

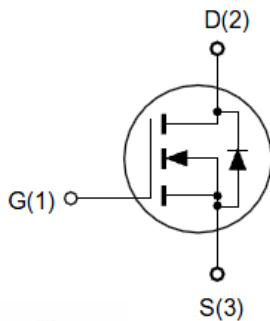
Features

- $BV_{DSS} = 500V, I_D = 1mA$
- $R_{DS(ON,MAX)} = 1.5\Omega @ V_{gs}=10V$
- Low intrinsic capacitance
- RoHS and green compliant packages
- TO-252 package

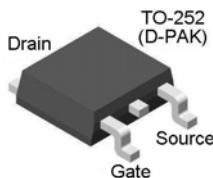
Applications

- Low power SMPS power supply
- Standby power

Equivalent Block Diagram



Package Pin Out



General Description

The LD7913 is an N-channel power MOSFET for high input voltage. It provides very low input capacitance of gate charging.

The typical application of LD7913 is used to be a low cost SMPS, standby power or charger.

Ordering Information

Part No.	Package	Packing Options	
		Bag(BG)	Tape & Reel (TR)
LD7913	TO-252-3	LD7913T6-BG	LD7913T6-TR

- Package material default is "Green" package.

Product Marking

LD8888 SSSSS...	◇ Line 1 – "LD" is a fixed character 8888: product name
•	◇ Line 2 – SSSSS...: lot number

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-Case Max	8.5	°C /W
$R_{\theta JA}$	Thermal Resistance, Junction-Ambient	60	°C /W

Notes: Surface mounted on FR4 board $t \leq 10\text{sec}$

Absolute Maximum Ratings

Symbol	Parameter	Limit	Unit
V _{DS}	Drain-Source Voltage	500	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Drain Current-Continuous	0.4	A
I _{DM}	Drain Current-Pulsed ^{*1}	4	A
E _{AS}	Single Pulse D-S Avalanche Energy ^{*2}	108	mJ
I _{AR}	Avalanche Current ^{*1}	0.5	A
E _{AR}	Repetitive Avalanche Energy ^{*1}	0.5	mJ
dv/dt	Peak Diode Recovery ^{*3}	5.5	V/ns
P _D	Maximum Power Dissipation @ T _J = 25°C	15	W
T _J , T _{STG}	Operating and Store Temperature Range	-55 to 150	°C

The values beyond the boundaries of absolute maximum rating may cause the damage to the device. Functional operation in this context is not implied. Continuous use of the device at the absolute rating level might influence device reliability. All voltages have their reference to device ground.

Electrical Characteristics

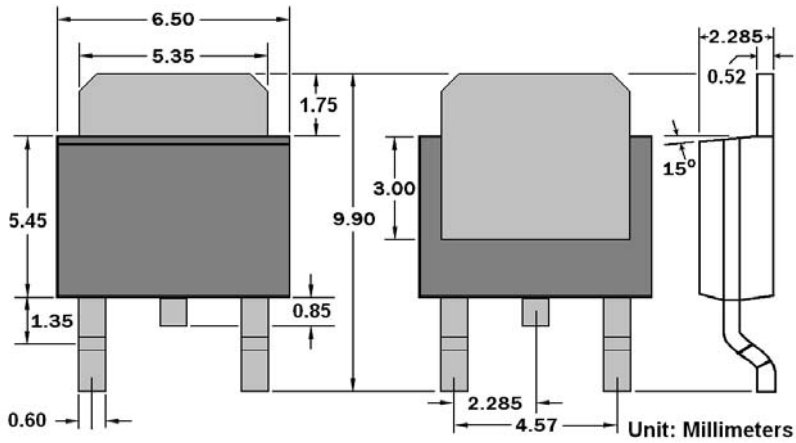
T_A = 25°C unless specified, otherwise minimum and maximum values are guaranteed by production testing requirements.

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	500	–	–	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 2.25A	–	1.2	1.5	Ω
Gate Threshold Voltage	V _{GS(TH)}	V _{DS} = V _{GS} , I _D = 250uA	2.0	3.0	4.0	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 10V, V _{GS} = 0V	–	–	1.0	uA
		V _{DS} = 400V, V _{GS} = 0V	–	–	1.0	
		V _{DS} = 500V, V _{GS} = 0V	–	–	1.0	
Gate Body Leakage	I _{GSS}	V _{GS} = ±10V, V _{DS} = 0V	–	–	±100	nA
Reverse Gate Body Leakage	I _{GSSR}	V _{GS} = -30V, V _{DS} = 0V	–	–	-100	nA
Forward Gate Body Leakage	I _{GSSF}	V _{GS} = 30V, V _{DS} = 0V	–	–	100	nA
Forward Transconductance	g _{fs}	V _{DS} = 50V, I _D = 0.25A	–	0.7	–	S
Dynamic Characteristics						
Total Gate Charge	Q _g	V _{DS} = 360V, I _D = 0.5A, V _{GS} = 10V ^{*4*5}	–	6.5	10	nC
Gate-Source Charge	Q _{gs}		–	1.3	–	
Gate-Drain Charge	Q _{gd}		–	3.2	–	
Input Capacitance	C _{iss}	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz	–	235	–	pF
Output Capacitance	C _{oss}		–	29	–	
Reverse Transfer Capacitance	C _{rss}		–	6.5	–	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{GS} = 25V, I _D = 0.5A, V _{DS} = 225V, R _G = 25Ω ^{*4*5}	–	14.7	–	nS
Turn-On Rise Time	t _r		–	32.8	–	
Turn-Off Delay Time	t _{d(off)}		–	25.2	–	
Turn-Off Fall Time	t _f		–	23.7	–	
Drain-Source Diode Characteristics and Maximum Ratings						
Drain-Source Diode Forward	I _S	V _{GS} = 0V	–	–	0.5	A
Maximum Pulsed Current	I _{SM}	V _{GS} = 0V	–	–	4.0	A
Drain-Source Diode Forward Voltage	V _{SD}	V _{GS} = 0V, I _S = 2.25A	–	–	1.5	V
Reverse Recovery Time	t _{rr}	V _{GS} = 0V, I _S = 1A di _f /dt = 100A/μS ^{*4}	–	110	–	nS
Reverse Recovery Charge	Q _{rr}		–	0.35	–	μC

Notes :

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. L=75mH, I_{AS}=1.6A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C
3. I_{SD} ≤ 0.5A, di/dt ≤ 300A/μS, V_{DD} ≤ BV_{DSS}, Starting T_J=25°C
4. Pulse test: pulse width ≤ 300uS.
5. Essentially independent of operating temperature

Package Outline



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