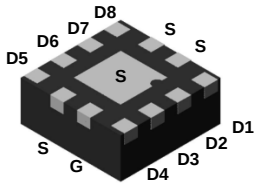
Features

- Low Gate Charge
- $R_{DS(ON)}$: 280mΩ @ V_{GS} = 4.5V (Single MOSFET)
- 8 N-Channel MOSFET in One Package
- Common Source
- Small Footprint 1.5mm × 1.5mm
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen, Antimony and Beryllium Free. "Green" Device (Note 3)**

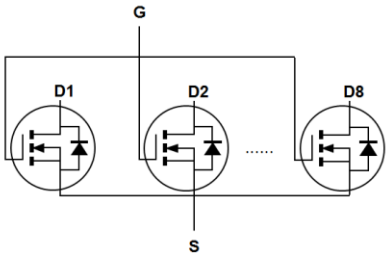
Mechanical Data

- Case: U-QFN1515-12
- Case Material—Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Terminal Connections: See Diagram
- Weight: 0.004 grams (Approximate)

U-QFN1515-12



Bottom View



Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMN1250UFEL-7	U-QFN1515-12	3000/Tape & Reel

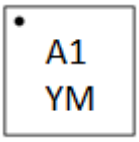
Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen, Antimony and Beryllium-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl), <1000ppm antimony compounds and <1000ppm Beryllium.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

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Marking Information

Site 1:

U-QFN1515-12



A1 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: G = 2019)
M= Month (ex: 9 = September)

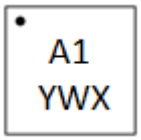
Date Code Key

Year	2019	2020	2021	2022	2023	2024	2025
Code	G	H	I	J	K	L	M

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Site 2:

U-QFN1515-12



A1 = Product Type Marking Code
YWX = Date Code Marking
Y = Year (ex: 9 = 2019)
W = Week (ex: a = week 27; z represents week 52 and 53)
X = Internal Code (ex: U = Monday)

Date Code Key

Year	2019	2020	2021	2022	2023	2024	2025	2026	2027
Code	9	0	1	2	3	4	5	6	7

Week	1-26	27-52	53
Code	A-Z	a-z	z

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Green	T	U	V	W	X	Y	Z
Lead Free	t	u	v	w	x	y	z

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Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	12	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current (Note 6) Continuous	T_A = +25°C	I_D	2.0	A
	T_A = +70°C		1.6	
Pulsed Drain Current (Note 7)		I_{DM}	10	A
ESD Capability (Note 10)		HBM	150	V
		CDM	1000	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 5)	P_D	0.66	W
Total Power Dissipation (Note 6)	P_D	1.25	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	177	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	100	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	12	—	—	V	I_D = 250µA, V_{GS} = 0V
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	µA	V_{DS} = 12V, V_{GS} = 0V
Gate-Body Leakage Current	I_{GSS}	—	—	±100	nA	V_{DS} = 0V, V_{GS} = ±8V
Gate Threshold Voltage	$V_{GS(TH)}$	0.4	—	1	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance (Note 8)	$R_{DS(ON)}$	—	280	450	mΩ	V_{GS} = 4.5V, I_D = 0.2A
		—	360	550	mΩ	V_{GS} = 2.5V, I_D = 0.1A
Forward Transfer Admittance	$\|Y_{FS}\|$	—	1	—	s	V_{DS} = 6V, I_D = 0.2A
Diode Forward Voltage (Note 8)	V_{SD}	—	0.8	1.0	V	I_S = 0.2A, V_{GS} = 0V
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C_{iss}	—	146	190	pF	V_{DS} = 6V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	10	15	pF	
Reverse Transfer Capacitance	C_{rss}	—	8	13	pF	
Gate Resistance	R_g	—	2.4	—	Ω	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz
SWITCHING CHARACTERISTICS (Note 9)						
Total Gate Charge	Q_g	—	1.3	1.9	nC	V_{GS} = 4.5V, V_{DS} = 6V, I_D =0.2A
Gate-Source Charge	Q_{gs}	—	0.3	—	nC	
Gate-Drain Charge	Q_{gd}	—	0.1	—	nC	
Turn-On Delay Time	$t_{D(ON)}$	—	1.9	2.7	ns	V_{DD} = 6V, V_{GS} = 4.5V, R_L = 22Ω, R_g = 6Ω
Turn-On Rise Time	t_R	—	1.3	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	7.5	11	ns	
Turn-Off Fall Time	t_F	—	1.0	—	ns	

Notes:
5. Device mounted on 1" × 1", FR-4 PC board with minimum recommended pad layout, and test with single MOSFET.
6. Device mounted on 1" × 1", FR-4 PC board with 2 oz. copper, and test with single MOSFET.
7. Repetitive Rating, pulse width limited by junction temperature, and test with single MOSFET.
8. Test pulse width t = 300ms, test with single MOSFET.
9. Guaranteed by design with single MOSFET, not subject to production testing.
10. Based on characterization data only. Not subject to production testing.

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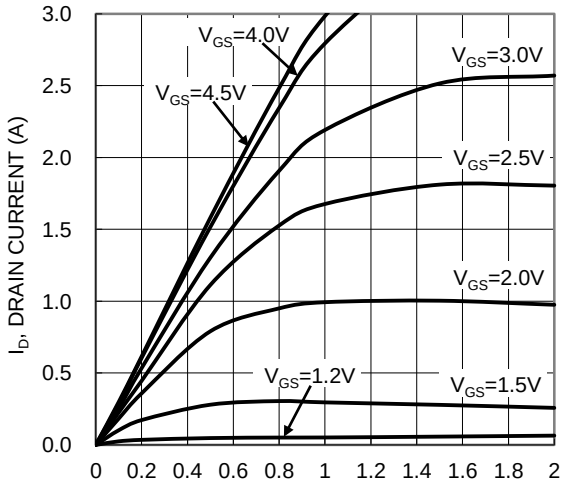


Figure 1. Typical Output Characteristic

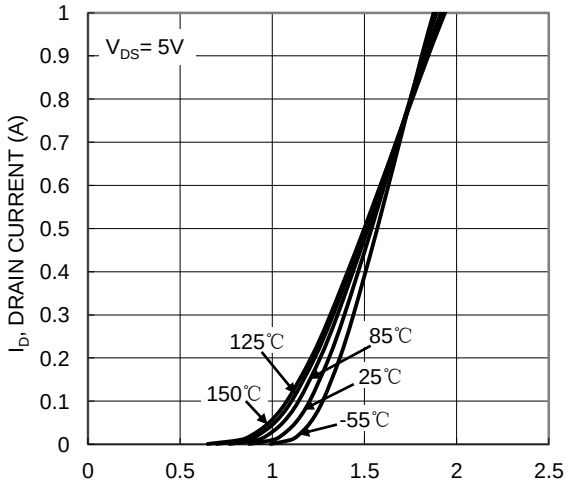


Figure 2. Typical Transfer Characteristic

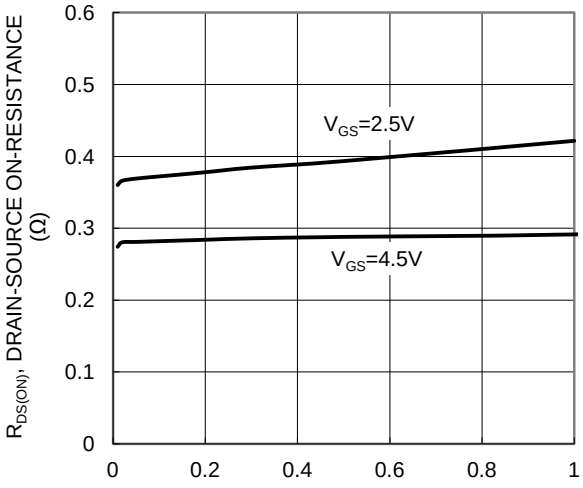


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

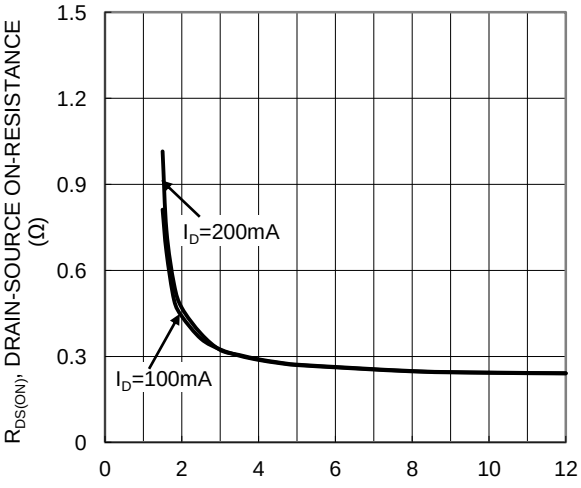


Figure 4. Typical Transfer Characteristic

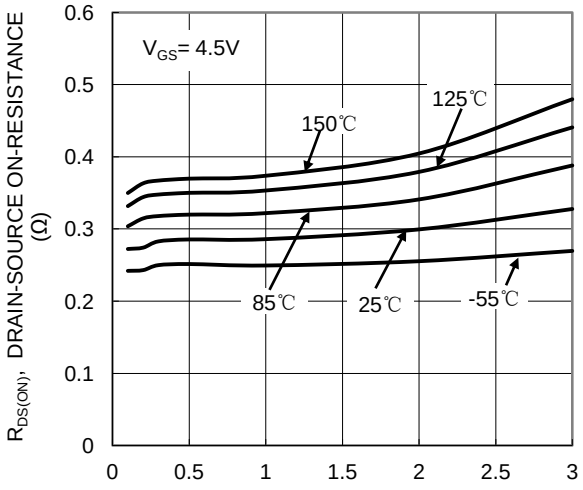


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature

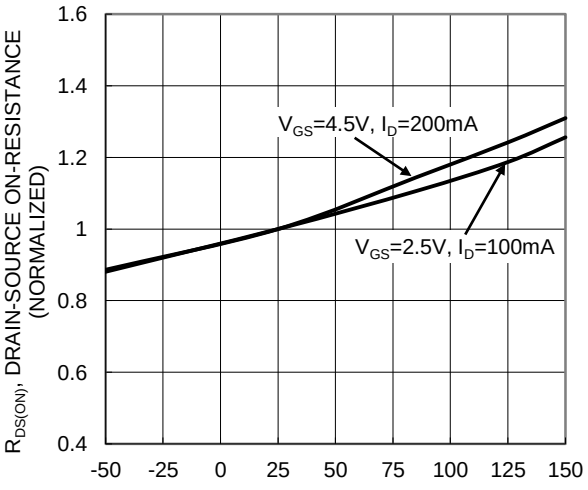


Figure 6. On-Resistance Variation with Temperature

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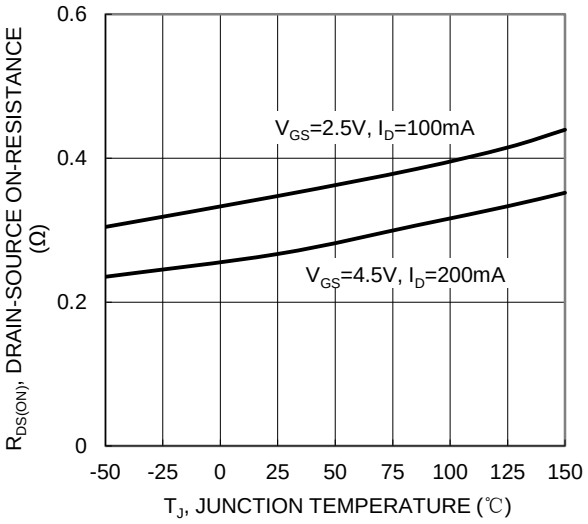


Figure 7. On-Resistance Variation with Temperature

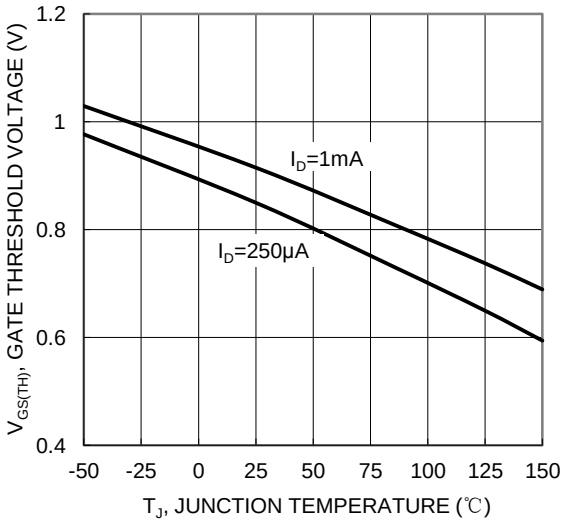


Figure 8. Gate Threshold Variation vs. Junction Temperature

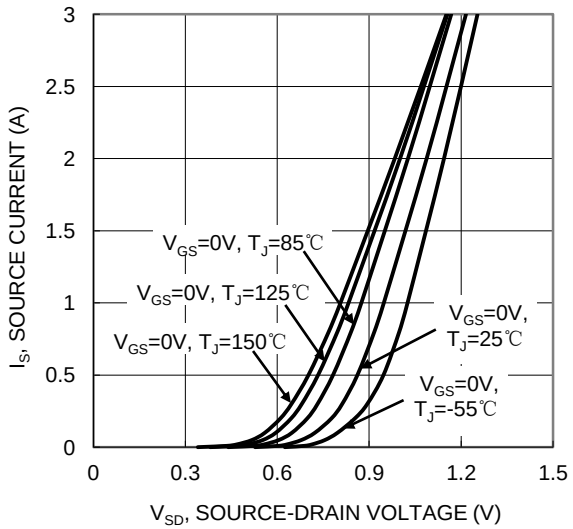


Figure 9. Diode Forward Voltage vs. Current

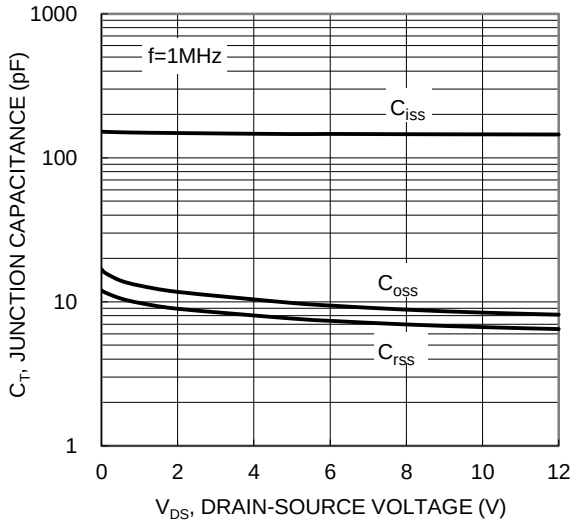


Figure 10. Typical Junction Capacitance

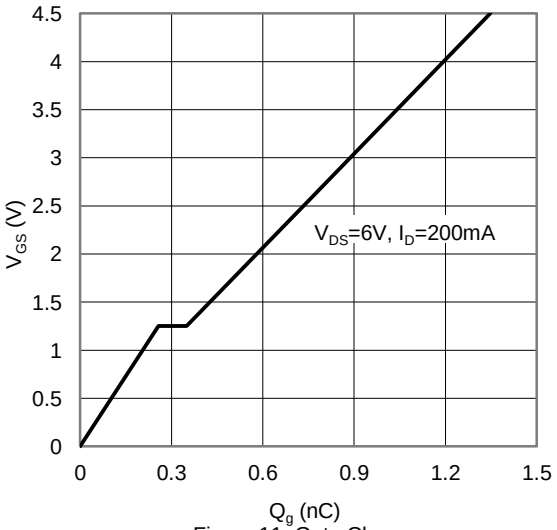


Figure 11. Gate Charge

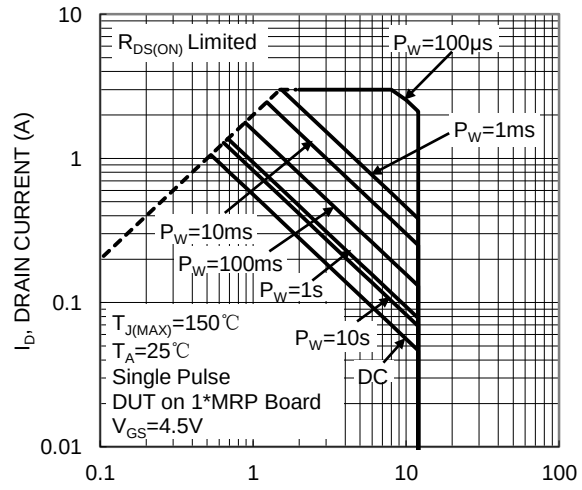


Figure 12. SOA, Safe Operation Area

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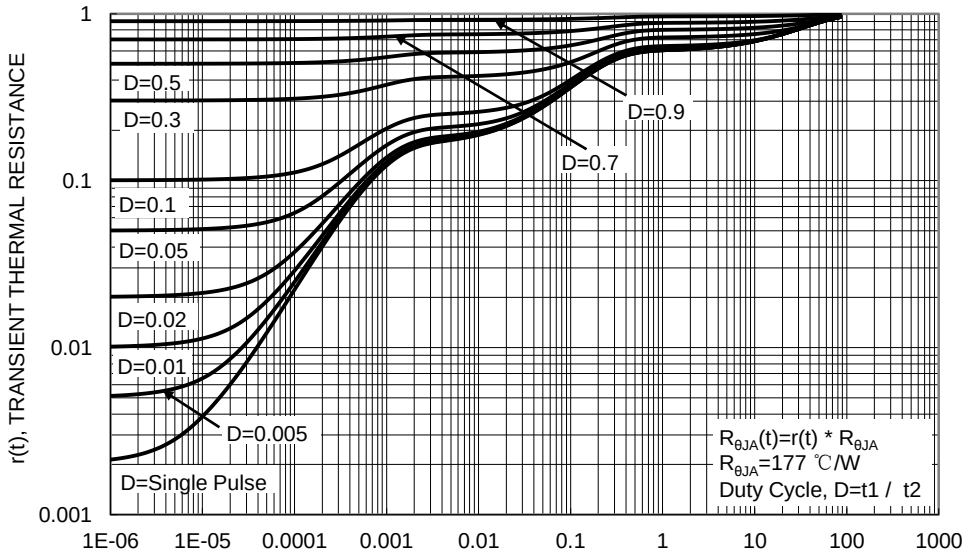


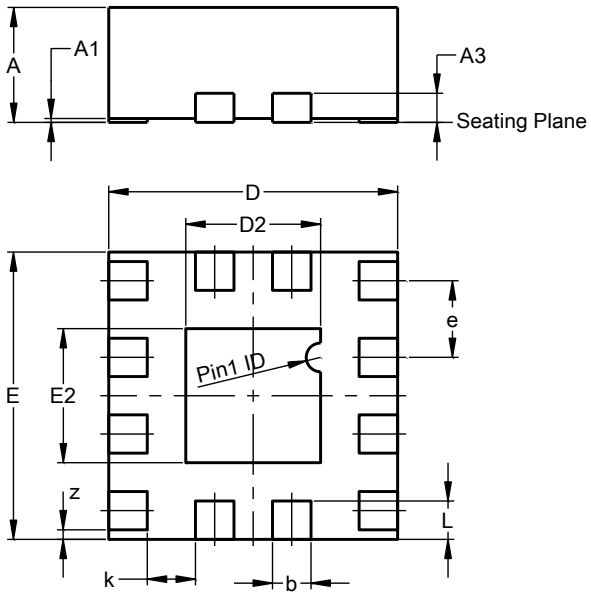
Figure 13. Transient Thermal Resistance

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Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

U-QFN1515-12

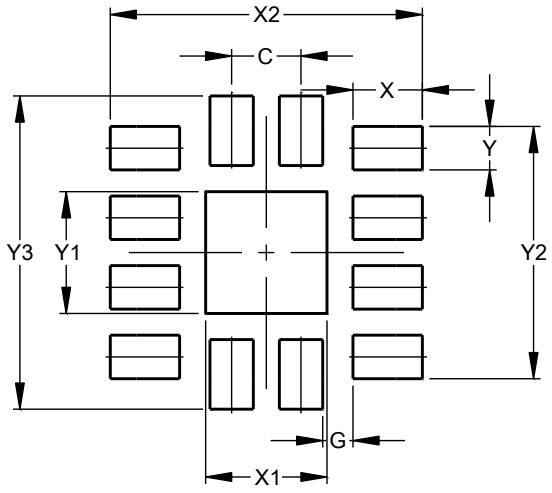


U-QFN1515-12			
Dim	**Min**	**Max**	**Typ**
A	0.57	0.63	0.60
A1	0.00	0.05	0.02
A3	0.152 BSC		
b	0.15	0.25	0.20
D	1.45	1.55	1.50
D2	0.60	0.80	0.70
E	1.45	1.55	1.50
E2	0.60	0.80	0.70
e	0.40 BSC		
L	0.15	0.25	0.20
k	—	—	0.25
z	—	—	0.050
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

U-QFN1515-12



Dimensions	Value (in mm)
C	0.400
G	0.175
X	0.400
X1	0.700
X2	1.800
Y	0.250
Y1	0.700
Y2	1.450
Y3	1.800

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