

30 W S-BAND POWER GaAs FET N-CHANNEL GaAs MES FET

DESCRIPTION

The NES2527B-30 is power GaAs FET which provides high output power and high gain in the 2.5 - 2.7 GHz band.

Internal input matching circuits are designed to optimize performance. The device has a 0.8 μm gate length for increased linear gain. To reduce thermal resistance, the device uses PHS (Plated Heat Sink) technology.

The device incorporates WSi (tungsten silicide) gate for high reliability and SiO_2 glassivation for surface stability.

FEATURES

- High output power
- High gain
- High power added efficiency
- Internally matched input
- High reliability

QUALITY GRADE

Standard

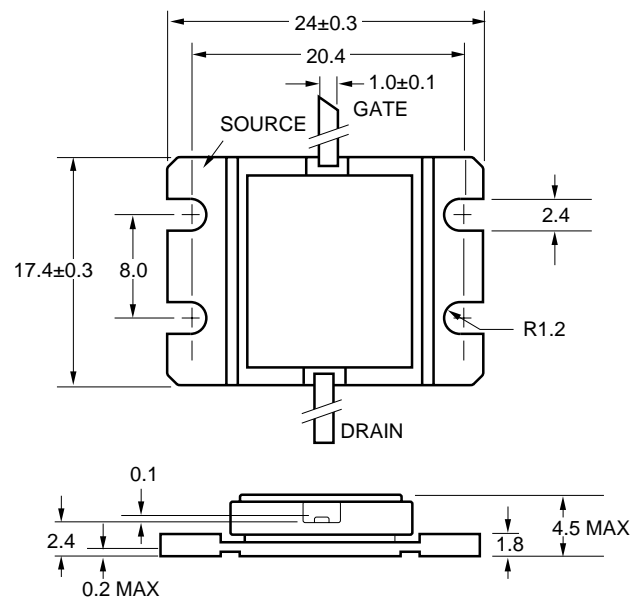
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Drain to Source Voltage	V_{DS}	15	V
Gate to Source Voltage	V_{GS}	-7	V
Gate to Drain Voltage	V_{GD}	-18	V
Drain Current	I_D	27	A
Gate Current	I_G	180	mA
Total Power Dissipation	$P_{T(*)}$	110	W
Channel Temperature	T_{ch}	175	$^\circ\text{C}$
Storage Temperature	T_{stg}	-65 to +175	$^\circ\text{C}$

* $T_C = 25^\circ\text{C}$

PACKAGE DIMENSIONS (UNIT: mm)



The information in this document is subject to change without notice.

ELECTRICAL CHARACTERISTICS (T_A = 25 °C)

CHARACTERISTICS	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Saturated Drain Current	I _{DSS}	—	18.0	—	A	V _{DS} = 2.5 V, V _{GS} = 0 V
Pinch-off Voltage	V _P	-4.0	-2.6	—	V	V _{DS} = 2.5 V, I _{DS} = 80 mA
Thermal Resistance	R _{th}	—	1.3	1.5	°C/W	Channel to Case
Output Power at 1 dB G.C.P. ³	P ₋₁	44.0	45.0	—	dBm	freq = 2.5/2.7 GHz V _{DS} = 10 V I _{DS} = 6.0 A (RF OFF)
Linear Gain	G _L	11.5	13.0	—	dB	
Power Added Efficiency	η _{add}	—	40.0	—	%	
3rd Order Intermodulation Distortion	IM ₃ ^{*1}	—	-42.0	—	dBc	

*1 P_O = 33.0 dBm, Δf = 1.0 MHz

RECOMMENDING OPERATING LIMITS

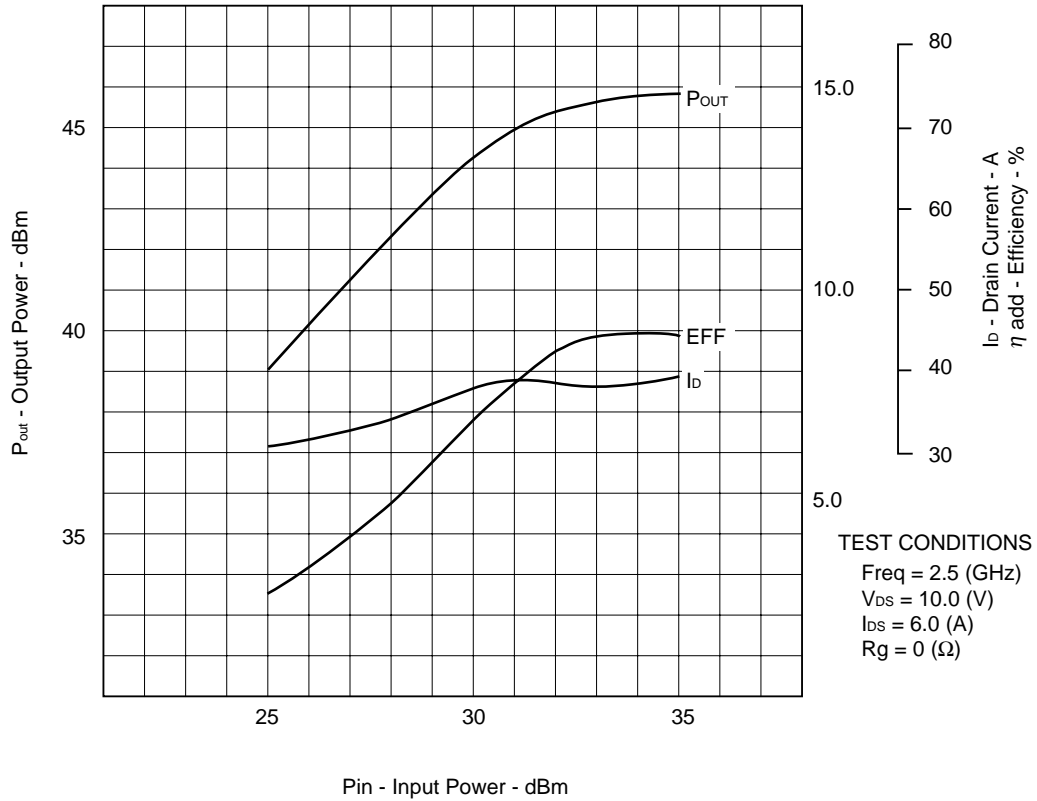
R _g ^{*2} (Ω)	V _{DS} (V)	T _{ch} (°C)	G.C.P. ^{*3}	T _{case} (°C)
30	to 10	to 130	to 3 dBcomp	to 62

*2 R_g is the series resistance between the gate supply and the FET gate.

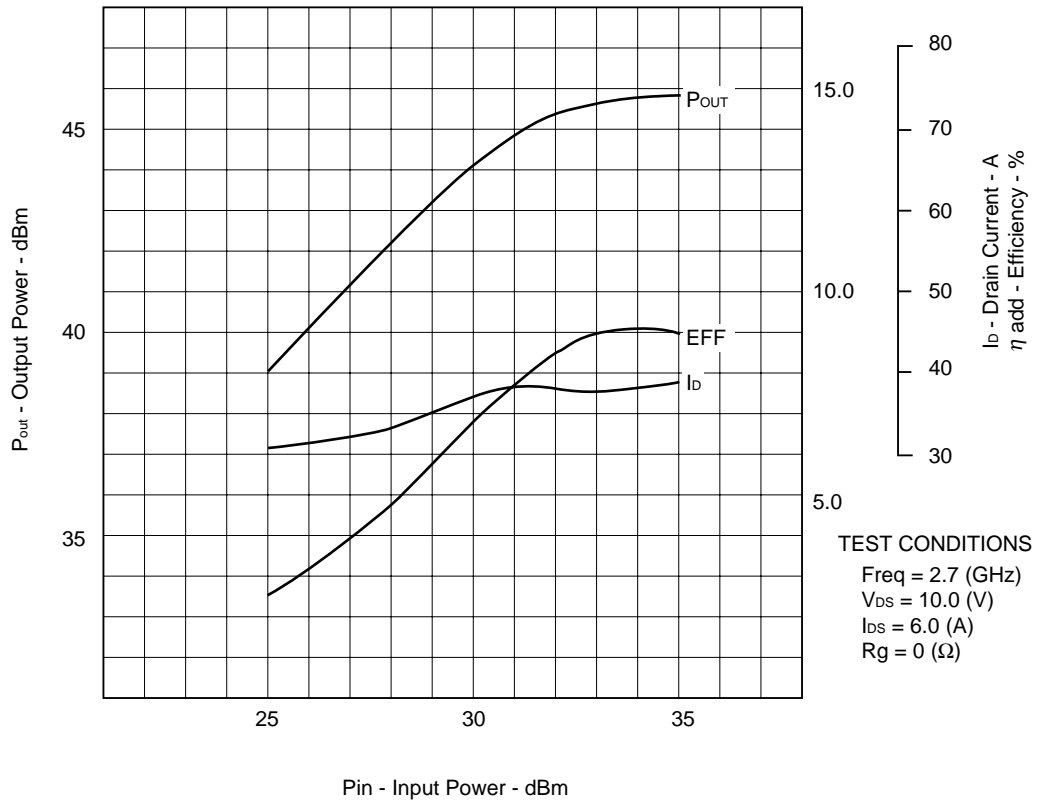
*3 G.C.P: Gain Compression Point

TYPICAL CHARACTERISTICS (T_A = 25 °C)

OUTPUT POWER, DRAIN CURRENT AND EFFICIENCY vs INPUT POWER



OUTPUT POWER, DRAIN CURRENT AND EFFICIENCY vs INPUT POWER



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NEC devices are classified into the following three quality grades:

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Standard: Computers, office equipment, communications equipment, test and measurement equipment, audio and visual equipment, home electronic appliances, machine tools, personal electronic equipment and industrial robots

Special: Transportation equipment (automobiles, trains, ships, etc.), traffic control systems, anti-disaster systems, anti-crime systems, safety equipment and medical equipment (not specifically designed for life support)

Specific: Aircrafts, aerospace equipment, submersible repeaters, nuclear reactor control systems, life support systems or medical equipment for life support, etc.

The quality grade of NEC devices is "Standard" unless otherwise specified in NEC's Data Sheets or Data Books. If customers intend to use NEC devices for applications other than those specified for Standard quality grade, they should contact an NEC sales representative in advance.

Anti-radioactive design is not implemented in this product.