Product Summary

$V_{(BR)DSS}$	$R_{DS(on)\ max}$	I_D $T_A = 25°C$
-30V	45mΩ @ V_{GS} = -10V	-4.3A
	65mΩ @ V_{GS} = -4.5V	-3.3A

Description

This new generation MOSFET has been 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
- Power Management Functions
- Analog Switch

Features

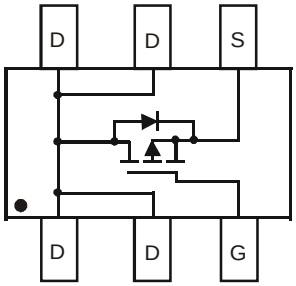
- Low Gate Threshold Voltage
- Low On-Resistance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT26
- Case Material – Molded Plastic, "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Weight: 0.008 grams (approximate)

SOT26

Top View



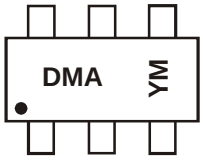
Top View
Internal Schematic

Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
DMP3056LDM-7	Commercial	SOT26	3000/Tape & Reel
DMP3056LDMQ-7	Automotive	SOT26	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 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.

Marking Information



DMA = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: V = 2008)
M = Month (ex: 9 = September)

Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	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 (@T_A = +25°C, unless otherwise specified.)

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 6) V_{GS} = 10V	Steady State	T_A = +25°C	I_D	-4.3	A
	t < 10s	T_A = +25°C	I_D	-5.8	A
Maximum Continuous Body Diode Forward Current (Note 6)			I_S	-2.3	A
Pulsed Drain Current (10µs pulse, duty cycle = 1%)			I_{DM}	-13	A

Thermal Characteristics

Characteristic		Symbol	Value	Units
Total Power Dissipation (Note 5)	T_A = +25°C	P_D	1.25	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State	$R_{\theta JA}$	100	°C/W
Total Power Dissipation (Note 6)	T_A = +25°C	P_D	1.5	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State	$R_{\theta JA}$	86	°C/W
Thermal Resistance, Junction to Case		$R_{\theta JC}$	15.6	
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
STATIC PARAMETERS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	—	—	V	V_{GS} = 0V, I_D = -250µA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	-1	µA	V_{GS} = 0V, V_{DS} = -30V
Gate-Body Leakage Current	I_{GSS}	—	—	±100 ±800	nA	V_{GS} = ±20V, V_{DS} = 0V V_{GS} = ±25V, V_{DS} = 0V
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	—	-2.1	V	V_{GS} = V_{DS}, I_D = -250µA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	—	— —	45 65	mΩ	V_{GS} = -10V, I_D = -5A V_{GS} = -4.5V, I_D = -4.2A
Forward Transconductance	g_{FS}	—	8	—	S	V_{DS} = -10V, I_D = -4.3A
Diode Forward Voltage	V_{SD}	—	—	-1.2	V	V_{GS} = 0V, I_S = -1.7A
DYNAMIC PARAMETERS (Note 8)						
Input Capacitance	C_{iss}	—	948	—	pF	V_{GS} = 0V, V_{DS} = -25V, f = 1.0MHz
Output Capacitance	C_{oss}	—	105	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	100	—	pF	
SWITCHING CHARACTERISTICS (Note 8)						
Total Gate Charge	Q_G	—	10.1	—	nC	V_{DS} = -15V, V_{GS} = -4.5V, I_D = -6A
	Q_G	—	21.1	—	nC	V_{DS} = -15V, V_{GS} = -10V, I_D = -6A
Gate-Source Charge	Q_{GS}	—	2.8	—		
Gate-Drain Charge	Q_{GD}	—	3.2	—		
Gate Resistance	R_g	—	13.15	—	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1MHz
Turn-On Delay Time	$t_{d(on)}$	—	10.2	—	ns	V_{DS} = -15V, V_{GS} = -10V, I_D = -1A, R_G = 6.0Ω
Rise Time	t_r	—	6.6	—		
Turn-Off Delay Time	$t_{d(off)}$	—	50.1	—		
Fall Time	t_f	—	22.3	—		

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 pad
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to product testing.

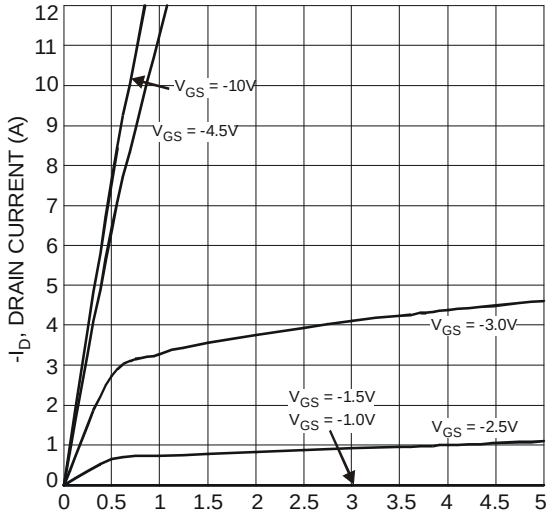


Fig. 1 Typical Output Characteristics

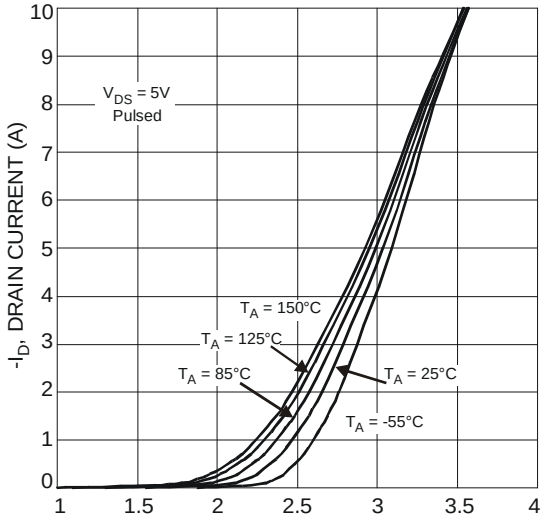


Fig. 2 Typical Transfer Characteristics

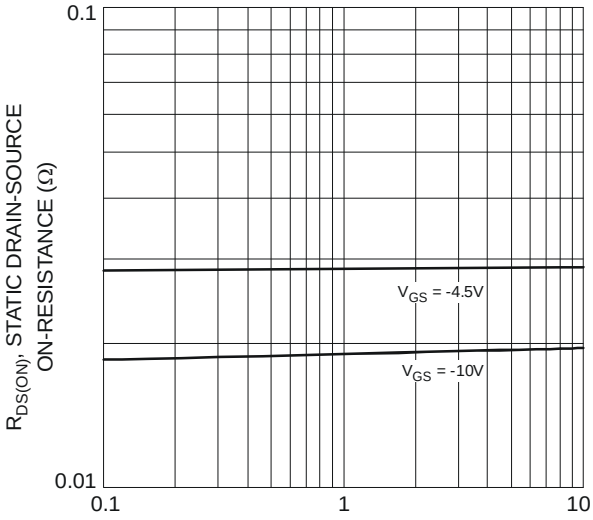


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

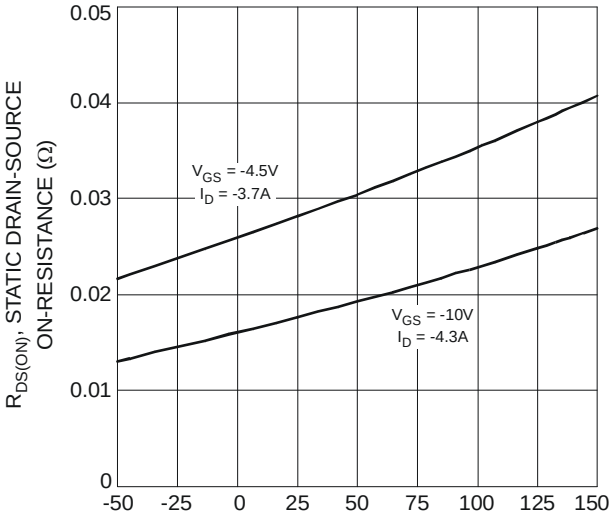


Fig. 4 Static Drain-Source On-Resistance vs. Ambient Temperature

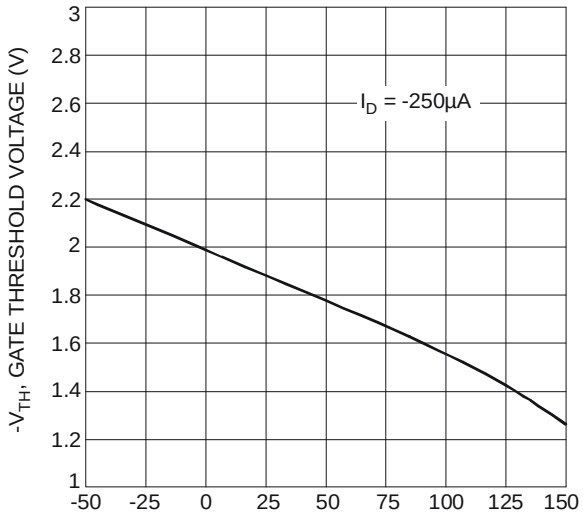


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

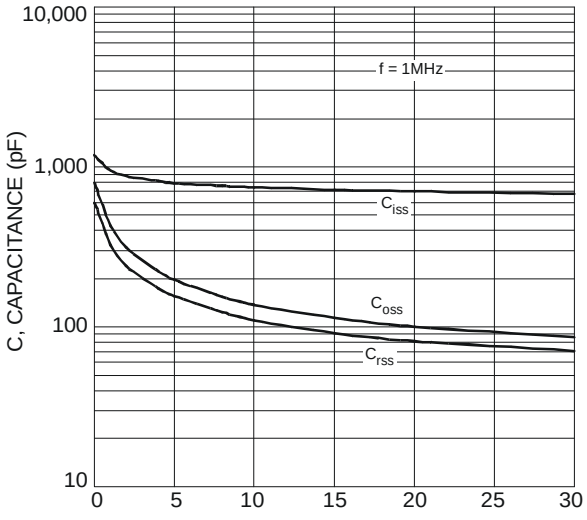


Fig. 6 Typical Total Capacitance

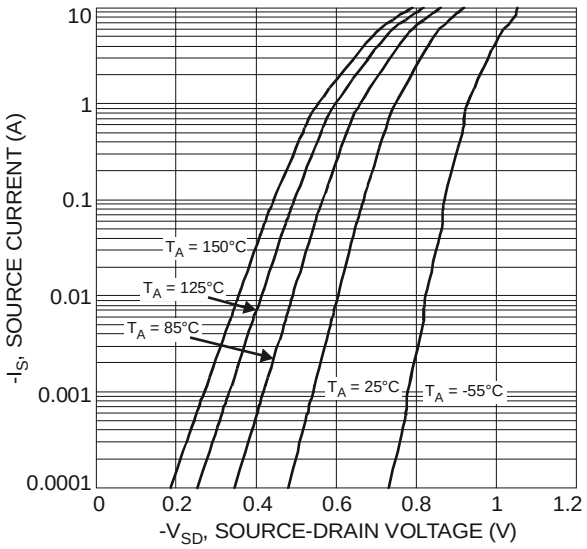


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

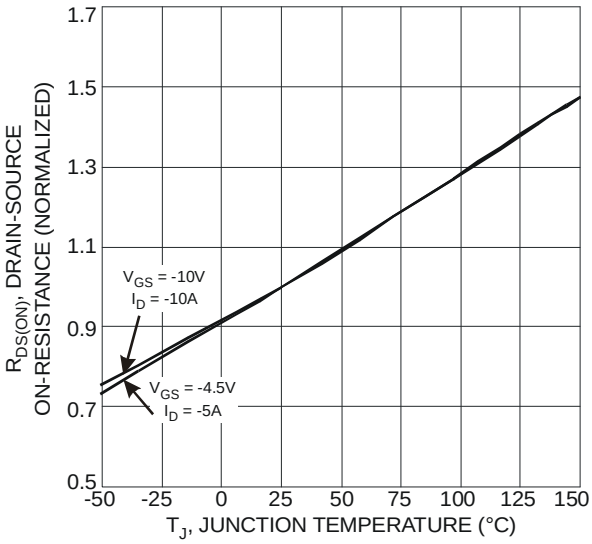


Fig. 8 On-Resistance Variation with Temperature

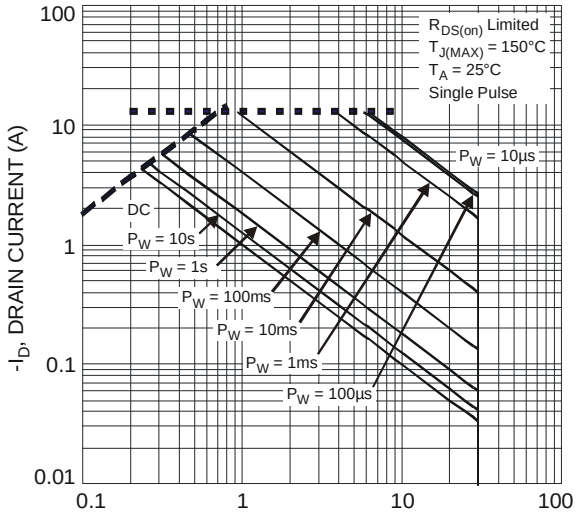


Fig. 9 Safe Operation Area

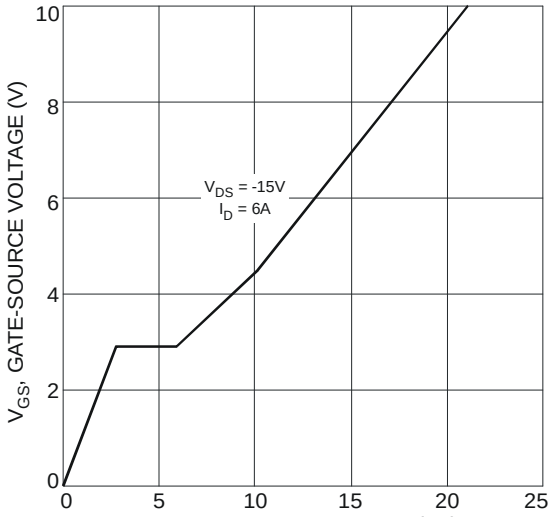


Fig. 10 Gate-Charge Characteristics

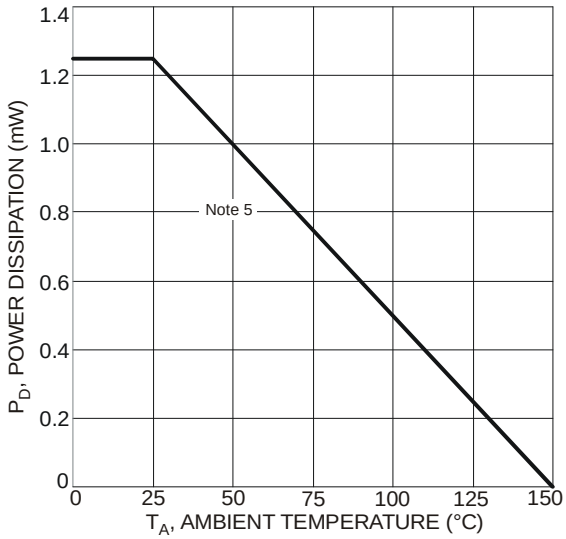


Fig. 11 Power Dissipation vs. Ambient Temperature

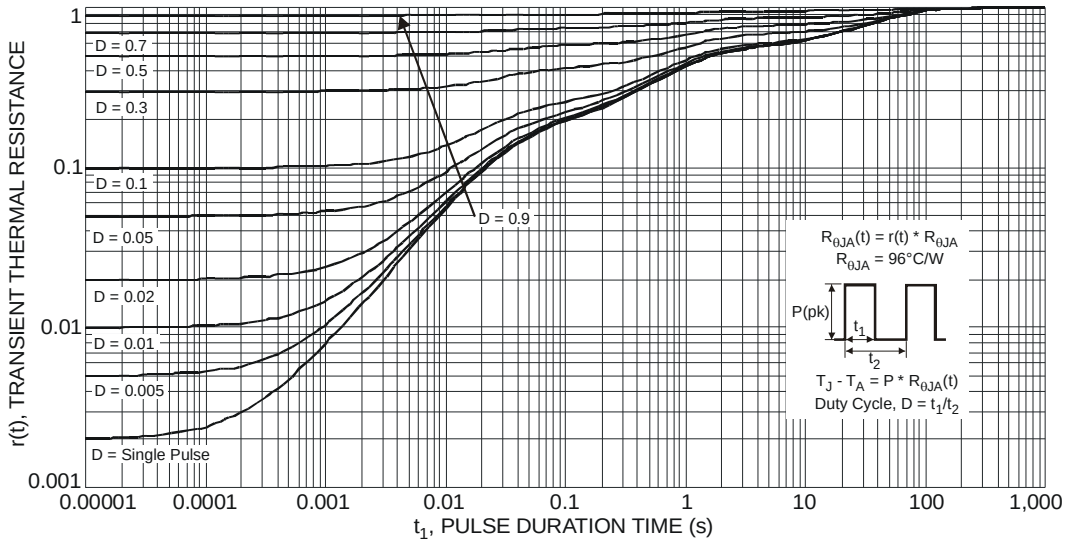
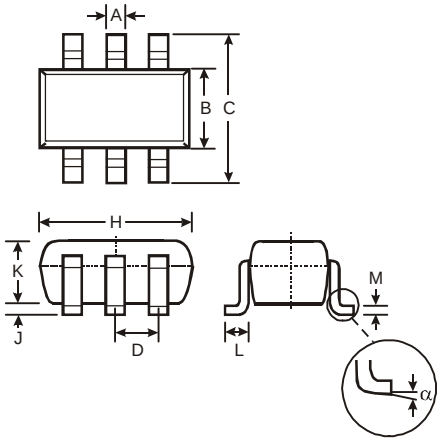


Fig. 12 Transient Thermal Response

Package Outline Dimensions

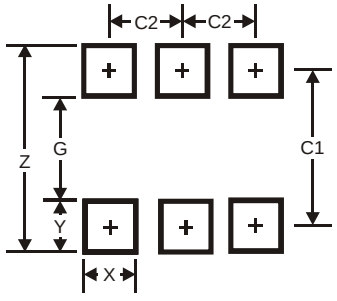
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT26			
Dim	**Min**	**Max**	**Typ**
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout

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



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

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