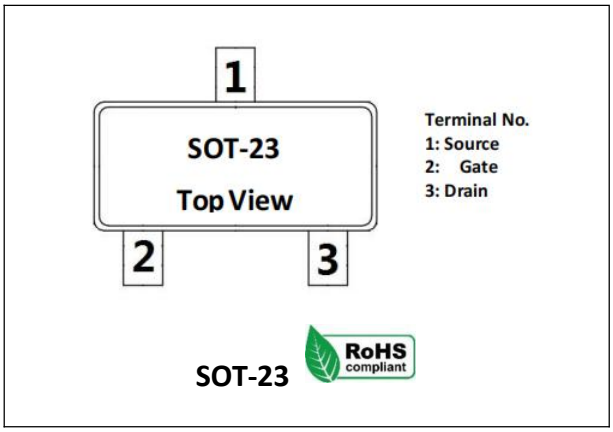
HTU7G06S0P6P

0.6W, 1.8 - 1000 MHz LDMOS Amplifier

Product datasheet

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} = +4Vdc, 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

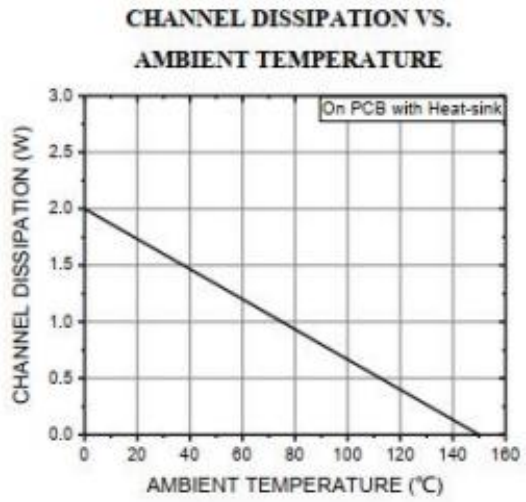
DC Characteristics

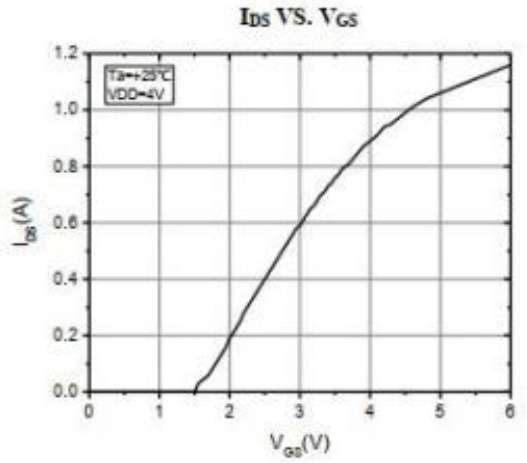
Parameter	Conditions	Min	Typ	Max	Unit
Breakdown Voltage $V_{(BR)DSS}$	Vgs=0V, Ids=8uA	17	-	-	V
Gate-Source Threshold Voltage $V_{GS(th)}$	Vds=Vgs, Ids=8uA	0.5	1.0	1.5	V
Drain Leakage Current I_{DSS}	Vgs=0V, Vds=17V	-	-	1	uA
Gate Leakage Current I_{GSS}	Vgs=10V, Vds=0V	-	-	1	uA

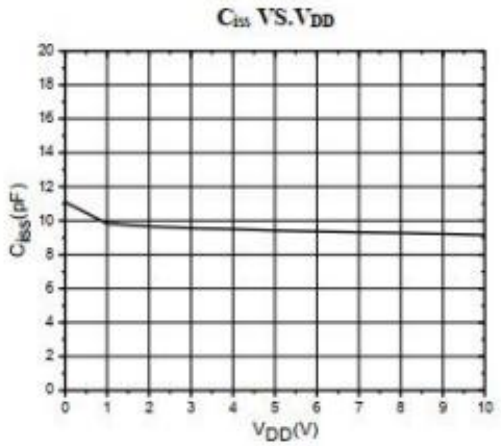
Load Mismatch Test

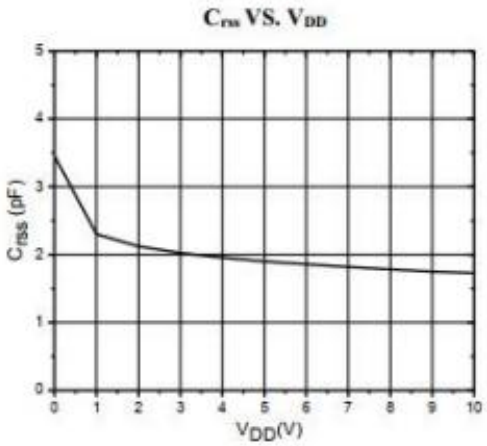
Condition	Test Result
VSWR=20:1, at all Phase Angles, V_{DD} = +4.2Vdc, I_{DQ}= 50mA, CW signal 29.5 dBm @435MHz test on WATECH Application Board	No Device Degradation
VSWR=20:1, at all Phase Angles, V_{DD} = +8.4Vdc, I_{DQ}= 50mA, CW signal 28.4 dBm @435MHz test on WATECH Application Board	No Device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

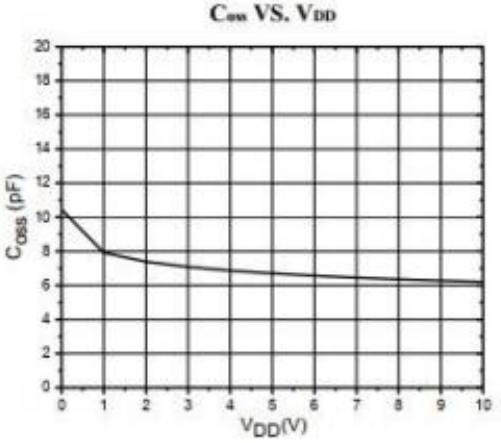
DC Performance





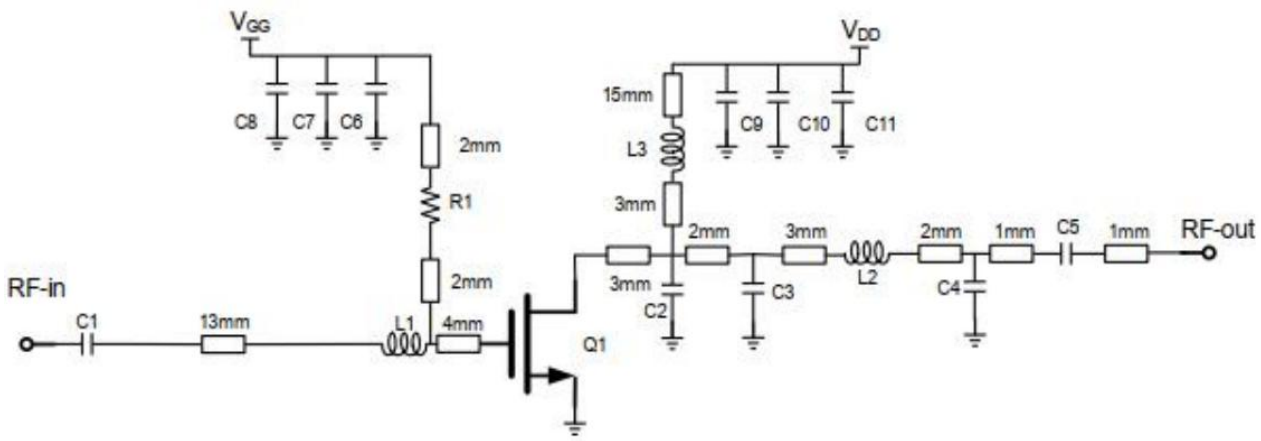






Test conditions unless otherwise noted: 25 °C

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

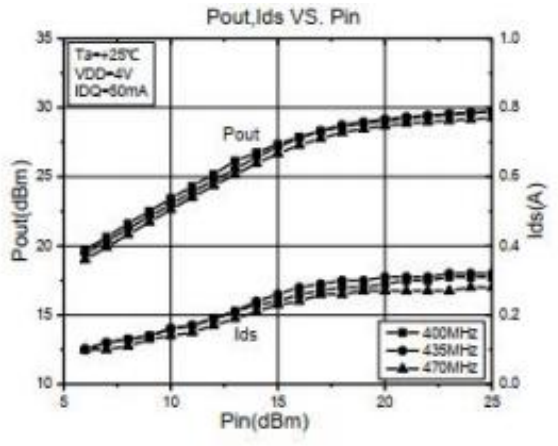


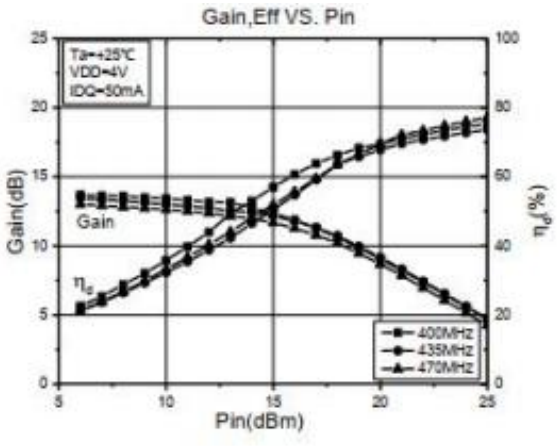
EVB Layout

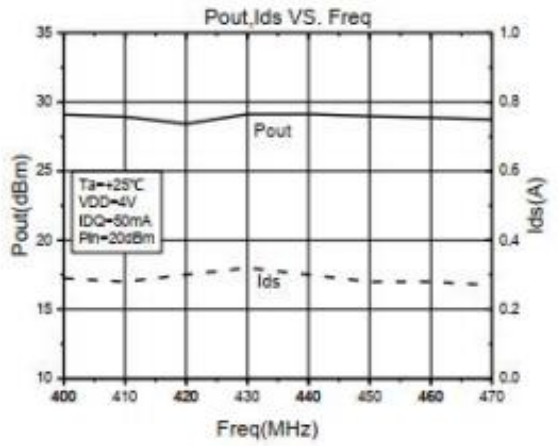
BoM - HTU7G06S0P6P 400 - 470 MHz Reference Design, 4.0V@50mA

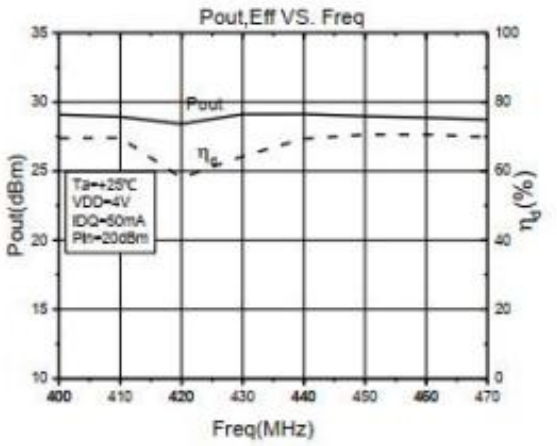
Reference	Value	Description	Manufacturer	P/N
Q1	-	0.6W, 1.8 - 1000 MHz LDMOS PA	Watech	HTU7G06S0P6P
C1, C5, C6, C9	100pF	MLCC	Murata	GRM1885C1H101A01
C2	18pF	MLCC	Murata	GRM1885C1H180JA01
C4	4pF	MLCC	Murata	GRM1885C1H4R0JA01
C3	9pF	MLCC	Murata	GRM1885C1H9R0JA01
C7,C10	1nF	MLCC	Murata	GRM1885C1H102JA01
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)			

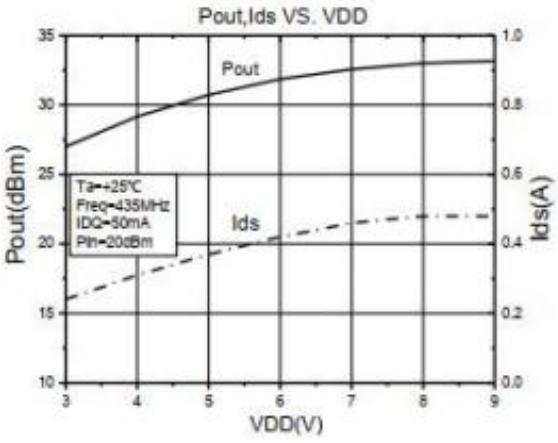
Performance Plots 400 - 470 MHz Reference Design, 4.0V@50mA

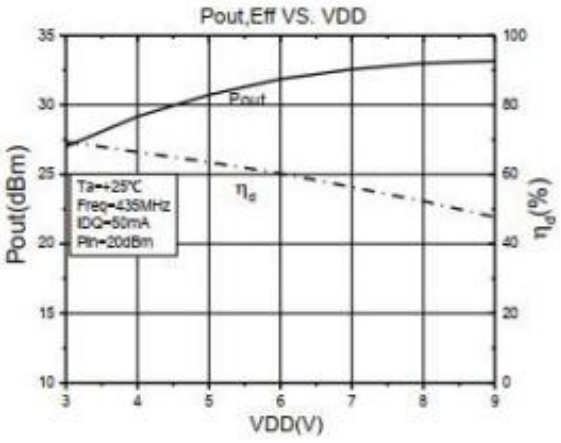






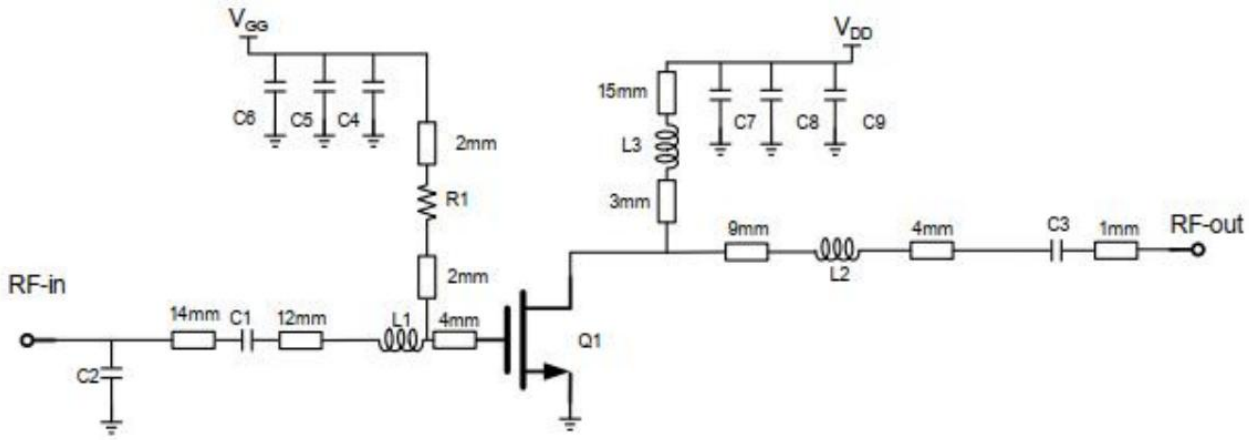






Test conditions unless otherwise noted: 25 °C, VDD = +4Vdc, IDQ=50mA, CW test on WATECH Application Board

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

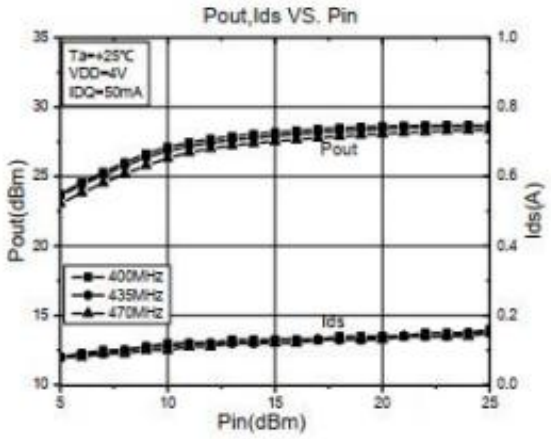


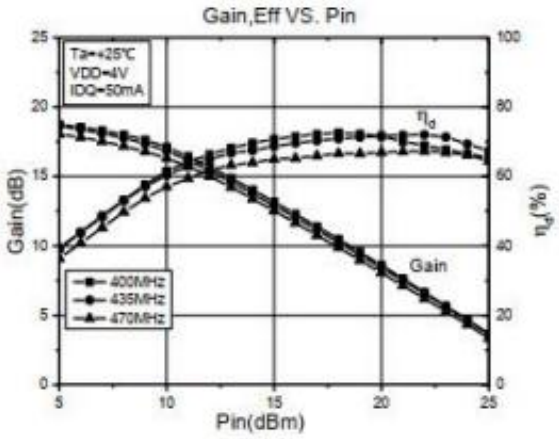
EVB Layout

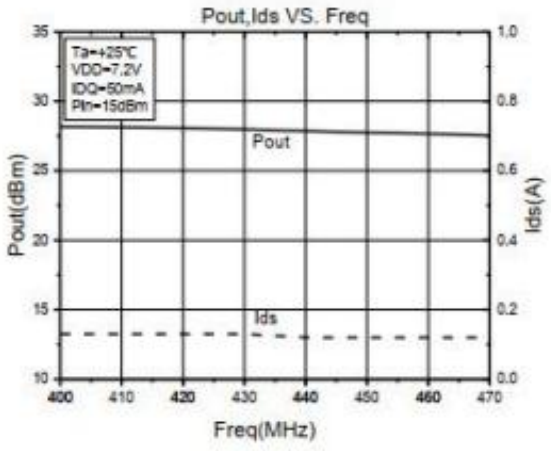
BoM - HTU7G06S0P6P 400 - 470 MHz Reference Design, 7.2V@50mA

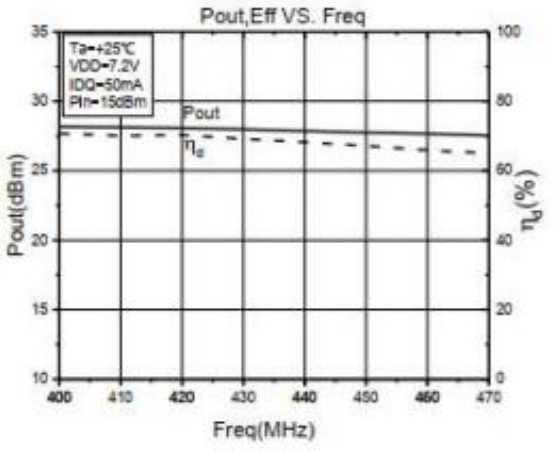
Reference	Value	Description	Manufacturer	P/N
Q1	-	0.6W, 1.8 - 1000 MHz LDMOS PA	Watech	HTU7G06S0P6P
C1,C3,C4,C7	100pF	MLCC	Murata	GRM1885C1H101A01
C2	8pF	MLCC	Murata	GRM1885C1H8R0JA01
C7,C10	1nF	MLCC	Murata	GRM1885C1H102JA01
C8,C11	1uF	MLCC	Murata	GRM32ER61H105KA12L
L1	5.6nH/0603		-	-
L2	D: 0.4 mm, Inside: 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)			

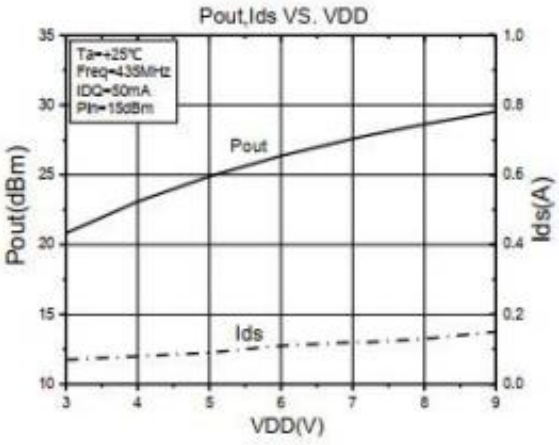
Performance Plots 400 - 470 MHz Reference Design, 7.2V@50mA

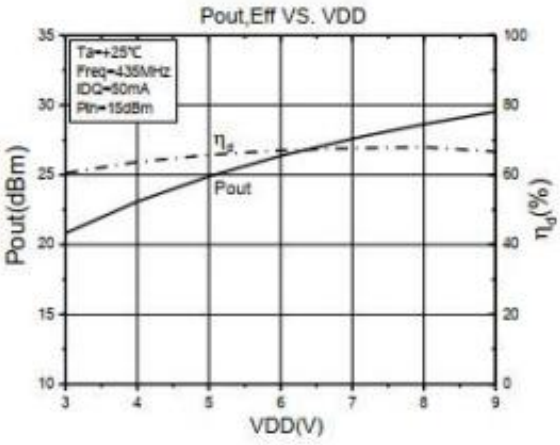












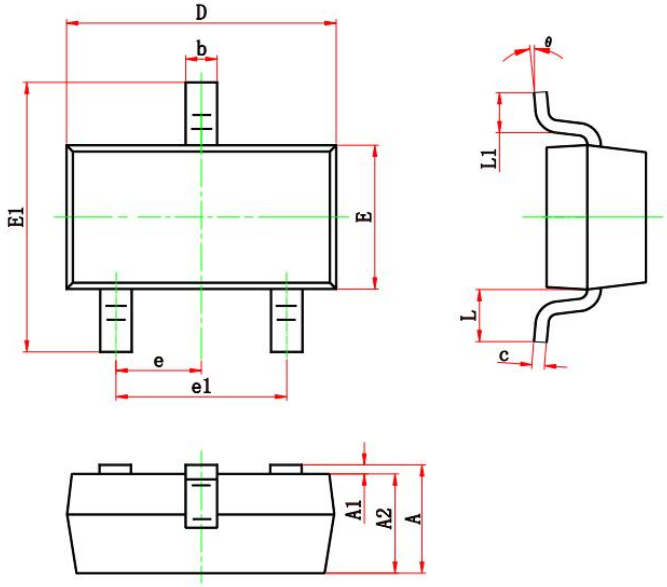
Test conditions unless otherwise noted: 25 °C, VDD = +7.2Vdc, IDQ=50mA, CW test on WATECH Application Board

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 “Watech Product Printing Specification”

Marking

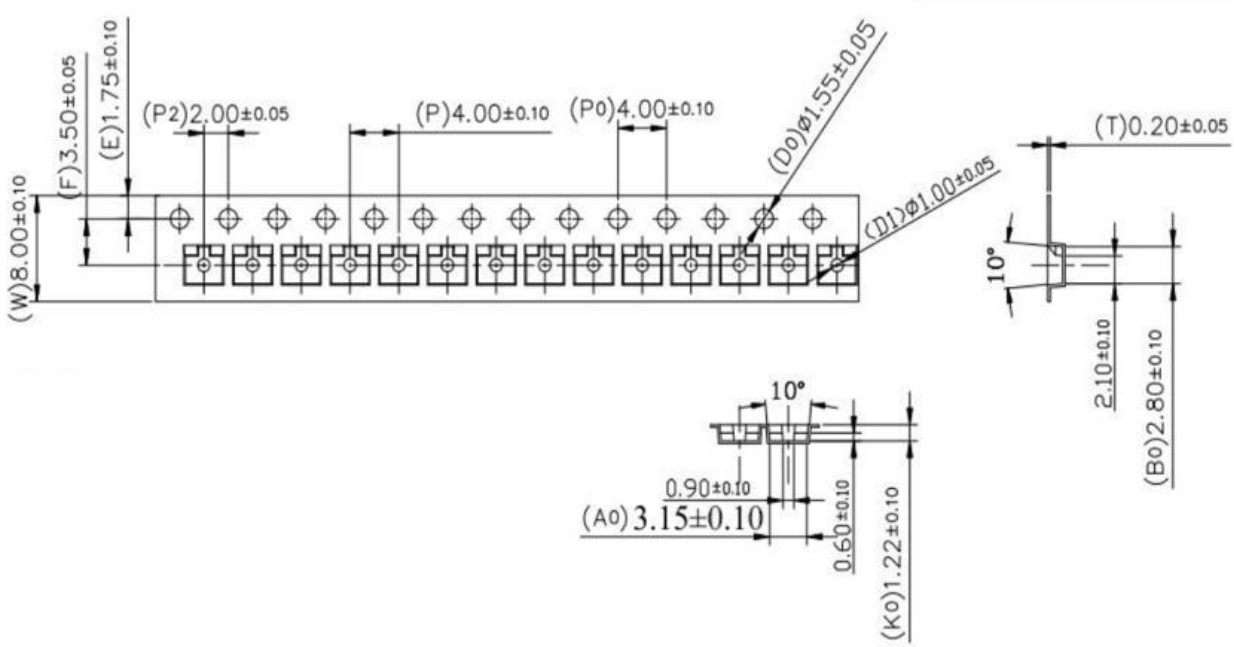


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.150	0.000	0.006
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 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 WATECH:

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- Email: MKT@huatai-elec.com

For technical questions and application information:

- Email: MKT@huatai-elec.com

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