

Features

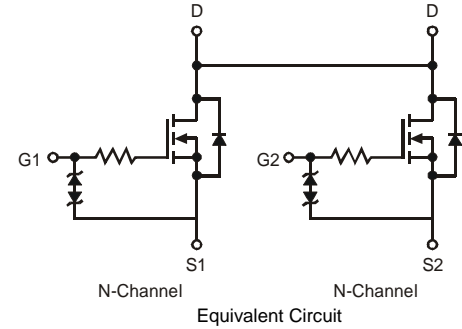
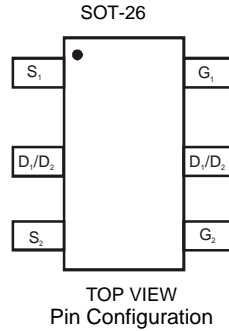
- Low Gate Charge
- Low $R_{DS(ON)}$:
 - $24m\Omega$ @ $V_{GS} = 4.5V$
 - $28m\Omega$ @ $V_{GS} = 2.5V$
 - $34m\Omega$ @ $V_{GS} = 1.8V$
- Low Input/Output Leakage
- **ESD Protected up to 2kV HBM**
- **Lead Free By Design/RoHS Compliant (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 4)**



ESD PROTECTED TO 2kV



TOP VIEW



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: 0.0008 grams (approximate)

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_{GS}	± 12	V
Drain Current (Note 1) Continuous	I_D	6.5	A
		5.2	A
Pulsed Drain Current (Note 2)	I_{DM}	30	A

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

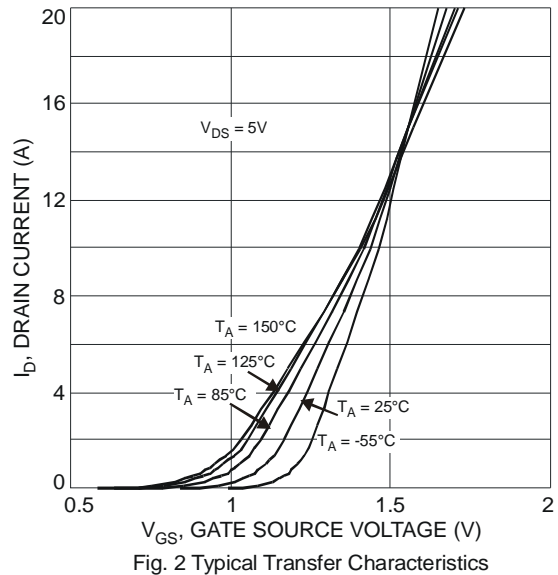
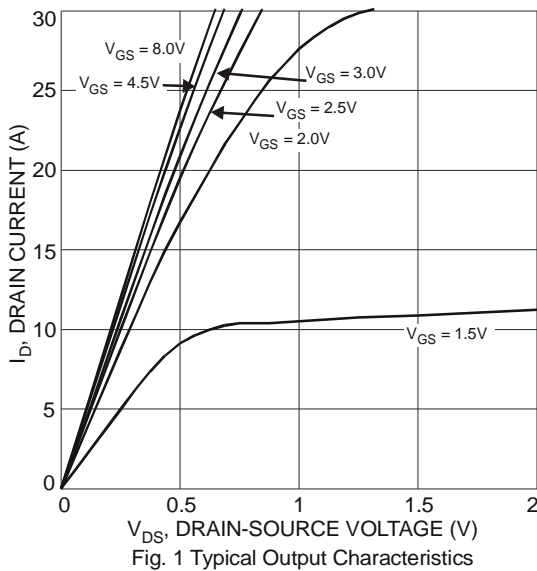
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 1)	P_D	0.85	W
Thermal Resistance, Junction to Ambient (Note 1) $t \leq 10s$	$R_{\theta JA}$	147	$^\circ C/W$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

- 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.

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	$I_D = 250\mu\text{A}, V_{GS} = 0\text{V}$
Zero Gate Voltage Drain Current	I_{DSS}	—	—	1	μA	$V_{DS} = 20\text{V}, V_{GS} = 0\text{V}$
Gate-Body Leakage Current	I_{GSS}	—	—	± 10	μA	$V_{DS} = 0\text{V}, V_{GS} = \pm 10\text{V}$
Gate-Source Breakdown Voltage	BV_{SGS}	± 12	-	-	V	$V_{DS} = 0\text{V}, I_G = \pm 250\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	0.9	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance (Note 5)	$R_{DS(on)}$	—	17 20 26	24 28 34	$\text{m}\Omega$	$V_{GS} = 4.5\text{V}, I_D = 6.5\text{A}$ $V_{GS} = 2.5\text{V}, I_D = 5.5\text{A}$ $V_{GS} = 1.8\text{V}, I_D = 3.5\text{A}$
Forward Transfer Admittance	$ Y_{FS} $	—	8	—	S	$V_{DS} = 10\text{V}, I_D = 5\text{A}$
Diode Forward Voltage (Note 5)	V_{SD}	—	0.7	1.0	V	$I_S = 2.25\text{A}, V_{GS} = 0\text{V}$
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	—	143	—	pF	$V_{DS} = 10\text{V}, V_{GS} = 0\text{V}$ $f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	74	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	29	—	pF	
Gate Resitance	R_G	—	202	—	Ω	$V_{GS} = 0\text{V}, V_{DS} = 0\text{V}, f = 1\text{MHz}$
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q_g	—	8.8	—	nC	$V_{GS} = 4.5\text{V}, V_{DS} = 10\text{V}, I_D = 6.5\text{A}$
Gate-Source Charge	Q_{gs}	—	1.4	—	nC	
Gate-Drain Charge	Q_{gd}	—	3.0	—	nC	
Turn-On Delay Time	$t_{D(on)}$	—	53	—	ns	$V_{DD} = 10\text{V}, V_{GS} = 4.5\text{V},$ $R_L = 10\Omega, R_G = 6\Omega$
Turn-On Rise Time	t_r	—	78	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	562	—	ns	
Turn-Off Fall Time	t_f	—	234	—	ns	

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



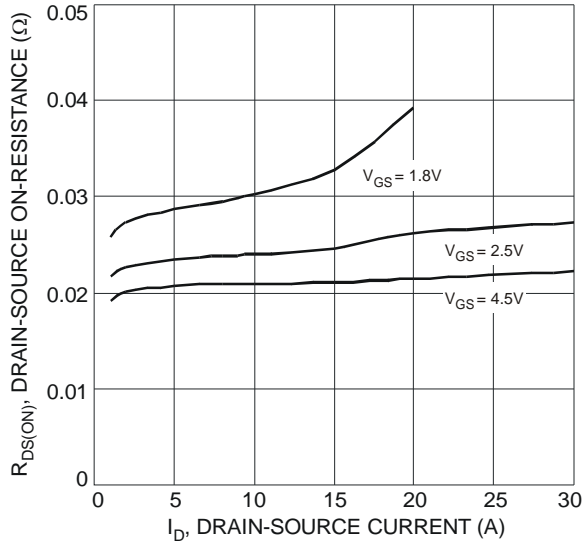


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

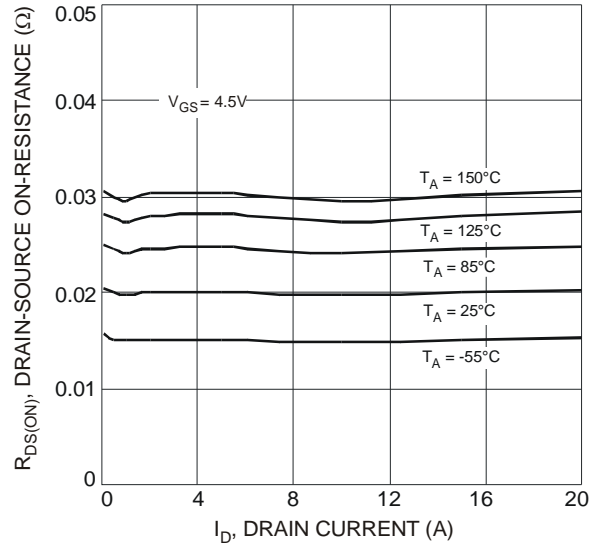


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

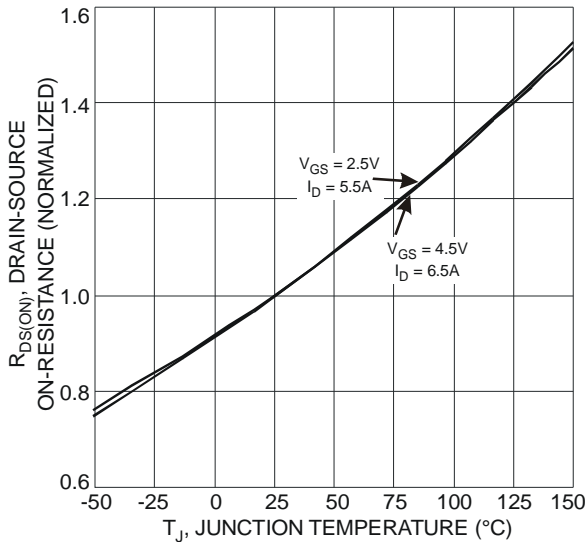


Fig. 5 On-Resistance Variation with Temperature

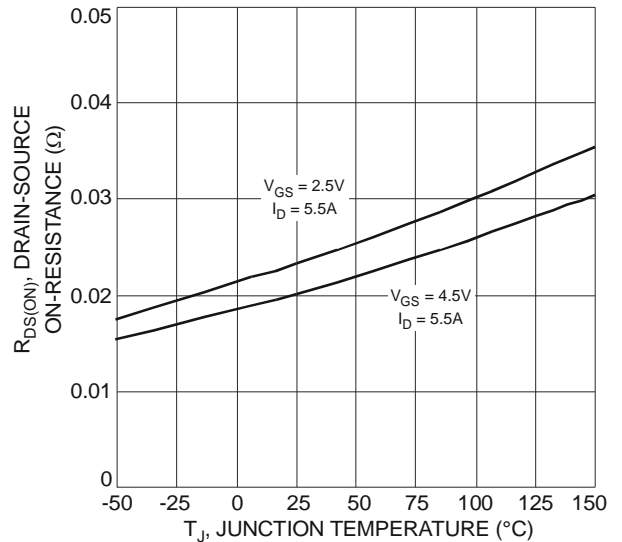


Fig. 6 On-Resistance Variation with Temperature

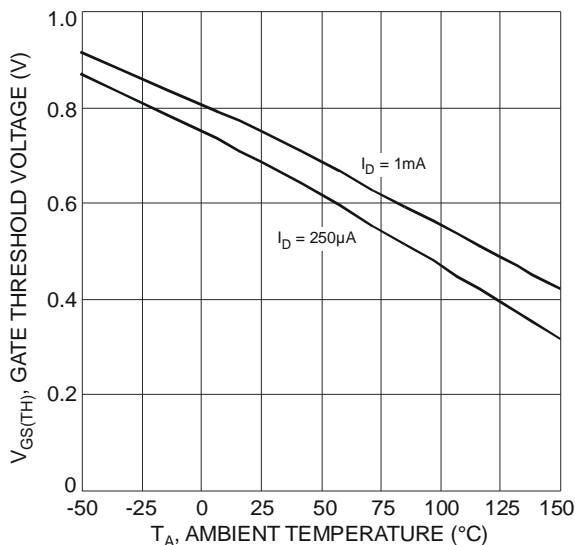


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

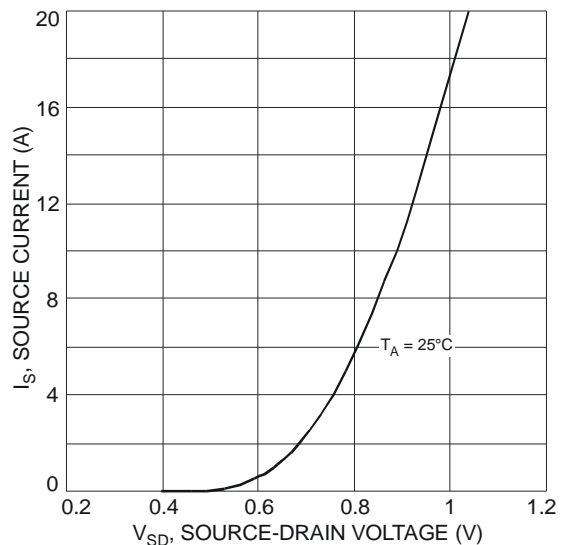


Fig. 8 Diode Forward Voltage vs. Current

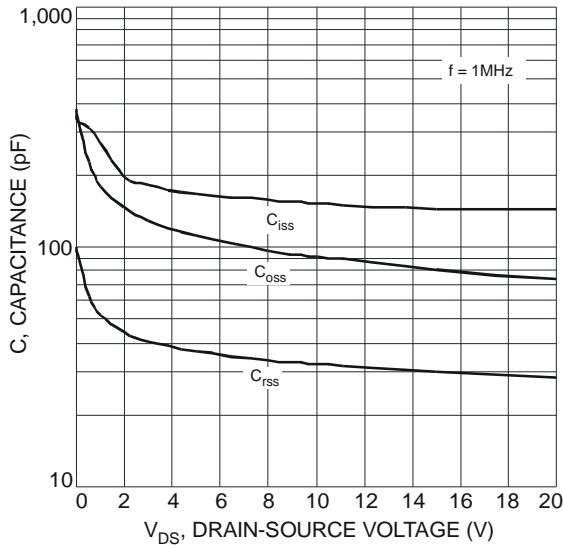


Fig. 9 Typical Capacitance

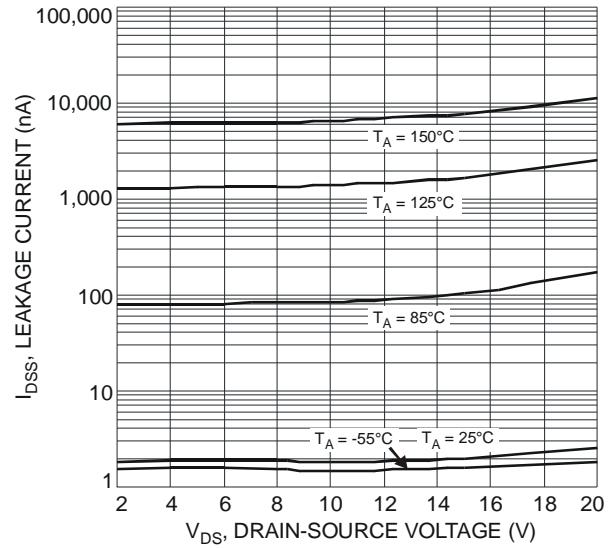


Fig. 10 Typical Drain-Source Leakage Current vs. Drain-Source Voltage

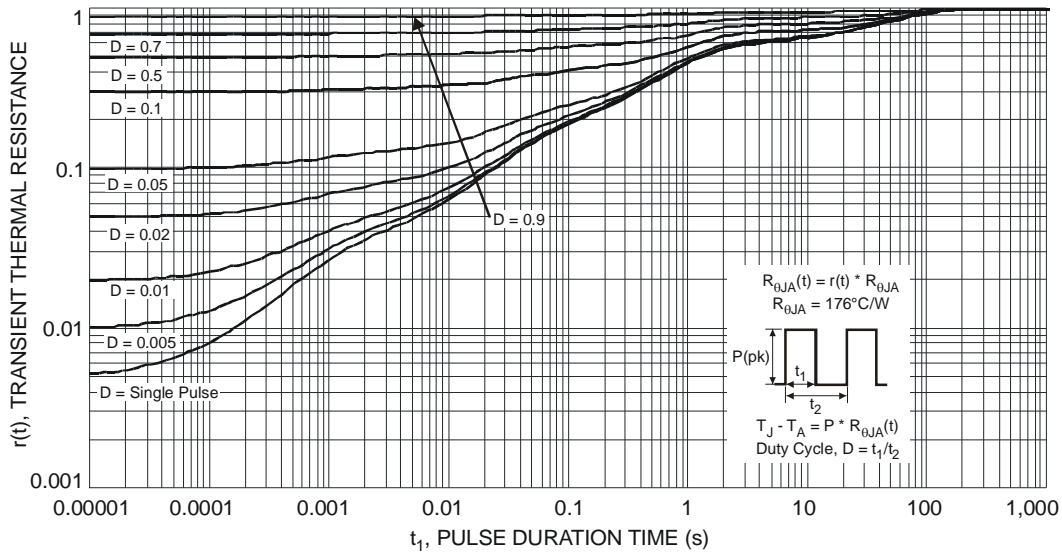


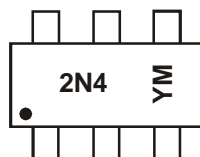
Fig. 11 Transient Thermal Response

Ordering Information (Note 7)

Part Number	Case	Packaging
DMG6968UDM-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



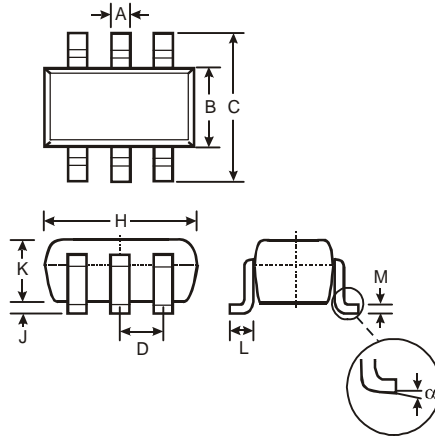
2N4 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: W = 2009)
 M = Month (ex: 9 = September)

Date Code Key

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

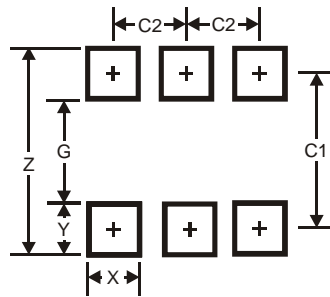
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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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