GT135D 50V, DC – 3.2GHZ, 135W GAN HEMT

FEATURES

- Operating Frequency Range: DC to 3.2GHz
- Operating Drain Voltage: +50V
- Maximum Output Power (P_{SAT}): 150W
- Maximum Drain Efficiency: 70%
- Efficiency-Tuned P3dB Gain: 18dB
- Surface Mount Plastic Package

14 Pin 6x3 mm DFN Package

DESCRIPTION

The GT135D is a 150W (P3dB) unmatched discrete GaN-on-SiC HEMT which operates from DC to 3.2GHz on a 50V supply rail. The wide bandwidth of the GT135D makes it suitable for a variety of applications including cellular infrastructure, radar, communications, and test instrumentation, and can support both linear and pulsed mode of operations.

The device is housed in an industry-standard 6x3 mm surface mount DFN package. Lead-free and ROHS compliant.

TYPICAL PERFORMANCE: POWER TUNED at P3dB, T_A = 25°C (1)

Parameter	1.7 GHz	2.0 GHz	2.3 GHz	2.6 GHz	3.2GHz
Gain (dB)	17.8	16.5	14.9	13.5	TBD
Saturated Output Power (W)	154	151	155	151	TBD
Drain Efficiency (%)	64	61	61	57	TBD

(1) V_D = 50V, I_{DQ} = 250mA

TYPICAL PERFORMANCE: EFFICIENCY TUNED at P3dB, T_A = 25°C (2)

Parameter	1.7 GHz	2.0 GHz	2.3 GHz	2.6 GHz	3.2GHz
Gain (dB)	18.7	17.1	15.9	14.7	TBD
Saturated Output Power (W)	108	135	100	100	TBD
Drain Efficiency (%)	71	68	68	66	TBD

(2) V_D = 50V, I_{DQ} = 250mA

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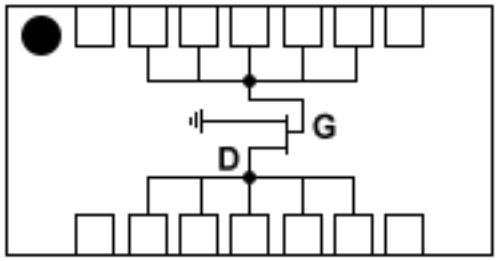
ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Units
Breakdown Voltage	>150	BV_{DG} (V)
Gate Source Voltage	-8 to +2	V_{GS} (V)
Operating Voltage	55	V (V)
Junction Temperature	+225	(°C)
Storage Temperature	-65 to +150	(°C)

BLOCK DIAGRAM



ELECTRICAL SPECIFICATIONS: T_A = 25°C

Parameter	Min.	Typ.	Max.	Units	Notes
Frequency Range	DC		3200	MHz	
DC Characteristics					
Drain Source Breakdown Voltage		>150		V_{DS} (V)	
Drain Source Leakage Current		1.50		I_{DS} (mA)	
Gate Threshold Voltage		-3.5 to -1.5		V_{GS} (V)	
Operating Conditions					
Gate Voltage		-2.5		V_G (V)	
Drain Voltage		50		V_D (V)	
Quiescent Drain Current		250		I_{DQ} (mA)	
Thermal Characteristics					
Thermal Resistance		TBD		(°C/W)	

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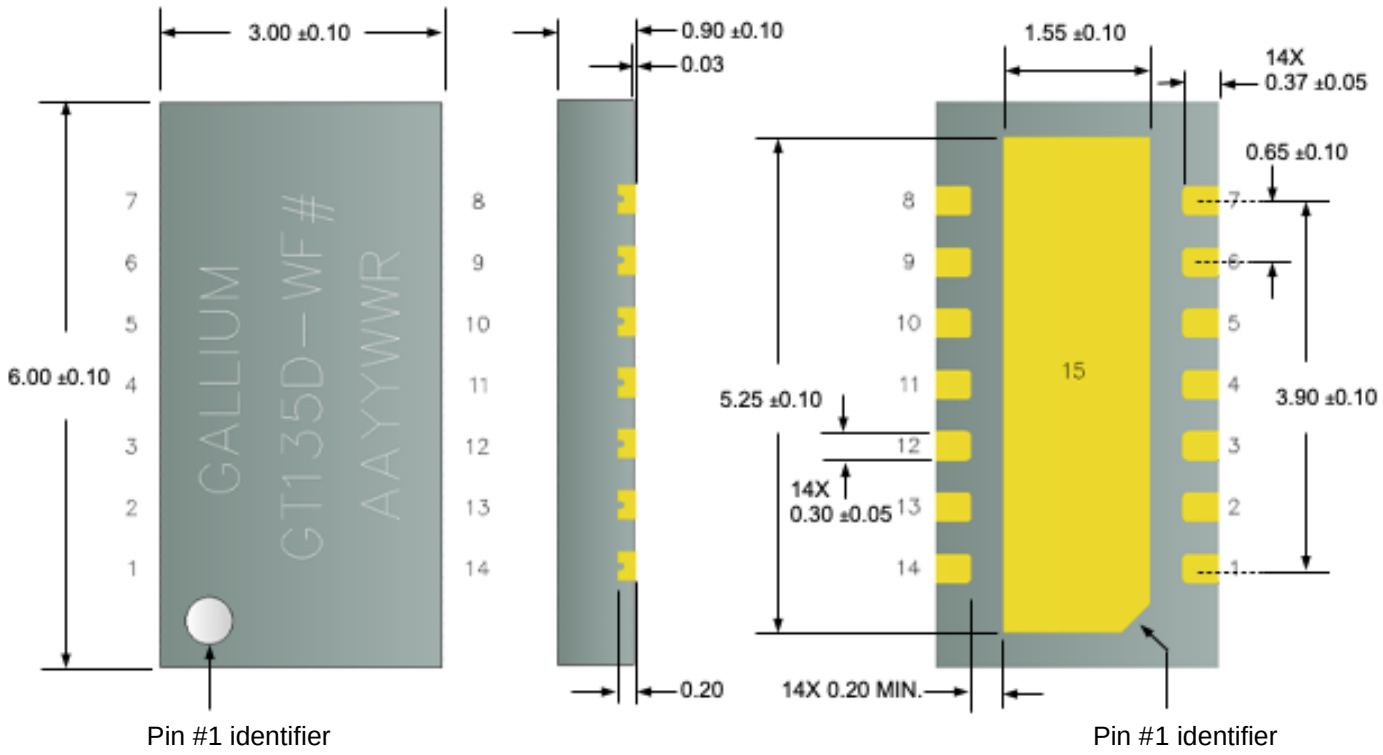
PACKAGE DIMENSIONS



Note: Dimension in mm. (Equivalent engineering part number - GE0047)

PIN CONFIGURATION

Pin	Input/Output
1	Not connected
2, 3, 4, 5, 6	RF Input / Gate Voltage
7, 8	Not connected
9, 10, 11, 12, 13	RF Output / Drain Voltage
14	Not connected
15 (Paddle)	Ground

DEVICE LABEL

Line 1:	COMPANY NAME:	GALLIUM
Line 2:	PART NUMBER - WAFER #	
Line 3:	AA:	Assembly Code
	YYWW:	Assembly Date Code
	R:	Reserved code

GaN HEMT BIASING SEQUENCE

To turn the transistor ON

1. Set V_{GS} to -5V
2. Turn on V_{DS} to normal operation voltage (50V)
3. Slowly increase V_{GS} to set I_{DS} current (250mA)
4. Apply RF power

To turn the transistor OFF

1. Turn the RF power off
2. Decrease V_{GS} to -5V
3. Turn off $V_{D.}$ Wait a few seconds for drain capacitor to discharge
4. Turn off V_{GS}

CONTACT INFORMATION

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