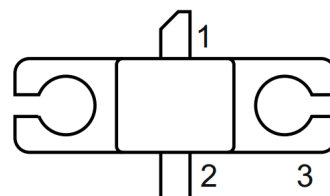


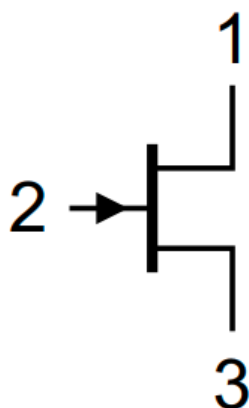
Product Introduction

ERIS0060-10 is a 10W universal wideband RF power GaN HEMT chip, which can be used in the range of DC~6.0GHz. ERIS0060-10 has excellent robustness (VSWR = 10:1), high voltage operation (50V), and is available in a thermally enhanced package for industrial, scientific, defense, medical, and other applications.



GaN process · SOT1227A packaging

Graphic symbol



Key technical indicators

DC characteristics:

- $V_{GS(TH)}$: -3.1V @ $V_{DS}=10V$, $I_D=1.2mA$
- $V_{GS(Q)}$: -2.94VDC @ $V_{DD}=48V$, $I_{DQ}=50mA$
- V_{BD} : 200V @ $V_{GS}=-8V$, $I_D=0.1mA$

RF characteristics:

- GSS: 19dB @ $V_{DD}=48V$, $I_{DQ}=50mA$
- PSAT: 10W @ $V_{DD}=48V$, $I_{DQ}=50mA$
- η : 70% @ $V_{DD}=48V$, $I_{DQ}=50mA$, PSAT

Dynamic Characteristics:

- C_{ISS} : 0.96pF @ $V_{DS}=40V$, $V_{GS}=-8V$, $f=1MHz$
- C_{OSS} : 0.54pF @ $V_{DS}=40V$, $V_{GS}=-8V$, $f=1MHz$

Note: The above conditions are all Freq=3.5 GHz, TC=25

Applications

- Commercial wireless infrastructure (cellular, WiMAX)
- Public mobile radios
- Radar, Jammers, Broadband general purpose amplifier
- EMC testing

Limiting values (Absolute Maximum Ratings, not simultaneous, at 25 °C)

Parameter	Symbol	Min	Max	Units	Conditions
Drain-Source Voltage	VDS	-	200	V	25
Gate-Source Voltage	VGS	-10	+1	V	25
Maximum Forward Gate Current	IGMAX	-	1.2	mA	25
Storage Temperature	TSTG	-65	+150		-
Operating Junction Temperature	TJ	-	225		-
Thermal Resistance, Junction to Case (die only), FEA ¹	RθJC	-	-	/W	85
Thermal Resistance, Junction to Case (packaged) ²	RθJC	-	-	/W	-
Mounting Temperature (30 seconds)	TS	-	320		30S

Note1 Finite Element Analysis (FEA) thermal values shall be used to determine performance and reliability.

Unless otherwise noted, all thermal references are FEA.

Note2 Die attach using silver sintering mounted to a 20 mil thick Cu carrier.

Characteristics

Characteristics	Symbol	Min	Typ	Max	Units	Conditions: Frequency = 3.5 GHz unless otherwise stated; TC = 25
DC characteristics						
Gate Threshold Voltage	VGS(TH)	-3.6	-3.1	-2.6	V	VDS=10V, ID=1.2mA
Gate Quiescent Voltage	VGS(Q)	-	-2.94	-	VDC	VDD=48V, IDQ=50mA
Drain Current ¹	IDS	-	1.1	-	A	VDS=10V, VGS=1V
Drain-Source Breakdown Voltage	VBD	200	-	-	V	VGS=-8V, ID=0.1mA
On Resistance	RON	-	3.0	-	Ω	VDS=0.1V
Gate Forward Voltage	VG-ON	-	1	-	V	IGS=1.2mA
RF characteristics						
Small Signal Gain	GSS	-	19	-	dB	VDD=48V, IDQ=50mA
Saturated Power Output ²	PSAT	-	10	-	W	VDD=48V, IDQ=50mA
Drain Efficiency ³	η	-	70	-	%	VDD=48V, IDQ=50mA, PSAT
Output Mismatch Stress	VSWR	-	-	10:1	Ψ	No damage at all phase angles, VDD=48V, IDQ=50mA, POUT=10W CW
Dynamic Characteristics						

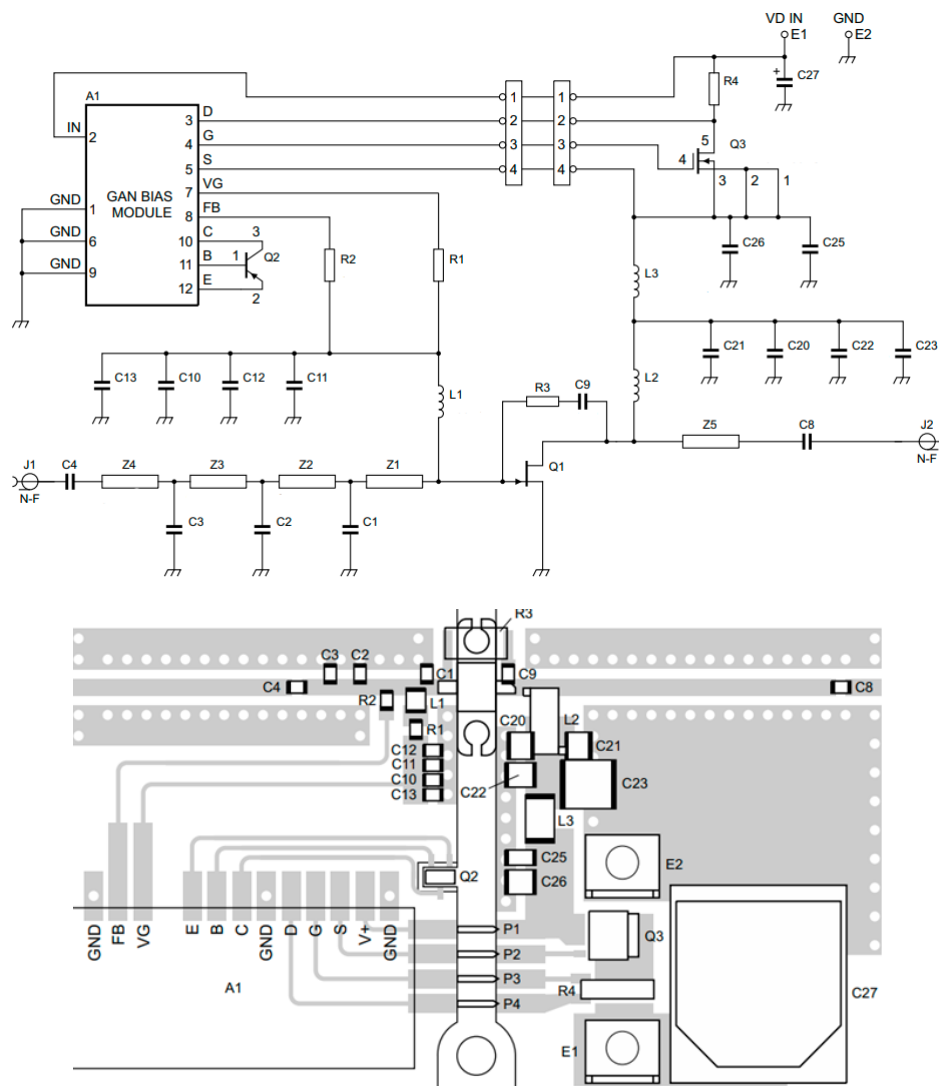
Characteristics	Symbol	Min	Typ	Max	Units	Conditions: Frequency = 3.5 GHz unless otherwise stated; TC = 25
Input Capacitance	CISS	-	0.96	-	pF	VDS=40V, VGS=-8V, f=1MHz
Output Capacitance	COSS	-	0.54	-	pF	VDS=40V, VGS=-8V, f=1MHz

Note1: Scaled from PCM data.

Note2: Pulsed Width = 100 μ s, Duty Cycle = 10%.

Note3: Drain Efficiency = PSAT/PDC

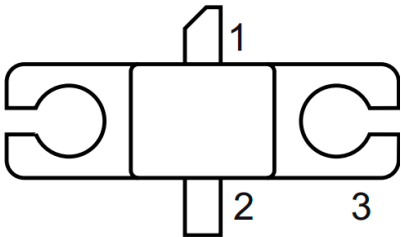
Typical application circuits



List of components

TBD

Pin block diagram

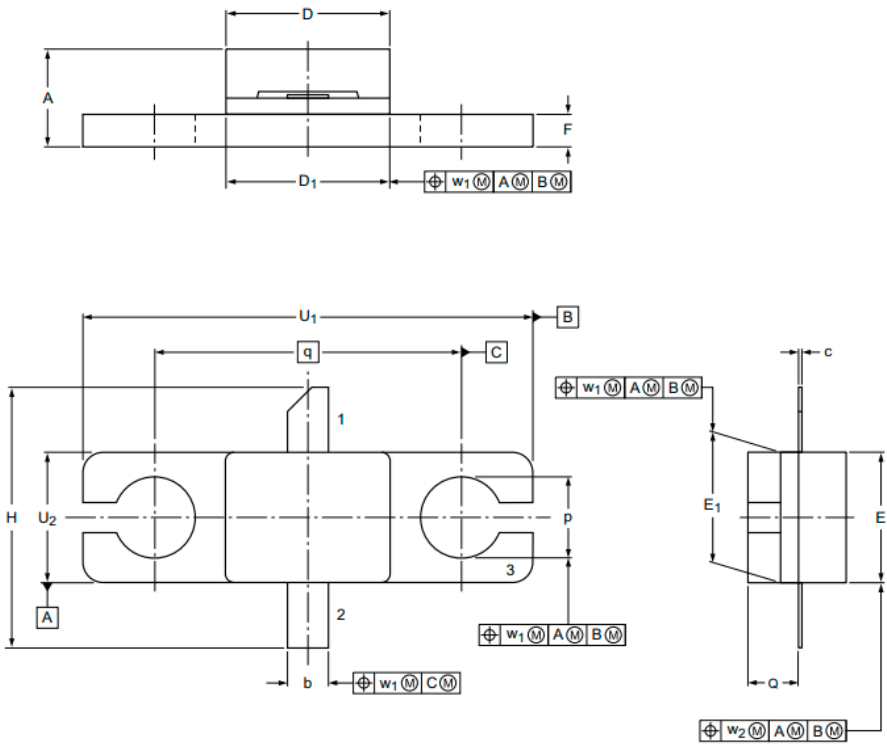


Pin definition

NO.	Pin name and definition
1	Drain
2	Gate
3	Source

Package size

Units: mm



Size																	
Unit(1)		A	b	c	D	D1	E	E1	F	H	p	Q	q	U1	U2	w1	w2
mm	max	3.68	1.4	0.15	5.18	5.21	4.17	4.19	1.14	8.64	2.67	1.7		14.1	4.19		
	nom												9.53			0.25	0.38
	min	2.84	1.14	0.08	4.98	4.95	3.96	3.94	0.89	7.62	2.41	1.45		13.84	3.94		
inches	max	0.145	0.055	0.006	0.204	0.205	0.164	0.165	0.045	0.340	0.105	0.067		0.555	0.165		
	nom												0.375			0.010	0.015
	min	0.112	0.045	0.003	0.196	0.195	0.156	0.155	0.035	0.300	0.095	0.057		0.545	0.155		

Note1: Millimeter dimensions are derived from the original inch dimensions.

Package shape

Units: mm



Pay attention to the operation

Parameter	Class	Standard
ESD(HBM) Range	CLASS 1B'	JEDEC JESD22-A114F
Moisture sensitivity level	-	IPC/JEDEC J-STD-020



Note1: Classification 1B is granted to any part that passes after exposure to an ESD pulse of 500 V, but fails after exposure to an ESD pulse of 1000 V.

Precautions

Solderability

Compatible with lead-free (maximum reflux temperature 260) and tin/lead (maximum reflux temperature 245) welding processes. Can provide solder profile according to requirements.
Contact coating: ENEPIG

RoHS compliance

This section complies with the 2011/65/EU RoHS standard (restrictions on the use of certain harmful substances in electrical and electronic equipment). This product also has the following attributes:
• Halogen free (chlorine, bromine) • Antimony free • No TBBP-A (C15H12Br4O2)
• No PFOS • No SVHC

Revision history

Date of revision	Revise the logo	Revised Content Description	Author	Approve
2022.07.01	V0.1	1. The product manual was released for the first time	Ming Wang	Haifeng Wu
2023.03.23	V0.2	2. Fix pinmap	Ming Wang	Haifeng Wu
2023.09.23	V1.0	3. Fix temperture performance	Ming Wang	Haifeng Wu
2023.12.13	V1.1	4. Fix BOM targets ERIS0060-10	Ming Wang	Haifeng Wu