

Product Summary

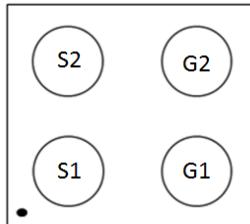
V_{SS}	$R_{SS(ON)}$	I_s $T_A = +25^\circ C$
12V	26m Ω @ $V_{GS} = 4.5V$	5.5 A

Description

This new generation MOSFET has been designed to minimize the on-state resistance ($R_{SS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Battery Management
- Load Switch
- Battery Protection



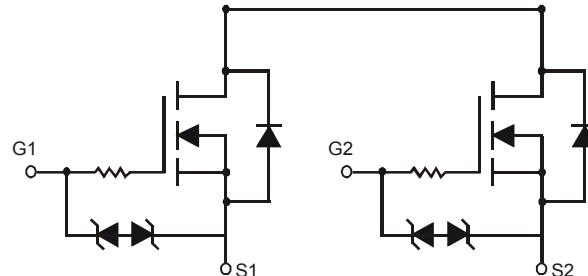
Top View

Features and Benefits

- Built-in G-S protection diode against ESD 2kV HBM.
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: U-WLB1818-4
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Weight: 0.005 grams (approximate)



Equivalent Circuit

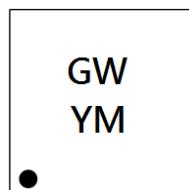
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN1033UCB4-7	U-WLB1818-4	3000/Tape & Reel

Notes:

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

Marking Information



GW = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: Y = 2011)
 M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015					
Code	W	X	Y	Z	A	B	C					
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

Maximum Ratings

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V _{SS}	12	V
Gate-Source Voltage			V _{GSS}	±6	V
Continuous Source Current @ V _{GS} = 4.5V T _A = +25°C (Note 5)	Steady State	T _A = +25°C	I _S	5.5 4.5	A
Pulsed Source Current @ T _A = +25°C (Notes 5 & 6)		T _A = +70°C	I _{SM}	20	A

Thermal Characteristics

Characteristic	Symbol	Value	Units
Power Dissipation, @T _A = +25°C (Note 5)	P _D	1.45	W
Thermal Resistance, Junction to Ambient @T _A = +25°C (Note 5)	R _{θJA}	88.21	°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
OFF CHARACTERISTICS (Note 7)						
Source to Source Breakdown Voltage T _J = +25°C	V _{(BR)SS}	12	—	—	V	I _S = 1mA, V _{GS} = 0V
Zero Gate Voltage Source Current T _J = +25°C	I _{SS}	—	—	1.0	μA	V _{SS} = 12V, V _{GS} = 0V
Gate-Body Leakage	I _{GSS}	—	—	±10	μA	V _{GS} = ±6V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(th)}	0.35	0.5	0.7	V	V _{SS} = 10V, I _S = 1.0mA
Static Source -Source On-Resistance	R _{SS(ON)}	—	19.5 20 20.5 21 21.5 22 26 35	26 27 28 29 30 31 33 50	mΩ	V _{GS} = 4.5V, I _S = 3.0A V _{GS} = 4.0V, I _S = 3.0A V _{GS} = 3.7V, I _S = 3.0A V _{GS} = 3.5V, I _S = 3.0A V _{GS} = 3.1V, I _S = 3.0A V _{GS} = 2.5V, I _S = 3.0A V _{GS} = 1.8V, I _S = 3.0A V _{GS} = 1.5V, I _S = 3.0A
Forward Transfer Admittance	Y _{fs}	—	11	—	S	V _{SS} = 10V, I _S = 3.0A
Body Diode Forward Voltage	V _{F(S-S)}	—	0.7	1.0	V	I _F = 3.0 A, V _{GS} = 0 V,
DYNAMIC CHARACTERISTICS (Note 8)						
Total Gate Charge	Q _g	—	37	—	nC	V _{GS} = 4.5V, V _{SS} = 10V, I _S = 6A
Turn-On Delay Time	t _{D(on)}	—	10	—	ns	V _{DD} = 6V, R _L = 6.0Ω, I _S = 3.0A
Turn-On Rise Time	t _r	—	20	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	83	—	ns	
Turn-Off Fall Time	t _f	—	52	—	ns	

Notes:

5. Device mounted on FR4 material with 1-inch² (6.45-cm²), 2-oz. (0.071-mm thick) Cu.
6. Repetitive rating, pulse width limited by junction temperature.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

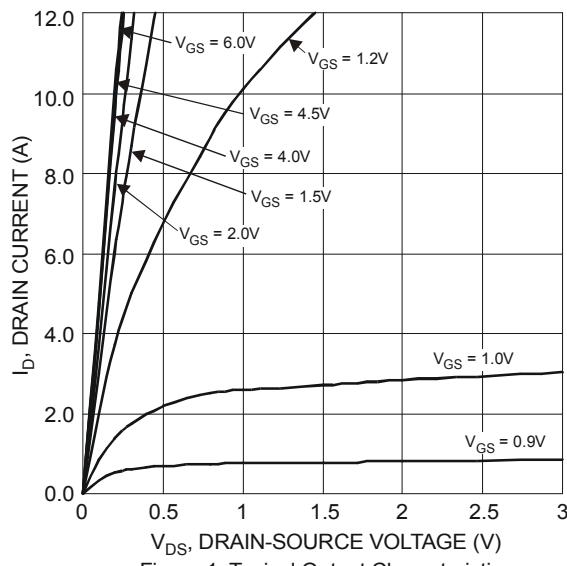


Figure 1 Typical Output Characteristics

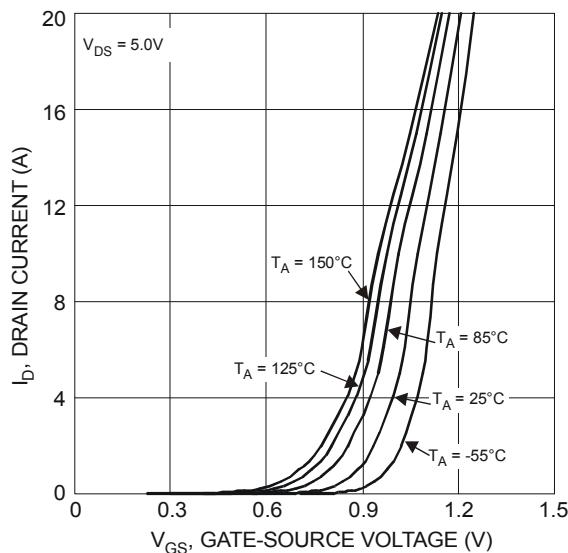


Figure 2 Typical Transfer Characteristics

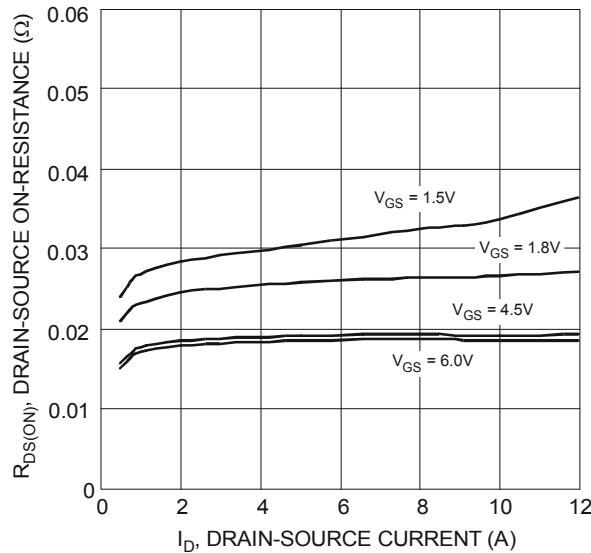


Figure 3 Typical On-Resistance vs. Drain Current and Gate Voltage

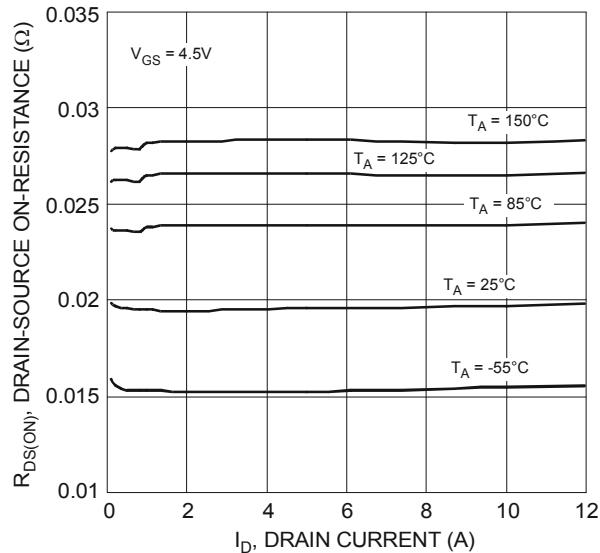


Figure 4 Typical On-Resistance vs. Drain Current and Temperature

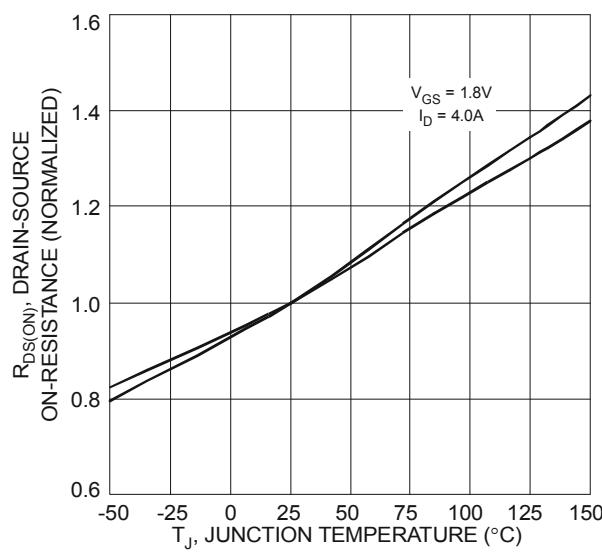


Figure 5 On-Resistance Variation with Temperature

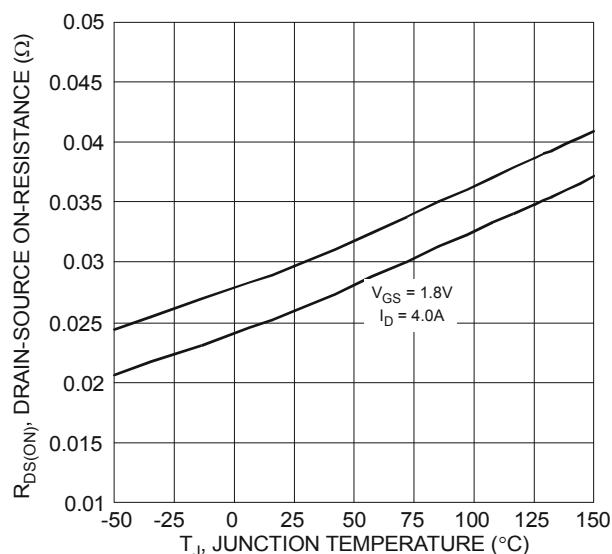


Figure 6 On-Resistance Variation with Temperature

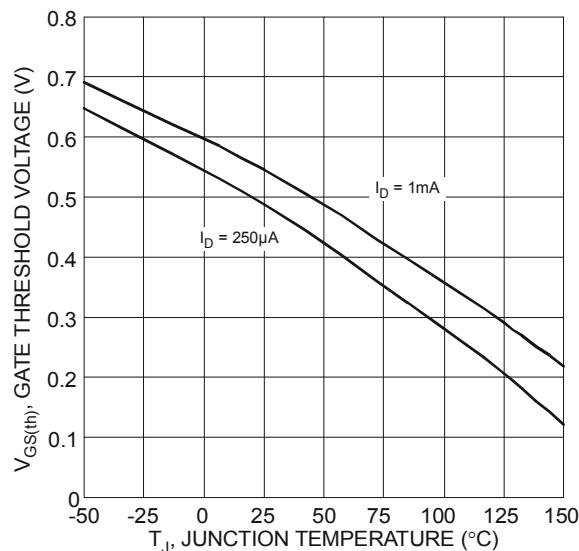


Figure 7 Gate Threshold Variation vs. Ambient Temperature

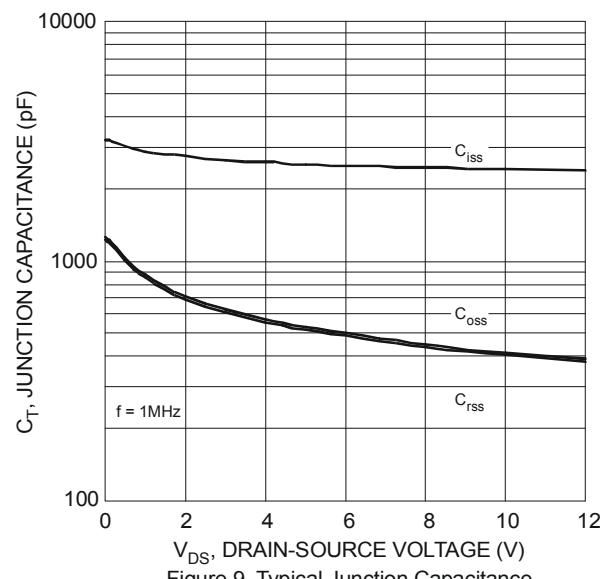


Figure 9 Typical Junction Capacitance

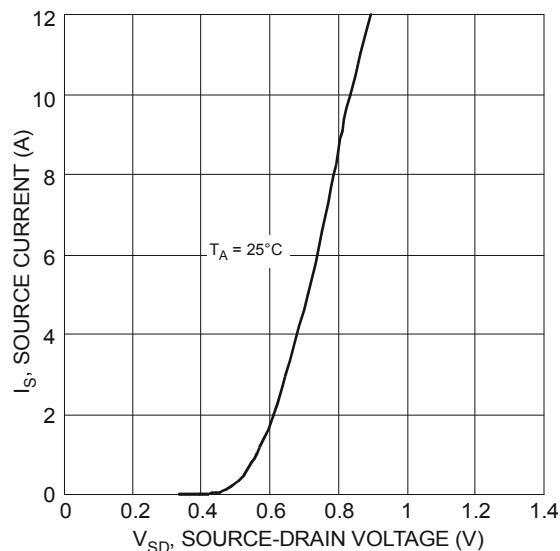


Figure 8 Diode Forward Voltage vs. Current

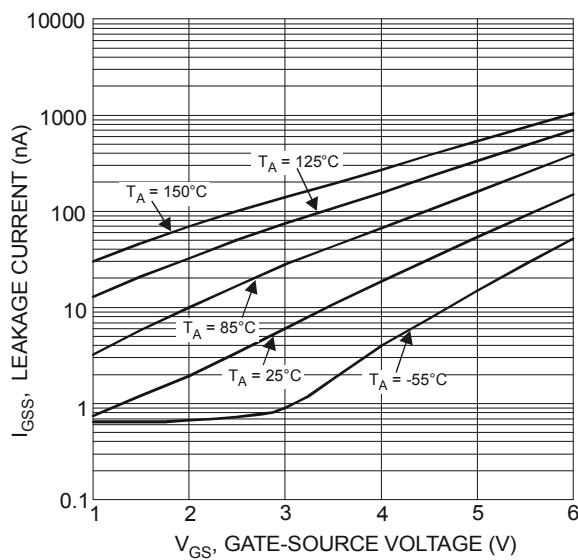


Figure 10 Gate-Source Leakage Current vs. Voltage

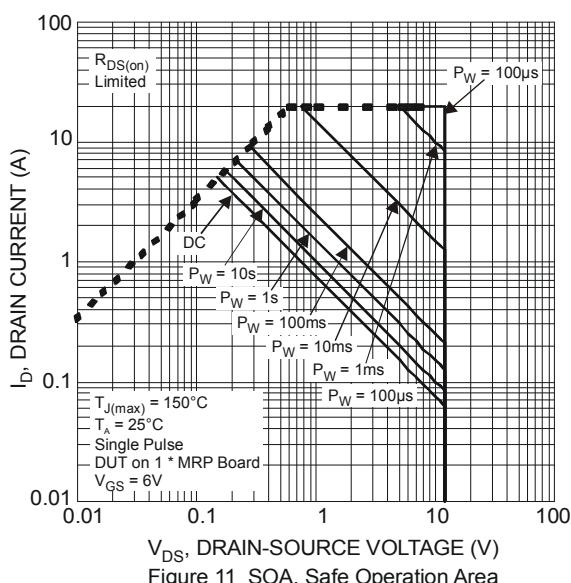
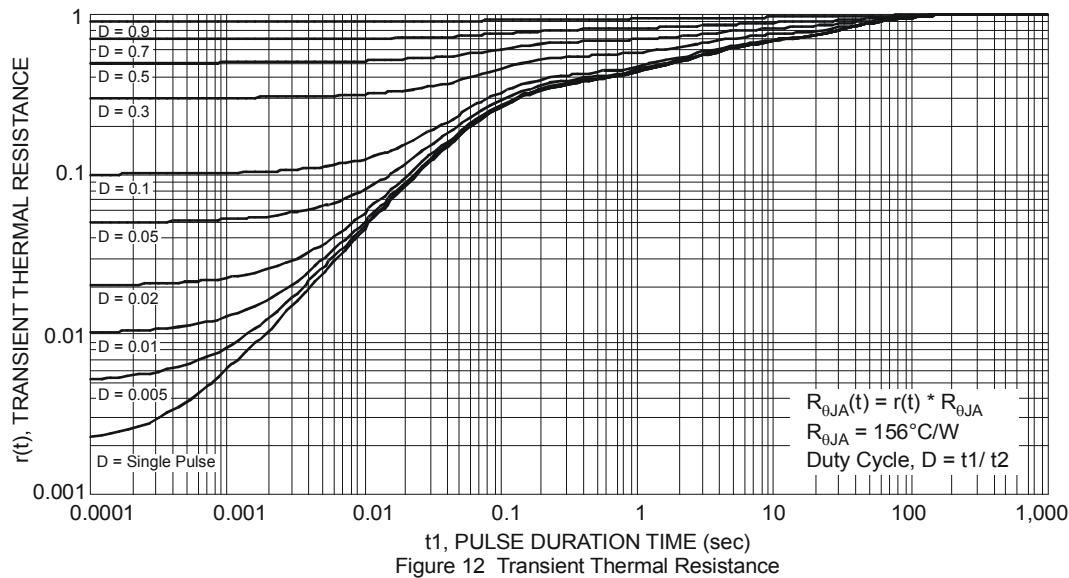
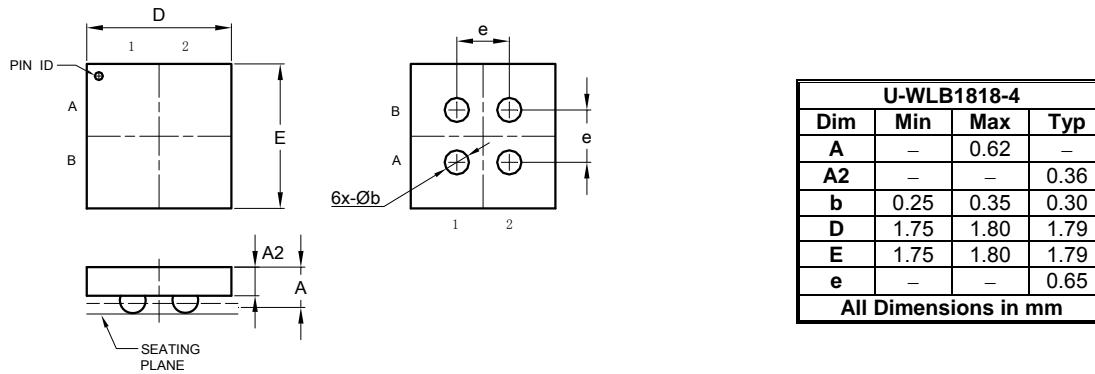


Figure 11 SOA, Safe Operation Area



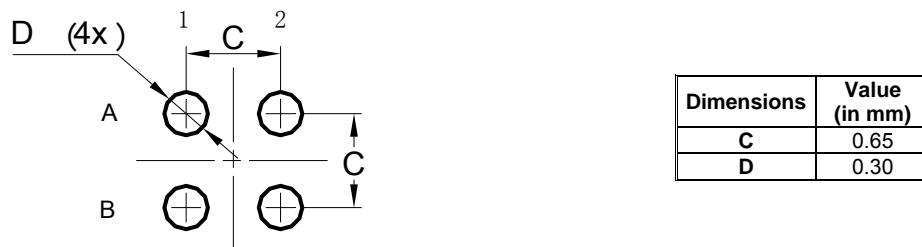
Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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