

Description

The HTU7G06S0P6P is an unmatched discrete LDMOS Power Amplifier with 0.6W saturated output power covering frequency range for VHF/UHF applications.

Features

- Operating Frequency Range: VHF/UHF
- Operating Drain Voltage: +4V
- Saturation Output Power: 0.8W
- Enhanced robustness design without device degradation
- Internally integrated enhanced ESD design

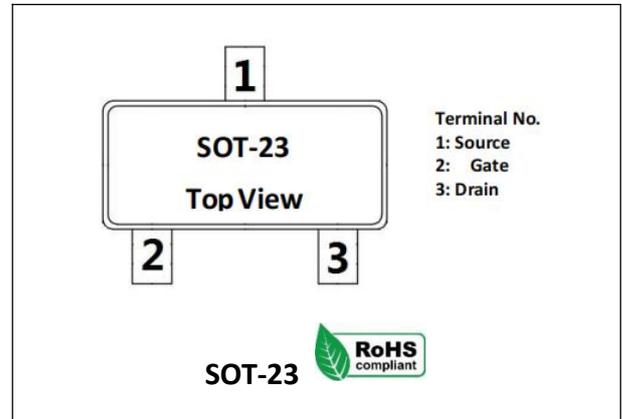
Freq (MHz)	Vdd (V)	Pin (W)	Pout (W)	Eff (%)
400-470	4.0	0.10	0.82	67.8

Test conditions unless otherwise noted: 25 °C,

$V_{DD} = +4V_{dc}$, $I_{DQ} = 50mA$, CW Signal

Applications

- VHF Band handheld Walkie-talkie
- UHF Band handheld Walkie-talkie
- 1.8-1000MHz other application Drivers or Final stage Amplifiers



Ordering Information

Part Number	Description
HTU7G06S0P6P	Reel Package
HTU7G06S0P6P EVB	400 - 470 MHz EVB

Absolute Maximum Ratings

Parameter	Range/Value	Unit
Drain voltage (V_{DSS})	-0.5 to +17	V
Gate voltage (V_{GS})	-5 to +10	V
Operation voltage (V_{DD})	+8.5	V
Storage Temperature (T_{STG})	-55 to +150	°C
Junction Temperature (T_J)	-40 to +150	°C
Thermal Resistance Junction to Case (R_{TH})	75	°C/W

Electrical Specification**DC Characteristics**

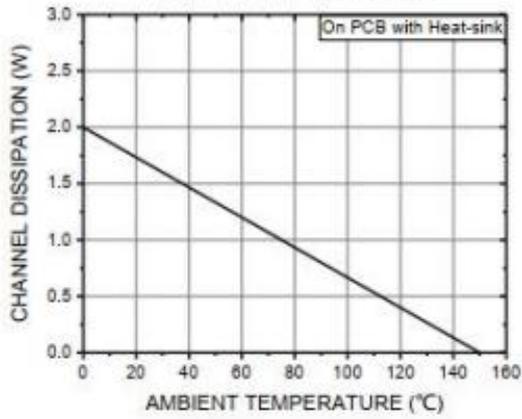
Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage $V_{(BR)DSS}$	$V_{GS}=0V, I_{DS}=8\mu A$	17	-	-	V
Gate-Source Threshold Voltage $V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=8\mu A$	0.5	1.0	1.5	V
Drain Leakage Current I_{DSS}	$V_{GS}=0V, V_{DS}=17V$	-	-	1	μA
Gate Leakage Current I_{GSS}	$V_{GS}=10V, V_{DS}=0V$	-	-	1	μA

Load Mismatch Test

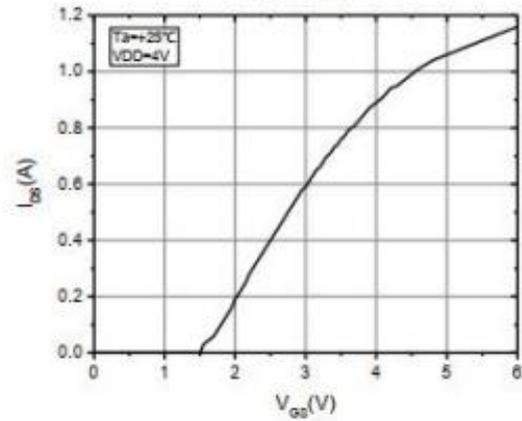
Condition	Test Result
VSWR=20:1, at all Phase Angles, $V_{DD} = +4.2V_{dc}$, $I_{DQ} = 50mA$, CW signal 29.5 dBm @435MHz test on HOTLO Application Board	No Device Degradation
VSWR=20:1, at all Phase Angles, $V_{DD} = +8.4V_{dc}$, $I_{DQ} = 50mA$, CW signal 28.4 dBm @435MHz test on HOTLO Application Board	No Device Degradation

DC Performance

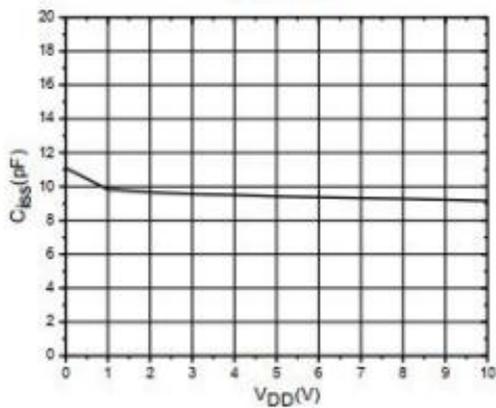
CHANNEL DISSIPATION VS. AMBIENT TEMPERATURE



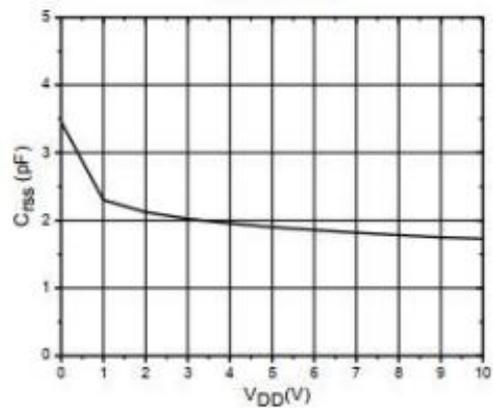
I_{DS} VS. V_{GS}



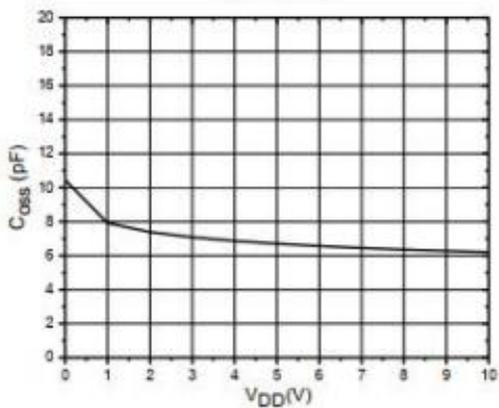
C_{iss} VS. V_{DD}



C_{rss} VS. V_{DD}

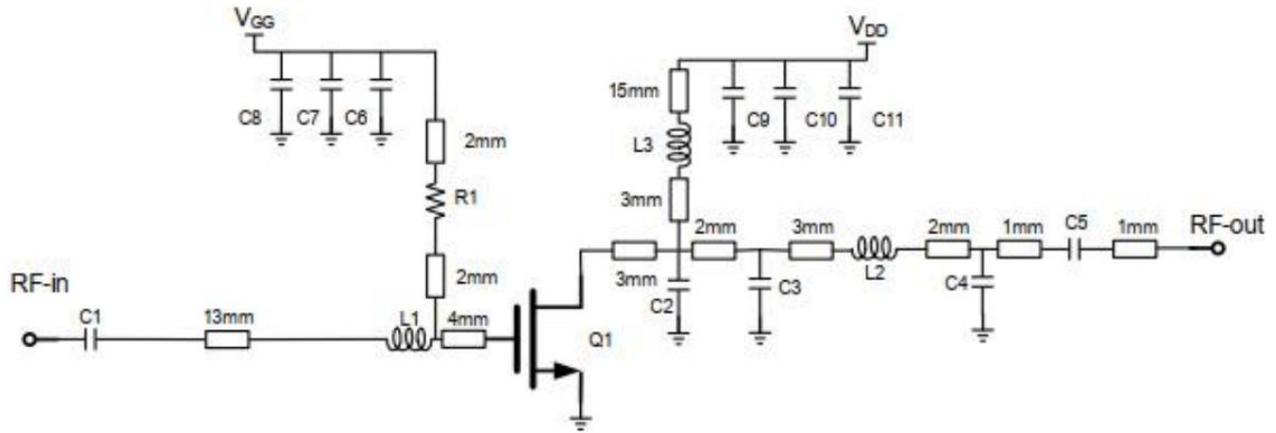


C_{oss} VS. V_{DD}



Test conditions unless otherwise noted: 25 °C

HTU7G06S0P6P 400 - 470 MHz Reference Design, 4.0V@50mA

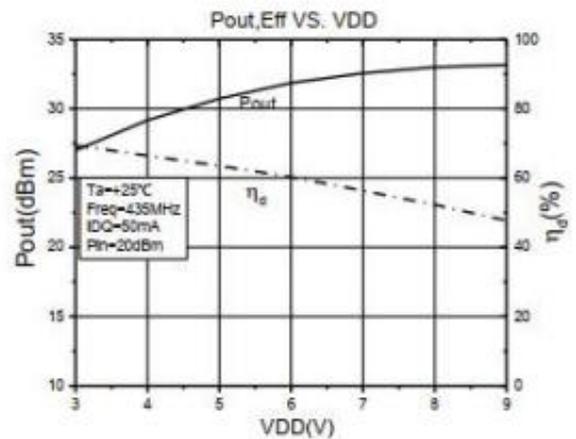
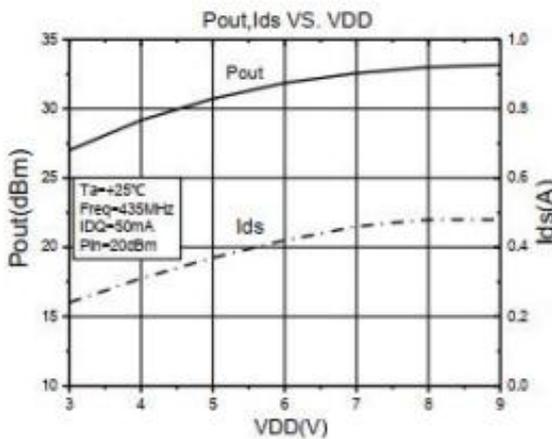
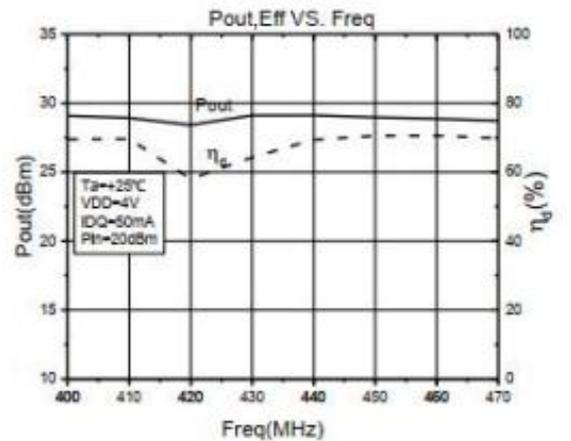
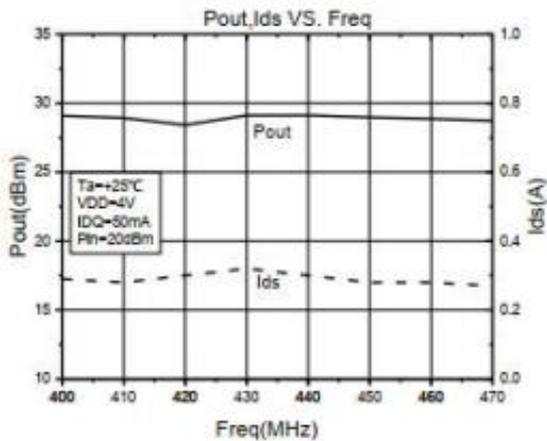
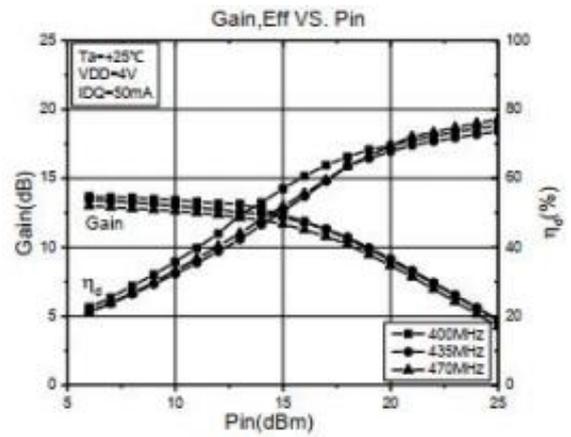
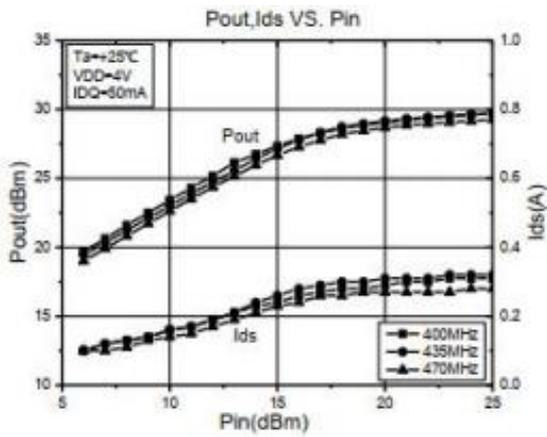


EVB Layout

BoM - HTU7G06S0P6P 400 - 470 MHz Reference Design, 4.0V@50mA

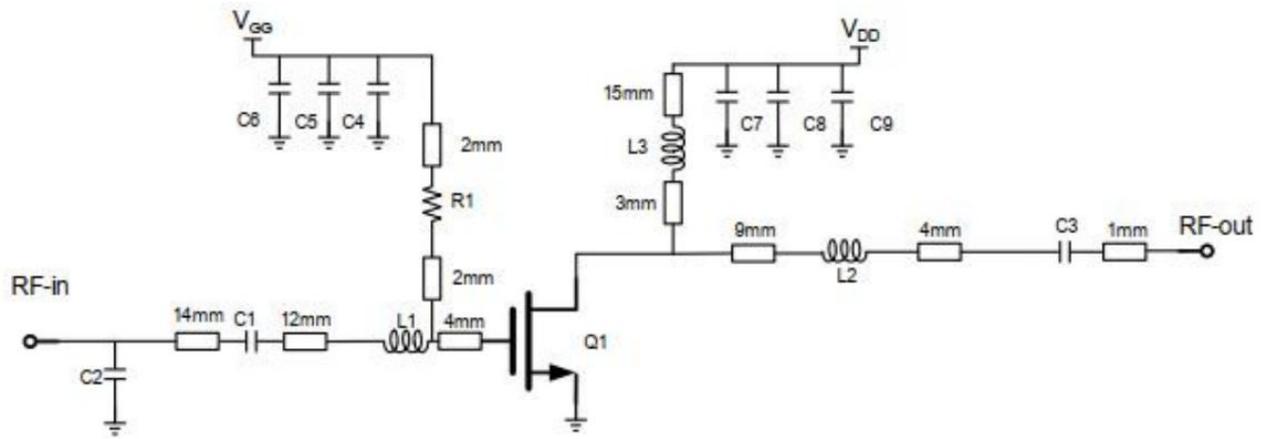
Reference	Value	Description	Manufacturer	P/N
Q1	-	0.6W, 1.8 - 1000 MHz LDMOS PA	Holto	HTU7G06S0P6P
C1, C5, C6, C9	100pF	MLCC	Murata	GRM1885C1H101A01
C2	18pF	MLCC	Murata	GRM1885C1H180JA01
C4	4pF	MLCC	Murata	GRM1885C1H4R0JA01
C3	9pF	MLCC	Murata	GRM1885C1H9R0JA01
C7,C10	1nF	MLCC	Murata	GRM1885C1H102JA01
C8,C11	10uF	MLCC	Murata	GRM32ER61H105KA12L
L1	5.6nH/0603		-	-
L2	D: 0.4 mm, Inside: 1.2 mm, 3 Turns		-	Enameled wire
L3	D: 0.4 mm, Inside: 1.5 mm, 8 Turns		-	Enameled wire
R1	51 Ω	Thick Film Resistor	-	-
PCB	FR-4 (er = 4.3), 30 mil (0.762 mm), 35 μm (1oz)			

Performance Plots 400 - 470 MHz Reference Design, 4.0V@50mA



Test conditions unless otherwise noted: 25 °C, VDD = +4Vdc, IDQ=50mA, CW test on HOLTLO Application Board

HTU7G06S0P6P 400 - 470 MHz Reference Design, 7.2V@50mA

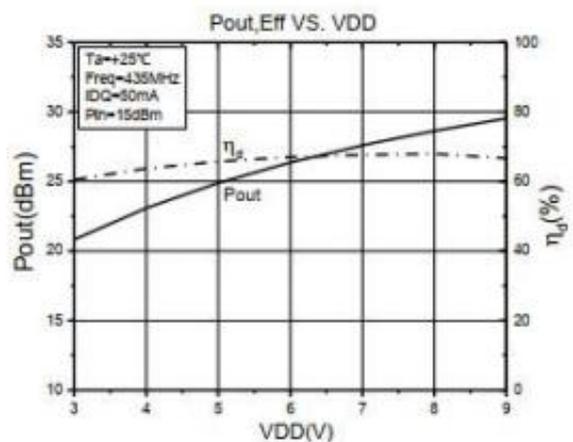
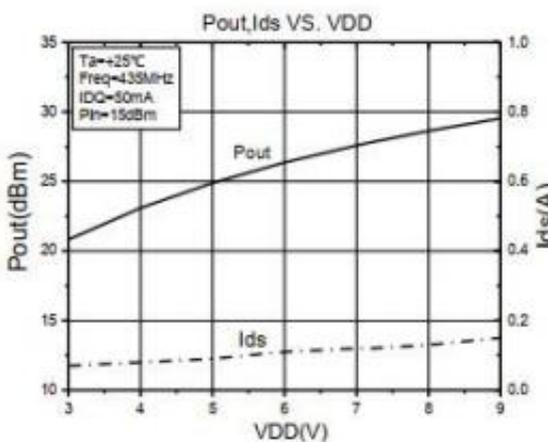
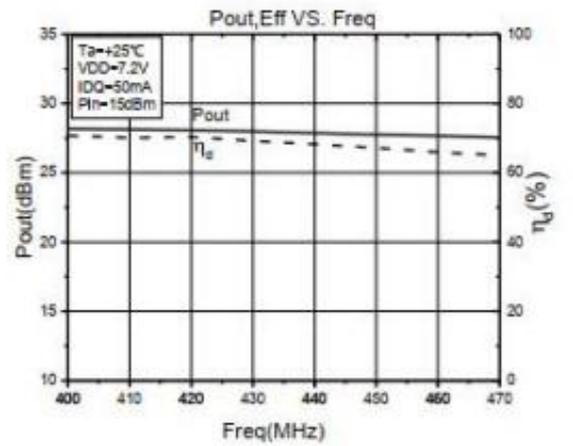
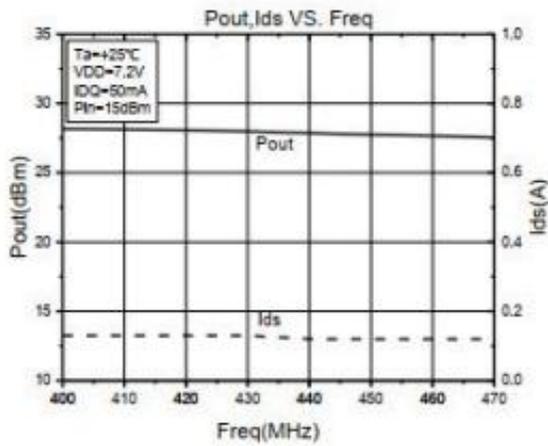
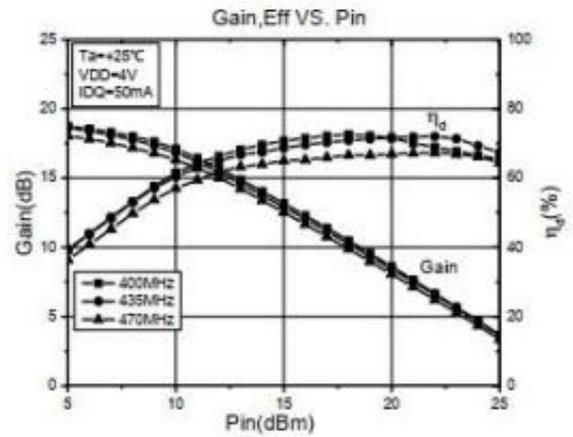
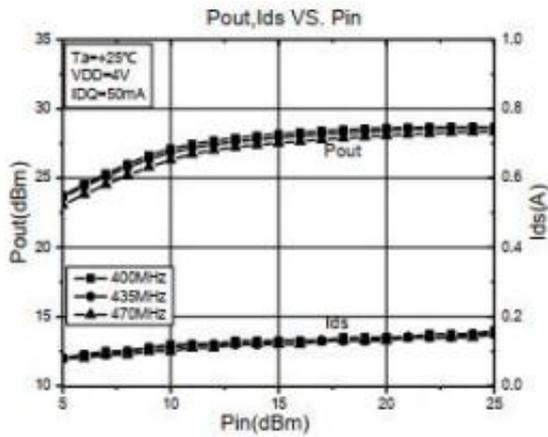


EVB Layout

BoM - HTU7G06S0P6P 400 - 470 MHz Reference Design, 7.2V@50mA

Reference	Value	Description	Manufacturer	P/N
Q1	-	0.6W, 1.8 - 1000 MHz LDMOS PA	Holto	HTU7G06S0P6P
C1,C3,C4,C7	100pF	MLCC	Murata	GRM1885C1H101A01
C2	8pF	MLCC	Murata	GRM1885C1H8R0JA01
C7,C10	1nF	MLCC	Murata	GRM1885C1H102JA01
C8,C11	1uF	MLCC	Murata	GRM32ER61H105KA12L
L1	5.6nH/0603		-	-
L2	D: 0.4 mm, Inside: 1.2 mm, 4 Turns		-	Enameled wire
L3	D: 0.4 mm, Inside: 1.5 mm, 8 Turns		-	Enameled wire
R1	51 Ω	Thick Film Resistor	-	-
PCB	FR-4 (er = 4.3), 30 mil (0.762 mm), 35 μm (1oz)			

Performance Plots 400 - 470 MHz Reference Design, 7.2V@50mA



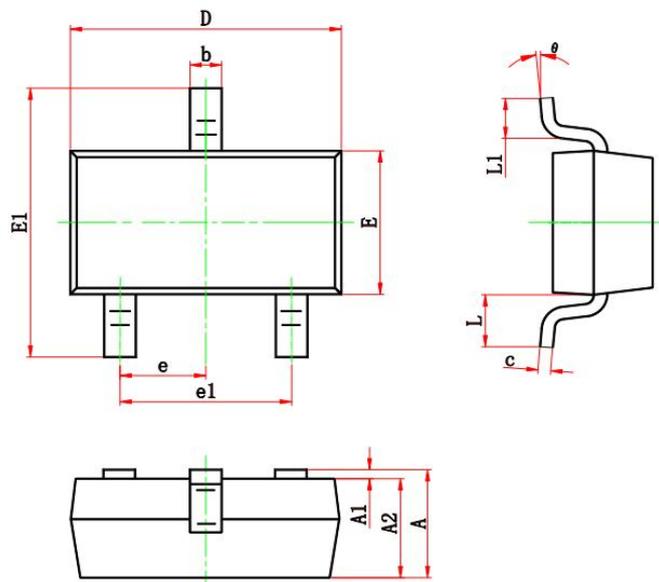
Test conditions unless otherwise noted: 25 °C, VDD = +7.2Vdc, IDQ=50mA, CW test on HOLTTO Application Board

Package Marking and Dimensions



- Line1 (fixed): fixed code SP6A.
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

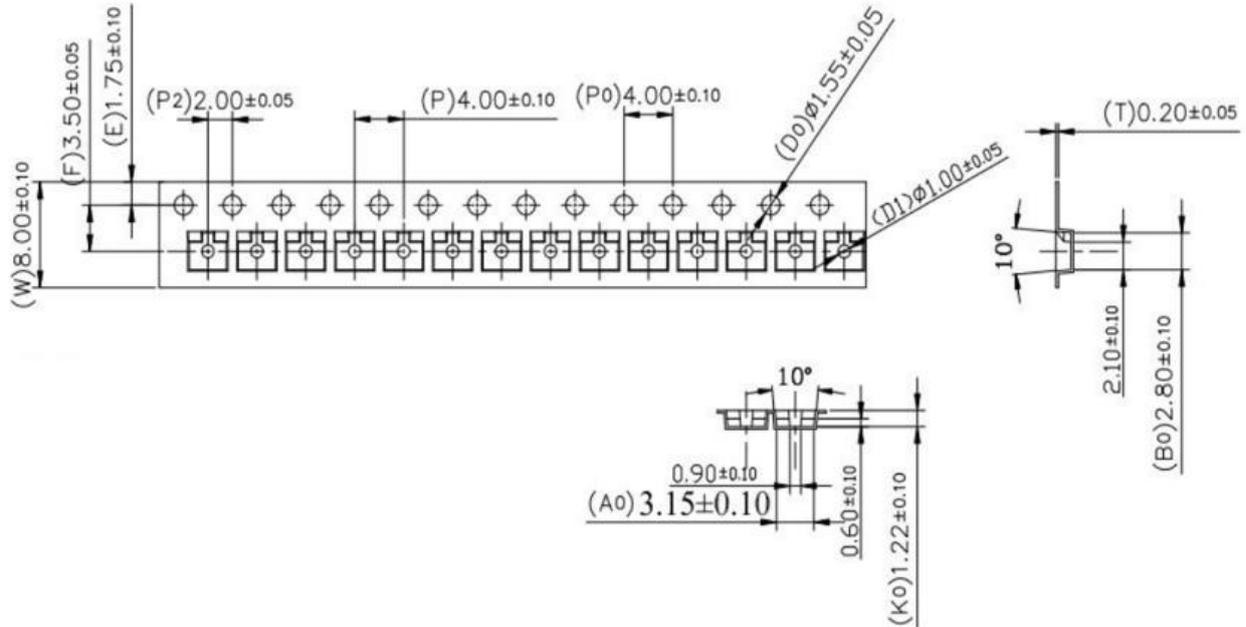


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.150	0.000	0.006
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

Package Dimensions

Tape and Reel Information

Package Type	Reel Size(inch)	Qty/Reel(pcs)	Qty/Box(pcs)	Qty/Carton(pcs)
SOT23	7inch	3000	30000	120000



Tape & Reel Packaging Descriptions

Handling Precautions

Parameter	Rating	Standard	
ESD – Human Body Model (HBM)	Class 1B	JESD22-A114	
ESD – Human Body Model (MM)	Class A	EIA/JESD22-A115	
ESD – Charged Device Model (CDM)	Class III	JESD22-C101	

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 2.8	Product	March 2023	New format based on English version datasheet
Rev 2.9	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 HOLTLO:

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

For technical questions and application information:

- Email: andetech@andesource.com

Important Notice

Information in this document is believed to be accurate and reliable. However, HOLTLO does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

“Typical” parameters are the average values expected by HOLTLO in large quantities and are provided for information purposes only. All information and specifications contained herein are subject to change without notice and customers should obtain and verify the latest relevant information before placing orders for HOLTLO products.

The information contained herein or any use of such information does not grant, explicitly or implicitly, to any party any patent rights, licenses, or any other intellectual property rights, whether with regard to such information itself or anything described by such information.

Applications that are described herein for any of these products are for illustrative purposes only. HOLTLO makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification. Customers are responsible for the design and operation of their applications and products using HOLTLO products, and HOLTLO accepts no liability for any assistance with applications or customer product design. It is customer's sole responsibility to determine whether the HOLTLO product is suitable and fit for the customer's applications and products planned, as well as for the planned application and use of customer's third-party customer(s). Customers should provide appropriate design and operating safeguards to minimize the risks associated with their applications and products.

HOLTLO products are not designed, authorized or warranted to be suitable for use in life support, life-critical or safety- critical systems or equipment, nor in applications where failure or malfunction of a HOLTLO product can reasonably be expected to result in personal injury, death or severe property or environmental damage. This document as well as the item(s) described herein may be subject to export control regulations. Export might require a prior authorization from competent authorities.