

NEC**MICROWAVE GaAs POWER FET**
NE9008**PRELIMINARY DATA SHEET****Ku-Band GaAs Power FET****FEATURES**

- CLASS A OPERATION
- HIGH POWER ADDED EFFICIENCY
- EMPLOYS P.H.S. (PLATED HEAT SINK) AND VIA HOLE GROUNDING
- BROAD BANDWIDTH
- INTERNALLY MATCHED INPUT

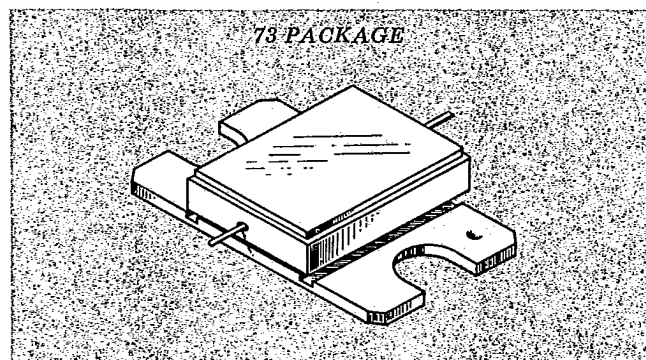
DESCRIPTION AND APPLICATIONS

The NE9008 is a 0.5 micron recessed gate GaAs power FET for commercial, military, and space amplifier and oscillator applications to 20 GHz. This device is complimentary to the NE9000,1,2 series and NE9004 covered in a separate data sheet. As with others in the series, the NE9008 incorporates silicon nitride passivation for surface stabilization, and silicon dioxide glassivation for superior scratch resistance and mechanical protection. The NE9008 consists of two NE9004 chips in the NEC's "73" hermetic all metal package. Packaged units incorporate internal matching in discrete frequency bands in order to facilitate simple circuit design. The series conforms to MIL-S-19500 and is space qualified.

PERFORMANCE SPECIFICATIONS ($T_a = 25^\circ\text{C}$)

NE PART NUMBER PACKAGE CODE			NE900873-9,10,11,12,13,14 73			NE900873-15 73		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX	MIN	TYP	MAX
P _{TEST}	Output Power at Test Point P _{in} = 28.0dBm, V _{DS} = 8V, I _D ≈ 900mA, f = (See Note 1)	dBm	33	33.5		33	33.5	
	P _{in} = 28.5dBm, V _{DS} = 8V, I _D ≈ 900mA, f = (See Note 1)	dBm						
P _{1dB}	Output Power at 1 dB Compression Point V _{DS} = 8V, I _D = 900mA, f = (See Note 1)	dBm		33			32.5	
G _{1dB}	Gain at 1dB Compression Point V _{DS} = 8V, I _D = 450mA, f = 13.5 GHz	dB		5.5				
	V _{DS} = 8V, I _D = 450mA, f = 15.2 GHz	dB		5.5			5	
η_{add}	Power Added Efficiency ² V _{DS} = 8V, I _D = 900mA, f = 9.5 GHz	%		22				
	V _{DS} = 8V, I _D = 900mA, f = 10.0 GHz	%		20				
	V _{DS} = 8V, I _D = 900mA, f = 11.5 GHz	%		20				
	V _{DS} = 8V, I _D = 900mA, f = 12.5 GHz	%		20				
	V _{DS} = 8V, I _D = 900mA, f = 13.5 GHz	%		20				
	V _{DS} = 8V, I _D = 900mA, f = 14.5 GHz	%		20				
	V _{DS} = 8V, I _D = 900mA, f = 15.2 GHz	%					18	

SEE NOTES ON BACK PAGE

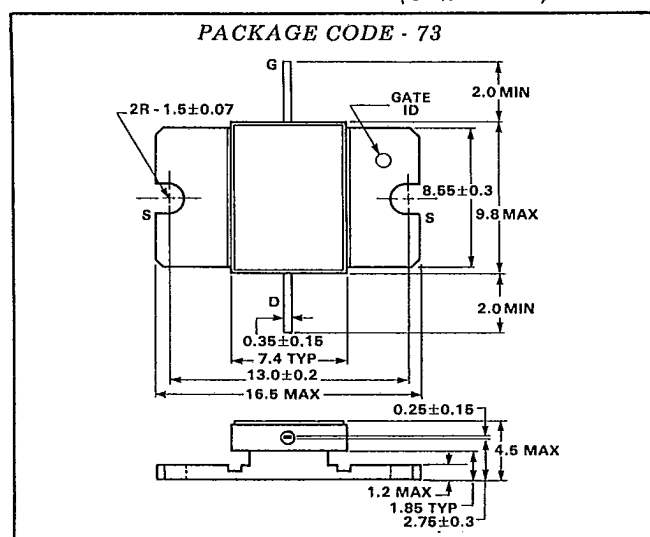
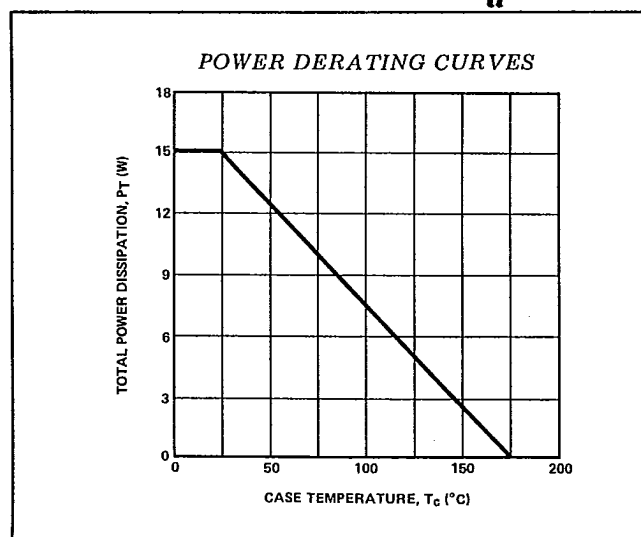
**SELECTION CHART**

NE PART NUMBER	TYPICAL PERFORMANCE		
	P _{1dB} (WATTS)	FREQUENCY RANGE (GHz)	G _{1dB} (dB)
NE900873-9	2.0	9.0-9.5	5.5
NE900873-10	2.0	9.5-10.5	5.5
NE900873-11	2.0	10.5-11.5	5.5
NE900873-12	2.0	11.5-12.5	5.5
NE900873-13	2.0	12.5-13.5	5.5
NE900873-14	2.0	13.5-14.5	5.5
NE900873-15	1.8	14.5-15.2	5

NE9008, Ku-BAND GaAs POWER FET

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

NE PART NUMBER			NE900873-9,10,11,12,13,14,15		
PACKAGE CODE			73		
SYMBOLS	PARAMETERS AND CONDITIONS	UNITS	MIN	TYP	MAX
I_{DSS}	Saturated Drain Current at $V_{DS} = 2.5\text{V}$, $V_{GS} = 0$	mA	1200	1800	2400
V_P	Pinch Off Voltage at $V_{DS} = 2.5\text{V}$, $I_{DS} = 40\text{mA}$	V	-2	-3.5	-5
g_m	Transconductance at $V_{DS} = 2.5\text{V}$, $I_{DS} = 600\text{mA}$	mS		400	
R_{th}	Thermal Resistance (channel — case)	$^\circ\text{C/W}$			10
P_T	Total Power Dissipation	W			15

PHYSICAL DIMENSIONS (Units in mm)**DEVICE CHARACTERISTICS ($T_a = 25^\circ\text{C}$)****ABSOLUTE MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)**

SYMBOLS	PARAMETERS	UNITS	RATINGS
V_{DS}	Drain to Source Voltage	V	20
V_{GS}	Gate to Source Voltage	V	-9
I_D	Drain Current	mA	2400
I_G	Gate Current	mA	20

NOTES:

- Test frequency for -9 = 9.5GHz; -10 = 10.5GHz; -11 = 11.5GHz; -12 = 12.5GHz; -13 = 13.5GHz; -14 = 14.5GHz; -15 = 15.2GHz.
- $\eta_{add} = \frac{P_{out} - P_{in}}{V_{DS} \times I_D} \times 100\%$

1329

D-08



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