



250V P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(ON) max}	I _{D max} T _A = +25℃
050\/	$14\Omega @ V_{GS} = -10V$	-0.26A
-250V	18Ω @ V _{GS} = -3.5V	-0.23A

Description

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

Applications

- General Purpose Interfacing Switch
- Load Switching
- Battery Management Application
- Power Management Functions

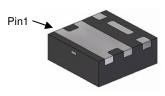
Features

- 0.6mm Profile Ideal for Low-Profile Applications
- PCB Footprint of 4mm²
- Low Gate Threshold Voltage
- Low On-Resistance
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

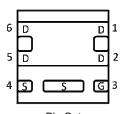
Mechanical Data

- Case: U-DFN2020-6
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish NiPdAu over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 @4
- Weight: 0.0065 grams (Approximate)

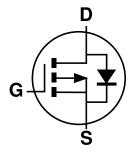
U-DFN2020-6



Bottom View



Pin Out Bottom View



Equivalent Circuit

Ordering Information (Note 4)

Part Number	Marking	Reel Size (inches)	Quantity per Reel
DMP25H18DLFDE-7	H8	7	3,000
DMP25H18DLFDE-13	H8	13	10,000

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

U-DFN2020-6



H8 = Product Type Marking Code YM = Date Code Marking Y = Year (ex: B = 2014) M = Month (ex: 9 = September)

Date Code Key

	Date Code Ito,												
	Year	2014		2015	2016		2017	2018		2019	2020		2021
	Code	В		С	D		Е	F		G	Н		I
Ī	Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ı	Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characteristic	Symbol	Value	Units		
Drain-Source Voltage	V_{DSS}	-250	V		
Gate-Source Voltage	V_{GSS}	±40	V		
Continuous Drain Current (Note 6) $V_{GS} = 10V$ Steady $T_A = +25$ °C $T_A = +70$ °C			I _D	-0.26 -0.21	Α
Pulsed Drain Current (10µs pulse, duty cycle ≦1%)	I _{DM}	-0.8	Α		
Maximum Body Diode Continuous Current (Note 6)	Is	1.2	Α		

Thermal Characteristics

Characteristic		Symbol	Value	Units	
Total Power Dissipation	(Note 5)	D-	0.6	W	
Total Fower Dissipation	(Note 6)	P _D	1.4		
Thermal Desistance, Junction to Ambient	(Note 5)	ם	191		
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	86	°C/W	
Thermal Resistance, Junction to Case	(Note 6)	$R_{ heta JC}$	17		
Operating and Storage Temperature Range		$T_{J_i}T_{STG}$	-55 to +150	Ç	

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

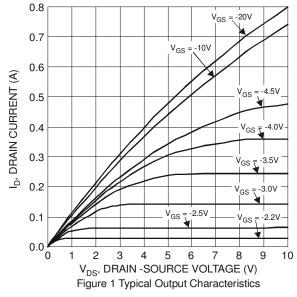
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 7)						•	
Drain-Source Breakdown Voltage		-250		_	٧	$V_{GS} = 0V$, $I_D = -1mA$	
Zero Gate Voltage Drain Current T _J = +25 ℃	I _{DSS}	_	_	-1	μΑ	$V_{DS} = -250V, V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 40V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 7)							
Gate Threshold Voltage	$V_{GS(th)}$	-0.5	-1.7	-2.5	V	$V_{DS} = V_{GS}, I_D = -1mA$	
Static Drain-Source On-Resistance	D		10	14	Ω	$V_{GS} = -10V, I_D = -200mA$	
Static Dialif-Source Off-nesistance	R _{DS (ON)}	_	13	18	22	$V_{GS} = -3.5V, I_D = -100mA$	
Diode Forward Voltage	V_{SD}	_	-0.8	-1.2	V	$V_{GS} = 0V, I_{S} = -200mA$	
DYNAMIC CHARACTERISTICS (Note 8)							
Input Capacitance	C _{iss}	_	81	_	pF		
Output Capacitance	Coss	_	14	_	pF	$V_{DS} = -25V, V_{GS} = 0V,$ f = 1.0MHz	
Reverse Transfer Capacitance	C _{rss}	_	4	_	pF	1 = 1.0WH2	
Gate Resistance	R_g	_	13	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = -10V)	Qg	_	2.8	_	nC		
Gate-Source Charge	Q_{gs}	_	0.3	_	nC	$V_{DS} = -25V, I_{D} = -200mA$	
Gate-Drain Charge	Q_{gd}	_	0.6	_	nC		
Turn-On Delay Time	t _{D(on)}	_	7.5	_	ns		
Turn-On Rise Time	t _r	_	25	_	ns	$V_{DS} = -30V, I_{D} = -200mA$	
Turn-Off Delay Time	t _{D(off)}	_	124	_	ns	$V_{GS} = -10V$, $R_G = 50\Omega$	
Turn-Off Fall Time	t _f	_	95	_	ns	1	
Reverse Recovery Time	t _{rr}		85	_	ns	1 1 0 A di/dt 100 A // · · -	
Reverse Recovery Charge	Q _{rr}	_	294	_	uС	$I_F = -1.0A$, di/dt = 100A/ μ s	

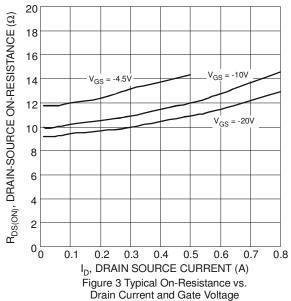
5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided. Notes:

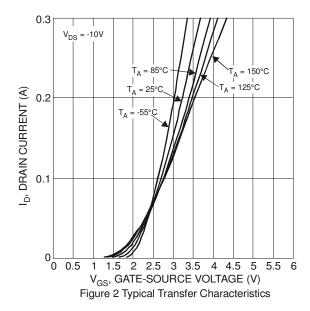
^{6.} Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.

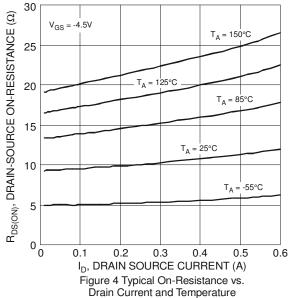
^{8.} Guaranteed by design. Not subject to production testing.





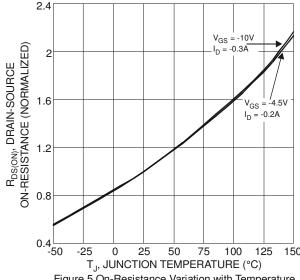












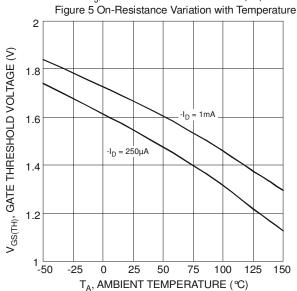
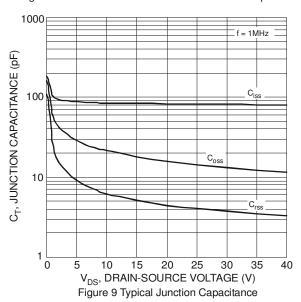


Figure 7 Gate Threshold Variation vs. Ambient Temperature



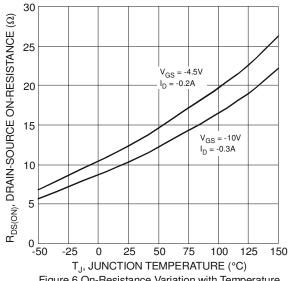
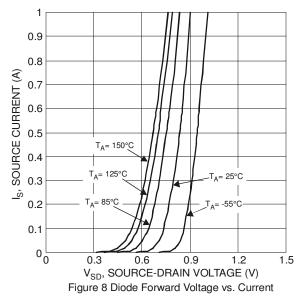


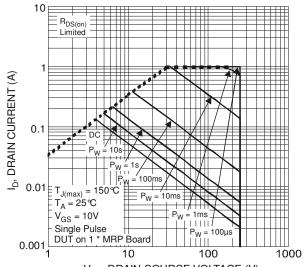
Figure 6 On-Resistance Variation with Temperature



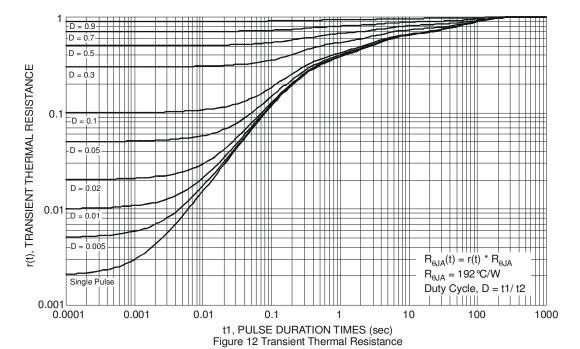
10 9 V_{GS}, GATE-SOURCE VOLTAGE (V) 8 7 $V_{DS} = -25V - I_{D} = -200 \text{mA}$ 6 5 3 2 00 2.5 0.5 1.5 2 3 $\mathbf{Q}_{\mathbf{q}}$, TOTAL GATE CHARGE (nC)

Figure 10 Gate-Charge Characteristics





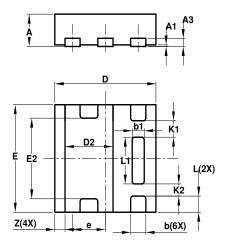
 V_{DS} , DRAIN-SOURCE VOLTAGE (V) Figure 11 SOA, Safe Operation Area





Package Outline Dimensions

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

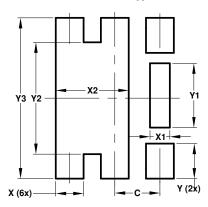


U-DFN2020-6									
D:	Type E								
Dim	Min	Max	Тур						
Α	0.57	0.63	0.60						
A1	0	0.05	0.03						
A3	_	_	0.15						
b	0.25	0.35	0.30						
b1	0.185	0.285	0.235						
D	1.95	2.05	2.00						
D2	0.85	1.05	0.95						
E	1.95	2.05	2.00						
E2	1.40	1.60	1.50						
е	-	_	0.65						
L	0.25	0.35	0.30						
L1	0.82	0.92	0.87						
K1			0.305						
K2			0.225						
Z — — 0.20									
All Dimensions in mm									

Suggested Pad Layout

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

U-DFN2020-6 Type E



Dimensions	Value (in mm)
С	0.650
Х	0.400
X1	0.285
X2	1.050
Υ	0.500
Y1	0.920
Y2	1.600
V٦	2 300



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