

NGN5359L1S-M120 is a Gallium Nitride RF power transistor internally matched to 50Ω, developed for 5.3-5.9 GHz high power amplifiers and suitable for use in pulsed radar applications. This transistor has a hermetically sealed package to enable use in applications with high reliability requirements.

**Features**

- 5.3-5.9 GHz operation
- 120W typical peak power
- 10dB power gain
- 50Ω input and output impedance
- 50% power added efficiency



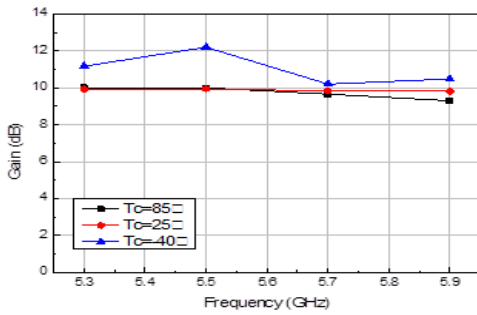
Characteristics	Symbol	Min.	Typ.	Max.	Units	Conditions
<b>DC Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$		-3.0		$V_{DC}$	$V_{DS} = 10\text{ V}, I_D = 28.8\text{ mA}$
Gate Quiescent Voltage	$V_{GS(Q)}$		-2.9		$V_{DC}$	$V_{DS} = 32\text{ V}, I_D = 100\text{ mA}$
Drain Current	$I_{DS}$		28		A	$V_{DS} = 6.0\text{ V}, V_{GS} = 2.0\text{ V}$
Drain-Source Breakdown Voltage	$V_{BR}$	100			$V_{DC}$	$V_{GS} = -8\text{ V}, I_D = 28.8\text{ mA}$
<b>RF Characteristics</b> ( $V_{DD} = 32\text{ V}, T_C = 25^\circ\text{C}, F = 5.3\text{-}5.9\text{ GHz}, I_{DQ} = 100\text{ mA}, DC = 10\%/200\mu\text{s}, P_{in} = 41\text{ dBm}$ )						
Power Gain	$G_{LS}$		10		dB	
Power Output	$P_{SAT}$		120		W	
Input Return Loss	$S_{11}$		-7		dB	
PAE	$\eta$	-	50	-	%	
Output Mismatch	VSWR			5:1	$\psi$	

Maximum Ratings	Symbol	Rating	Units	Conditions
<b>Parameter</b>				
Drain-Source Voltage	$V_{DSS}$	84	$V_{DC}$	25°C
Gate-Source Voltage	$V_{GS}$	-10, +2	$V_{DC}$	25°C
Storage temperature	$T_{STG}$	-65 - 150	°C	
Operating Junction Temperature	$T_J$	225	°C	
Maximum Drain Current	$I_{DMAX}$	12	A	25°C
Maximum Forward Gate Current	$I_{GMAX}$	28	mA	25°C
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.4	°C/W	
Duty cycle	DC	10	%	

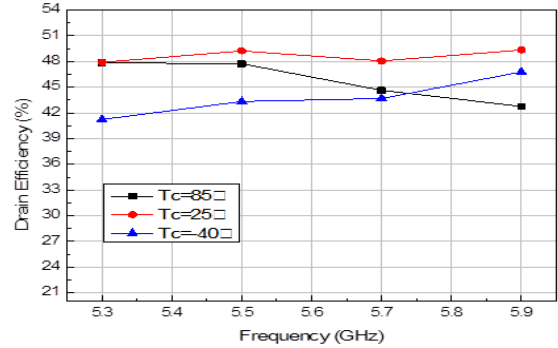
**Typical Performance**

( $V_{DD} = 32V$ ,  $T_c = 25^\circ C$ ,  $F = 5.3-5.9 GHz$ ,  $I_{DD} = 100mA$ ,  $DC = 10\%/200\mu s$ ,  $P_{in} = 41dBm$ )

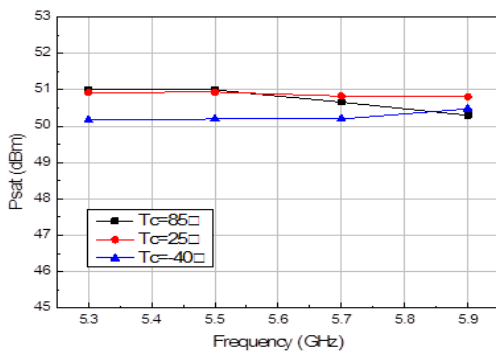
**Gain vs Frequency**



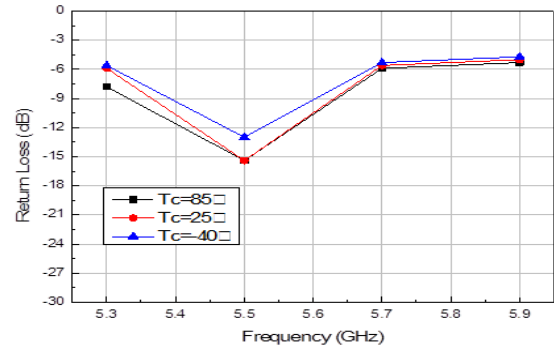
**Efficiency vs Frequency**



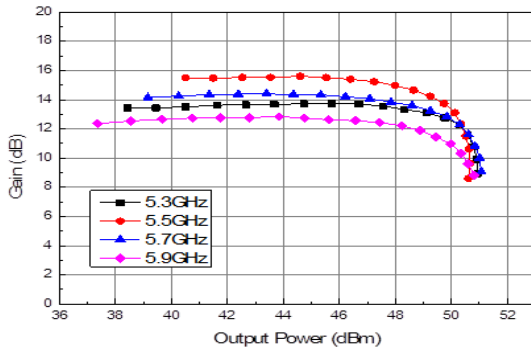
**Psat vs Frequency**



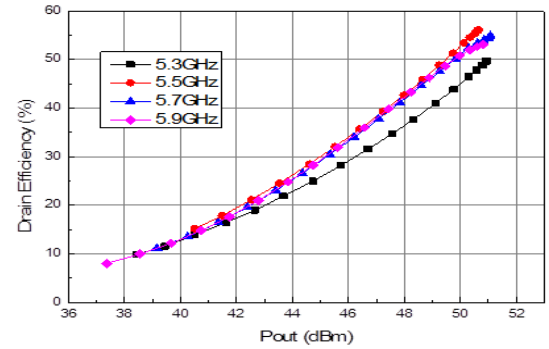
**Input Return Loss vs Frequency**



**Gain vs Pout**



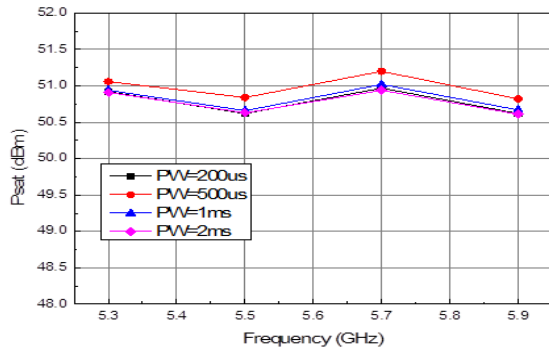
**Efficiency vs Pout**



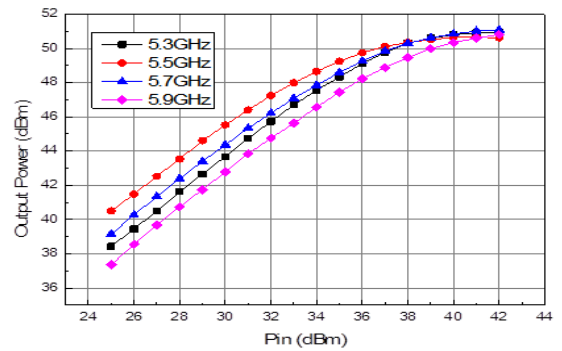
Typical Performance

( $V_{DD} = 32V$ ,  $T_c = 25^\circ C$ ,  $F = 5.3-5.9$  GHz,  $I_{DD} = 100mA$ ,  $DC = 10\%/200\mu s$ ,  $P_{in} = 41dBm$ )

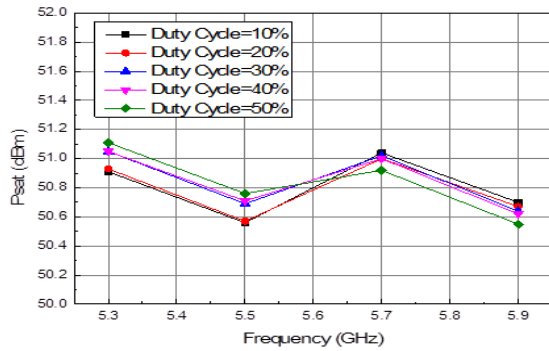
P<sub>sat</sub> vs Frequency



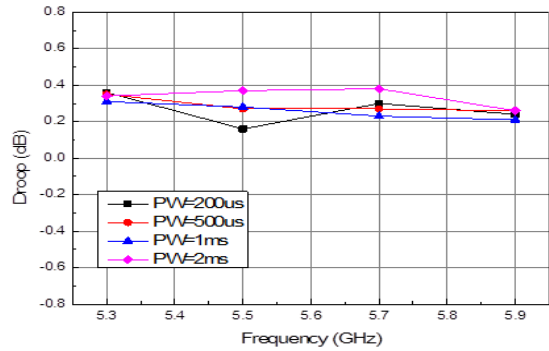
P<sub>out</sub> vs P<sub>in</sub>

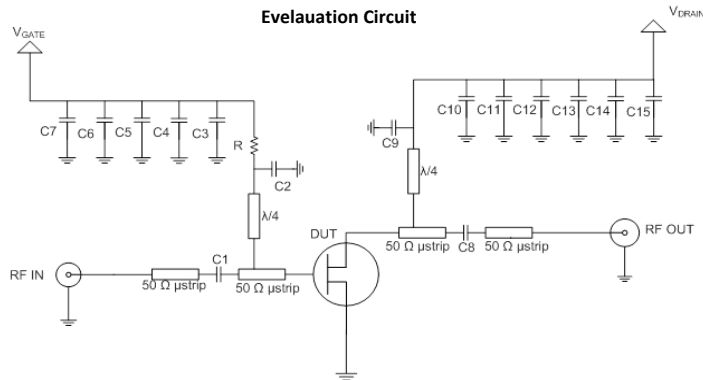


P<sub>sat</sub> vs Frequency



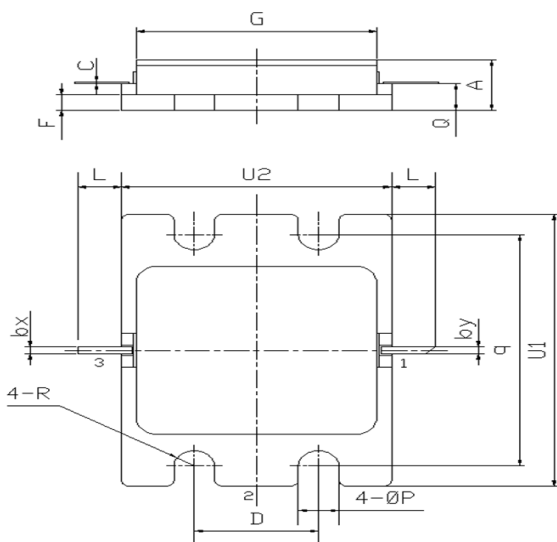
Droop vs Frequency





Pos.	Descr.
R	10Ω
C1,C2,C8,C9	3.3pF
C3,C10	10pF
C4, C11	100μF
C5, C12	1000pF
C6, C13	33nF
C7, C14	0.01μF
C15	470μF
PCB 4350B	$\epsilon_r=3.66$

**Package Drawing**



Item	Measure mm	
	Min	Max
A	4.05	4.5
bx	0.55	0.65
by	0.55	0.65
C	0.05	0.15
D	7.85	8.15
F	1.2	1.6
L	2.85	3.15
G	15.35	15.65
ØP	2.45	2.75
Q	2.25	2.55
q	20.2	20.6
R	1.15	1.45
U1	23.8	24.2
U2	17.2	17.6