

Introduction of RF Medium Power Devices

October, 2009

**Microwave Device Sales Engineering
Compound Semiconductor Devices Division,
Discrete and IC Operations Unit,
NEC Electronics Corporation**

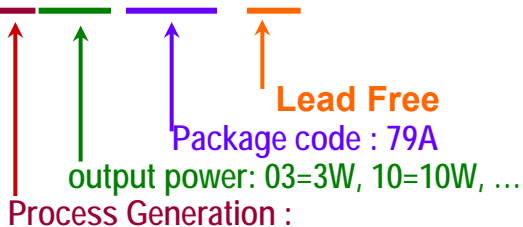
Summary of NE55 Series

FEATURES

- Semiconductor Process : N-CHANNEL SILICON POWER LDMOS FET. ($V_{ds} < 7.5V$)
- Package : Full Mold Plastic.
- Suitable Application : 460MHz to 1800MHz Power Amp (FRS/GMRS, Cellular Phone.)
- Highly I_{dsq} stability.
- Highly humidity resistance.
- Easy I_{ds} (Gain) Control by Gate Voltage.

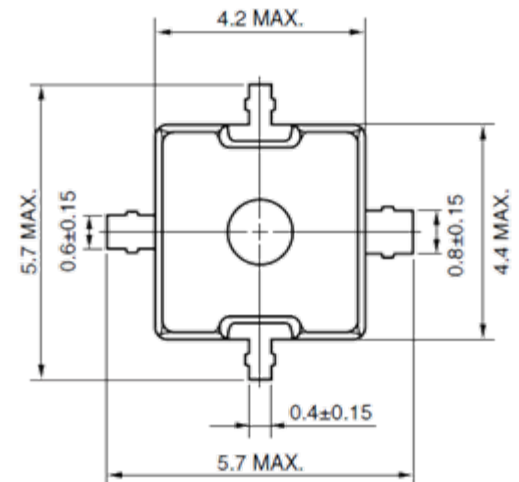
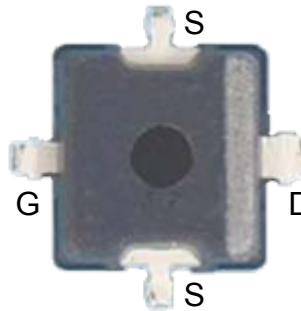
Mean of Products Name

NE5510279A-A



PACKAGE INFORMATION

- Surface mount plastic mold package
- Effective prevention against humidity



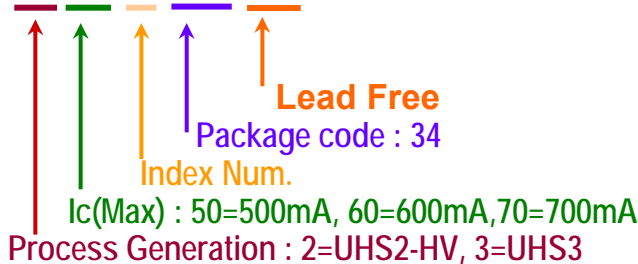
Summary of NESG Series

FEATURES

- Semiconductor Process : SiGeHBT (Silicon Germanium Hetero junction Bipolar Transistor).
- Package : Full Mold Plastic.
- Suitable Application : 460MHz to 950MHz Medium Power Amp (FRS/GMRS,PMR.)
- ft 10GHz to 14GHz

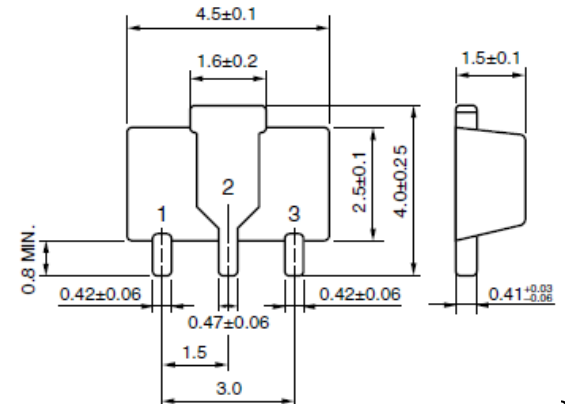
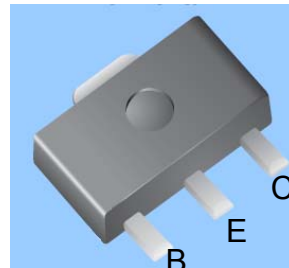
Mean of Products Name

NESG250134-A



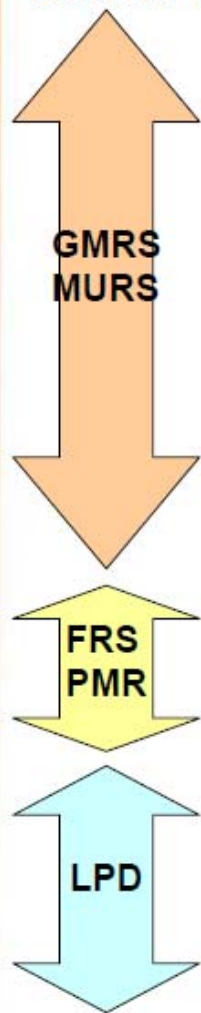
PACKAGE INFORMATION

- Surface mount plastic mold package
- Effective prevention against humidity



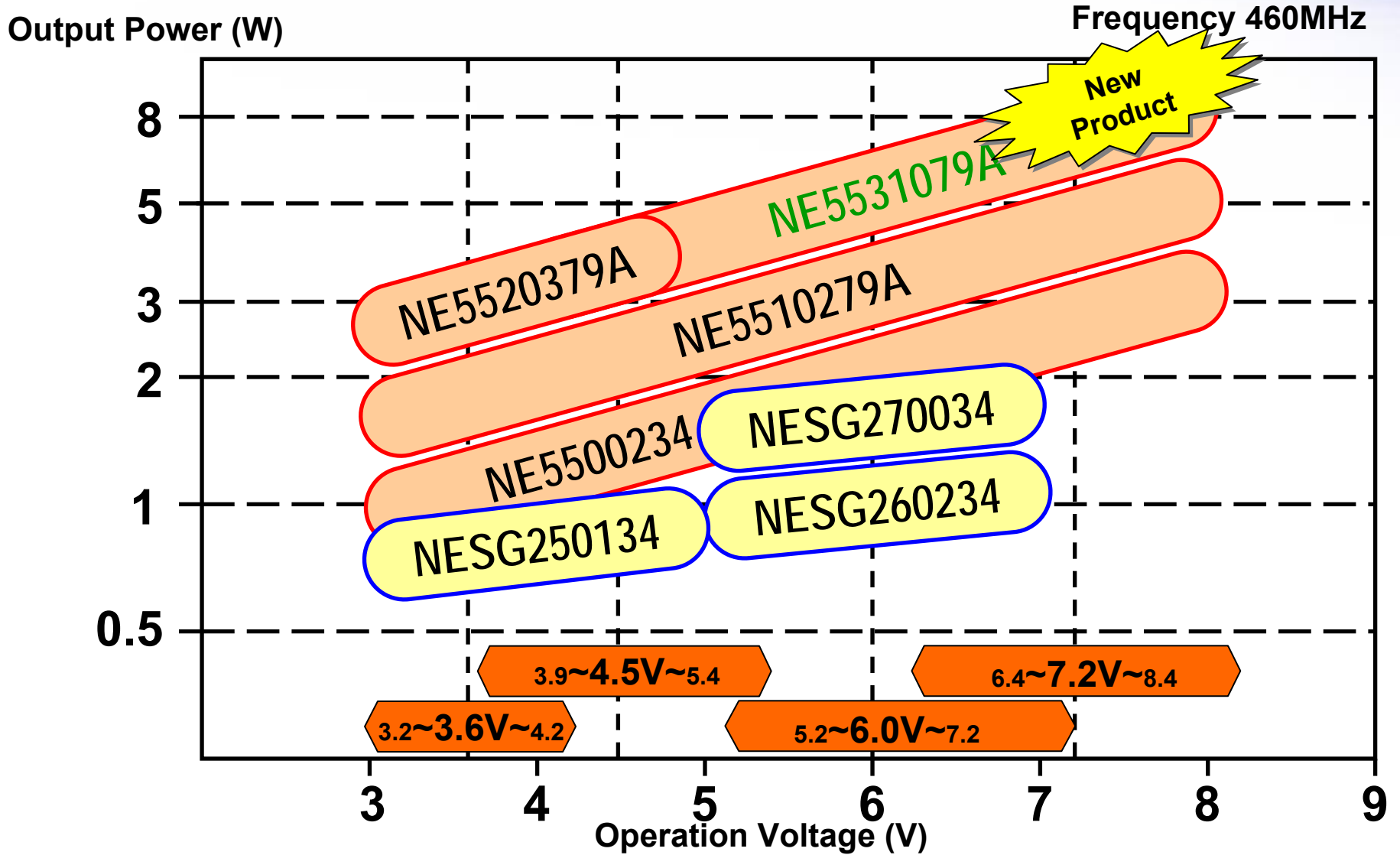
Recommended PA Devices **NEC**

Antenna Output Power(W)

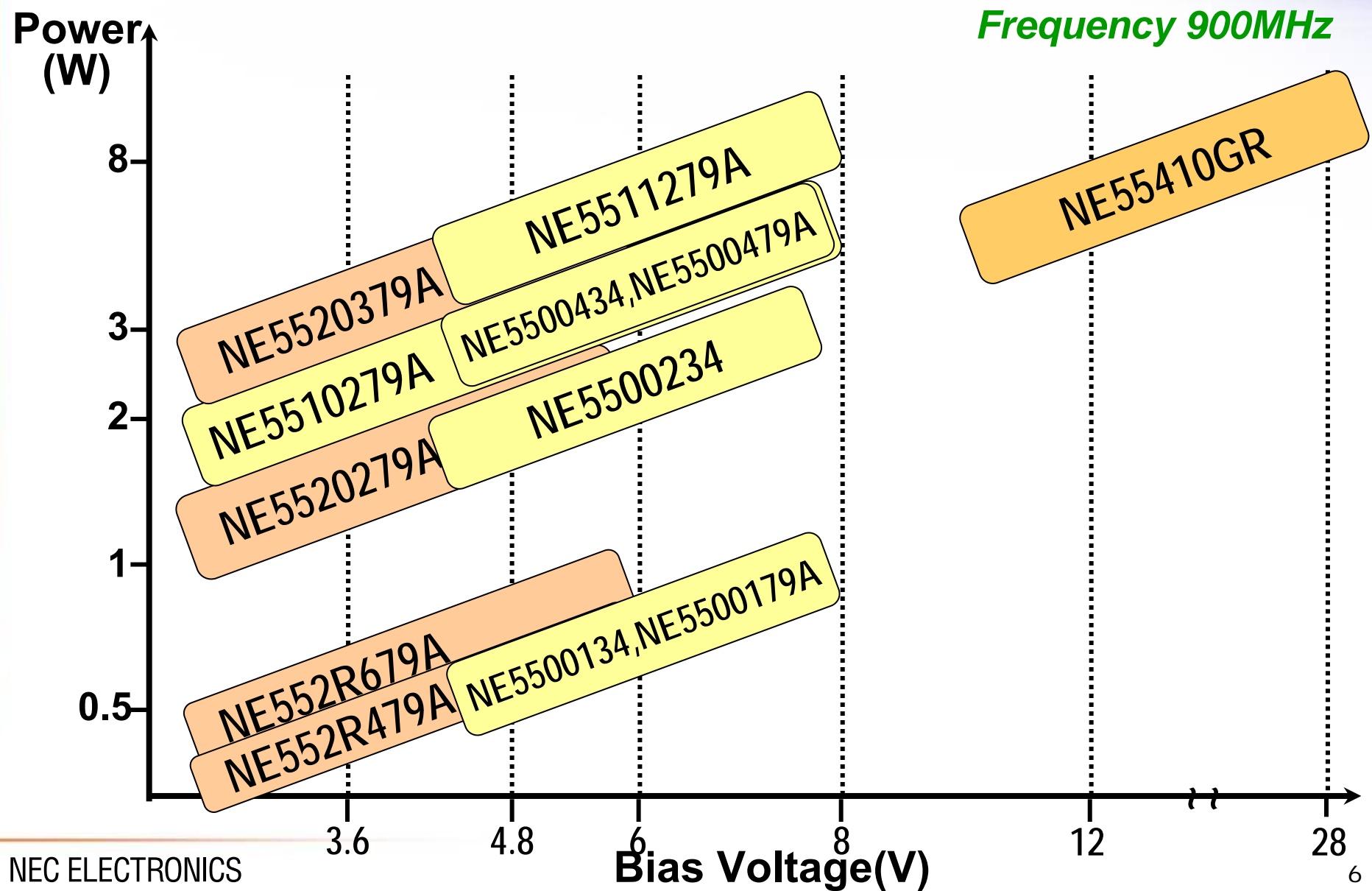


5W (37dBm)	NE5511279A		
	NE5531079A (New Product!)		
2~3W (33dBm~)	NE5520279A NE5520379A	NE5510279A NE5520379A	NE5500479A NESG270034
1W (30dBm)	NE552R679A		NESG260234
0.5W (27dBm)	NESG250134		
0.1W (20dBm)	NE664M04		
	NESG2101M05		
	3.0~3.2V	4.5V	4.8V~6.0V

Recommended PA Devices



Products Map of NE55X Si LD MOSFET NEC

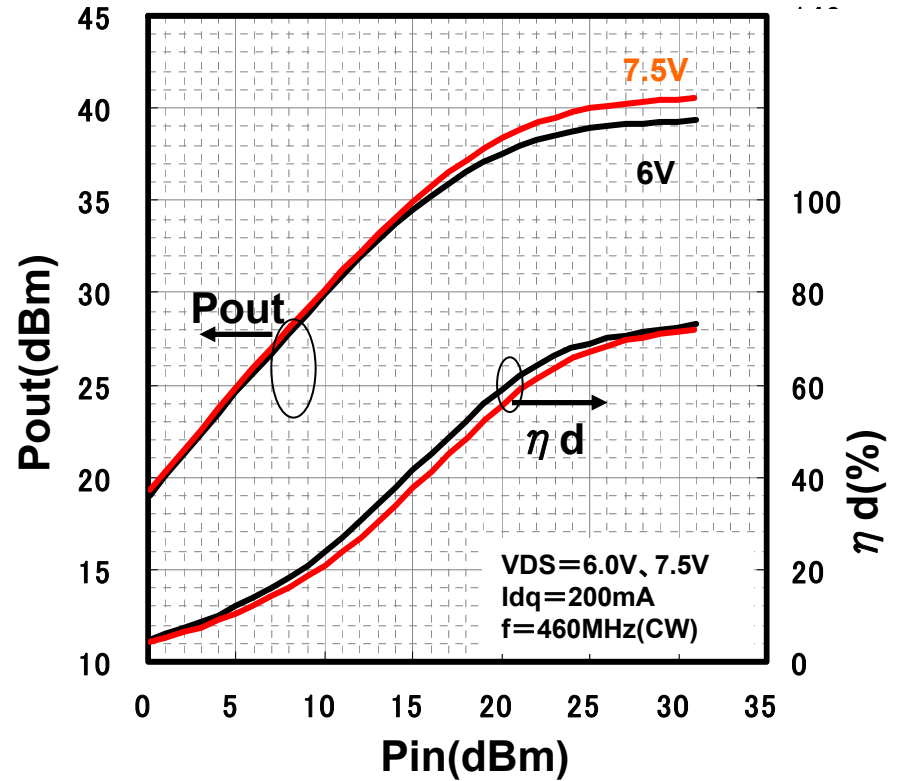
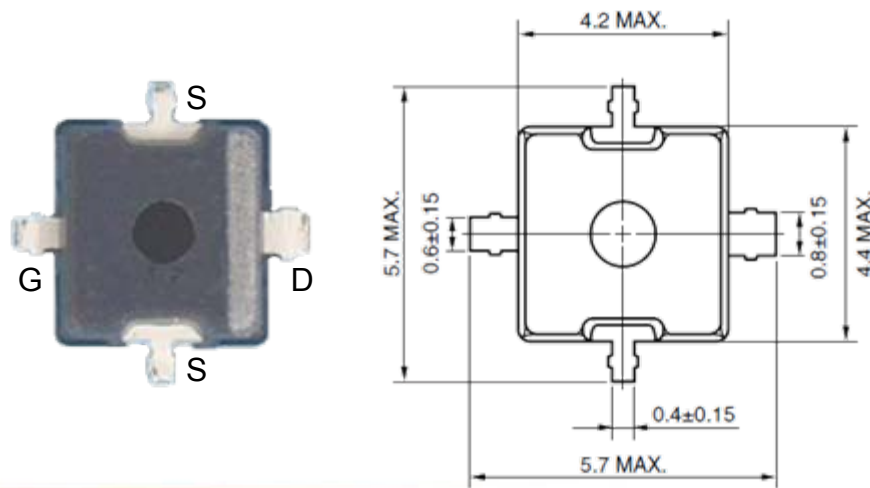


Si LD-MOS FET

Feature

- No degradation by Load mismatch tolerance
(@VDS=7.5V, Pin=25dBm, f=460MHz, VSWR:20:1 All phase)
- Suitable for 5W FRS PA
- SiLDMOS Technology
- High Gain : GL=20dB(TYP)
(@f=460MHz, Vds=7.5V, Idq=200mA)
- High Power : 40dBm(TYP)
(@Pin=25dBm, f=460MHz, Vds=7.5V, Idq=200mA)
- High Efficiency : $\eta d=68\%$ (TYP)
(@Pin=25dBm, f=460MHz, Vds=7.5V, Idq=200mA)

New Product



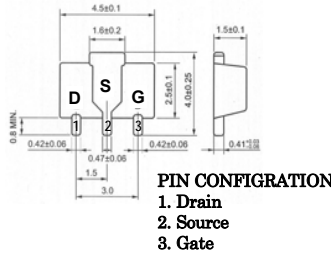
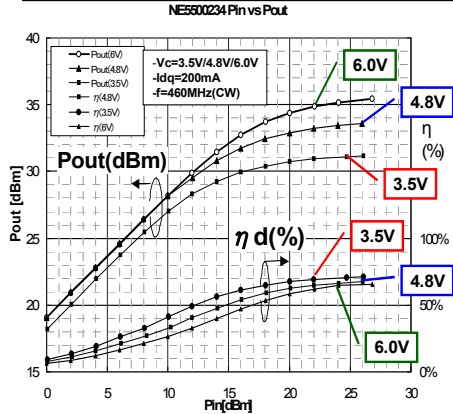
SiLDMOS NE55 Series (1)

NE5500234

feature

- Suitable for 2W FRS PA
- SiLDMOS Technology
- High Power : 33dBm(TYP) (@Pin=20dBm, f=460MHz, Vds=4.8V, Idq=200mA)
- High Gain : GL=19dB(TYP) (@f=460MHz, Vds=4.8V, Idq=200mA)
- High Efficiency : $\eta_d=62\%$ (TYP) (@Pin=20dBm, f=460MHz, Vds=4.8V, Idq=200mA)

2W@4.8V
@460MHz

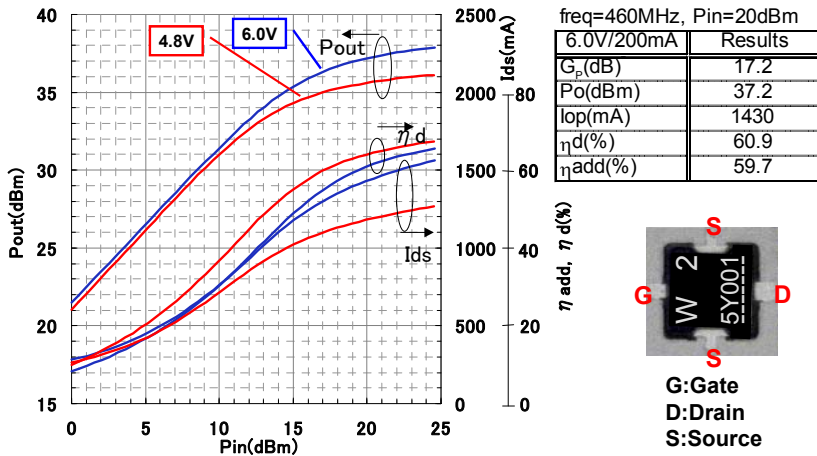


■ Evaluation Board: available

NE5510279A

== 460MHz, 4.8V/6.0V Operation ==

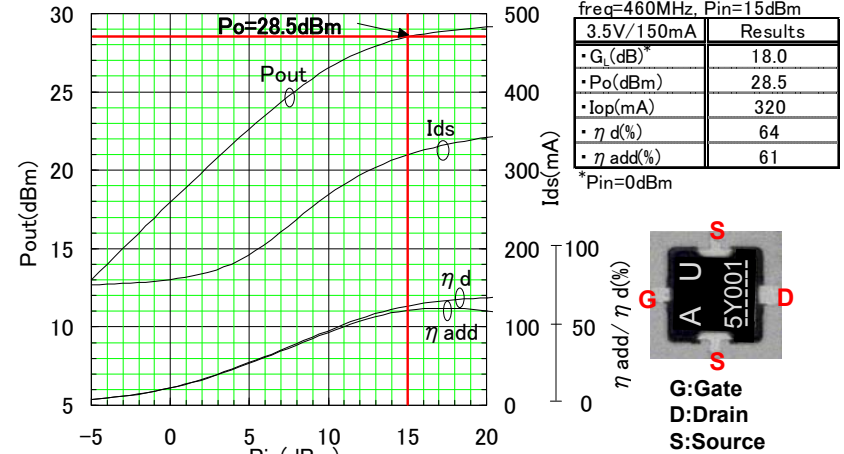
5W@6.0V
@460MHz



NE552R679A

== 460MHz, 3.5V Operation ==

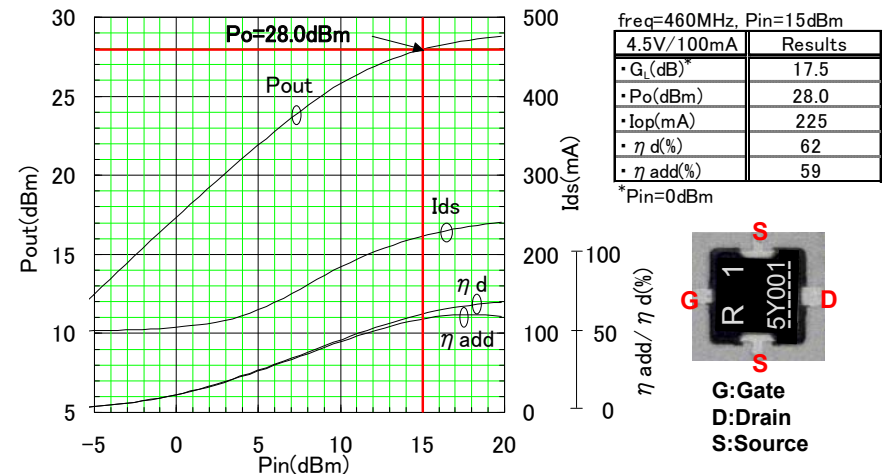
0.6W@3.5V
@460MHz



NE5500179A

== 460MHz, 4.5V Operation ==

0.6W@4.5V
@460MHz

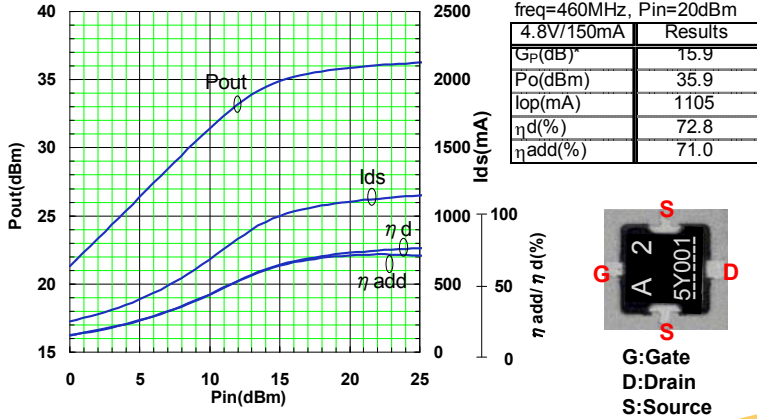


SiLDMOS NE55 Series (2)

NE5520279A

== 460MHz, 4.8V Operation ==

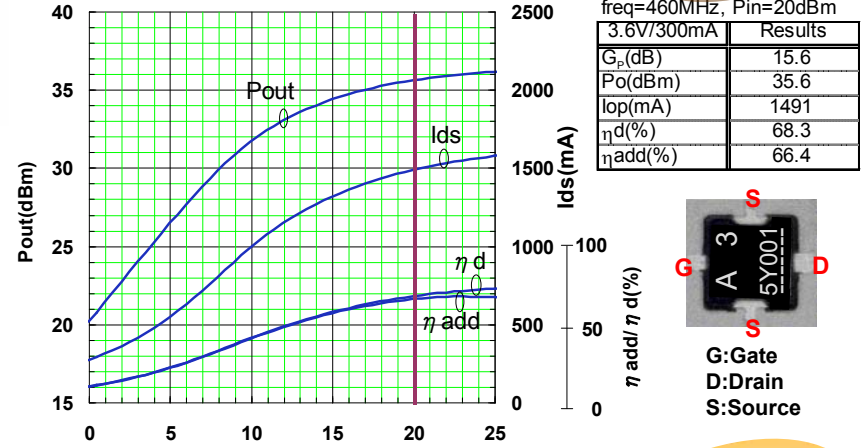
4W@4.8V
@460MHz



NE5520379A

== 460MHz, 3.6V Operation ==

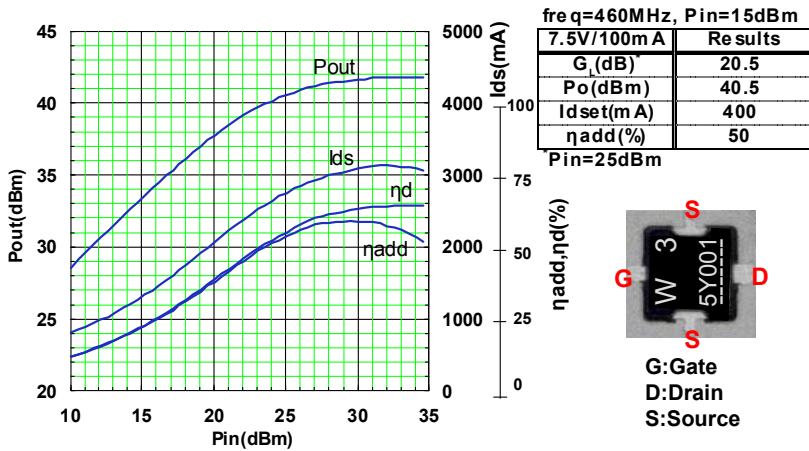
3.6W@3.6V
@460MHz



NE5511279A

== 460MHz, 7.5V Operation ==

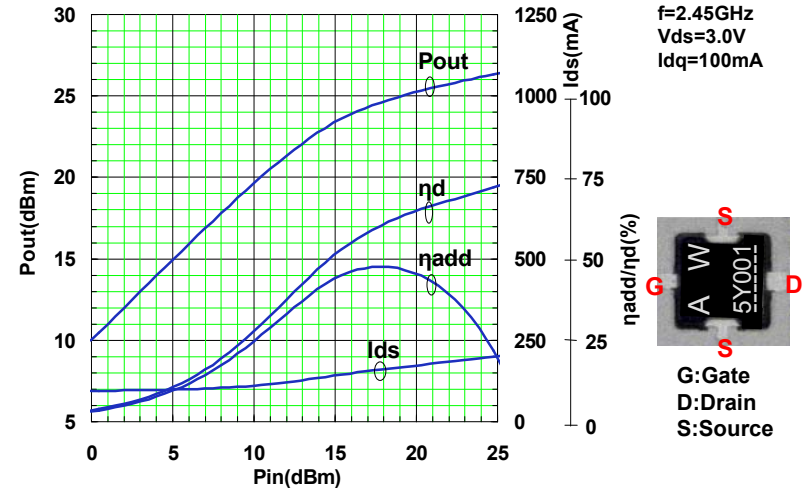
11W@7.5V
@460MHz



NE552R479A

== 2450MHz, 3.0V Operation ==

0.3W@3.0V
@2.45GHz



Line up of NE55X SiLDMOSFET

for various RF
power applications

Part Number	Op. Voltage	Pout(dBm)				Applications
		460MHz	900MHz	1.9GHz	2.4GHz	
NE55410GR	28V	41.0	41.0	40.5	40.0	Base Station
NE5511279A	7.5V	40.5	40.0	-	-	GMRS
NE5500179A NE5500134	4.8V	30.0	29.5	29.0	28.0	FRS
NE5500234	4.8V	33.0	-	32.5	-	FRS
NE5500479A NE5500434	4.8V	36.0	35.0	-	-	900MHz WLL GSM
NE5510279A	3.5V	34.5	34.0	33.0	-	AMPS
NE5520279A	3.2V	34.5	34.0	33.0	31.0	2.4GHz WLL BWA
NE5520379A	3.2V	36.0	35.5	33.0	-	GSM900/DCS1800
NE552R479A	3V	28.0	27.5	26.5	25.0	2.4GHz SS CordlessTEL Bluetooth
NE552R679A	3V	28.0	-	-	-	FRS

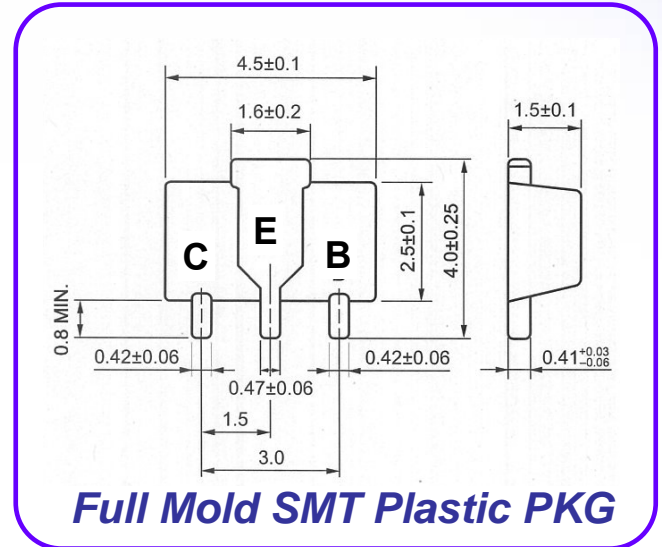
Si / SiGe Bipolar Tr

460MHz 0.8W SiGe HBT

= NESG250134 =

Features

- Suitable Low-Voltage FRS Final stage PA
- SiGe Technology (UHS2-HV, $V_{CBO}=20V$)
- High Isolation PKG
(emitter pin : center configuration)



ELECTRICAL CHARACTERISTICS (Ta=25°C)

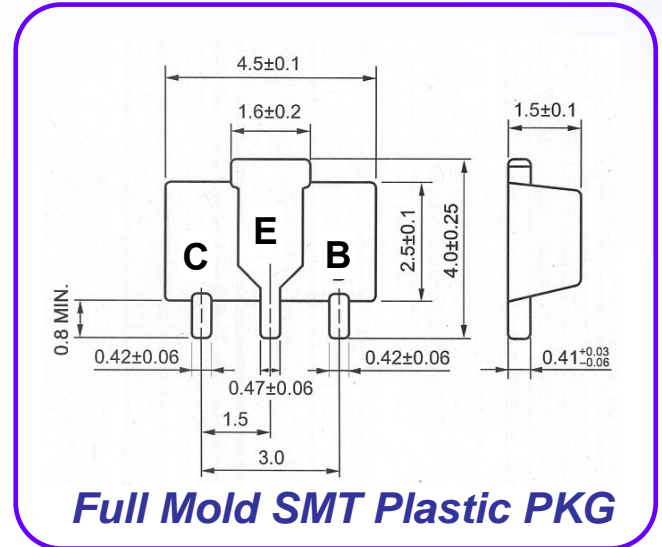
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
hFE	hFE	80	120	180	—	Vce=3V, Ic=100mA
Thermal Resistance	Rth(j-a)	—	65	—	°C/W	Junction to Case
Output Power	Po	27.0	29.0	—	dBm	freq.=460MHz Vce=3.6V, Icset=30mA Pin=15dBm
Power Added Efficiency	PAE	—	60	—	%	
Linear Gain(Pin=0dBm)	GL	16.0	19.0	—	dB	

460MHz 1.0W SiGe HBT

= NESG260234 =

Features

- Suitable for FRS/GMRS PA
- SiGe Technology (UHS2-HV , $V_{CBO}=25V$)
- High Isolation PKG
(emitter pin : center configuration)



ELECTRICAL CHARACTERISTICS (Ta=25°C)

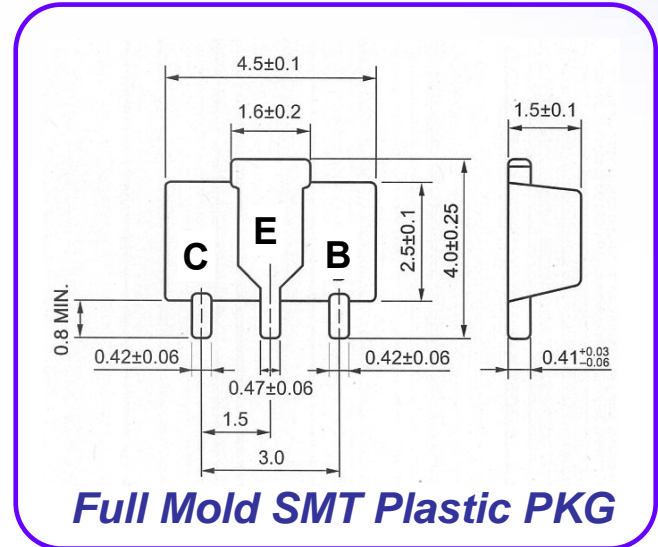
CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
hFE	hFE	80	120	180	—	Vce=3V, Ic=100mA
Thermal Resistance	Rth(j-a)	—	65	—	°C/W	Junction to Case
Output Power	Po	28.5	30.0	—	dBm	freq.=460MHz Vce=6V, Icset=30mA Pin=15dBm
Power Added Efficiency	PAE	—	50	—	%	
Linear Gain(Pin=0dBm)	GL	19.0	22.0	—	dB	

460MHz 2.0W SiGe HBT

= NESG270034 =

Features

- Suitable for Hi-Voltage FRS/GMRS PA
- SiGe Technology (UHS2-HV , V_{CBO} =TBD)
- High Isolation PKG
(emitter pin : center configuration)



ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
hFE	hFE	80	120	180	—	Vce=3V, Ic=100mA
Thermal Resistance	Rth(j-a)	—	65	—	°C/W	Junction to Case
Output Power	Po	31.5	33.5	—	dBm	freq.=460MHz Vce=6V, Icset=30mA Pin=20dBm
Power Added Efficiency	PAE	—	60	—	%	
Linear Gain(Pin=0dBm)	GL	17.5	19.5	—	dB	

Single Si / SiGe Tr Line-up

Period :2009.10.01 to 2010.03.31
ISSUED:2009.10.01

Process	f _T (GHz)	I _C (mA)	V _{CE} (V)	ESD	3Pin Po-MM (SOT-89) 34	3Pin MM (SOT-23) 33	3Pin SMM (SOT-323) 30	3Pin USMM (1808) 19	3Pin L2MM (1005) M13	4Pin Po-MM (SOT-89) M02	4Pin MM (SOT-143) 39	4Pin SMM (SOT-343) 18	4Pin TSMM M04	4Pin TSMM M05	4pin L2MM (1208) M14	6Pin SMM (SOT-363) M01	6Pin L2MM (1208) M16	
Mold Size					4.5×2.5	2.9×1.5	2.0×1.25	1.6×0.8	1.0×0.5	4.5×2.45	2.9×1.5	2.0×1.25	2.0×1.25	2.0×1.25	1.2×0.8	2.0×1.25	1.2×0.8	
Package Size					4.5×4.0	2.9×2.8	2.0×2.1	1.6×1.6	1.0×0.7	4.5×3.95	2.9×2.8	2.0×2.1	2.0×2.05	2.0×2.05	1.2×1.0	2.0×2.1	1.2×1.0	
Height					1.5	1.3	0.9	0.75	0.5	1.5	1.3	0.9	0.59	0.59	0.5	0.9	0.5	
Si	5.5	50	12			NE97833												
	8.5	50	12			NE97733												
	5.0	60	12				NE58230	NE58219										
	5.3	250	15		NE46134					NE461M02								
	5.5	30	12				NE58130	NE58119										
	6.0	150	12		NE46234					NE462M02								
	7.0	100	12		NE85634	NE85633	NE85630	NE85619		NE856M02	NE85639E	NE85618						
	9.0	65	10			NE68133	NE68130	NE68119			NE68139E	NE68118						
	10.0	35	10			NE68033	NE68030	NE68019			NE68039E	NE68018						
		100	5.5						NE851M13									
	12.0	30	6						NE68519		NE68539E	NE68518						
		100	6								NE67839	NE67818	NE678M04					
	14.0	30	6													NE696M01		
	14.5	50	6								NE67739	NE67718	NE677M04					
		10	3					NE68619				NE68618						
	15.5	30	3					NE68719				NE68718						
		30	3															
	16.0	30	3															
		150	6								NE68939							
	18.0	300	6								NE69039							
		35	3						NE894M13									
	25.0	12	3.3											NE661M04	NE661M05			
35		3.3					NE66219						NE662M04				NE662M16	
100		3.3											NE663M04					
500		5											NE664M04					
SiGe	100	5						NE894M13										
	400	5.5	*		NESG240034	NESG240033												
	500	9.2			NESG250134													
	12	200	5.5	*	NESG220034	NESG220033												
	14.0	600	9.2		NESG260234													
	15.0	750	9.2		NESG270034													
	15.5	100	5.5	*		NESG210833												
	18.0	40	5						NESG204619									
		25.0	35	4.3											NESG3031M05	NESG3031M14		
	4.3													NESG3032M14				
	4.3		*											NESG3033M14				
	5													NESG2021M05			NESG2021M16	
	100	5	5											NESG2031M05			NESG2031M16	
5													NESG2101M05			NESG2101M16		
36.0	35	2.3										NESG2030M04						
SiGe:C	27.0	35	3	*											NESG4030M14			

NEC NEC Electronics Corporation
Discrete and IC Operations Unit, Compound Semiconductor Devices Division

Single Si / SiGe Tr Line-up

Period :2009.10.01 to 2010.03.31

ISSUED:2009.10.01

Process	f _r (GHz)	I _c (mA)	V _{ce} (V)	ESD	3Pin	3Pin	3Pin	3Pin	3Pin	4Pin	4Pin	4Pin	4Pin	4Pin	4Pin	6Pin	6Pin		
					Po-MM (SOT-89) 34	MM (SOT-23) 33	SMM (SOT-323) 30	USMM (1608) 19	L2MM (1005) M13	Po-MM (SOT-89) M02	MM (SOT-143) 39	SMM (SOT-343) 18	TSM M04	TSM M05	L2MM (1208) M14	SMM (SOT-363) M01	L2MM (1208) M16		
Mold Size					4.5×2.5	2.9×1.5	2.0×1.25	1.6×0.8	1.0×0.5	4.5×2.45	2.9×1.5	2.0×1.25	2.0×1.25	2.0×1.25	2.0×1.25	1.2×0.8	2.0×1.25	1.2×0.8	
Package Size					4.5×4.0	2.9×2.8	2.0×2.1	1.6×1.6	1.0×0.7	4.5×3.95	2.9×2.8	2.0×2.1	2.0×2.05	2.0×2.05	2.0×2.05	1.2×1.0	2.0×2.1	1.2×1.0	
Height					1.5	1.3	0.9	0.75	0.5	1.5	1.3	0.9	0.59	0.59	0.5	0.9	0.5		
Si	5.5	50	12			2SA1978													
	8.5	50	12			2SA1977													
	5.0	60	12				2SC4571	2SC5004											
	5.3	250	15			2SC4536					2SC5337								
	5.5	30	12				2SC4570	2SC5005											
	6.0	150	12			2SC4703					2SC5338								
	7.0	100	12			2SC3357	2SC3356	2SC4226	2SC5006		2SC5336	2SC4093	2SC5011						
	9.0	65	10				2SC3583	2SC4227	2SC5007			2SC4094	2SC5012						
	10.0	35	10				2SC3585	2SC4228	2SC5008			2SC4095	2SC5013						
		100	5.5							2SC5801									
	12.0	30	6						2SC5010			2SC4957	2SC5015						
		100	6									2SC5455	2SC5752	2SC5753					
	14.0	30	6													2SC5369			
	14.5	50	6									2SC5454	2SC5750	2SC5751					
	15.5	10	3						2SC5181				2SC5180						
		30	3						2SC5186				2SC5185						
	16.0	30	3																
		150	6																
	18.0	300	6									2SC5288							
		300	6									2SC5289							
	20.0	35	3							2SC5787									
		12	3.3											2SC5507	NE661M05				
	25.0	35	3.3						2SC5606					2SC5508				2SC5704	
100		3.3											2SC5509						
500		5											2SC5754						
SiGe	10	100	5						NESG210719										
		400	5.5	*	NESG240034	NESG240033													
		500	9.2		NESG250134														
	12	200	5.5	*	NESG220034	NESG220033													
		600	9.2		NESG260234														
	15.0	750	9.2		NESG270034														
	15.5	100	5.5	*		NESG210833													
	18.0	40	5							NESG204619									
			4.3												NESG3031M05	NESG3031M14			
		35	4.3														NESG3032M14		
			4.3	*													NESG3033M14		
			5															NESG2021M16	
			5															NESG2031M16	
100			5												NESG2101M05		NESG2101M16		
36.0	35	2.3										2SC5761							
SiGe:C	27.0	35	3	*											NESG4030M14				

NEC Electronics Microwave Devices Web Site

NEC

Worldwide > Japan > 日本語

SITE MAP CONTACT US

Enter Keyword GO PARAMETRIC ADVANCED

NEC Empowered by Innovation

NEC ELECTRONICS

HOME APPLICATIONS PRODUCTS TECHNOLOGY

Overview
Microcontrollers and Microprocessors
Discrete
Linear ICs
Memory
ASIC
Interface
Digital AV
Mobile
Display Driver
Other ASSP
Data-Electronic Devices
RF and Microwave Devices
General Information
Regional

RF and Microwave Devices Home
Product Lineup
Application
Cross-reference
Documentation
Development Data Download
Search within RF and Microwave Devices site
Opto/RF and Microwave Devices Mailing Service

Products > RF and Microwave Devices

RF and Microwave Devices

Product Lineup Application

System Introduction
Basic RF Blocks
System Block Diagrams
Select a product on the list to view examples:
System block diagrams

AVAILABLE!

- Data Sheets in PDF
- Device Parameters
- CAD Data
- Evaluation-Board Information

<http://www.necel.com/microwave/>