMANCE CHARACTERISTICS (T<sub>A</sub> = 25°C)



TYPICAL IMPEDANCE

PART NUMBER	FREQUENCY	Z <sub>IN</sub>		Z <sub>L</sub> *	
		Real	Imaginary	Real	Imaginary
NEM080481E-12	950 MHz	3.22	+j6.6	6.36	-j4.7
NEM081081E-12	950 MHz	2.31	+j3.49	9.8	-j5.91
NEM082081B-12	860 MHz	2.5	+j0.5	2.23	+j0
NEM084081B-12	860 MHz	1.5	-j4.75	1.75	-j2.0



\* Z<sub>L</sub> is optimum load impedance at rated output power.

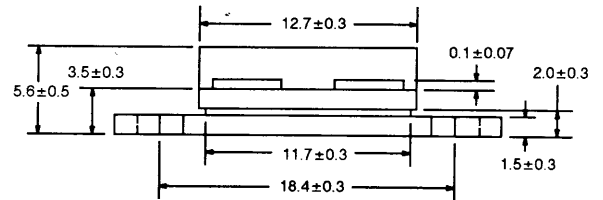
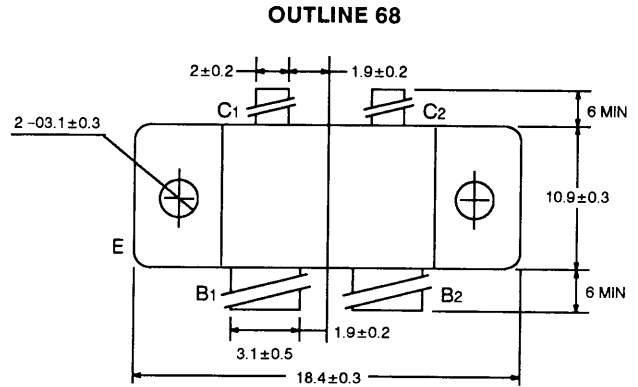
### FEATURES

- **HIGH POWER AND HIGH GAIN:**  $f = 860$  MHz, Class AB
- **NEM081568-28:**  $P_o > 41$  dBm,  $G_P > 8$  dB
- **NEM085068-28:**  $P_o > 46.2$  dBm,  $G_P > 6.2$  dB
- **GOLD METALLIZATION**
- **PUSH-PULL STRUCTURE**
- **INTERNALLY MATCHED**
- **IDEAL FOR TV TRANSMITTER**

### DESCRIPTION

This NEM series of NPN epitaxial power bipolars is designed specifically for broadcast and other high power applications operating at 860 MHz. This series provides high power output of either 12.6 or 42 watts, high gain, high efficiency, and high resistance to burn-out with load mismatch. This NEM series is ideal for class AB applications.

### OUTLINE DIMENSIONS (Units in mm)



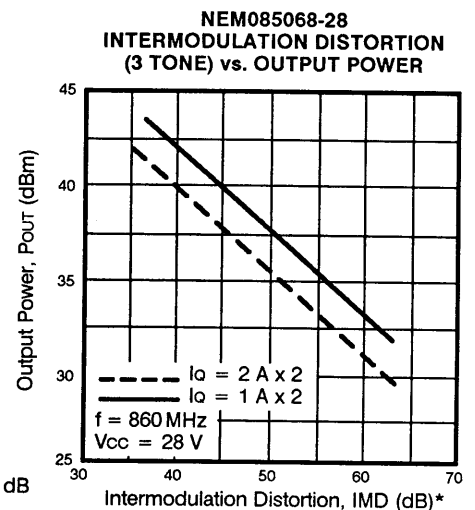
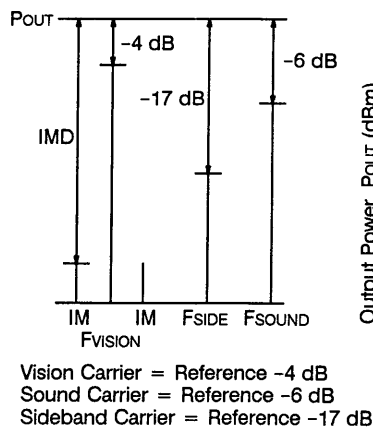
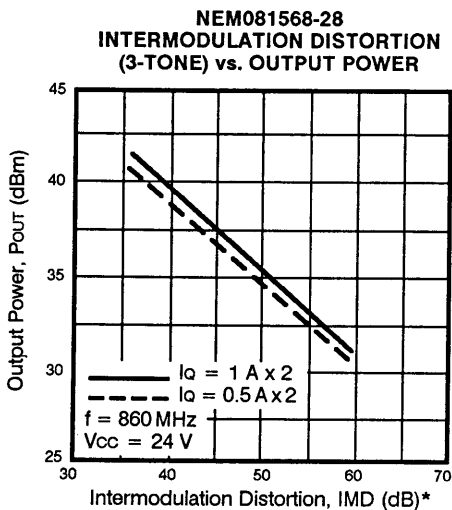
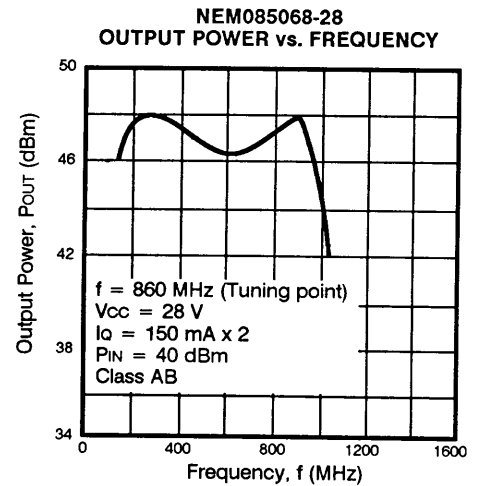
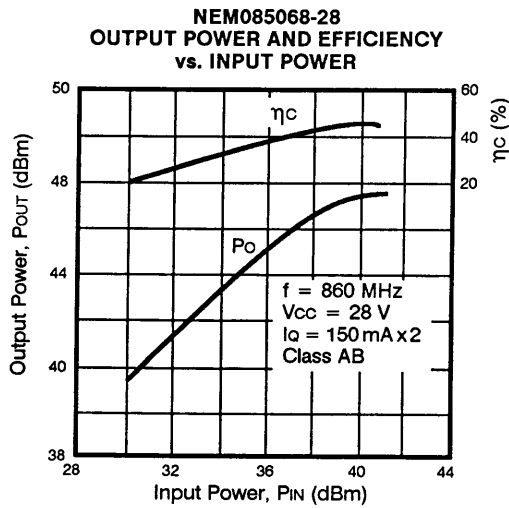
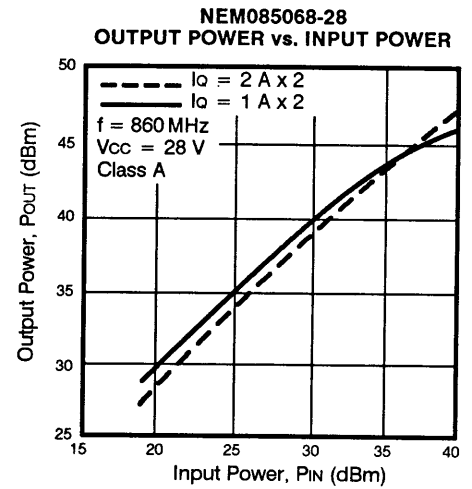
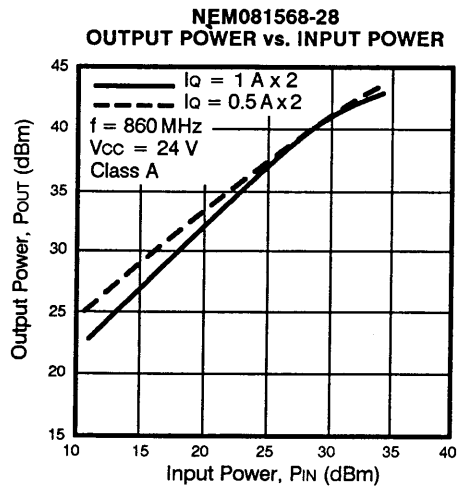
B1 = Base 1      C1 = Collector 1      E = Emitter  
B2 = Base 2      C2 = Collector 2

### ELECTRICAL SPECIFICATIONS (T<sub>A</sub> = 25 °C)

PART NUMBER PACKAGE OUTLINE			NEM081568-28 68			NEM085068-28 68		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
I <sub>cBO</sub> *	Collector Cutoff Current at V <sub>CB</sub> = 30 V	mA			2			4
I <sub>eBO</sub> *	Emitter Cutoff Current at V <sub>EB</sub> = 2 V	mA			2			4
h <sub>FE</sub> *	DC Forward Current Gain at V = 10 V I <sub>C</sub> = 1.6 A I <sub>C</sub> = 2 A		20	60	120	20	60	120
C <sub>OB</sub>	Output Capacitance at V <sub>CB</sub> = 28 V, I <sub>E</sub> = 0, f = 1 MHz	pF		24	36		40	60
VSWR	f = 860 MHz, I <sub>Q</sub> = 150 mA x 2 class AB V <sub>CC</sub> = 24 V, P <sub>OUT</sub> = 41 dBm V <sub>CC</sub> = 28 V, P <sub>OUT</sub> = 46.2 dBm		∞			∞		
P <sub>OUT</sub>	f = 860 MHz, I <sub>Q</sub> = 150 mA x 2 (class AB) P <sub>IN</sub> = 33 dBm, V <sub>CC</sub> = 24 V P <sub>IN</sub> = 40 dBm, V <sub>CC</sub> = 28 V	dBm dBm	41	42		46.2	47.2	
η <sub>c</sub>	f = 860 MHz, I <sub>Q</sub> = 150 mA x 2 (class AB) P <sub>IN</sub> = 33 dBm, V <sub>CC</sub> = 24 V P <sub>IN</sub> = 40 dBm, V <sub>CC</sub> = 28 V	% %	45		40			

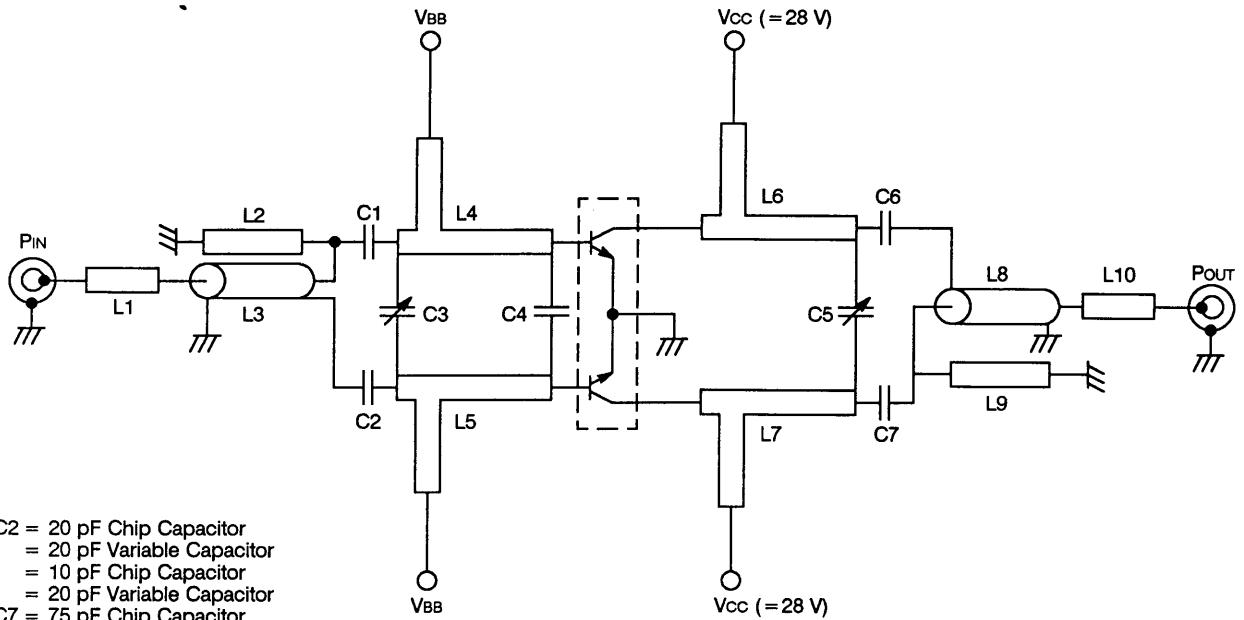
\*Each Side

TYPICAL PERFORMANCE CHARACTERISTICS (TA = 25°C)



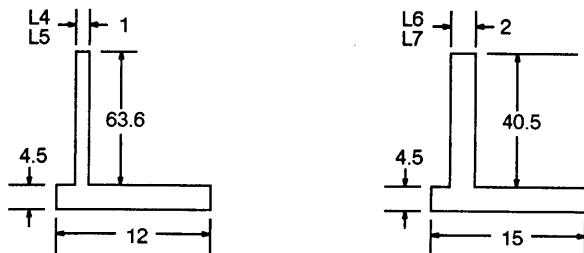
\*Worst case for three-tone spectrum shown.

NEM085068-28 200-900 MHz BROADBAND AMPLIFIER SCHEMATIC (CLASS AB)



- C1, C2 = 20 pF Chip Capacitor
- C3 = 20 pF Variable Capacitor
- C4 = 10 pF Chip Capacitor
- C5 = 20 pF Variable Capacitor
- C6, C7 = 75 pF Chip Capacitor

- L1, L10 - Microstripline (23.6 x 4.5 mm)
- L2, L9 - 50 Ω semi rigid coax (65 mm x 5 mm) Use only outer conductor
- L3, L8 - 50 Ω semi rigid coax (65 mm x 5 mm) Use both center and outer conductor
- L4, L5, L6, L7 - Microstrip line



**ABSOLUTE MAXIMUM RATINGS** (TA = 25°C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V <sub>CC</sub>	Collector to Base Voltage	V	50
V <sub>CEO</sub>	Collector to Emitter Voltage	V	32
V <sub>EBO</sub>	Emitter to Base Voltage	V	3
I <sub>C</sub>	Collector Current	A	12
	NEM081658-28	A	15
	NEM085068-28	A	15
R <sub>TH (J-C)</sub>	Thermal Resistance (Junction-to-Case)	°C/W	1.75
	NEM081658-28	°C/W	1.09
	NEM085068-28	°C/W	1.09
P <sub>T</sub>	Total Power Dissipation (T <sub>c</sub> = 25°C)	W	100
	NEM081658-28	W	160
	NEM085068-28	W	160
T <sub>J</sub>	Junction Temperature	°C	200
T <sub>STG</sub>	Storage Temperature	°C	-65 to +200

(Units in mm)