

To our customers,

Old Company Name in Catalogs and Other Documents

On April 1st, 2010, NEC Electronics Corporation merged with Renesas Technology Corporation, and Renesas Electronics Corporation took over all the business of both companies. Therefore, although the old company name remains in this document, it is a valid Renesas Electronics document. We appreciate your understanding.

Renesas Electronics website: <http://www.renesas.com>

April 1st, 2010
Renesas Electronics Corporation

Issued by: Renesas Electronics Corporation (<http://www.renesas.com>)

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GaAs MES FET NES2527B-30

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 SiO₂ glassivation for surface stability.

FEATURES

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

QUALITY GRADE

Standard

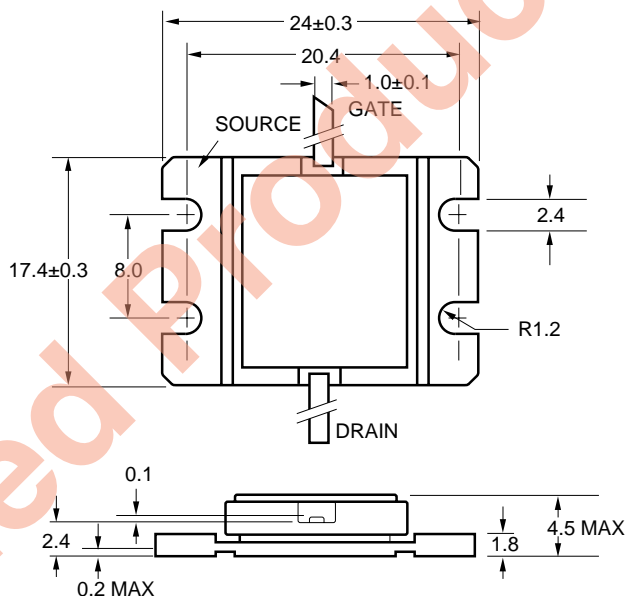
Please refer to "Quality grade on NEC Semiconductor Devices" (Document number IEI-1209) published by NEC Corporation to know the specification of quality grade on the devices and its recommended applications.

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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	°C
Storage Temperature	T _{stg}	-65 to +175	°C

* T_C = 25 °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

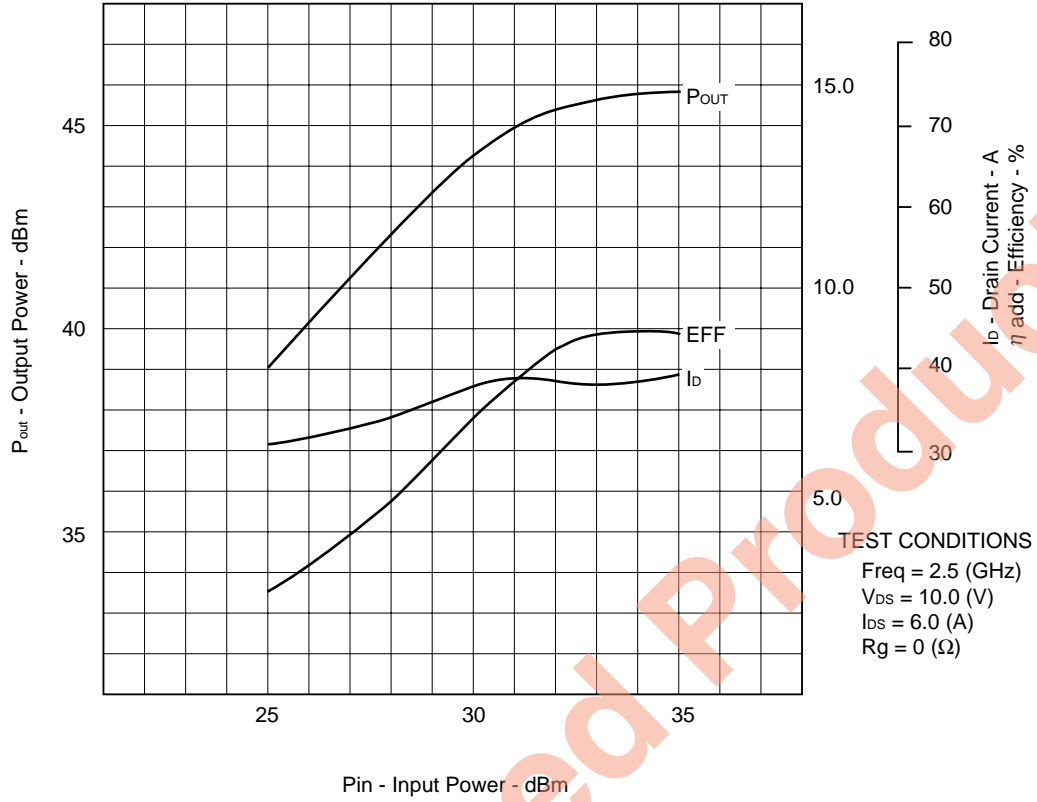
R _g ² (Ω)	V _{DS} (V)	T _{ch} (°C)	G.C.P. ³	T _{case} (°C)
30	to 10	to 130	to 3 dBcomp	to 62

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

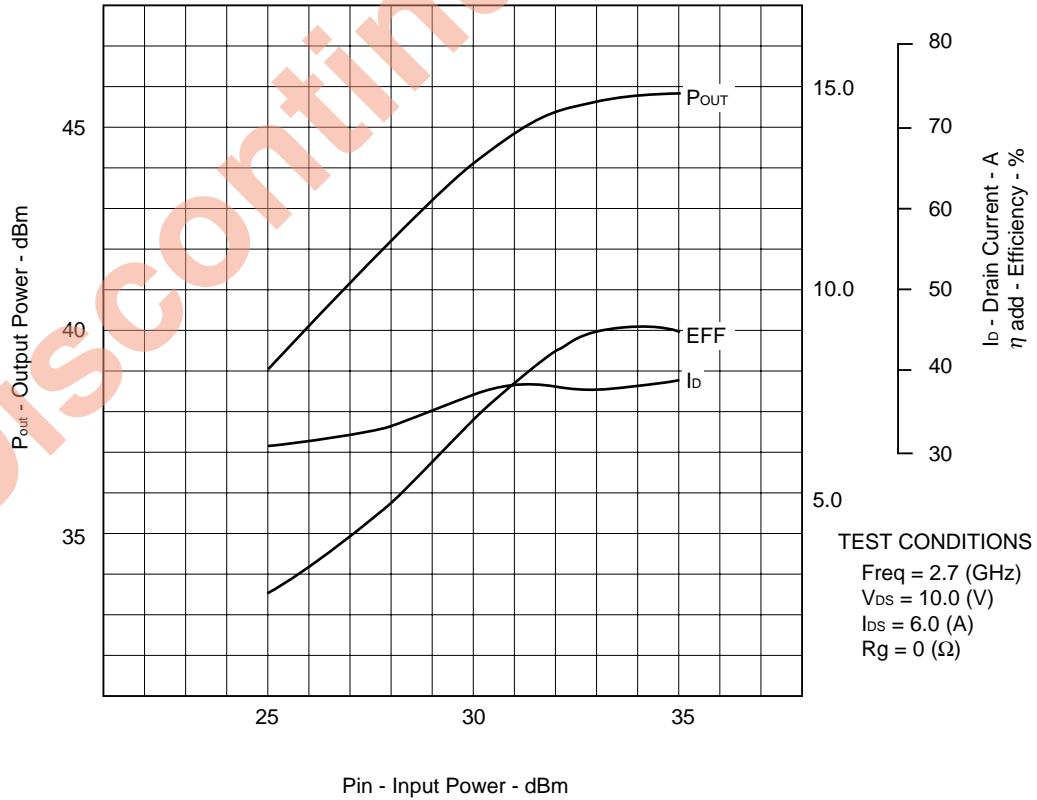
*3 G.C.P: Gain Compression Point

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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"Standard", "Special", and "Specific". The Specific quality grade applies only to devices developed based on a customer designated "quality assurance program" for a specific application. The recommended applications of a device depend on its quality grade, as indicated below. Customers must check the quality grade of each device before using it in a particular application.

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.