

## Features

- Low  $R_{DS(ON)}$ :
  - 45mΩ @  $V_{GS} = -10V$
  - 65mΩ @  $V_{GS} = -4.5V$
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

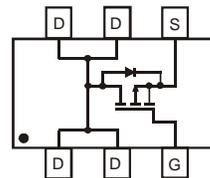
## Mechanical Data

- Case: SOT-26
- 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
- Marking Information: See Page 4
- Ordering Information: See page 4
- Weight: 0.008 grams (approximate)

SOT-26



TOP VIEW



TOP VIEW  
Internal Schematic

## Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	-30	V
Gate-Source Voltage	$V_{GSS}$	±20	V
Drain Current (Note 1) Continuous ( $V_{GS} = -10V$ )	$I_D$	-5 -4.2	A
		$T_A = 25^\circ C$ $T_A = 70^\circ C$	
Pulsed Drain Current (Note 2)	$I_{DM}$	-13	A

## Thermal Characteristics

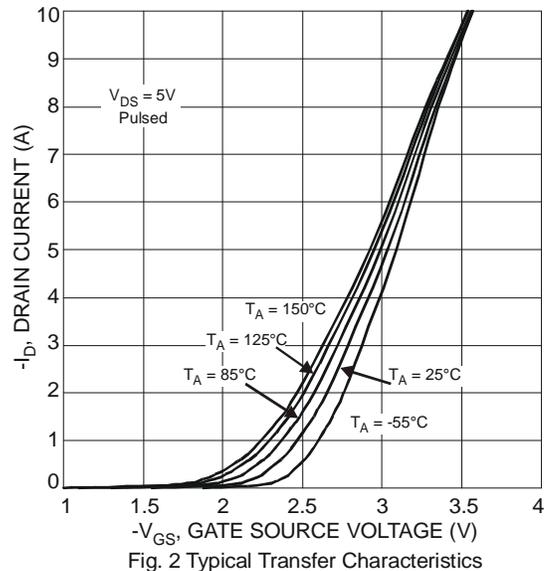
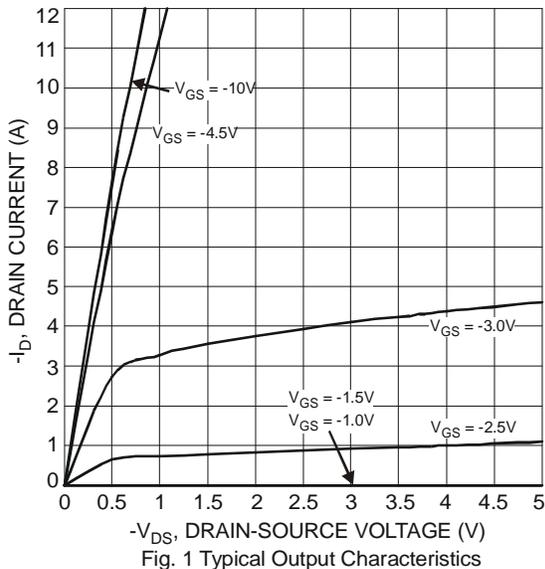
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	1.25	W
Thermal Resistance, Junction to Ambient (Note 1); Steady-State	$R_{\theta JA}$	100	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
1. Device mounted on 1"x1", FR-4 PC board on 0.1in.<sup>2</sup> pads on 2 oz. Copper pads and test pulse width  $t \leq 10s$ .
  2. Repetitive Rating, pulse width limited by junction temperature.
  3. No purposefully added lead.
  4. Diodes Inc's "Green" policy can be found on our website at [http://www.diodes.com/products/lead\\_free/index.php](http://www.diodes.com/products/lead_free/index.php).

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>STATIC PARAMETERS</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	-30	—	—	V	V <sub>GS</sub> = 0V, I <sub>D</sub> = -250μA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	-1	μA	T <sub>J</sub> = 25°C V <sub>GS</sub> = 0V, V <sub>DS</sub> = -30V
Gate-Body Leakage Current	I <sub>GSS</sub>	—	—	±100 ±800	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V V <sub>GS</sub> = ±25V, V <sub>DS</sub> = 0V
Gate Threshold Voltage	V <sub>GS(th)</sub>	-1.0	—	-2.1	V	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = -250μA
Static Drain-Source On-Resistance (Note 5)	R <sub>DS(ON)</sub>	—	—	45 65	mΩ	V <sub>GS</sub> = -10V, I <sub>D</sub> = -5A V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -4.2A
Forward Transconductance (Note 5)	g <sub>FS</sub>	—	8	—	S	V <sub>DS</sub> = -10V, I <sub>D</sub> = -4.3A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	—	—	-1.2	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = -1.7A
<b>DYNAMIC PARAMETERS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	—	722	—	pF	V <sub>GS</sub> = 0V, V <sub>DS</sub> = -25V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	114	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	92	—	pF	
Gate Resistance	R <sub>G</sub>	—	3.3	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V f = 1.0MHz
<b>SWITCHING CHARACTERISTICS</b>						
Total Gate Charge	Q <sub>G</sub>	—	10.1	—	nC	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -6A
	Q <sub>G</sub>	—	21.1	—	nC	
Gate-Source Charge	Q <sub>GS</sub>	—	2.8	—	nC	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -6A
Gate-Drain Charge	Q <sub>GD</sub>	—	3.2	—	nC	
Gate Resistance	R <sub>g</sub>	—	13.15	—	Ω	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Turn-On Delay Time	t <sub>d(on)</sub>	—	6.4	—	ns	V <sub>DS</sub> = -15V, V <sub>GS</sub> = -10V, I <sub>D</sub> = -1A, R <sub>G</sub> = 6.0Ω
Rise Time	t <sub>r</sub>	—	5.3	—		
Turn-Off Delay Time	t <sub>d(off)</sub>	—	26.5	—		
Fall Time	t <sub>f</sub>	—	14.7	—		

Notes: 5. Test pulse width t = 300μs.  
6. Guaranteed by design. Not subject to production testing.



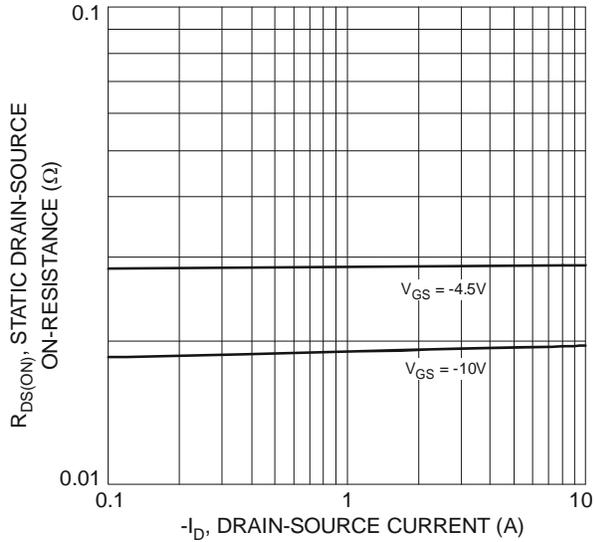


Fig. 3 On-Resistance vs. Drain Current & Gate Voltage

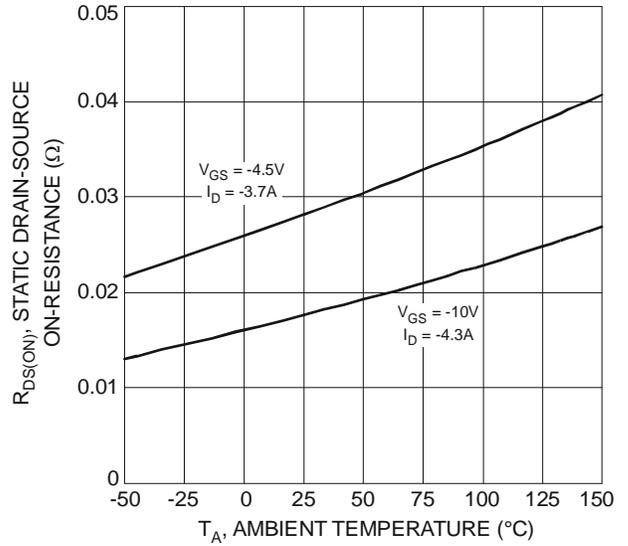


Fig. 4 Static Drain-Source On-Resistance vs. Ambient Temperature

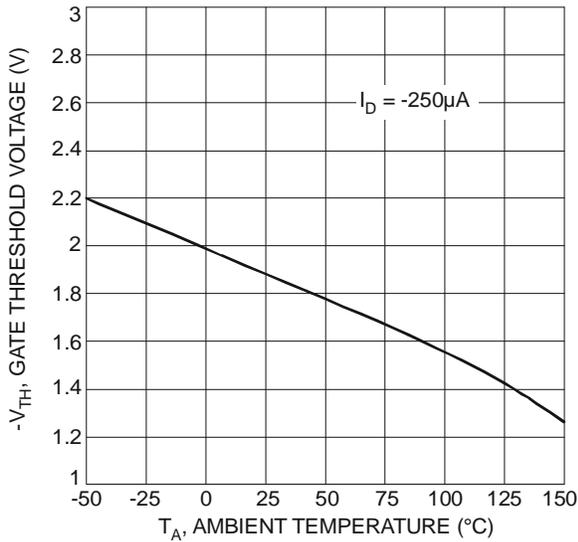


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

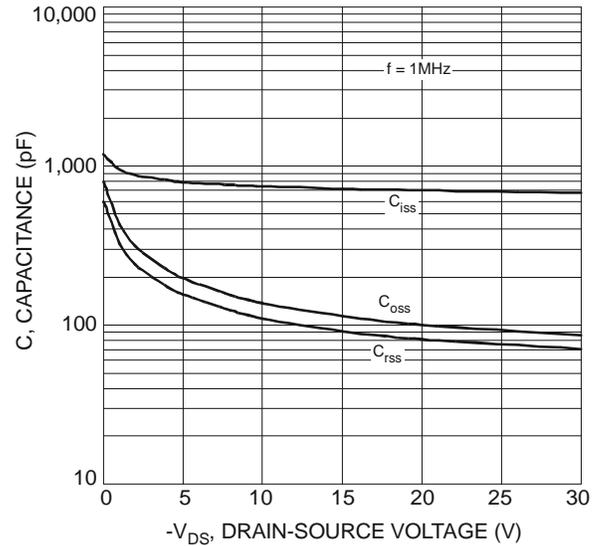


Fig. 6 Typical Total Capacitance

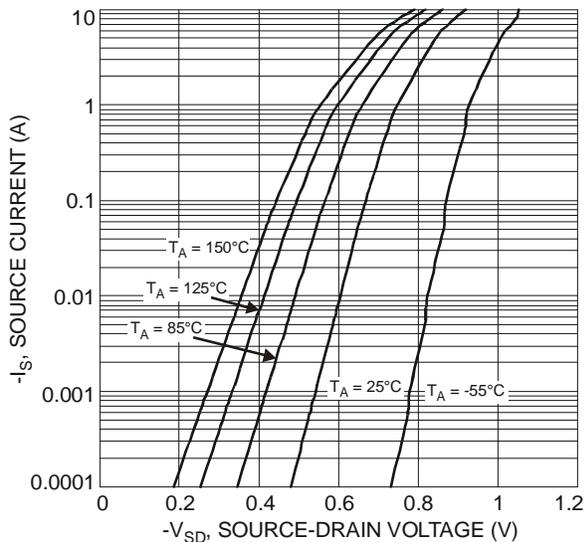


Fig. 7 Reverse Drain Current vs. Source-Drain Voltage

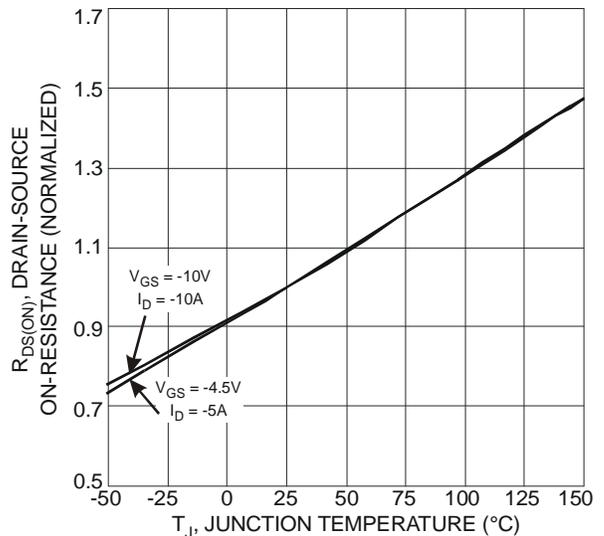


Fig. 8 On-Resistance Variation with Temperature

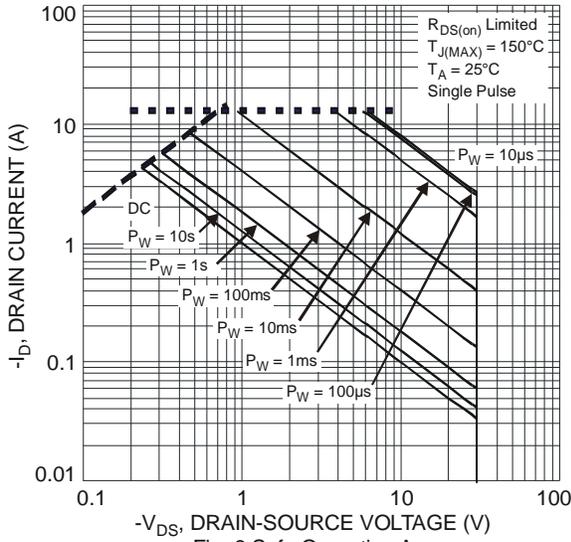


Fig. 9 Safe Operation Area

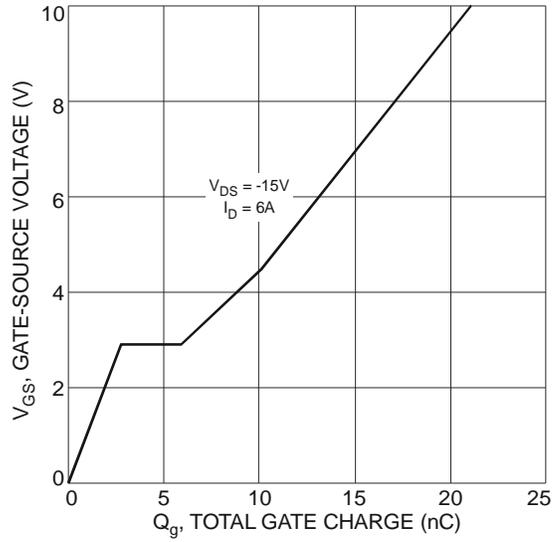


Fig. 10 Gate-Charge Characteristics

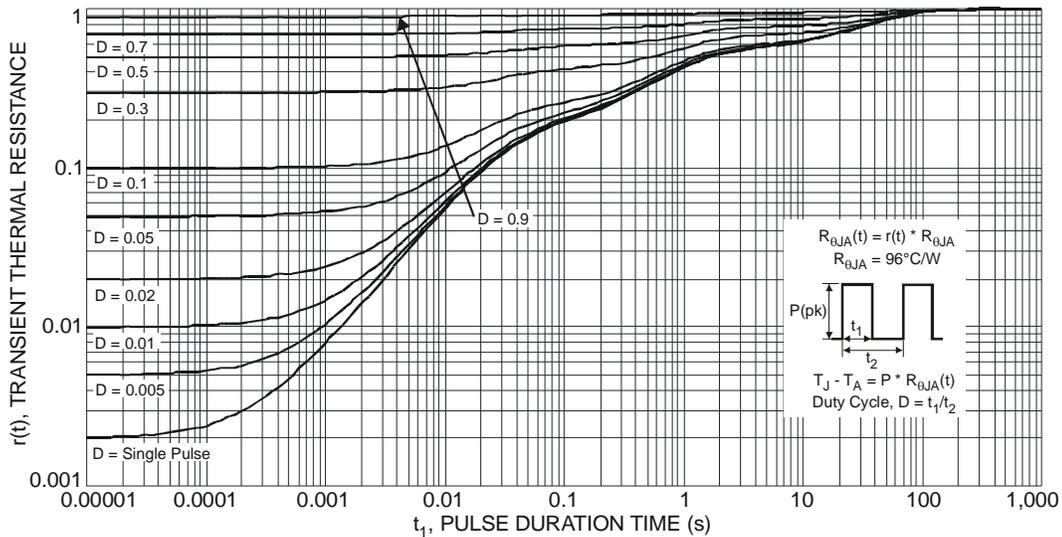


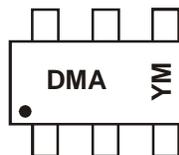
Fig. 11 Transient Thermal Response

**Ordering Information** (Note 7)

Part Number	Case	Packaging
DMP3056LDM-7	SOT-26	3000/Tape & Reel

Notes: 7. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**



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

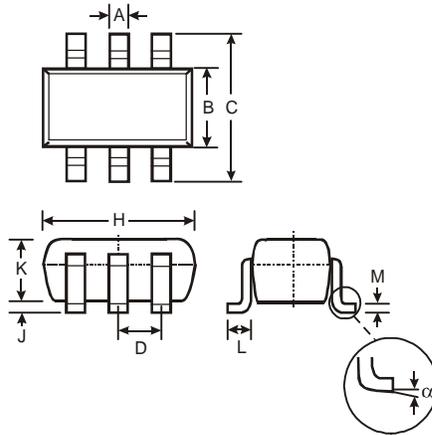
Date Code Key

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

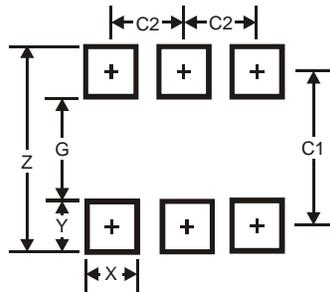
**Package Outline Dimensions**



SOT-26			
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**



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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