



P-CHANNEL ENHANCEMENT MODE MOSFET

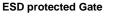
Product Summary

BV _{DSS}	R _{DS(ON)} Max	I _D Max T _A = +25°C
001/	45mΩ @ V _{GS} = -4.5V	-4.7A
-20V	90mΩ @ V _{GS} = -1.8V	-3.3A

Description and Applications

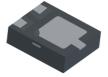
This MOSFET is designed to minimize the on-state resistance (RDS(ON)) and yet maintain superior switching performance, making it ideal for high-efficiency power management applications.

- Backlighting
- **Power Management Functions**
- **DC-DC Converters**





TOP VIEW



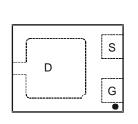
BOTTOM VIEW

Features and Benefits

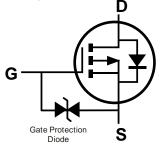
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected**
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)

Mechanical Data

- Case: X2-DFN2015-3
- 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
- Terminals Connections: See Diagram Below
- Weight: 0.008 grams (Approximate)



Internal Schematic (Top View)



Equivalent Circuit

Ordering Information (Note 4)

Part Number	Case	Packaging
DMP2045UFY4-7	X2-DFN2015-3	3,000/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 http://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- 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 https://www.diodes.com/design/support/packaging/diodes-packaging/

Marking Information

45F **YM**

45F = Marking Code YM = Date Code Marking Y = Year (ex: F = 2018)M = Month (ex: 9 = September)

Date Code Key

Year	2017	2018	20	019	2020	2021		2022	2023	202	24	2025
Code	E	F		G	Н	- 1		J	K	L	-	М
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



Maximum Ratings (@ $T_A = +25^{\circ}C$, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±8	V
Continuous Drain Current (Note 6) V _{GS} = -4.5V	ΙD	-4.7 -3.8	А	
Maximum Continuous Body Diode Forward Curre	ent (Note 6)	Is	-1	Α
Pulsed Drain Current (10µs Pulse, Duty Cycle =	1%)	I _{DM}	-25	A

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 5)		P _D	0.67	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{ heta JA}$	190	°C/W
Total Power Dissipation (Note 6)		P _D	1.49	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{ heta JA}$	84	°C/W
Thermal Resistance, Junction to Case (Note 6)		$R_{\theta JC}$	14.5	
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

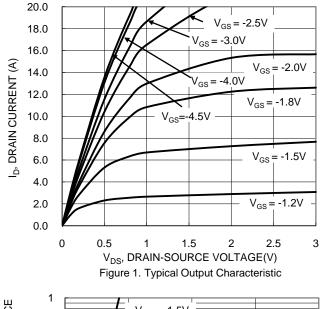
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition		
OFF CHARACTERISTICS (Note 7)								
Drain-Source Breakdown Voltage	BV_{DSS}	-20	1	_	V	$V_{GS} = 0V, I_D = -250\mu A$		
Zero Gate Voltage Drain Current $T_J = +25^{\circ}C$	I_{DSS}	_	_	-1	μA	$V_{DS} = -20V, V_{GS} = 0V$		
Gate-Source Leakage	I _{GSS}	_	_	±10	μA	$V_{GS} = \pm 8.0V, V_{DS} = 0V$		
ON CHARACTERISTICS (Note 7)								
Gate Threshold Voltage	$V_{GS(TH)}$	-0.3	_	-1.0	V	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$		
		_	34	45		$V_{GS} = -4.5V, I_D = -4.0A$		
Static Drain-Source On-Resistance	Dagger	_	44	58	mΩ	V _{GS} = -2.5V, I _D = -3.5A		
Static Drain-Source Off-Nesistance	R _{DS(ON)}	_	56	90	11152	V _{GS} = -1.8V, I _D = -0.1A		
		ı	80	160		$V_{GS} = -1.5V, I_D = -0.1A$		
Diode Forward Voltage	V_{SD}	1	-0.6	-1.2	V	$V_{GS} = 0V, I_S = 1.0A$		
DYNAMIC CHARACTERISTICS (Note 8)								
Input Capacitance	C_{iss}		634	_	pF			
Output Capacitance	Coss	_	81	_	pF	$V_{DS} = -10V, V_{GS} = 0V$ f = 1.0MHz		
Reverse Transfer Capacitance	C _{rss}	_	66	_	pF	1 - 1.0WH12		
Gate Resistance	R_g	_	20	_	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz$		
Total Gate Charge	Q_g	_	6.8	_	nC			
Gate-Source Charge	Q _{gs}	_	0.7	_	nC	$V_{GS} = -4.5V, V_{DS} = -10V$		
Gate-Drain Charge	Q _{gd}	_	1.6	_	nC	10 - 40		
Turn-On Delay Time	t _{D(ON)}	_	4.2	_	ns			
Turn-On Rise Time	t _R	_	3.4	_	ns	$V_{DS} = -10V, V_{GS} = -4.5V,$		
Turn-Off Delay Time	t _{D(OFF)}	_	22.7	_	ns	$R_D = 2.5\Omega$, $R_g = 3.0\Omega$, $I_D = -1A$		
Turn-Off Fall Time	t _F	-	9.6	_	ns			
Reverse Recovery Time	t _{RR}	-	1.8	_	ns	I _F = -1.0A, di/dt = 100A/µs		
Reverse Recovery Charge	Q _{RR}	_	9.4	_	nC	I _F = -1.0A, di/dt = 100A/µs		

Notes:

- 5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
- 6. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.
- 7. Short duration pulse test used to minimize self-heating effect.
- 8. Guaranteed by design. Not subject to product testing.





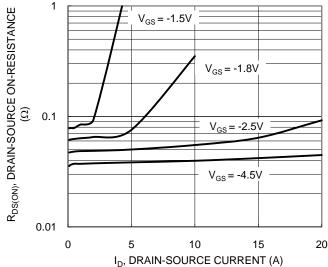


Figure 3. Typical On-Resistance vs. Drain Current and

Gate Voltage

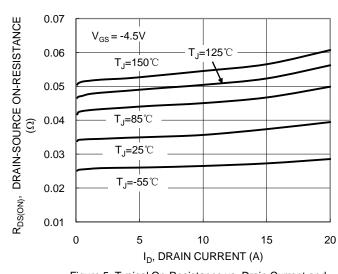
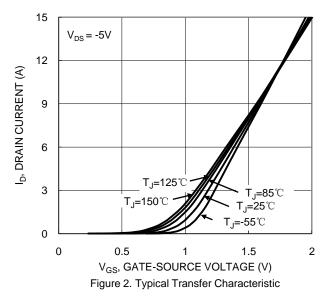
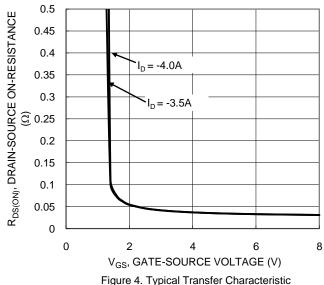


Figure 5. Typical On-Resistance vs. Drain Current and Junction Temperature





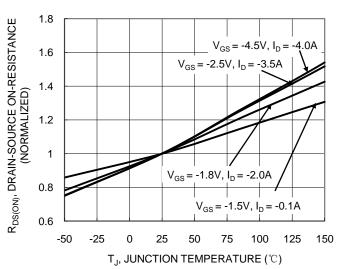


Fig.5 On-Resistance Variation with Junction Temperature



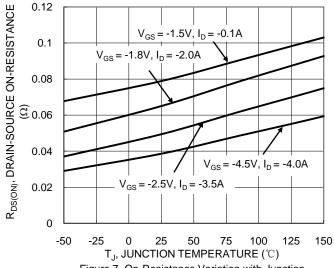


Figure 7. On-Resistance Variation with Junction Temperature

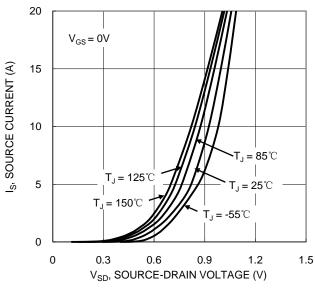


Figure 9. Diode Forward Voltage vs. Current

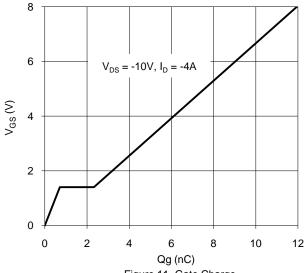


Figure 11. Gate Charge

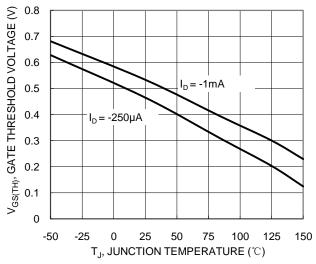
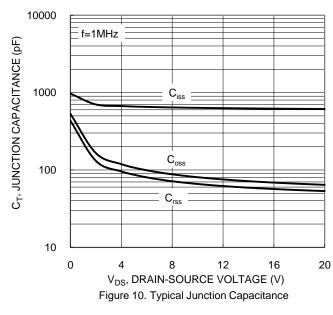


Figure 8. Gate Threshold Variation vs. Junction Temperature



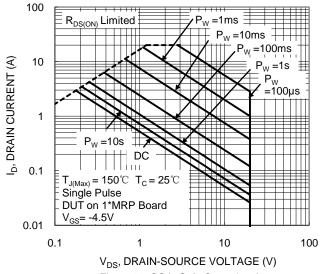


Figure 12. SOA, Safe Operation Area



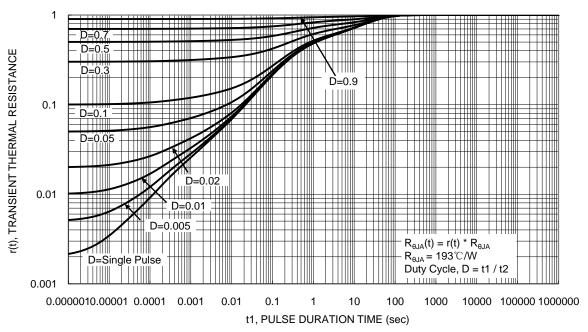


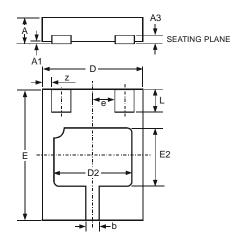
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

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

X2-DFN2015-3

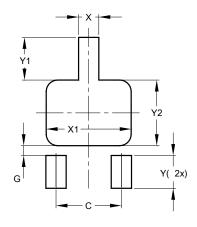


X2-DFN2015-3							
Dim	Min	Max	Тур				
Α	-	0.40	-				
A1	0	0.05	0.02				
A3	-	-	0.13				
b	0.20	0.30	0.25				
D	1.45	1.575	1.5				
D2	1.00	1.20	1.10				
е	-	-	0.50				
Е	1.95	2.075	2.00				
E2	0.70	0.90	0.80				
L	0.25	0.35	0.30				
z	-	-	0.125				
All Dimensions in mm							

Suggested Pad Layout

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

X2-DFN2015-3



X2-DFN2015-3					
Dimensions	Value (in mm)				
С	1.000				
G	0.150 0.310 1.300				
Х					
X1					
Υ	0.500				
Y1	0.650				
Y2	1.000				

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