

3.2 V, 2 W, L&S BAND MEDIUM POWER SILICON LD-MOSFET

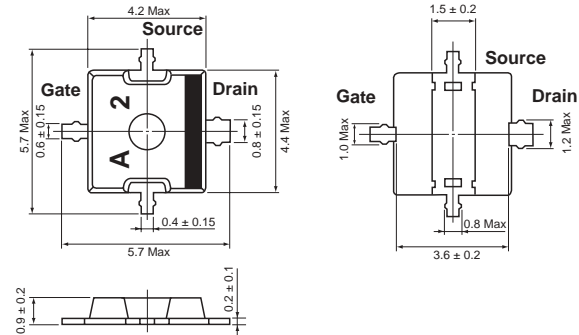
NE5520279A

FEATURES

- **LOW COST PLASTIC SURFACE MOUNT PACKAGE:**
5.7x5.7x1.1 mm MAX
- **HIGH OUTPUT POWER:**
+32 dBm TYP
- **HIGH LINEAR GAIN:**
10 dB TYP @ 1.8 GHz
- **HIGH POWER ADDED EFFICIENCY:**
45% TYP at 1.8 GHz
- **SINGLE SUPPLY:**
2.4 to 6.0 V

OUTLINE DIMENSIONS (Units in mm)

PACKAGE OUTLINE 79A



DESCRIPTION

The NE5520279A is an N-Channel silicon power MOSFET specially designed as the transmission power amplifier for 3.2 V DCS1800 handsets. It can be operated at up to 6 V for higher power, Fixed Wireless Access applications. Die are manufactured using NEC's NEWMOS technology (NEC's 0.6 μm WSi gate lateral MOSFET) and housed in a surface mount package.

APPLICATIONS

- **DIGITAL CELLULAR PHONES:**
3.2 V GSM/DCS1800 Class 1 Handsets
- **0.7-2.5 GHz FIXED WIRELESS ACCESS**
- **RETAIL BUSINESS RADIO**
- **SPECIAL MOBILE RADIO**

ELECTRICAL CHARACTERISTICS (T_A = 25°C)

PART NUMBER				NE5520279A			TEST CONDITIONS
PACKAGE OUTLINE				79A			
FUNCTIONAL CHARACTERISTICS	SYMBOLS	CHARACTERISTICS	UNITS	MIN	TYP	MAX	
Functional Characteristics	P _{OUT}	Output Power	dBm	30.5	32.0		f = 1.8 GHz, V _{DS} = 3.2 V, I _{DSQ} = 300 mA, P _{IN} = 25 dBm, except P _{IN} = 10 dBm for Linear Gain ¹
	G _L	Linear Gain ¹	dB		10		
	η _{ADD}	Power Added Efficiency	%		45		
	I _D	Operating Drain Current	mA		800		
Electrical DC Characteristics	I _{GSS}	Gate-to-Source Leakage Current	nA			100	V _{GSS} = 5.0 V
	I _{DSS}	Drain-to-Source Leakage Current	nA			100	V _{DSS} = 8.5 V
	V _{TH}	Gate Threshold Voltage	V	1.0	1.4	2.0	V _{DS} = 3.5 V, I _{DS} = 1 mA
	g _m	Transconductance	S		1.3		V _{DS} = 3.5 V, I _{DS} = 300 mA
	BV _{DSS}	Drain-to-Source Breakdown Voltage	V	15	18		I _{DSS} = 10 A
	R _{TH}	Thermal Resistance	°C/W			10	Channel-to-Case

Notes:

1. DC performance is tested 100%. Several samples per wafer are tested for RF performance. Wafer rejection criteria for standard devices is 1 reject for several samples.

ABSOLUTE MAXIMUM RATINGS¹ (T_A = 25 °C)

SYMBOLS	PARAMETERS	UNITS	RATINGS
V _{DS}	Drain Supply Voltage	V	8.5
V _{GS}	Gate Supply Voltage	V	5
I _D	Drain Current	A	1.0
I _D	Drain Current (Pulse Test) ²	A	1.5
P _T	Total Power Dissipation	W	10
T _{CH}	Channel Temperature	°C	125
T _{STG}	Storage Temperature	°C	-55 to +125

Note:

1. Operation in excess of any one of these parameters may result in permanent damage.
2. Duty Cycle 50%, T_{on} = 1 ms.

RECOMMENDED OPERATING LIMITS

SYMBOLS	PARAMETERS	UNITS	TYP	MAX
V _{DS}	Drain to Source Voltage	V	3.0	8.0
V _{GS}	Gate Supply Voltage	V	2.0	3.0
I _{DS}	Drain Current ¹	A	0.8	1.0
P _{IN}	Input Power	dBm	25	26

Note:

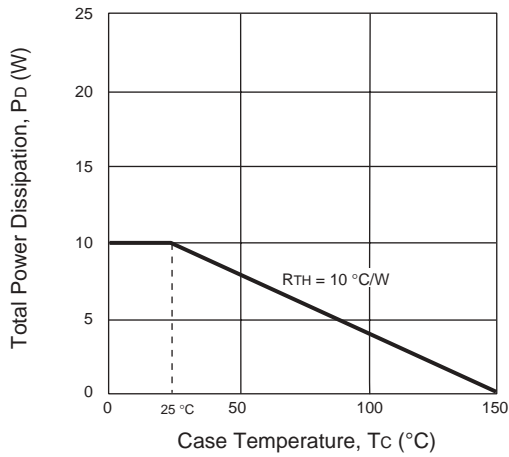
1. Pulse Test

ORDERING INFORMATION

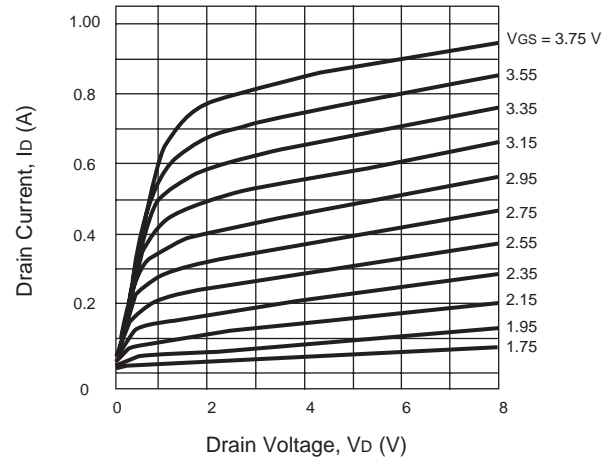
PART NUMBER	QTY
NE5520279A-T1A	5 K/Reel

TYPICAL PERFORMANCE CURVES (T_A = 25 °C)

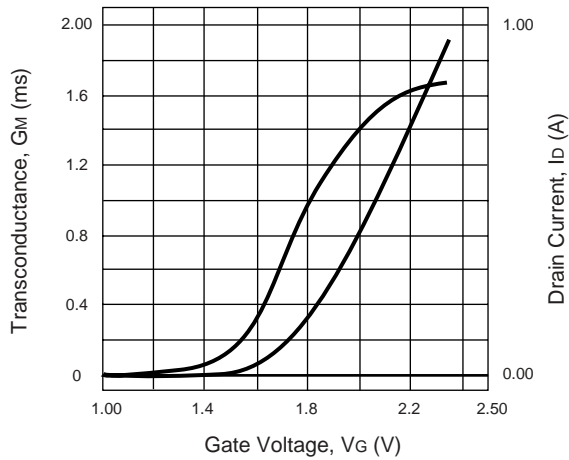
TOTAL POWER DISSIPATION vs. CASE TEMPERATURE



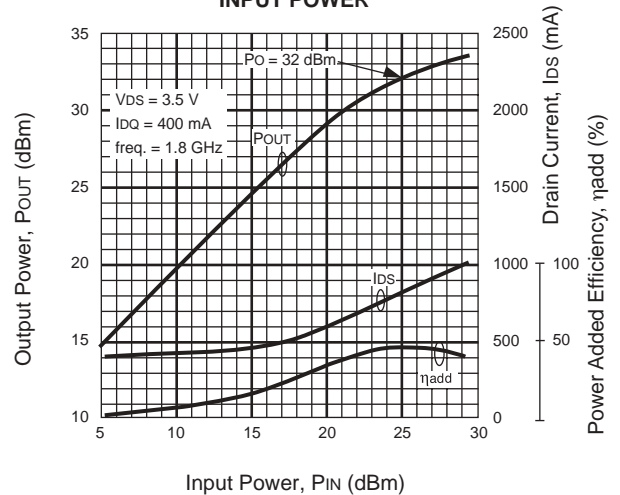
DRAIN CURRENT vs. DRAIN VOLTAGE



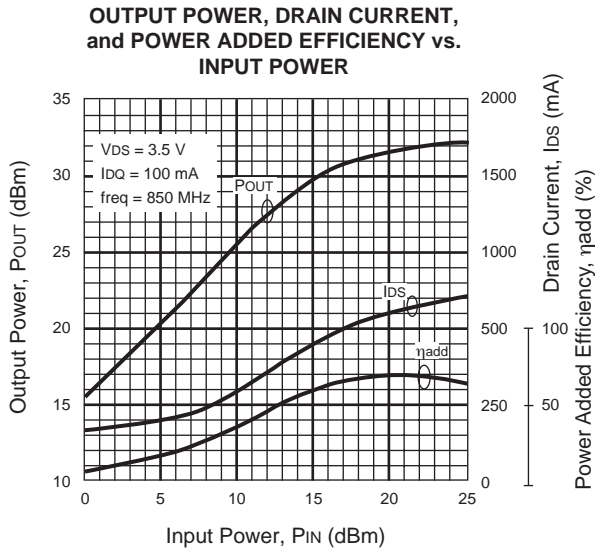
TRANSCONDUCTANCE AND DRAIN CURRENT vs. GATE VOLTAGE



OUTPUT POWER, DRAIN CURRENT, and POWER ADDED EFFICIENCY vs. INPUT POWER

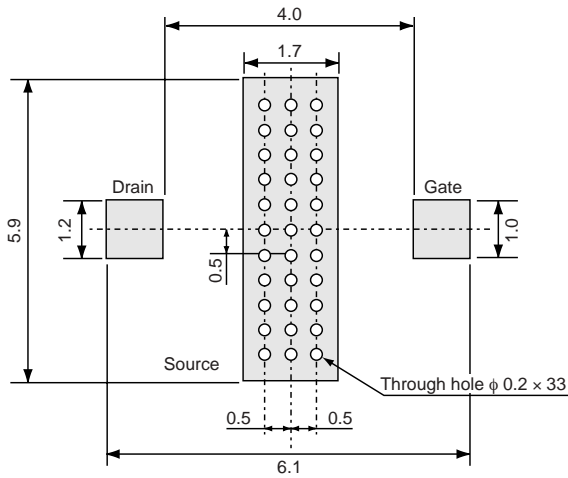


TYPICAL PERFORMANCE CURVES ($T_A = 25^\circ\text{C}$)



P.C.B. LAYOUT (Units in mm)

79A PACKAGE



Note:
 Use rosin or other material to prevent solder from penetrating through-holes.

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