HT20340S

400W, 10 - 300 MHz LDMOS Amplifier

Product datasheet

Description

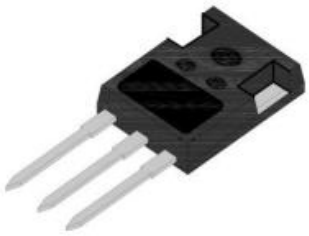
The HT20340S is an unmatched discrete LDMOS Power Amplifier with 400W saturated output power covering frequency range from 10 to 300 MHz.

Features

- Operating Frequency Range: 10~300 MHz
- Operating Drain Voltage: 50V
  （Maximum：55V）
- Saturation Output Power: 400W
- Excellent thermal stability due to low thermal resistance package
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

Applications

- Microwave heating
- Microwave thawing
- Other RF energy applications

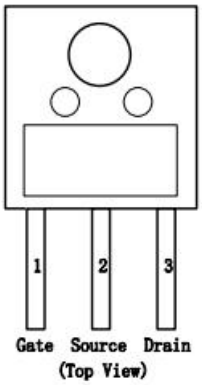


TO247-3L

RoHS compliant

Plastic high power package with a hole; 3 leads

HT20340S



Note: Exposed backside of the package is the source terminal for the transistor

Pin Connections

Ordering Information

Part Number	Description
HT20340S	Tube Package
HT20340S EVB	40.68MHz EVB

Typical

Performance

RF Characteristics (CW)

Freq (MHz)	Gain (dB)	P5dB (dBm)	Eff(%)@P5dB
40.68	32.46	54.02	75.26

Test conditions unless otherwise noted: 25 °C, VDD = +40Vdc, IDQ = 250mA, Vgs= 2.9V, test on HOTLO Application Board

RF Characteristics (CW)

Freq (MHz)	Gain (dB)	P5dB (dBm)	Eff (%)
40.68	31.92	53.32	79.51

Test conditions unless otherwise noted: 25 °C, VDD = +36Vdc, IDQ= 250mA, Vgs= 2.9V, test on HOTLO Application Board

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V_{DSS})	-0.5 to +130	V
Gate voltage (V_{GS})	-5 to +10	V
Storage Temperature (T_{STG})	-55 to +150	°C
Junction Temperature (T_J)	-40 to +225	°C

Electrical Specification

DC Characteristics

Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage $V_{(BR)DSS}$	Vgs=0V, Ids=288uA		130		V
Gate-Source Threshold Voltage $V_{GS(th)}$	Vds=10V, Ids=288uA	1.5	2.2	2.9	V
Drain Leakage Current I_{DSS}	Vgs=0V, Vds=50V		0.1	10	uA
Gate Leakage Current I_{GSS}	Vgs=5V, Vds=0V		0.01	1	uA

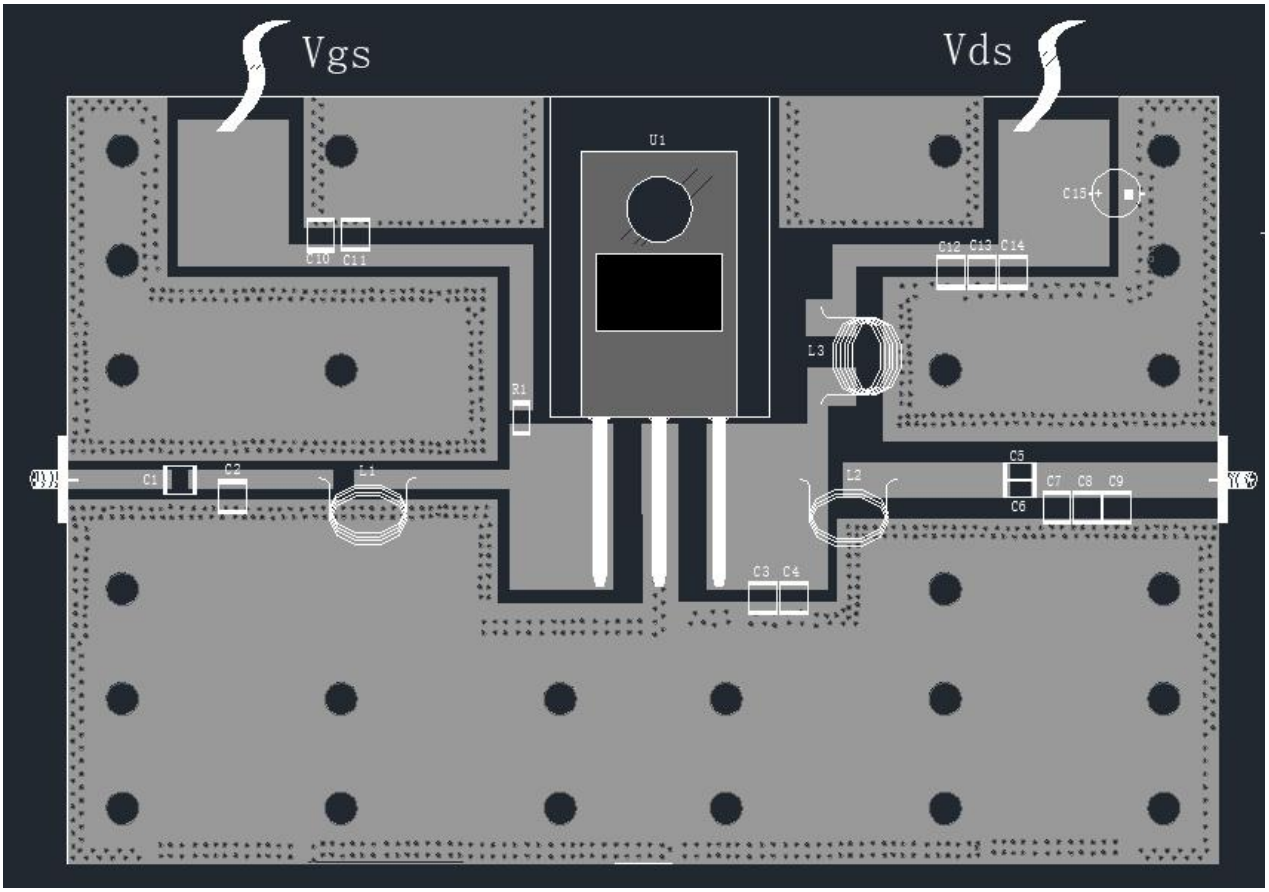
Load Mismatch Test

Condition	Test Result
VSWR=65:1, at all Phase Angles, V_{DD} = +40Vdc, I_{DQ}= 250mA, CW, P_{AVG} = 252W, Frequency 40.68MHz test on HOTLO Application Board	No Device Degradation

Thermal Information

Parameter	Condition	Value (Typ)	Unit
Thermal Resistance Junction to Case (R_{TH})	T_{CASE}= 80°C, V_{DD} = +50Vdc, I_{DQ}= 100mA, CW 400W,freq@40 MHz	0.5	°C /W

HT20340S 40.68MHz Reference Design



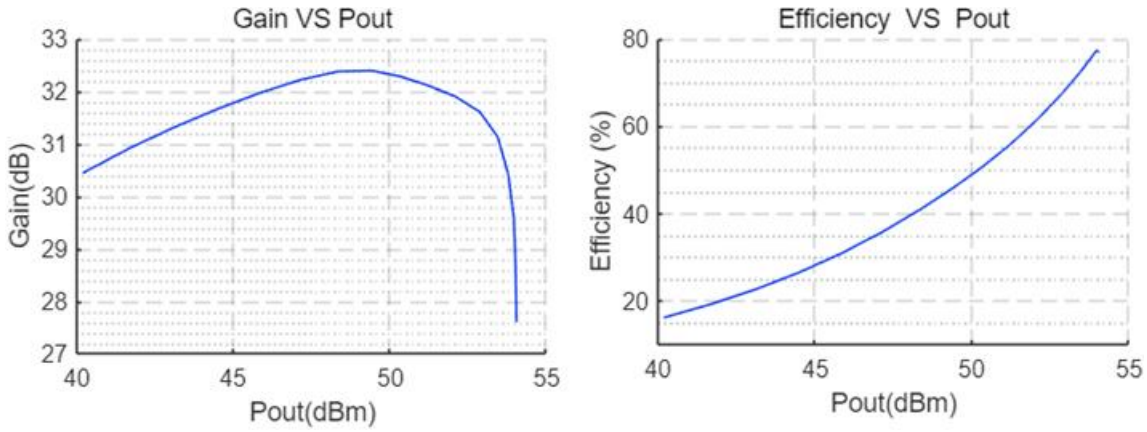
EVB Layout

Bill of Materials (BoM) - HT20340S 40.68MHz Reference Design

Reference	Value	Description	Manufacturer	P/N
U1	-	400W,10 - 300 MHz LDMOS PA	Holto	HT20340S
C1,C12	820pF	Chip Capacitor	DLC	DLC70B821JW501XT
C2	180pF	Chip Capacitor	DLC	DLC70B181JW501XT
C3,C7	120pF	Chip Capacitor	DLC	DLC70B121JW501XT

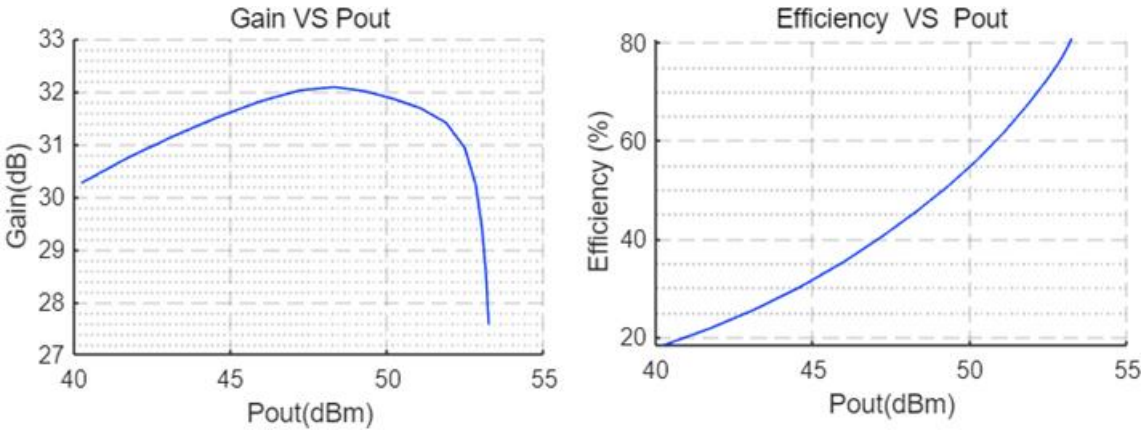
C4,C5,C6	30pF	Chip Capacitor	DLC	DLC70B300JW501XT
C8	100pF	Chip Capacitor	DLC	DLC70B101JW501XT
C9	82pF	Chip Capacitor	DLC	DLC70B820JW501XT
C10,C13,C14	10uF	Chip Capacitor	Murata	GRJ32QR73A103KWJ1
C11	1nF	Chip Capacitor	Murata	GRJ32ER71E106KE11
C15	470uF	Electrolytic Capacitor	KNSCHA	01EC1316
R1	51 Ω	Wire Resister	KOA	WK73R2BTTD1002F
L1	4 turns,d=11mm	Air Inductor	1 mm copper wire	-
L2	3 turns,d=11mm	Air Inductor	1 mm copper wire	-
L3	6 turns,d=11mm	Air Inductor	1 mm copper wire	-
PCB	FR4 (er = 4.5), 60 mil (1.524 mm), 35 µm (1oz)			

Performance Plots



Pulsed CW, Gain and Efficiency vs Pout

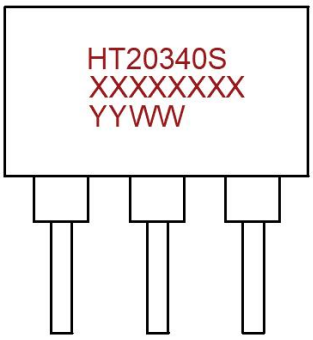
Test conditions unless otherwise noted: 25 °C, VDD = +40Vdc, IDQ=250mA ,Vgs=2.9V, CW test on HOTLO Application Board



Pulsed CW, Gain and Efficiency vs Pout

Test conditions unless otherwise noted: 25 °C, VDD = +36Vdc, IDQ= 250mA ,Vgs=2.9V, CW test on HOTLO Application Board

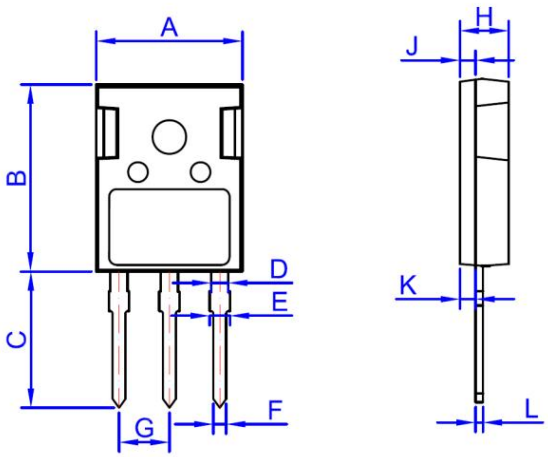
Package Marking and Dimensions



- Line1 (fixed): Part No in W/O
- Line2 (unfixed): The last eight digits or letters of Marking Lot No in W/O (Sample:EERA0001)
- Line3 (unfixed): Date Code

This Marking SPEC only stipulates the content of Marking. For marking requirements such as font and size, please refer to the latest version of "Holto Product Printing Specification"

Marking

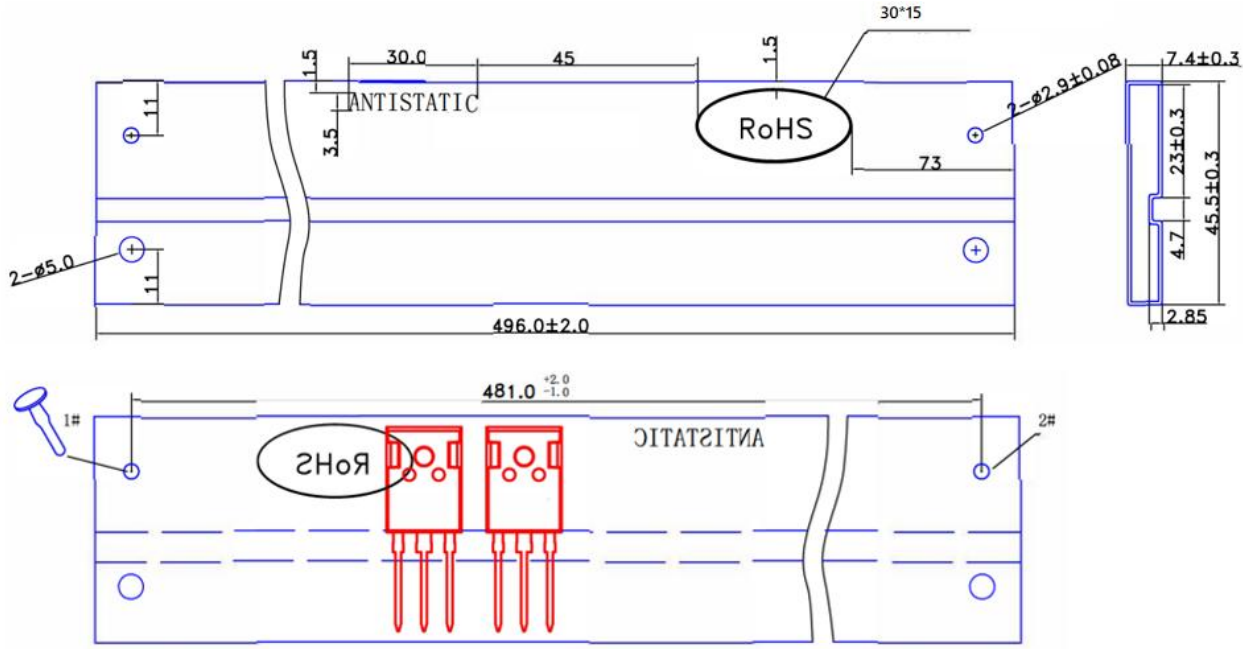


Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	15.50	15.80	16.10	0.610	0.622	0.634
B	20.80	21.00	22.20	0.819	0.827	0.874
C	19.70	20.00	20.30	0.776	0.787	0.799
D	1.80	2.00	2.20	0.071	0.079	0.087
E	1.90	2.10	2.30	0.075	0.083	0.091
F	1.00	1.20	1.40	0.039	0.047	0.055
G		5.44			0.214	
H	4.80	5.00	5.20	0.189	0.197	0.205
J	1.90	2.00	2.10	0.075	0.079	0.083
K	2.20	2.35	2.50	0.087	0.093	0.098
L	0.41	0.60	0.79	0.016	0.024	0.031

Package Dimensions

Tape and Reel Information

Package Type	Qty/Tube(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
TO-247	30	600	2400



Packaging Descriptions

Handling

Precautions

Parameter	Grade
Moisture Sensitivity Level MSL	3

Parameter	Rating	Standard
ESD – Human Body Model (HBM)	Class 2	JESD22-A114
ESD – Human Body Model (MM)	Class B	EIA/JESD22-A115

RoHS Compliance

This product is compliant with the 2011/65/EU RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment), as amended by Directive 2015/863/EU.

Datasheet Status

Document status	Product status	Definition
Objective Datasheet	Design simulation	Product objective specification
Preliminary Datasheet	Customer sample	Engineering samples and first test results
Product Datasheet	Mass production	Final product specification

Abbreviations

Acronym	Definition
LDMOS	Laterally-Diffused Metal-Oxide Semiconductor
CW	Continuous Waveform

Revision history

Document ID	Datasheet Status	Release Date	Revision Version
Rev 1.0	Product	Jun. 2023	Product
Rev 1.1	Product	March 2024	Version released after re review

Contact

Information

For the latest specifications, additional product information, worldwide sales and distribution locations and information about HOTLO:

- Web: www.andesource.com
- Email: andehk@andesource.com

For technical questions and application information:

- Email:andetech@andesource.com

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