

Description

The WSD1614DN uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 1.8V.

This device is suitable for use as a Battery protection or in other Switching application.

Features

High power and current handling capability

Lead free product is acquired

Surface mount package

ESD:1.5KV

Product Summary

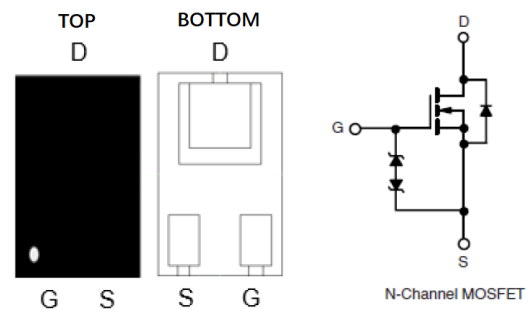
BVDSS	RDSON	ID
20V	230mΩ	1.4A

Application

Battery protection

Load switch

DFN1.0X0.6-3L Pin Configuration



Absolute Maximum Ratings @TA=25°C unless otherwise noted

Symbol	Parameter	Rating	Unit	
VDS	Drain-Source Voltage	20	V	
VGS	Gate-Source Voltage	±8	V	
ID	Drain Current (Continuous) *AC	TA=25°C	1.4	A
		TA=70°C	1.1	A
IDM	Drain Current (Pulse) *B	3	A	
PD	Power Dissipation	TC=25°C	0.55	W
TJ/TSTG	Operating Temperature/ Storage Temperature	-55~150	°C	

Thermal Resistance Ratings

Symbol	Parameter	Max	Unit	
RthJA	Maximum Junction-to-Ambient	Steady-State	180	°C/W

Electrical Characteristics @TA=25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 16V, V _{GS} = 0V	--	--	1	μA
V _{GS(TH)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _{DS} = 250μA	0.4	--	1	V
I _{GSS}	Gate Leakage Current	V _{GS} = 8V, V _{DS} = 0V	--	--	10	μA
R _{DS(on)}	Drain-Source On-state Resistance	V _{GS} = 4.5V, I _D = 0.55A	--	--	230	mΩ
		V _{GS} = 2.5V, I _D = 0.45A	--	--	305	mΩ
		V _{GS} = 1.8V, I _D = 0.35A	--	--	455	mΩ
V _{SD}	Diode Forward Voltage	I _{SD} = 0.35A, V _{GS} = 0V	--	--	1.2	V
I _S	Diode Forward Current *AC	T _A = 25°C	--	--	0.58	A
Q _g	Total Gate Charge	V _{GS} = 4.5V, V _{DS} = 10V, I _D = 1A	--	2	--	nC
Q _{gs}	Gate-Source Charge		--	0.3	--	nC
Q _{gd}	Gate-Drain Charge		--	0.3	--	nC
t _{d(on)}	Turn-on Delay Time	V _{GS} = 4.5V, V _{DS} = 10V, R _G = 6Ω, I _D = 2A	--	1.2	--	ns
t _r	Turn-on Rise Time		--	25	--	ns
t _{d(off)}	Turn-off Delay Time		--	14	--	ns
t _f	Turn-Off Fall Time		--	15	--	ns
C _{iss}	Input Capacitance	V _{DS} = 10V, V _{GS} = 0V, f = 1.0MHz	--	43	--	pF
C _{oss}	Output Capacitance		--	9	--	pF
C _{rss}	Reverse Transfer Capacitance		--	6	--	pF

Note:

A: The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t_≤ 10s junction to ambient thermal resistance rating.

Typical Performance Characteristics ((T_J = 25 °C, unless otherwise noted))

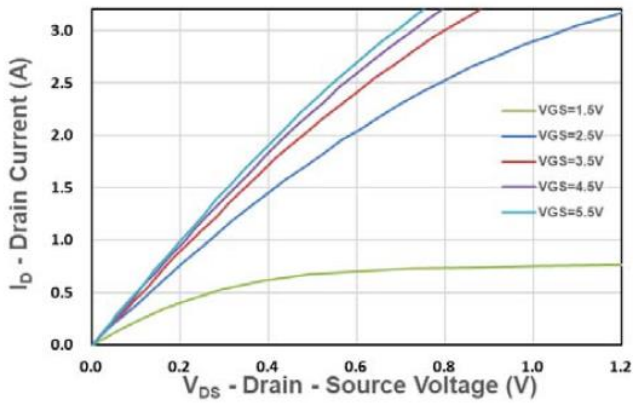


Figure 1. Output Characteristics

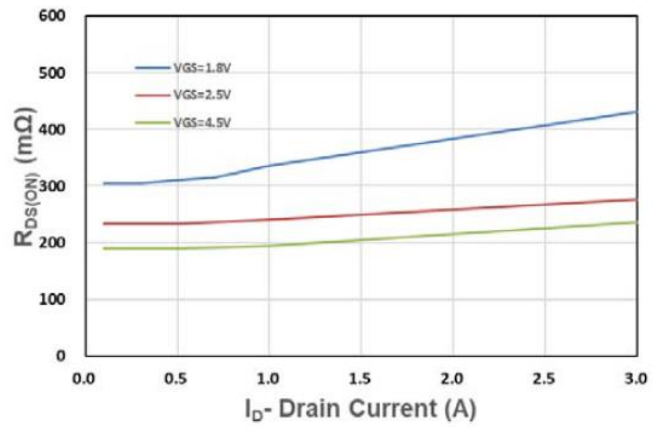


Figure 2. On-Resistance vs. I

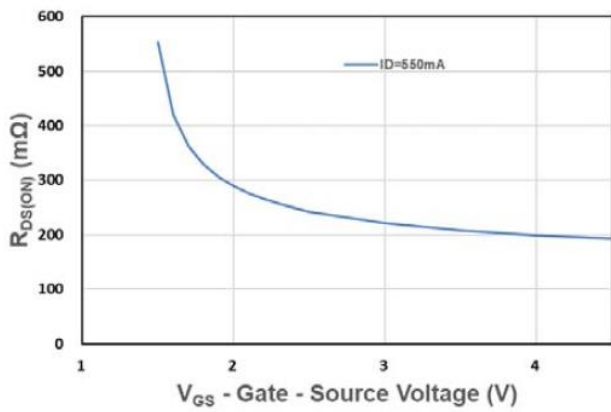


Figure 3. On-Resistance vs. V_{GS}

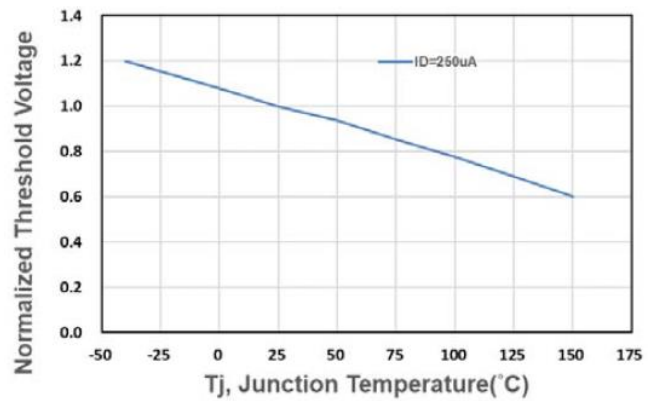


Figure 4. Gate Threshold Voltage

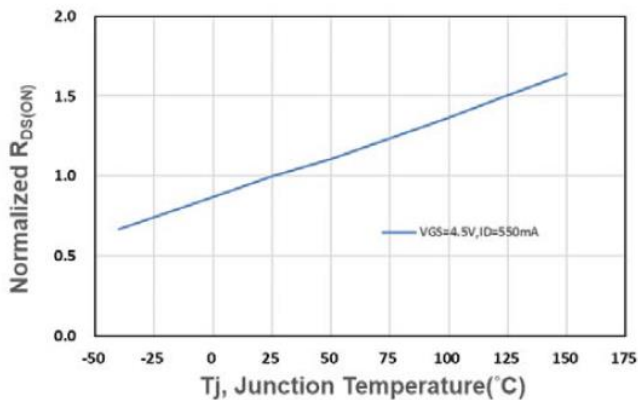


Figure 5. Drain-Source On Resistance

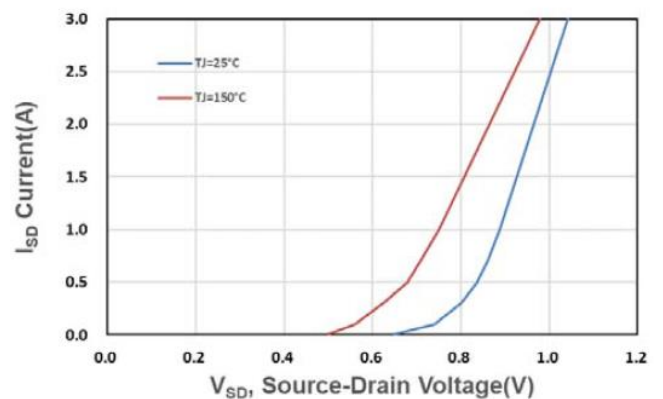


Figure 6. Source-Drain Diode Forward

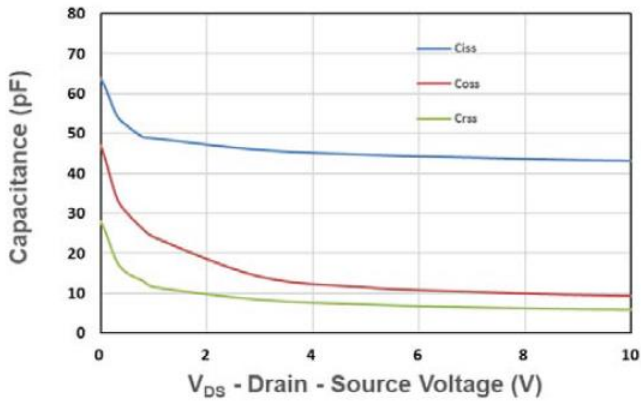


Figure 7. Capacitance

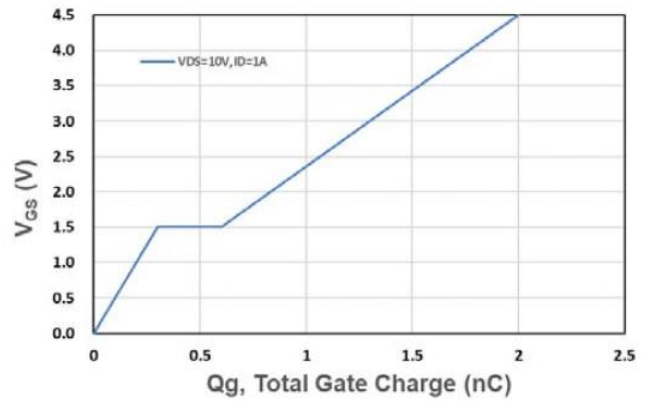


Figure 8. Gate Charge Characteristics

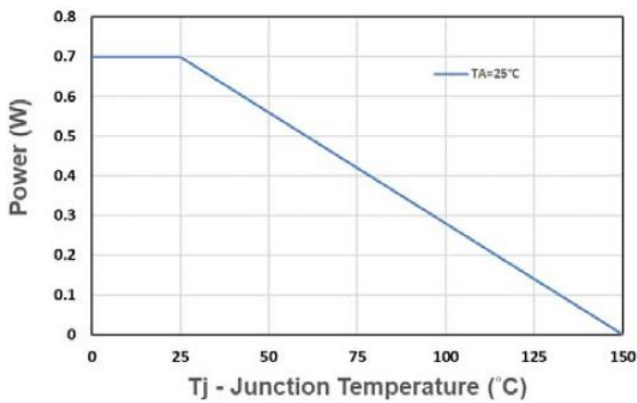


Figure 9. Power Dissipation

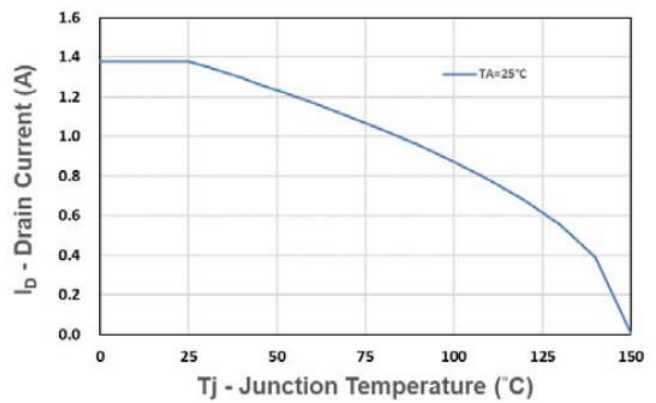


Figure 10. Drain Current

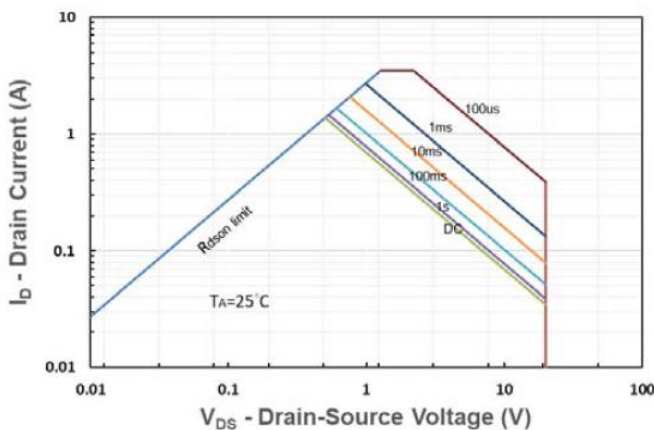


Figure 11. Safe Operating Area

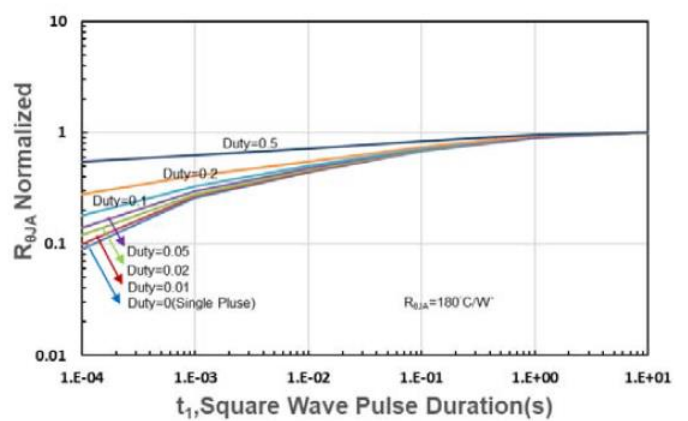
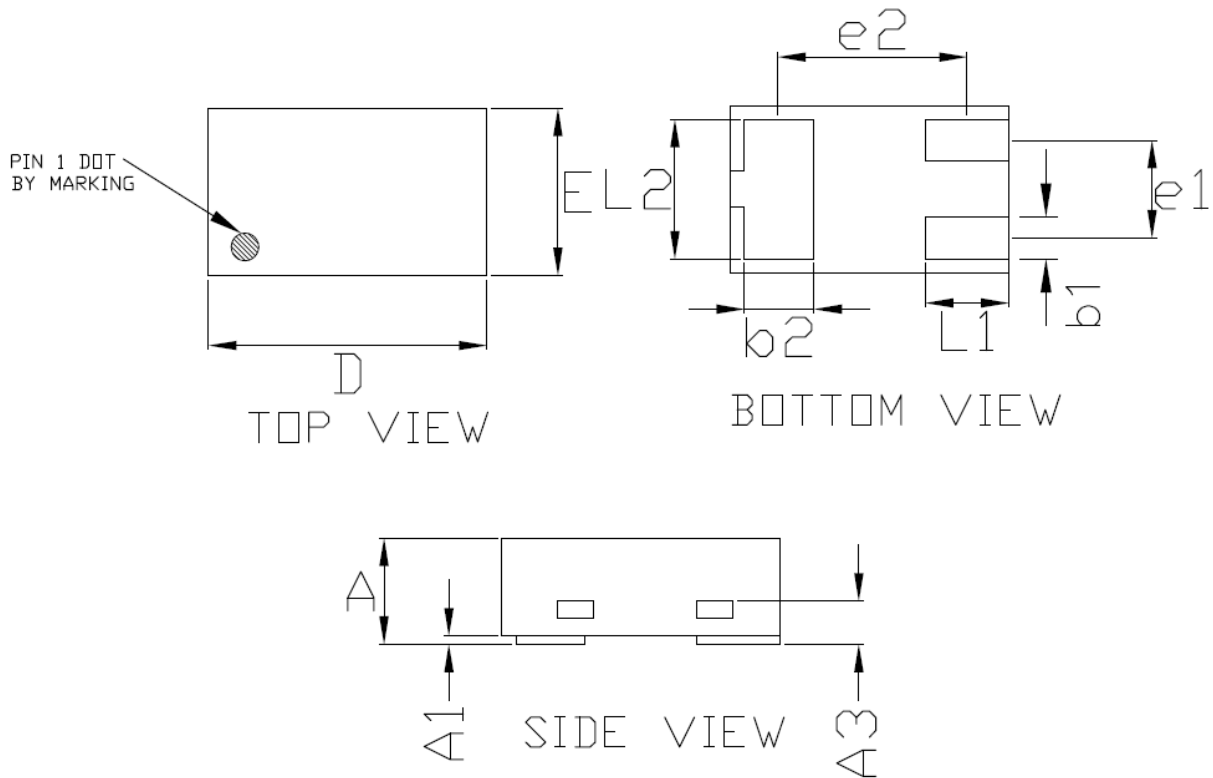


Figure 12. $R_{\theta JA}$ Transient Thermal Impedance

DFN1.0*0.6-3L



COMMON DIMENSIONS(MM)			
PKG.	X1:EXTREME THIN		
REF.	MIN.	NOM.	MAX
A	>0.40	-	0.50
A1	0.00	-	0.05
A3	0.125 REF.		
D	0.95	1.00	1.05
E	0.55	0.60	0.65
b1	0.10	0.15	0.20
b2	0.20	0.25	0.30
L1	0.20	0.30	0.40
L2	0.40	0.50	0.60
e1	0.35 BSC		
e2	0.675 BSC		



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