

## Features

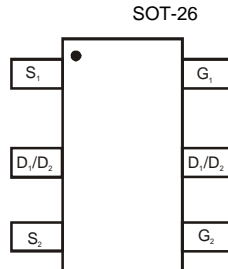
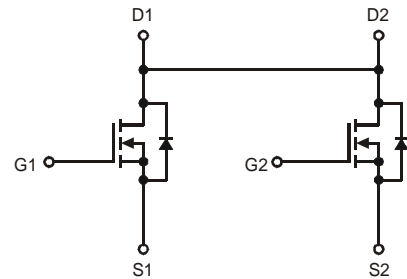
- Low Gate Charge
- Low  $R_{DS(ON)}$ :
  - $28m\Omega$  @  $V_{GS} = 4.5V$
  - $32m\Omega$  @  $V_{GS} = 2.5V$
  - $40m\Omega$  @  $V_{GS} = 1.8V$
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**

## Mechanical Data

- Case: SOT-26
- Case Material - Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- 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)



TOP VIEW


 TOP VIEW  
Pin Configuration


Equivalent Circuit

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	20	V
Gate-Source Voltage	$V_{GSS}$	$\pm 8$	V
Drain Current (Note 1) Continuous	$I_D$	4.2	A
		3.2	A
Pulsed Drain Current (Note 2)	$I_{DM}$	30	A

## Thermal Characteristics @ $T_A = 25^\circ C$ unless otherwise specified

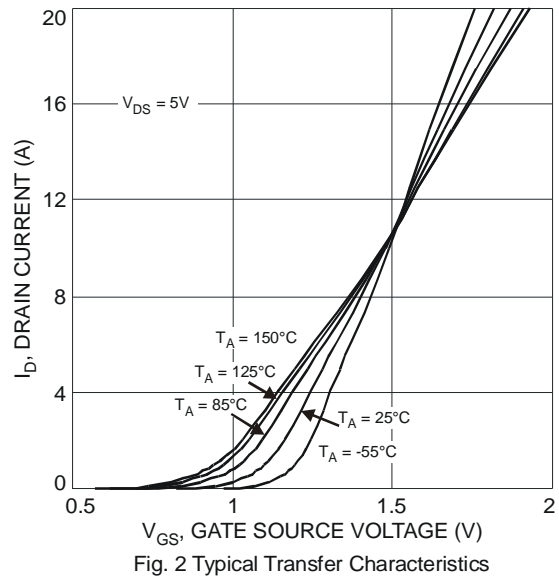
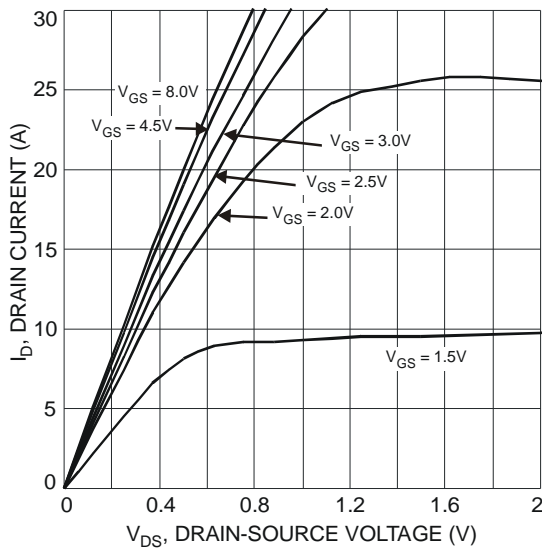
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	$P_D$	0.98	W
Thermal Resistance, Junction to Ambient (Note 1) $t \leq 10s$	$R_{\theta JA}$	128	$^\circ C/W$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$

- Notes:
1. Device mounted on 1"x1", FR-4 PC board with 2 oz. Copper 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
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	20	—	—	V	I <sub>D</sub> = 250μA, V <sub>GS</sub> = 0V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	—	—	1	μA	V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V
Gate-Body Leakage Current	I <sub>GSS</sub>	—	—	±100	nA	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±8V
Gate Threshold Voltage	V <sub>GS(th)</sub>	0.5	—	0.9	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance (Note 5)	R <sub>DS (ON)</sub>	—	22	28	mΩ	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 8.2A
			25	32		V <sub>GS</sub> = 2.5V, I <sub>D</sub> = 3.3A
			31	40		V <sub>GS</sub> = 1.8V, I <sub>D</sub> = 2.0A
Forward Transfer Admittance	Y <sub>FS</sub>	—	7	—	S	V <sub>DS</sub> = 10V, I <sub>D</sub> = 4A
Diode Forward Voltage (Note 5)	V <sub>SD</sub>	—	0.7	0.9	V	I <sub>S</sub> = 2.25A, V <sub>GS</sub> = 0V
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C <sub>iss</sub>	—	856	—	pF	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	—	83	—	pF	
Reverse Transfer Capacitance	C <sub>rss</sub>	—	78	—	pF	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz
Gate Resitance	R <sub>G</sub>	—	1.32	—	Ω	
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q <sub>g</sub>	—	8.3	—	nC	V <sub>GS</sub> = 4.5V, V <sub>DS</sub> = 10V, I <sub>D</sub> = 8.2A
Gate-Source Charge	Q <sub>gs</sub>	—	1.3	—	nC	
Gate-Drain Charge	Q <sub>gd</sub>	—	3.1	—	nC	
Turn-On Delay Time	t <sub>D(on)</sub>	—	8.4	—	ns	V <sub>DD</sub> = 10V, V <sub>GS</sub> = 4.5V, R <sub>L</sub> = 10Ω, R <sub>G</sub> = 6Ω
Turn-On Rise Time	t <sub>r</sub>	—	8.2	—	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	—	40.4	—	ns	
Turn-Off Fall Time	t <sub>f</sub>	—	8.9	—	ns	

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



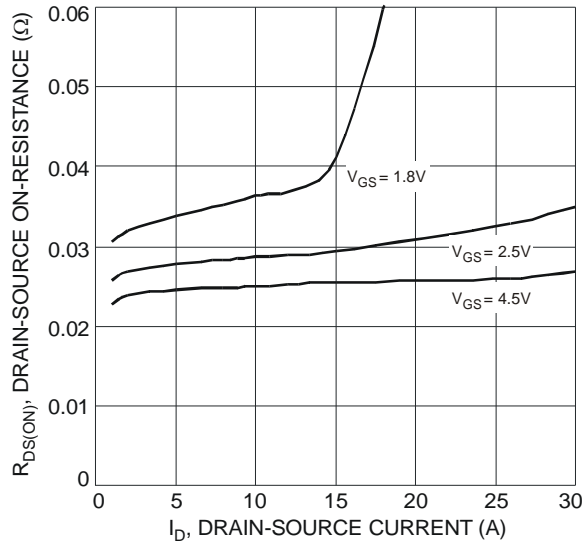


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

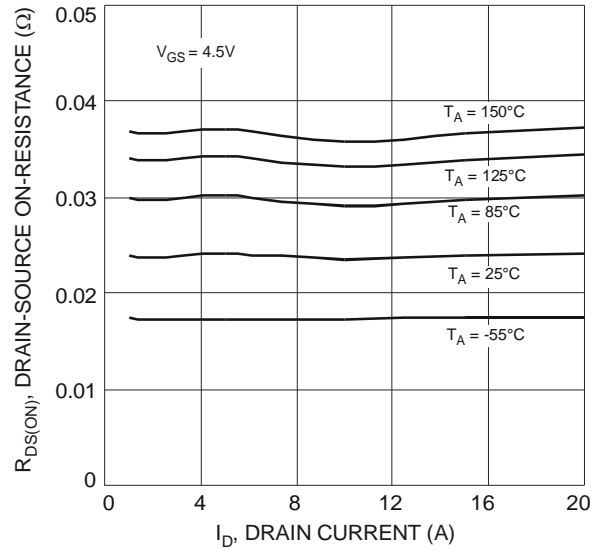


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

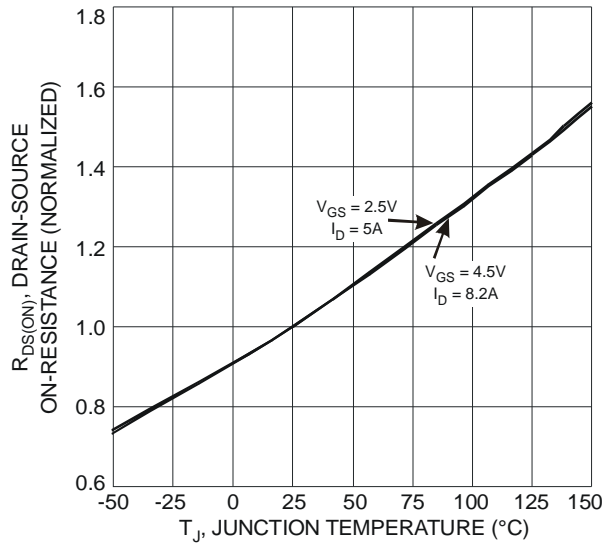


Fig. 5 On-Resistance Variation with Temperature

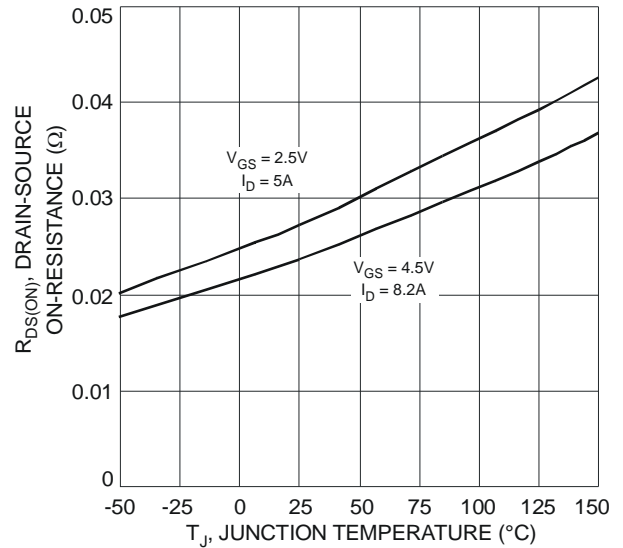


Fig. 6 On-Resistance Variation with Temperature

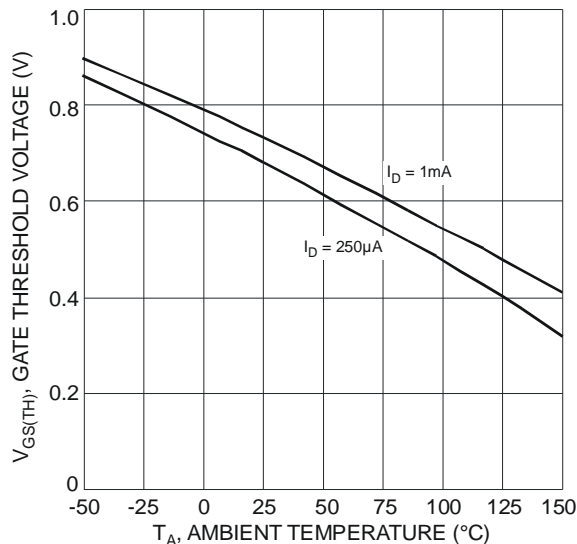


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

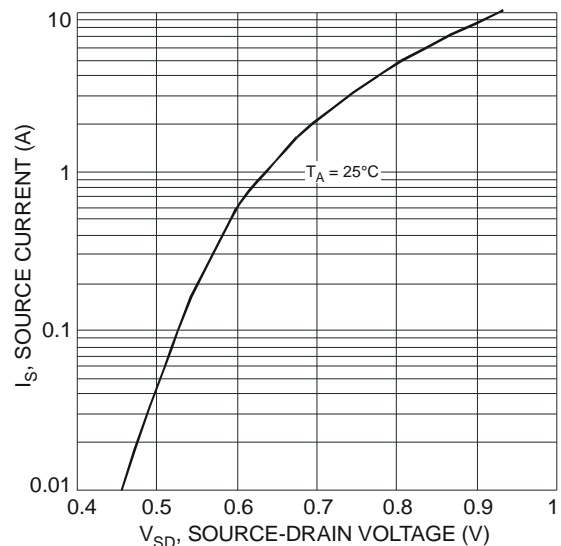


Fig. 8 Diode Forward Voltage vs. Current

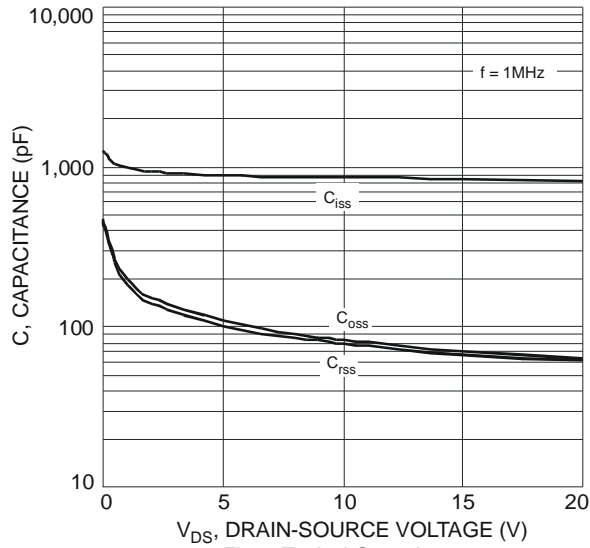


Fig. 9 Typical Capacitance

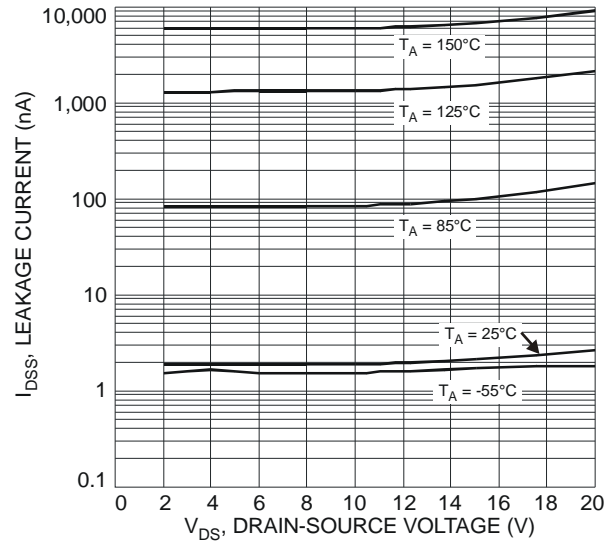


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

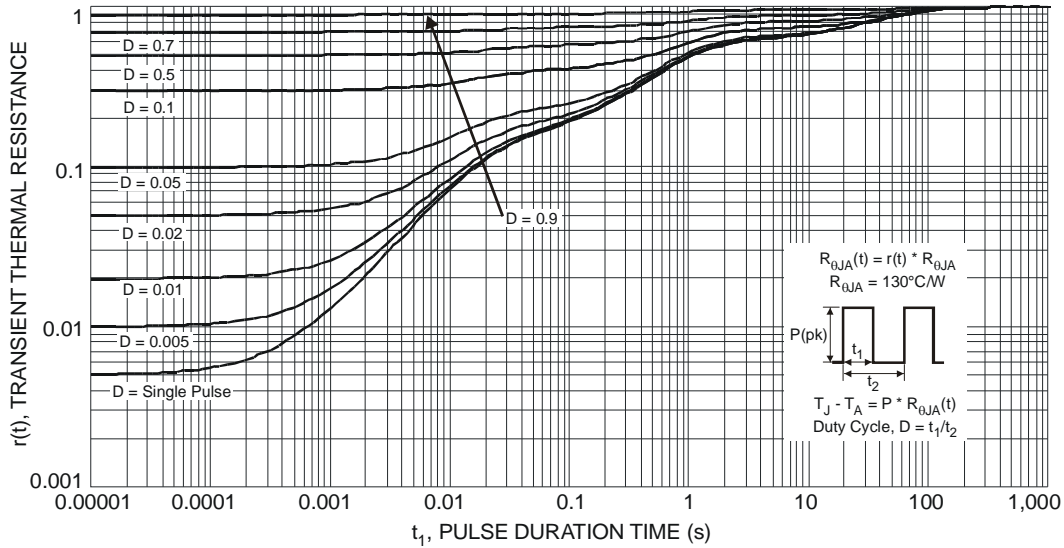


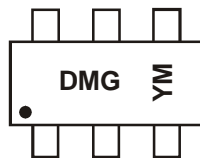
Fig. 11 Transient Thermal Response

## Ordering Information (Note 7)

Part Number	Case	Packaging
DMG9926UDM-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



DMG = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: W = 2009)  
 M = Month (ex: 9 = September)

### Date Code Key

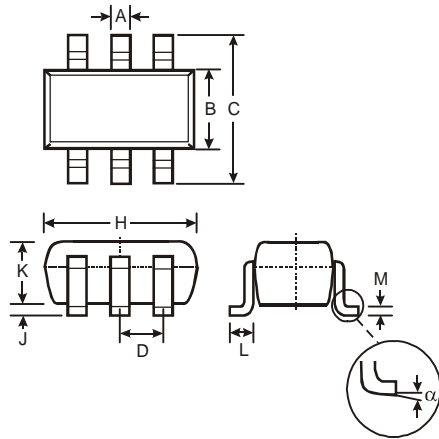
Date Code Key

Year	2008	2009	2010	2011	2012	2013	2014	2015
Code	V	W	X	Y	Z	A	B	C

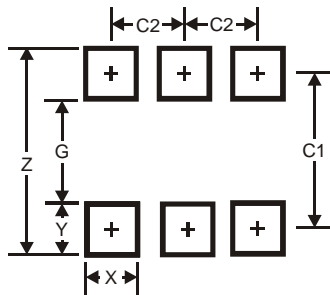
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

# 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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