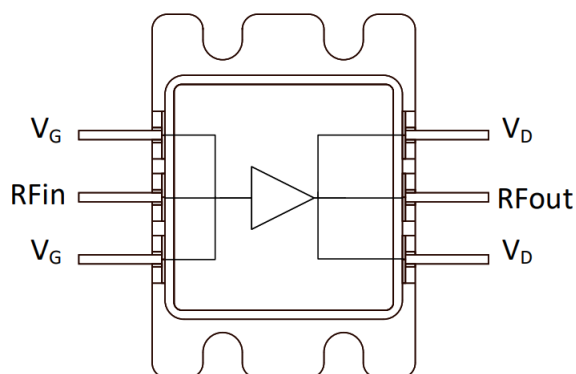


3700-4500MHz, 60W, 28V, GaN RF Transistor

General Description

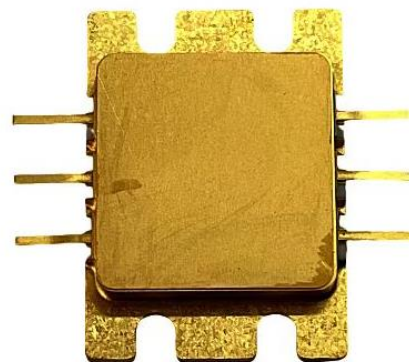
The GNNT3745-48M is a gallium nitride (GaN) high electron mobility transistor (HEMT), The device integrated single-stage power amplifier with 60W saturated output power and 3700MHz-4500MHz operating frequency range. It is 50 Ω input and output and requires minimal external components. The device is in an industry standard mental-ceramic 17.4mm*24mm*4.4mm package.

Block Diagram



Features

- Operating Frequencies: 3700MHz~4500MHz
- Output Power(Psat): 48.3dBm
- Power Gain: 10.6dB
- PAE: 60.5%
- Operating voltage: 28V
- Support CW & Pulse Mode
- Package: 17.4mm*24mm*4.4mm mental-ceramic



Applications

- Radar
- Wireless Radio
- Test Instruments
- Broadband applications

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	10mA(Typ)
Gate-Source Voltage(V_G)	-2.50 V(Typ)

Note:

- 1.All the RF spec tested under recommended conditions.
- 2.Bias-up Procedure : Set V_G to the pinch-off (V_P) voltage, typically -5 V, then turn on V_D to nominal supply voltage (28V)
- 3.Bias-down Procedure : Turn off RF signal, then turn off V_D and wait 1 second to allow drain capacitor dissipation, turn off V_G

Absolute Maximum Rating

Note:

1. Operating outside the rated range may cause irreversible damage to the device

Parameter	Range Value
Drain-Source Breakdown Voltage (BV_{DS})	120V
Drain-Source Voltage Range, (V_D)	20~32V
Gate-Source Voltage Range, (V_G)	-10~+1V
Operating Temperature Range	-40~125°C
Storage Temperature Range	-65~150°C

RF Characteristics

Symbol	Parameter	3700MHz	4000MHz	4500MHz	Unit
P_{sat}	Saturated Output Power	48.4	48.7	48.5	dBm
G_p	Power Gain	13.5	12.9	10.6	dB
Eff	Drain Efficiency	56	60.5	63.5	%

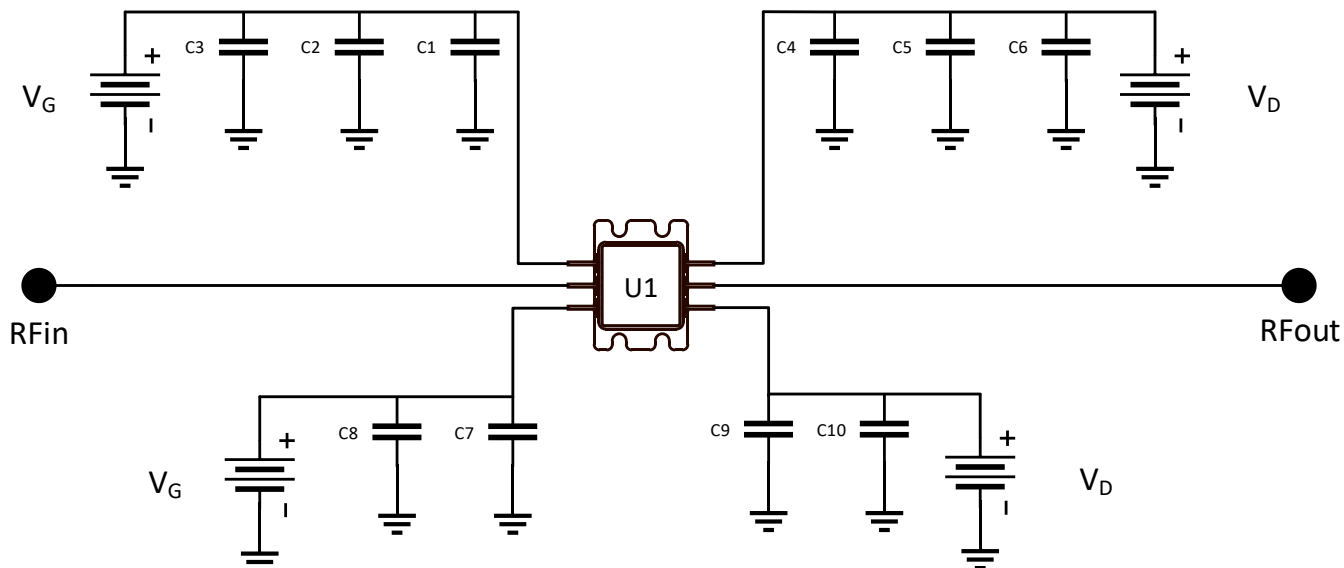
Test condition: $T_A = 25\text{ }^{\circ}\text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 100\text{mA}$, CW

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	TBD	-	$^{\circ}\text{C/W}$

Test condition: $T_A = 25\text{ }^{\circ}\text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 10\text{mA}$, CW

Evaluation Board

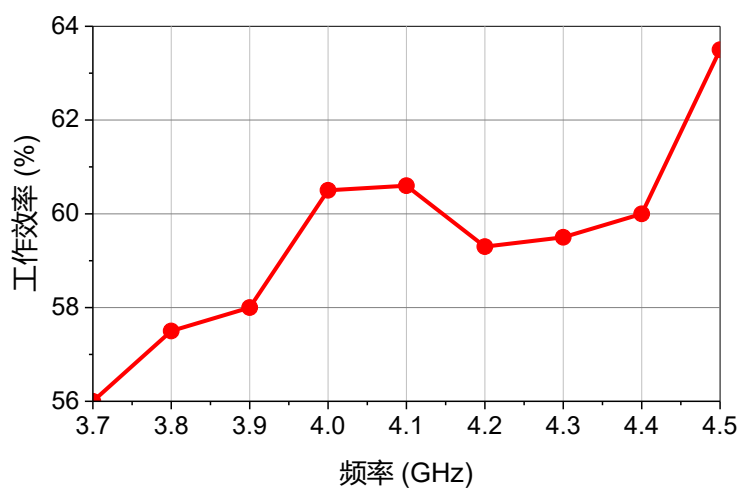
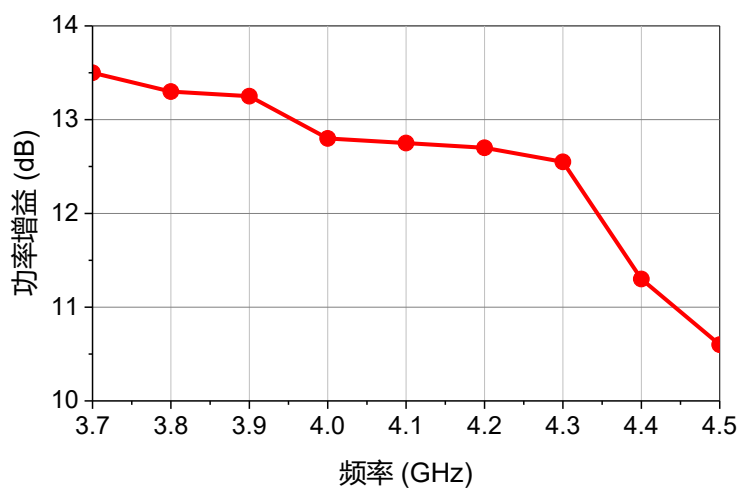
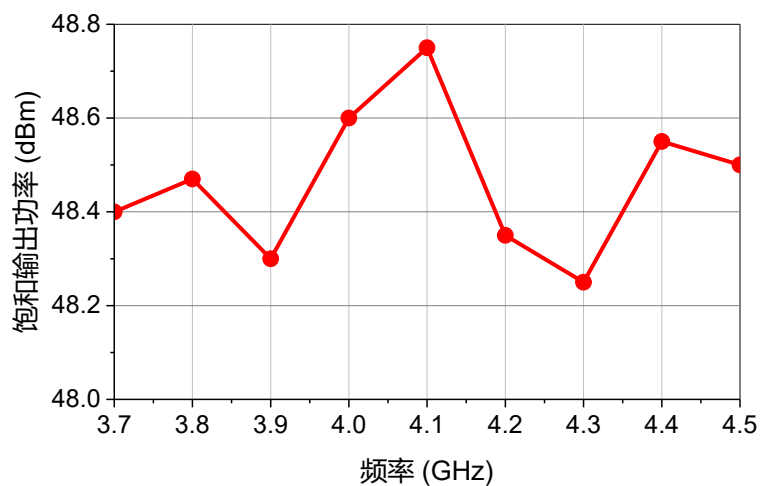


BOM List of EVB

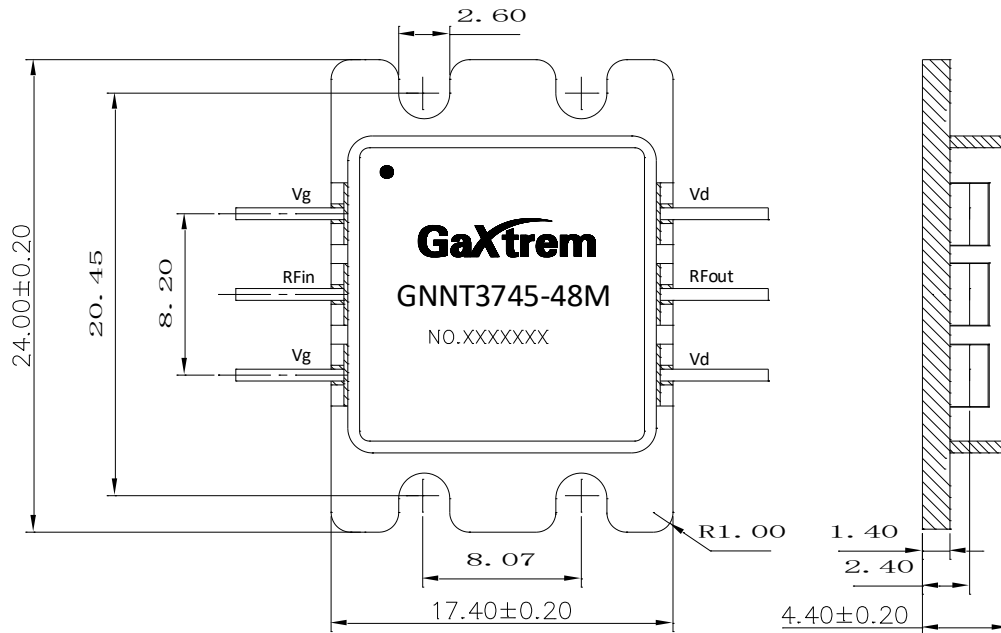
Ref Des	Value	Qty	Manufacturer	Part#
C1, C4, C7, C9	2200 pF	4	Dielectric Labs	C08BL222X-5UN-X0T
C3, C6	10 uF	2	Murata	GRM32ER71J106KA12L
C2, C5, C8, C10	100 nF	4	Murata	GRM188R71H104MA93
U1	/	1	Gaxtrem	GNNT3745-48M

EVB Test Result, 3.7GHz-4.5GHz

Test condition: TA = 25 °C, VD = 28V, IDQ = 100mA, CW.



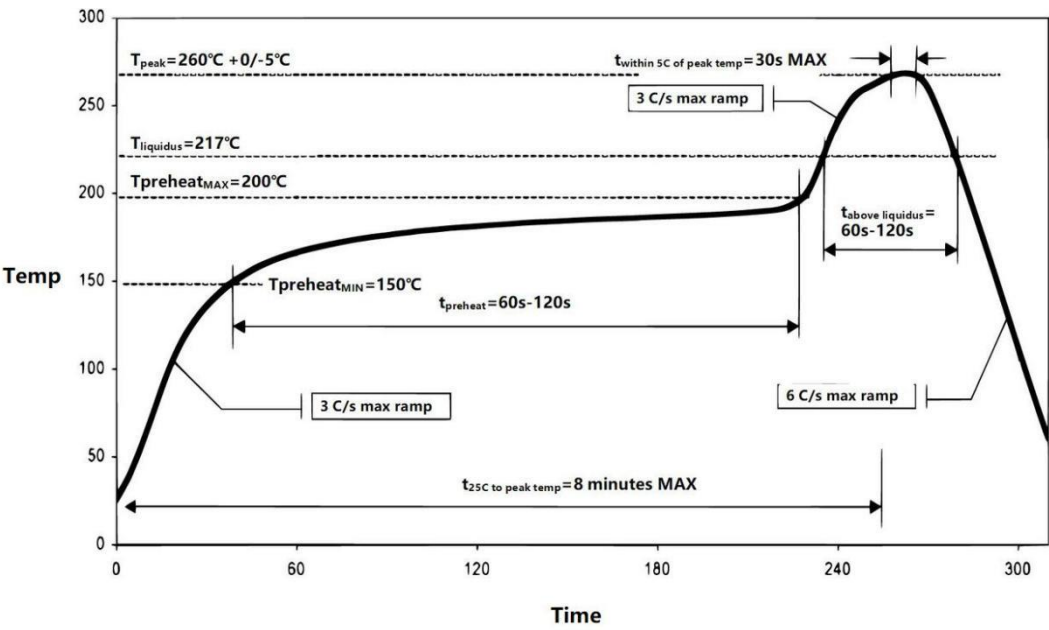
Mechanical Information



Note:

1. All dimensions are in millimeters.
2. All dimension tolerances are ± 0.10 mm

Recommended Solder Temperature Profile



Revision History

Data	Revision	Datasheet Status
2023/04/26	1.0	Preliminary Datasheet
2024/06/28	1.1	Update Test Data