

Product Summary

BV_{DSS}	$R_{DS(ON)} \text{ MAX}$	$I_D \text{ MAX}$ $T_A = +25^\circ\text{C}$
-30V	25m Ω @ $V_{GS} = -10\text{V}$	-6.8A
	38m Ω @ $V_{GS} = -4.5\text{V}$	-5.0A

Description

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

Applications

- DC-DC converters
- Power-management functions
- Load switches

Features

- Low Input Capacitance
- Low On-Resistance
- Fast Switching Speed
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.
<https://www.diodes.com/quality/product-definitions/>
- An automotive-compliant part is available under a separate datasheet ([DMP3028LFDEQ](#))

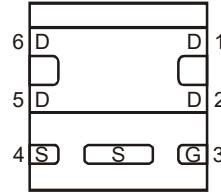
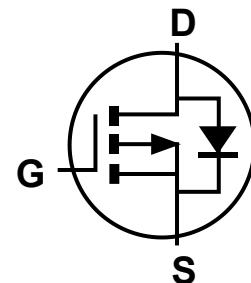
Mechanical Data

- Package: U-DFN2020-6
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 **e4**
- Weight: 0.0065 grams (Approximate)

U-DFN2020-6 (Type E)



Bottom View


 Pinout
Bottom View


Equivalent Circuit

Ordering Information (Note 4)

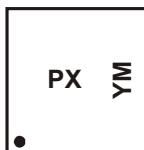
Orderable Part Number	Package	Packing	
		Qty.	Carrier
DMP3028LFDE-7	U-DFN2020-6 (Type E)	3,000	Tape & Reel
DMP3028LFDE-13	U-DFN2020-6 (Type E)	10,000	Tape & Reel

Notes:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
- 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

Site 1

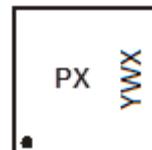


PX = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: M = 2025)
 M = Month (ex: 9 = September)

Date Code Key

Year	2012	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	Z	-	M	N	P	R	S	T	U	V	W	X
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



PX = Product Type Marking Code
 YWX = Date Code Marking
 Y = Year (ex: 5 = 2025)
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2012	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	2	-	5	6	7	8	9	0	1	2	3	4
Week	1-26			27-52			53					
Code	A-Z			a-z			z					
Internal Code	Sun		Mon		Tue		Wed		Thu		Fri	
Code	T		U		V		W		X		Y	

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	± 20	V
Continuous Drain Current (Note 5) $V_{GS} = -10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-6.8 -5.3	A
	$t < 10\text{s}$	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	-8.2 -6.6	A
Maximum Body Diode Forward Current (Note 5)			I_S	-2.5	A
Pulsed Drain Current (10 μs Pulse, Duty Cycle = 1%)			I_{DM}	-40	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic		Symbol	Value	Unit
Total Power Dissipation (Note 6)	$T_A = +25^\circ\text{C}$	P_D	0.66	W
	$T_A = +70^\circ\text{C}$		0.42	
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	189	$^\circ\text{C/W}$
	$t < 10\text{s}$		125	
Total Power Dissipation (Note 5)	$T_A = +25^\circ\text{C}$	P_D	2.03	W
	$T_A = +70^\circ\text{C}$		1.3	
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	61	$^\circ\text{C/W}$
	$t < 10\text{s}$		41	
Thermal Resistance, Junction to Case (Note 5)	$R_{\theta JC}$		9.3	
Operating and Storage Temperature Range	T_J, T_{STG}		-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	$V_{GS} = 0, I_D = -250\mu\text{A}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	-1	μA	$V_{DS} = -30\text{V}, V_{GS} = 0$
Gate-Source Leakage	I_{GS}	—	—	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(\text{TH})}$	-1.2	—	-2.4	V	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(\text{ON})}$	—	20	25	$\text{m}\Omega$	$V_{GS} = -10\text{V}, I_D = -7\text{A}$
		—	29	38		$V_{GS} = -4.5\text{V}, I_D = -6.2\text{A}$
Forward Transfer Admittance	$ Y_{fs} $	—	4.5	—	s	$V_{DS} = -5\text{V}, I_D = -7\text{A}$
Diode Forward Voltage	V_{SD}	—	-0.7	-1.2	V	$V_{GS} = 0, I_S = -2.1\text{A}$
On-State Drain Current (Note 8)	$I_{D(\text{ON})}$	-20	—	—	A	$V_{DS} \leq -5\text{V}, V_{GS} = -4.5\text{V}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	1241	1860	pF	$V_{DS} = -15\text{V}, V_{GS} = 0$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	147	220		
Reverse Transfer Capacitance	C_{rss}	—	110	165	Ω	$V_{DS} = 0, V_{GS} = 0, f = 1.0\text{MHz}$
Gate Resistance	R_G	—	15	30		
Total Gate Charge ($V_{GS} = -10\text{V}$)	Q_g	—	22	33	nC	$V_{DS} = -15\text{V}, I_D = -7\text{A}$
Total Gate Charge ($V_{GS} = -4.5\text{V}$)	Q_g	—	10.9	17		
Gate-Source Charge	Q_{gs}	—	3.5	6	ns	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Gate-Drain Charge	Q_{gd}	—	4.7	8		
Turn-On Delay Time	$t_{D(\text{on})}$	—	9.7	15	ns	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Turn-On Rise Time	t_r	—	17.1	26		
Turn-Off Delay Time	$t_{D(\text{off})}$	—	60.5	91	ns	$V_{GS} = -10\text{V}, V_{DD} = -15\text{V}$ $R_{GEN} = 6\Omega, I_D = -7\text{A}$
Turn-Off Fall Time	t_f	—	40.4	61		

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

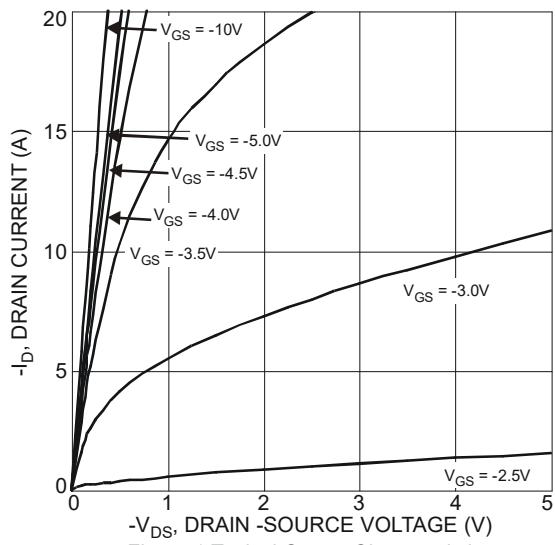


Figure 1 Typical Output Characteristics

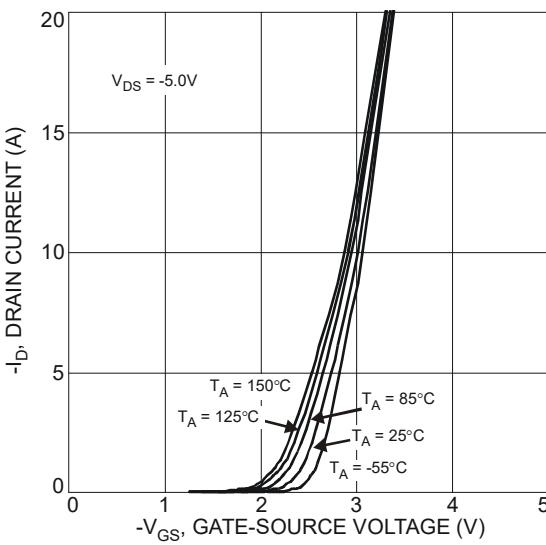


Figure 2 Typical Transfer Characteristics

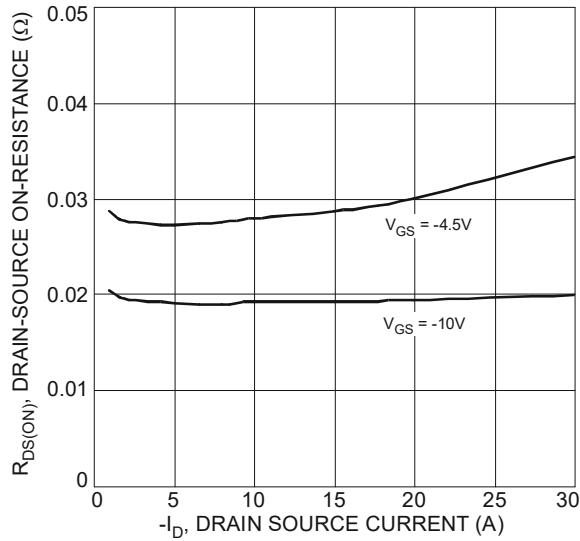


Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

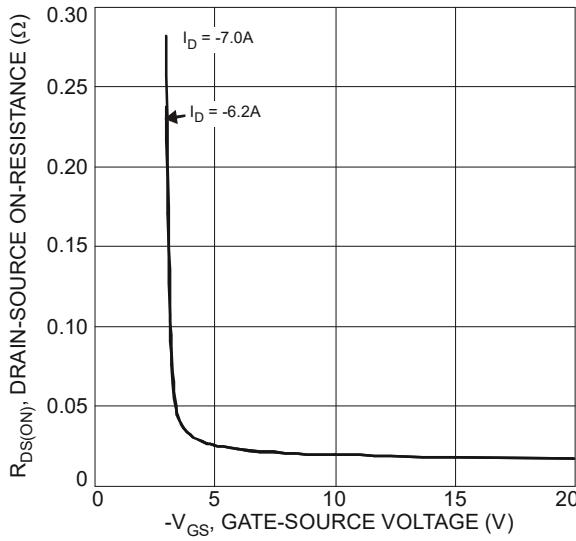


Figure 4 Typical Drain-Source On-Resistance
vs. Gate-Source Voltage

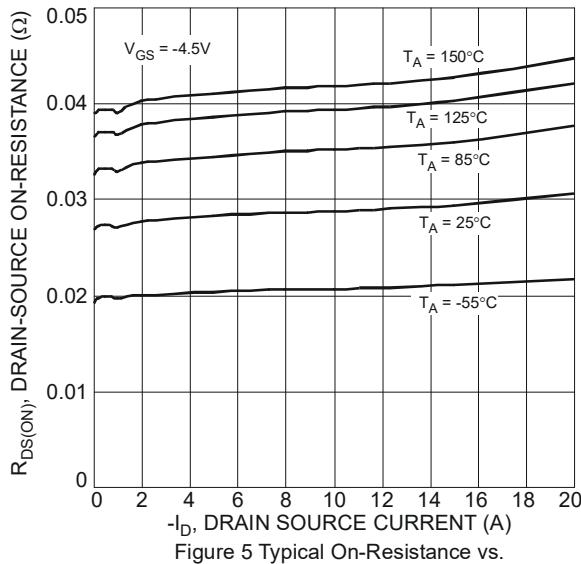


Figure 5 Typical On-Resistance vs.
Drain Current and Temperature

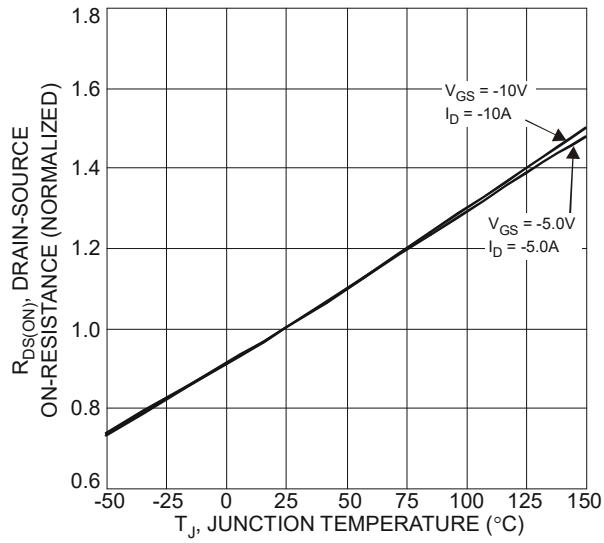


Figure 6 On-Resistance Variation with Temperature

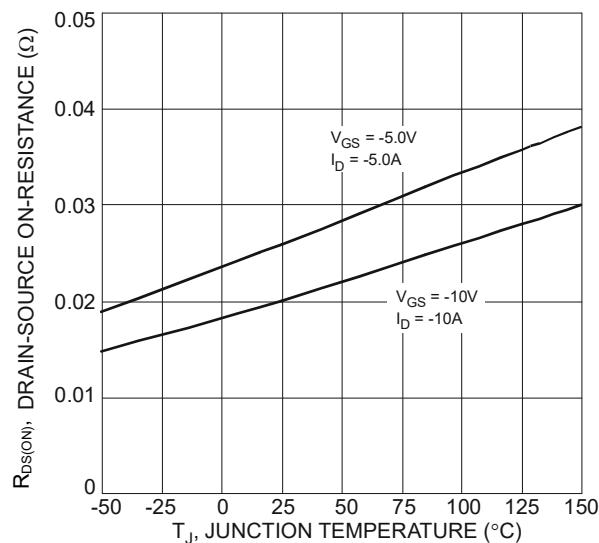


Figure 7 On-Resistance Variation with Temperature

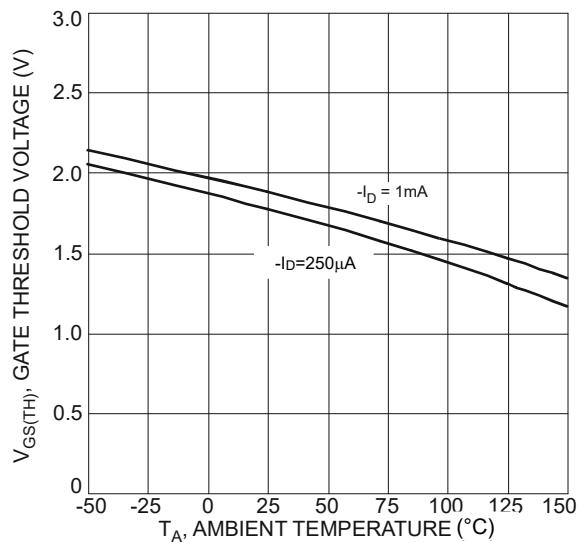


Figure 8 Gate Threshold Variation vs. Ambient Temperature

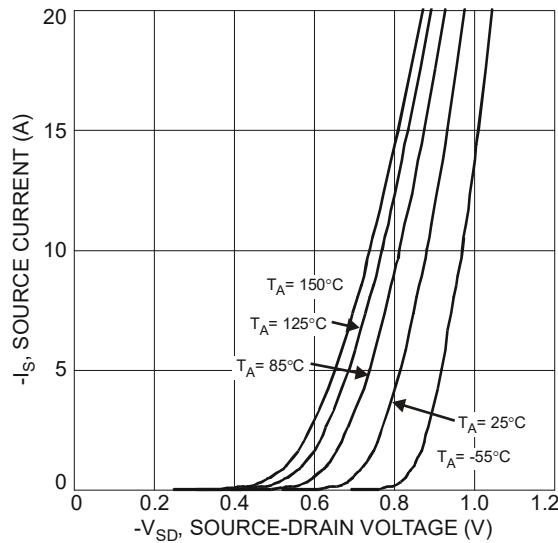


Figure 9 Diode Forward Voltage vs. Current

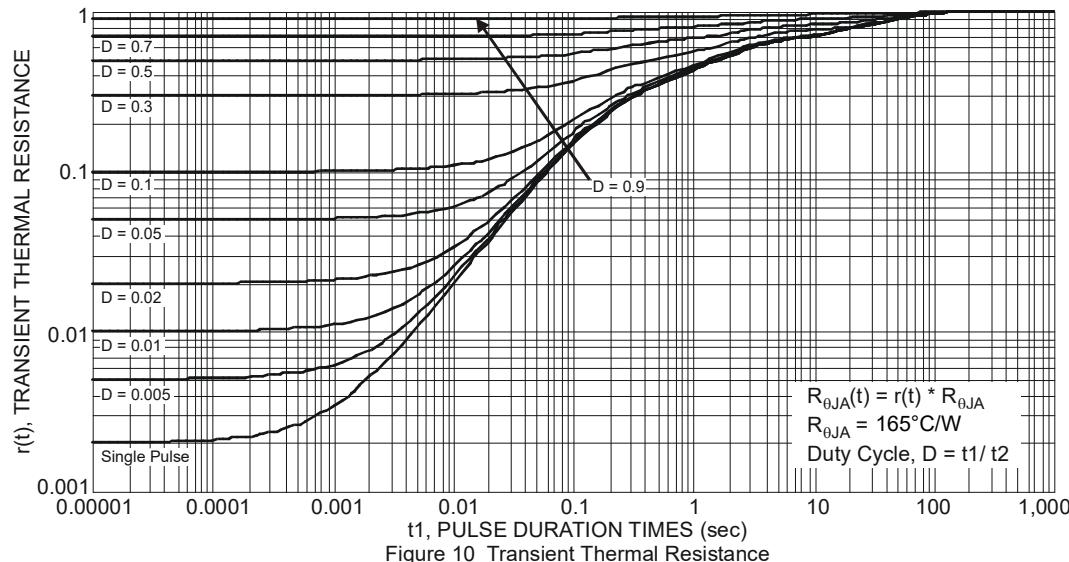
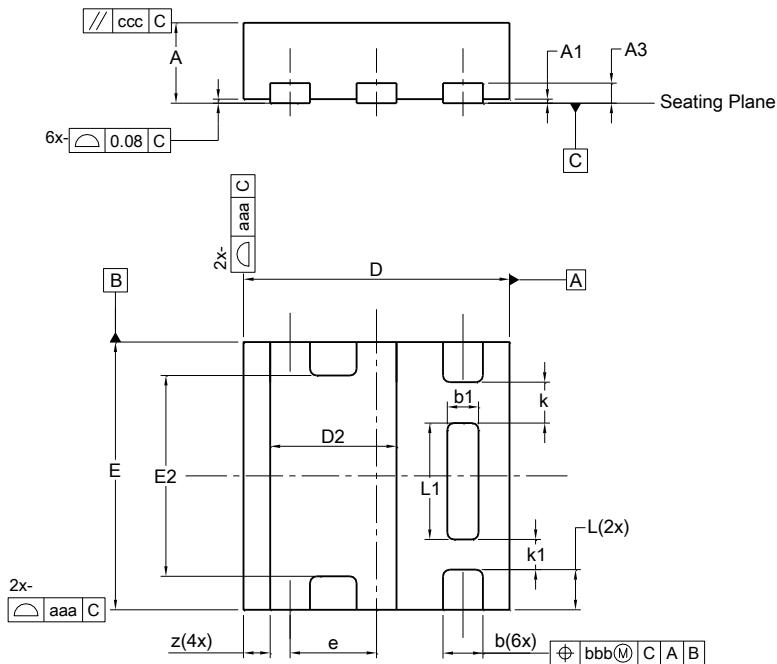


Figure 10 Transient Thermal Resistance

Package Outline Dimensions

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

U-DFN2020-6 (Type E)



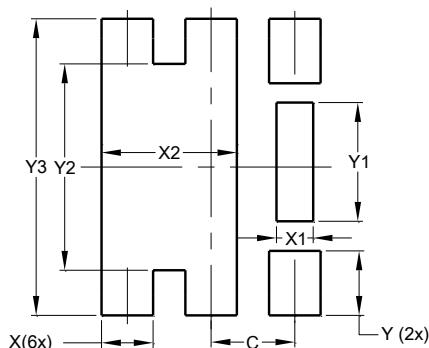
U-DFN2020-6 (Type E)			
Dim	Min	Max	Typ
A	0.57	0.63	0.60
A1	0.00	0.05	0.03
A3	—	—	0.15
b	0.25	0.35	0.30
b1	0.185	0.285	0.235
D	1.95	2.05	2.00
D2	0.85	1.05	0.95
E	1.95	2.05	2.00
E2	1.40	1.60	1.50
e	—	—	0.65
L	0.25	0.35	0.30
L1	0.82	0.92	0.87
k	—	—	0.305
k1	—	—	0.225
Z	—	—	0.20

All Dimensions in mm

Suggested Pad Layout

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

U-DFN2020-6 (Type E)



Dimensions	Value (in mm)
C	0.650
X	0.400
X1	0.285
X2	1.050
Y	0.500
Y1	0.920
Y2	1.600
Y3	2.300

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