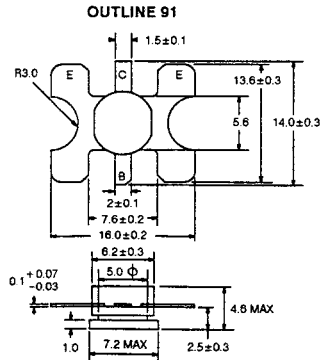
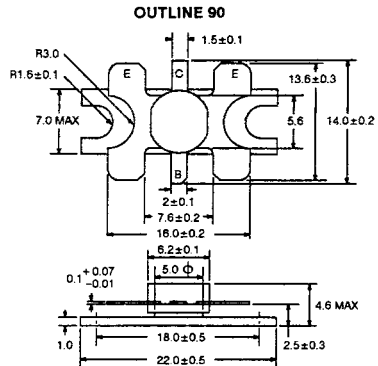
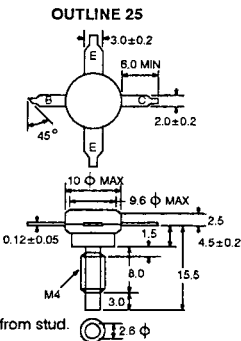
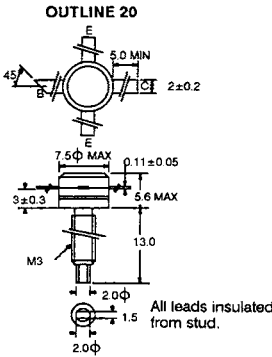


FEATURES

- SUPERIOR RF PERFORMANCE
- HIGH GAIN
- SUPPLY VOLTAGE, $V_{cc} = 12.6 \text{ V}$
- FOR 400 MHz BAND MOBILE RADIO APPLICATIONS
- FOUR DIFFERENT LOW COST PACKAGE STYLES
- RUGGED VSWR $\infty:1$
- HIGH POWER
- HIGH RELIABILITY
- COMMON EMITTER

OUTLINE DIMENSIONS (Units in mm)



DESCRIPTION AND APPLICATIONS

The NE0500-12 series of UHF NPN epitaxial silicon power transistors are designed for mobile radio applications with a nominal supply voltage of 12.6 V. The series provides high performance at a low cost with reliability uncommon to conventional devices. Reliability is assured by 100% screening to NEC's stringent quality control standards. These standards use procedures patterned after MIL-S-19500 and are capable of meeting the test requirements of MIL-STD-750. The series uses

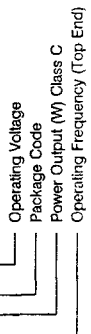
a newly developed NEC structure which is far superior to conventional techniques in providing emitter ballasting. The chips are passivated by a layer of Si_3N_4 and then physically protected by a layer of SiO_2 . The series is available in a variety of low cost, rugged packages designed to provide from 3.5 to 17 watts output power. The characteristics and features offered make the NE0500-12 series the ideal choice for mobile radio applications in the 400 MHz band.

PERFORMANCE SPECIFICATIONS (TA = 25°C)

SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	NE05030-12 2SC2081 20		NE05030 (91)-12 2SC2283K (M) 90 (91)		NE051025-12 2SC2082 25		NE051090 (91)-12 2SC2284K (M) 90 (91)		NE051525-12 2SC2083 25		NE052090 (91)-12 2SC2285K (M) 90 (91)		
			MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	MIN	TYP	MAX	
Pout	Output Power at Vcc = 12.6 V, f = 500 MHz PIN = 25 dBm PIN = 34 dBm PIN = 33 dBm PIN = 36 dBm	dBm	34.5	35		34.5	35.5	39	39.5	38.5	39.5				
ηc	Collector Efficiency at Vcc = 12.6 V, f = 500 MHz PIN = 23 dBm PIN = 34 dBm PIN = 33 dBm PIN = 36 dBm	%	55	60	50	60	60	70	55	65	65	75	50	60	
BVcbo	Collector to Base Breakdown Voltage at Ic = 0 Ic = 1 mA Ic = 3 mA Ic = 2 mA Ic = 4 mA	V	38		38		38		38		38		38		
BVebo	Emitter to Base Breakdown Voltage at Ic = 0 Ic = 1 mA Ic = 3 mA Ic = 2 mA Ic = 4 mA	V	3		3		3		3		3		3		
LVceo	Collector to Emitter Breakdown Voltage at Ia = 0 Ic = 10 mA Ic = 30 mA Ic = 20 mA Ic = 40 mA	V	18		18		18		18		18		18		
Icso	Collector Cutoff Current at Vcb = 30 V, Ie = 0	mA	0.25		0.25		0.25		0.25		0.75		1		
Iebo	Emitter Cutoff Current at Veb = 2 V, Ic = 0	mA	0.25		0.25		0.25		0.25		0.75		1		
hFE	DC Forward Current Gain at Vce = 10 V Ic = 0.2 mA (pulsed) Ic = 0.6 mA (pulsed) Ic = 0.4 mA (pulsed) Ic = 0.8 mA (pulsed)		20	60	20	60	20	60	20	60	20	60	20	60	
Cob	Output Capacitance ² at Vcb = 10 V, Ie = 0, f = 1 MHz	pF	6	8	6	8	6	8	6	8	17	22	12	17	
Vswr	Voltage Standing Wave Ratio Phase = λg/2 Vcc = 16 V, Pout = 5 W Vcc = 16 V, Pout = 10 W Vcc = 16 V, Pout = 20 W		∞		∞		∞		∞		∞		∞		

Notes:

1. Power Numbering System
NEXXYZZ-WW
2. Electronic Industrial Association of Japan.
3. Emitter and flange (case) are grounded.



ABSOLUTE MAXIMUM RATINGS (TA = 25°C)

PART NUMBER EIAJ 2 REGISTERED NUMBER PACKAGE OUTLINE		PARAMETERS AND CONDITIONS		UNITS		RATINGS		RATINGS		RATINGS			
Vcbo	Collector to Base Voltage	V		38		NE050390 (91)-12 2SC2283K (M) 90 (91)	38	NE051090 (91)-12 2SC2284K (M) 90 (91)	38	NE051525-12 2SC2083 25	38	NE052090 (91)-12 2SC2285K (M) 90 (91)	38
Vceo	Collector to Emitter Voltage	V		18		NE050390 (91)-12 2SC2283K (M) 90 (91)	18	NE051090 (91)-12 2SC2284K (M) 90 (91)	18	NE051525-12 2SC2083 25	18	NE052090 (91)-12 2SC2285K (M) 90 (91)	18
Vebo	Emitter to Base Voltage	V		3		NE050390 (91)-12 2SC2283K (M) 90 (91)	3	NE051090 (91)-12 2SC2284K (M) 90 (91)	3	NE051525-12 2SC2083 25	3	NE052090 (91)-12 2SC2285K (M) 90 (91)	3
Ic	Collector Current	A		0.75		NE050390 (91)-12 2SC2283K (M) 90 (91)	0.75	NE051090 (91)-12 2SC2284K (M) 90 (91)	1.5	NE051525-12 2SC2083 25	3	NE052090 (91)-12 2SC2285K (M) 90 (91)	3
Rth	Thermal Resistance (Junction-to-Case)	°C/W		15		NE050390 (91)-12 2SC2283K (M) 90 (91)	15	NE051090 (91)-12 2SC2284K (M) 90 (91)	8.8	NE051525-12 2SC2083 25	4.4	NE052090 (91)-12 2SC2285K (M) 90 (91)	4.4
PT	Total Device Dissipation	W		10		NE050390 (91)-12 2SC2283K (M) 90 (91)	10	NE051090 (91)-12 2SC2284K (M) 90 (91)	17	NE051525-12 2SC2083 25	34	NE052090 (91)-12 2SC2285K (M) 90 (91)	34
Tj	Junction Temperature	°C		175		NE050390 (91)-12 2SC2283K (M) 90 (91)	-65 to +175	NE051090 (91)-12 2SC2284K (M) 90 (91)	-65 to +175	NE051525-12 2SC2083 25	-65 to +175	NE052090 (91)-12 2SC2285K (M) 90 (91)	-65 to +175
Tstg	Storage Temperature	°C		175		NE050390 (91)-12 2SC2283K (M) 90 (91)	-65 to +175	NE051090 (91)-12 2SC2284K (M) 90 (91)	-65 to +175	NE051525-12 2SC2083 25	-65 to +175	NE052090 (91)-12 2SC2285K (M) 90 (91)	-65 to +175

Notes:

1. Power Numbering System

NEXXXX-ZZ-WW

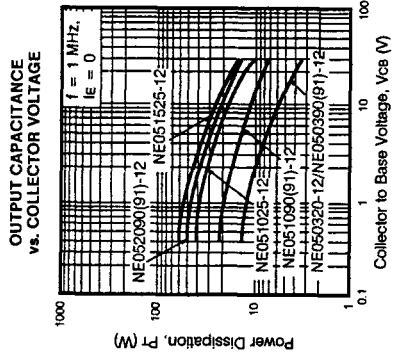
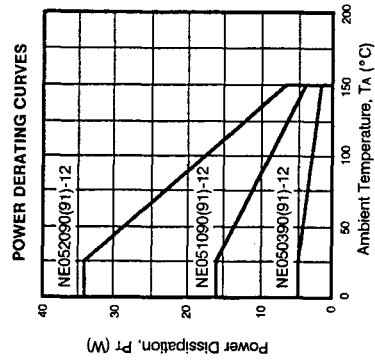
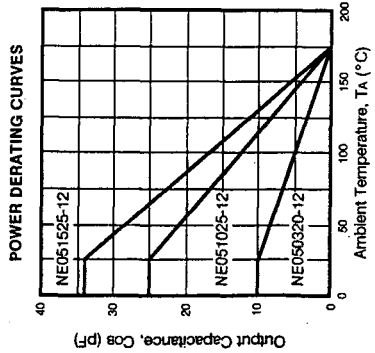
Operating Voltage

Power Output (W) Class C

Operating Frequency (Top End)

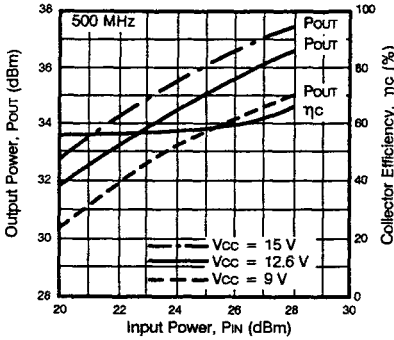
2. Electronic Industrial Association of Japan.

TYPICAL DEVICE CHARACTERISTICS (TA = 25°C)

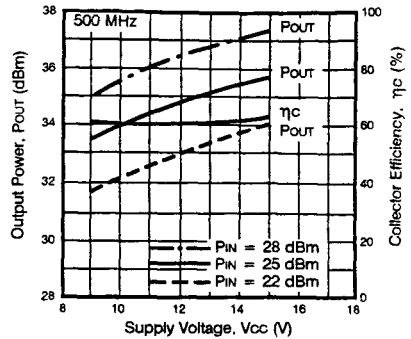


TYPICAL PERFORMANCE CHARACTERISTICS (T_A = 25°C, CLASS C, GROUNDED EMITTER)

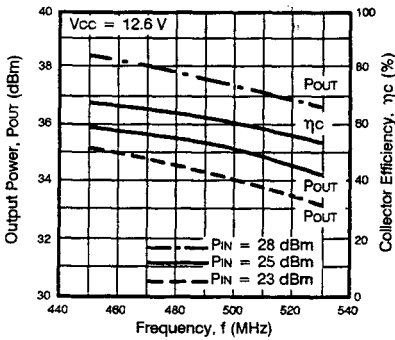
NE050320-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. INPUT POWER



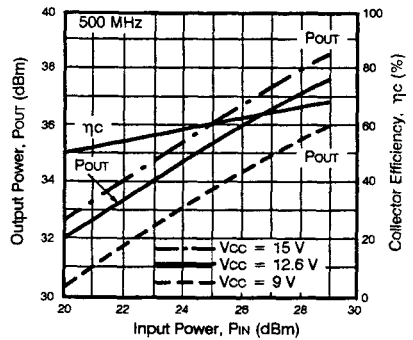
NE050320-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. SUPPLY VOLTAGE



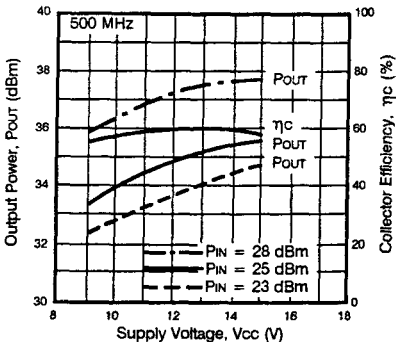
NE050320-12, NE050390 (91)-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. FREQUENCY



NE050390 (91)-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. INPUT POWER



NE050390 (91)-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. SUPPLY VOLTAGE



NE051025-12
OUTPUT POWER AND COLLECTOR
EFFICIENCY vs. INPUT POWER

