



DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on) max}	I _D T _A = +25°C
	$13m\Omega @ V_{GS} = 4.5V$	9.0A
	$14m\Omega @ V_{GS} = 4.0V$	8.7A
20V	$17m\Omega @ V_{GS} = 3.1V$	8.0A
	$18m\Omega @ V_{GS} = 2.5V$	6.7A
	$28m\Omega$ @ V_{GS} = 1.8V	6.3A

Description

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

Applications

- Power Management Functions
- Battery Pack
- Load Switch

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- · Fast Switching Speed
- ESD Protected Gate
- 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-DFN2030-6
- Case Material: Molded Plastic, "Green" Molding Compound UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram Below
- Weight: 0.012 grams (approximate)

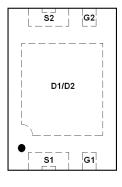
U-DFN2030-6



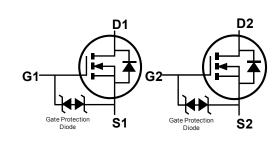
ESD PROTECTED TO 2kV



Bottom View



Top View



Equivalent Circuit

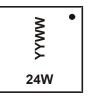
Ordering Information (Note 4)

Part Number	Case	Packaging
DMN2014LHAB-7	U-DFN2030-6	3,000 / Tape & Reel
DMN2014LHAB-13	U-DFN2030-6	10.000 / 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



24W = Product Type Marking Code YYWW = Date Code Marking YY = Last digit of year (ex: 14 for 2014) WW = Week code (01 to 53)



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

Character	Symbol	Value	Unit		
Drain-Source Voltage	V _{DSS}	20	V		
Gate-Source Voltage	V _{GSS}	±12	V		
Continuous Drain Compant (Note C) V - 4 5 V	Steady State	T _A = +25°C T _A = +70°C	ID	9.0 7.1	Α
Continuous Drain Current (Note 6) V _{GS} = 4.5V	t < 10s	T _A = +25°C T _A = +70°C	ID	9.3 7.4	А
Pulsed Drain Current (10µs pulse, duty cycle = 1%)			I _{DM}	45	Α

Thermal Characteristics

Characteristic	Symbol	Value	Units		
Total Dawer Dissination (Note 5)	T _A = +25°C	,	0.8	W	
Total Power Dissipation (Note 5)	T _A = +70°C	P_{D}	0.5	VV	
Thermal Penistance, Junction to Ambient (Note 5)	Steady State	D	157	°C/W	
Thermal Resistance, Junction to Ambient (Note 5)	t < 10s	$R_{\theta JA}$	148		
Total Dawer Dissination (Note 6)	T _A = +25°C	J	1.7	W	
Total Power Dissipation (Note 6)	T _A = +70°C	P_{D}	1.1	VV	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	ם	73.7		
Thermal Resistance, Junction to Ambient (Note 6)	t < 10s	$R_{\theta JA}$	68	°C/W	
Thermal Resistance, Junction to Case		$R_{ heta JC}$	9.4		
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C	

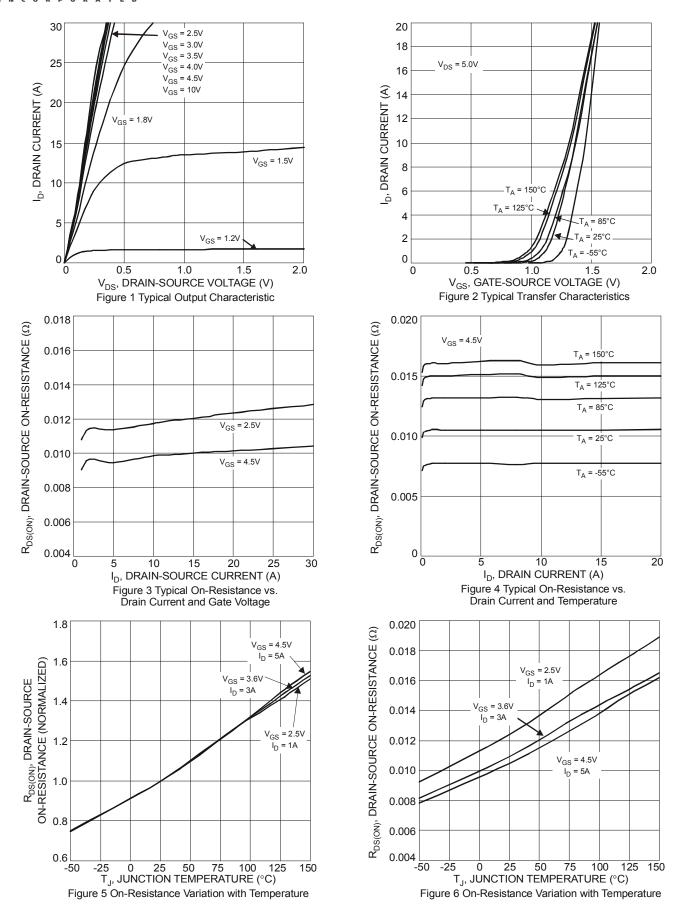
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)							
Drain-Source Breakdown Voltage	BV _{DSS}	20		_	V	$V_{GS} = 0V$, $I_D = 250\mu A$	
Zero Gate Voltage Drain Current T _J = +25°C	I_{DSS}	_	-	1.0	μΑ	$V_{DS} = 20V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_		±10	μΑ	$V_{GS} = \pm 8V$, $V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	V _{GS(th)}	0.3	0.71	1.1	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$	
			10	13		$V_{GS} = 4.5V$, $I_D = 4.0A$	
			11	14		$V_{GS} = 4.0V, I_D = 4.0A$	
Static Drain-Source On-Resistance	R _{DS} (ON)	_	12	17	$m\Omega$	$V_{GS} = 3.1V$, $I_D = 4.0A$	
			13	18		$V_{GS} = 2.5V, I_D = 4.0A$	
			19	28		$V_{GS} = 1.8V, I_D = 3.5A$	
Forward Transfer Admittance	Y _{fs}		25	_	S	$V_{DS} = 5V, I_{D} = 6A$	
Diode Forward Voltage	V_{SD}	_	0.75	1.0	V	V _{GS} = 0V, I _S = 1A	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}		1550	l	pF	101/11/	
Output Capacitance	Coss	_	166		pF	$V_{DS} = 10V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C_{rss}	_	145	_	pF	1 - 1.0WH12	
Gate Resistance	R_g	_	1.37	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 2.5V)	Q_g	_	8.4	_	nC		
Total Gate Charge (V _{GS} = 4.5V)	Qq	_	16	_	nC	V _{DS} = 10V, I _D = 6A	
Gate-Source Charge	Qgs	_	2.3	_	nC		
Gate-Drain Charge	Q_{gd}		2.5	_	nC		
Turn-On Delay Time	t _{D(on)}	_	6.9	_	ns		
Turn-On Rise Time	t _r		15.5	_	ns	$V_{DD} = 10V, R_L = 1.7\Omega,$	
Turn-Off Delay Time	t _{D(off)}	_	40.9	_	ns	$V_{GS} = 5.0V$, $R_G = 3\Omega$	
Turn-Off Fall Time	t _f	_	12	_	ns	<u> </u>	

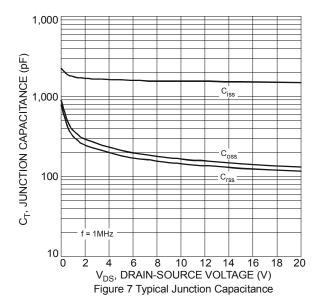
Notes:

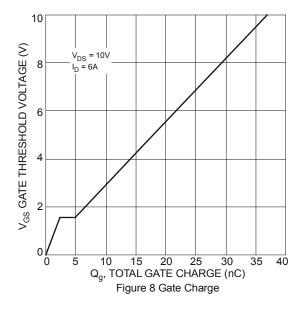
- Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout
 Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad
- 7. Repetitive rating, pulse width limited by junction temperature 8. Guaranteed by design. Not subject to product testing

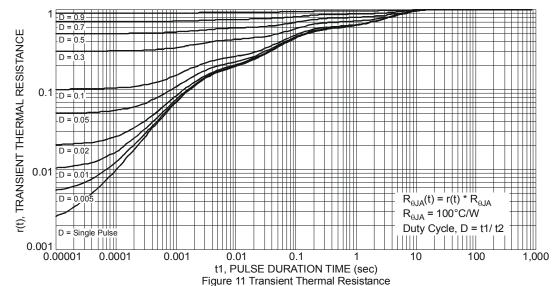








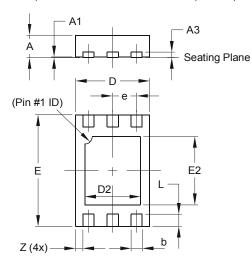






Package Outline Dimensions

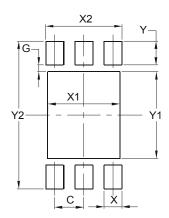
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



	U-DFN2030-6						
	Type B						
Dim	Min	Max	Тур				
Α	0.55	0.65	0.60				
A 1	0	0.05	0.02				
A3	-	-	0.15				
b	0.25	0.35	0.30				
D	1.95	2.05	2.00				
D2	1.40	1.60	1.50				
Ε	2.95	3.05	3.00				
E2	1.74	1.94	1.84				
е	-	-	0.65				
L	0.28	0.38	0.33				
Ζ	-	-	0.20				
All	All Dimensions in mm						

Suggested Pad Layout

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



Dimensions	Value			
פווטופוושווום	(in mm)			
С	0.650			
G	0.150			
Х	0.400			
X1	1.600			
X2	1.700			
Υ	0.530			
Y1	1.940			
Y2	3.300			



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