

## Features

- Low  $R_{DS(ON)}$
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 2)**

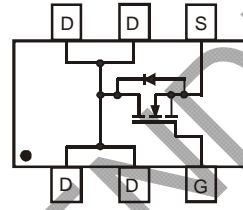
## Mechanical Data

- Case: SOT-26
- Case Material - Molded Plastic. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking Information: See Page 2
- Ordering Information: See page 2
- Weight: 0.008 grams (approximate)

SOT-26



TOP VIEW



TOP VIEW  
Internal Schematic

## 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	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current (Note 3)	$I_D$	$T_A = 25^\circ\text{C}$	5.3
		$T_A = 70^\circ\text{C}$	4.2
Pulsed Drain Current (Note 4)	$I_{DM}$	31	A

## Thermal Characteristics

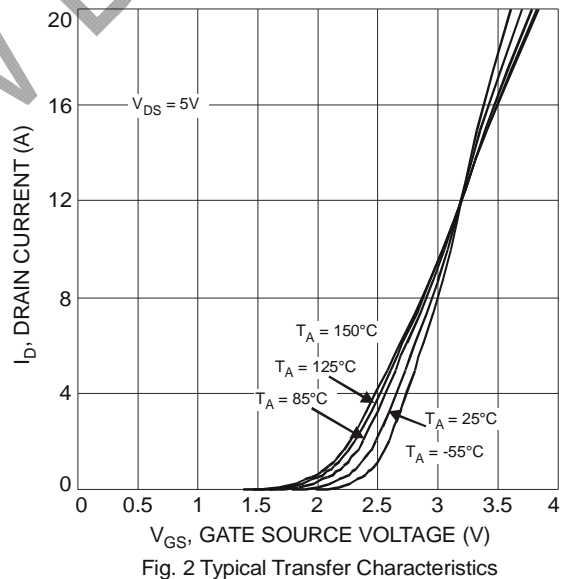
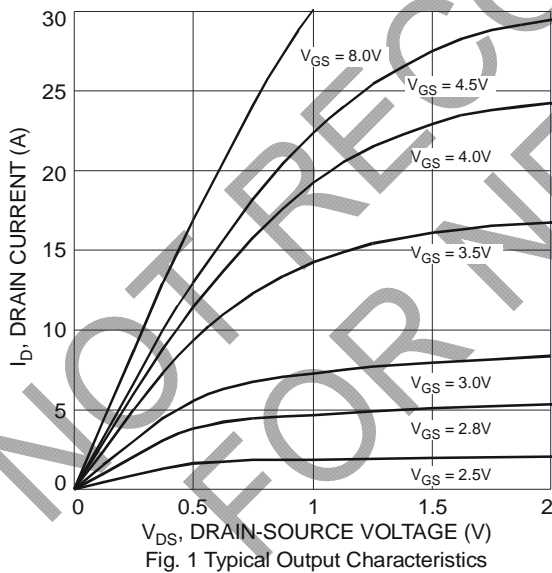
Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 3)	$P_D$	1.12	W
Thermal Resistance, Junction to Ambient $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	111	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. No purposefully added lead.
  2. 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).
  3. Device mounted on FR-4 PCB, with minimum recommended pad layout.
  4. Repetitive Rating, pulse width limited by junction temperature.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
<b>OFF CHARACTERISTICS (Note 5)</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 T <sub>J</sub> = 25°C	I <sub>DSS</sub>	-	-	1.0	μA	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V
Gate-Source Leakage	I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V
<b>ON CHARACTERISTICS (Note 5)</b>						
Gate Threshold Voltage	V <sub>GS(th)</sub>	1.0	1.5	2.0	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	-	22	27	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> = 7A
			32	40		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 5.6A
Forward Transfer Admittance	Y <sub>fs</sub>	-	10	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> = 7A
Diode Forward Voltage	V <sub>SD</sub>	-	0.75	1.0	V	V <sub>GS</sub> = 0V, I <sub>S</sub> = 1A
<b>DYNAMIC CHARACTERISTICS (Note 6)</b>						
Input Capacitance	C <sub>iss</sub>	-	404	-	pF	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 0V, f = 1.0MHz
Output Capacitance	C <sub>oss</sub>	-	52	-	pF	
Reverse Transfer Capacitance	C <sub>riss</sub>	-	45	-	pF	V <sub>DS</sub> = 0V, V <sub>GS</sub> = 0V, f = 1MHz
Gate Resistance	R <sub>g</sub>	-	1.51	-	Ω	
Total Gate Charge	Q <sub>g</sub>	-	9.2	-	nC	V <sub>GS</sub> = 10V, V <sub>DS</sub> = 15V, I <sub>D</sub> = 5.8A
Gate-Source Charge	Q <sub>gs</sub>	-	1.2	-	nC	
Gate-Drain Charge	Q <sub>gd</sub>	-	1.8	-	nC	V <sub>DD</sub> = 15V, V <sub>GS</sub> = 10V, R <sub>L</sub> = 2.6Ω, R <sub>G</sub> = 3Ω
Turn-On Delay Time	t <sub>D(on)</sub>	-	3.41	-	ns	
Turn-On Rise Time	t <sub>r</sub>	-	6.18	-	ns	
Turn-Off Delay Time	t <sub>D(off)</sub>	-	13.92	-	ns	
Turn-Off Fall Time	t <sub>f</sub>	-	2.84	-	ns	

Notes: 5. Short duration pulse test used to minimize self-heating effect.  
6. Guaranteed by design. Not subject to production testing.



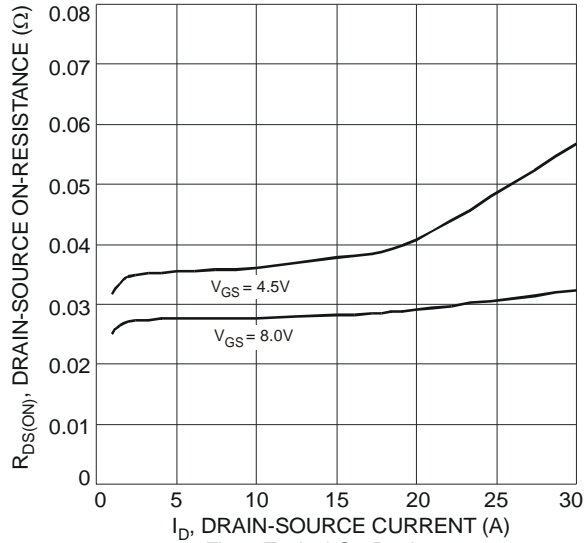


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

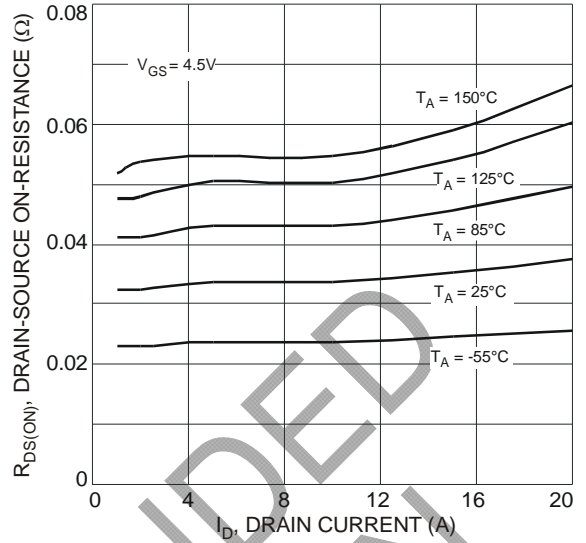


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

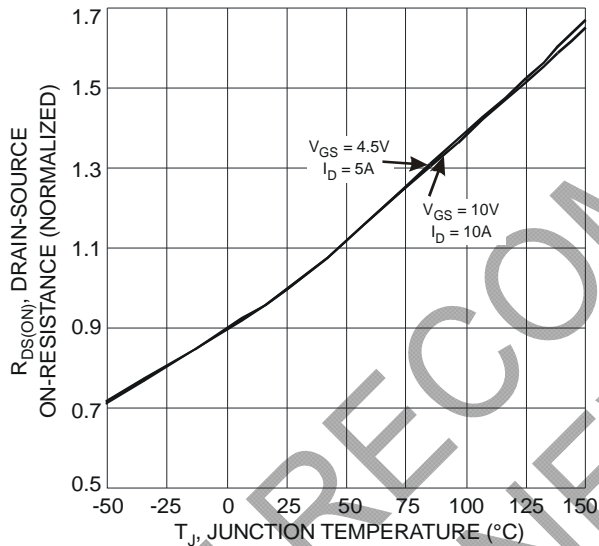


Fig. 5 On-Resistance Variation with Temperature

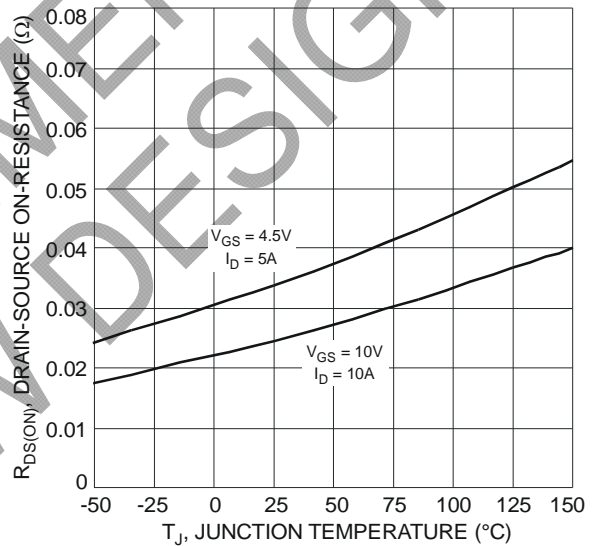


Fig. 6 On-Resistance Variation with Temperature

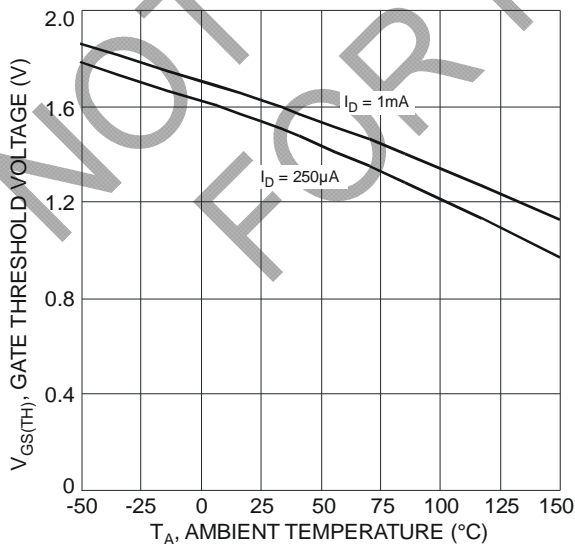


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

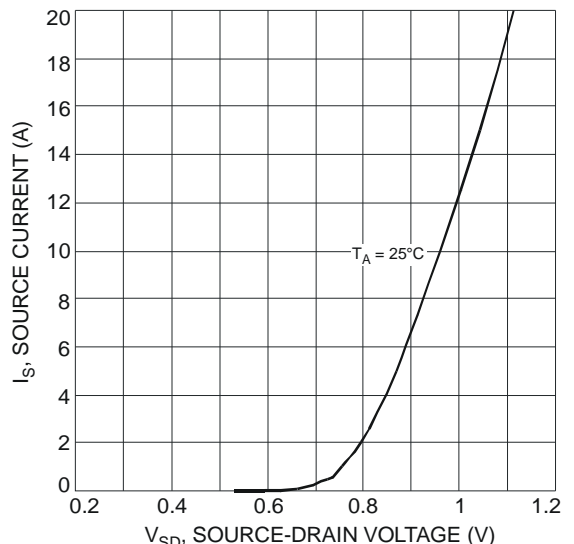
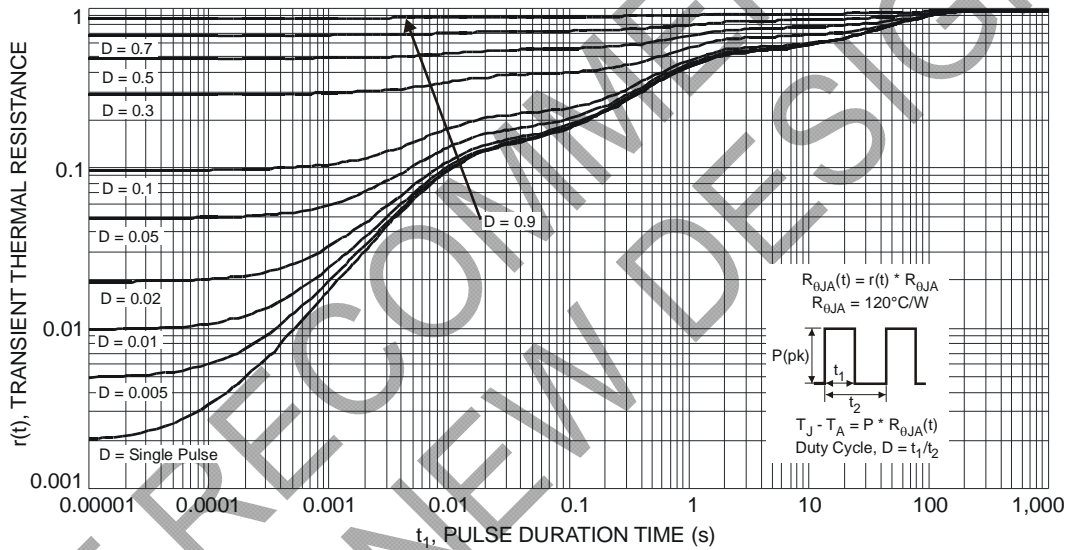
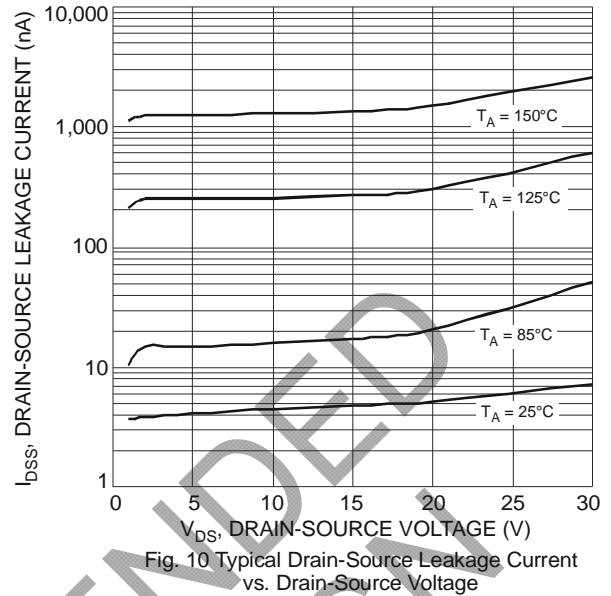
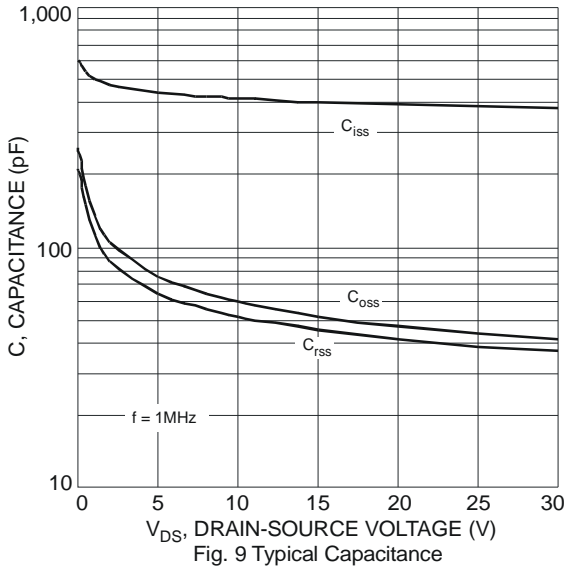


Fig. 8 Diode Forward Voltage vs. Current

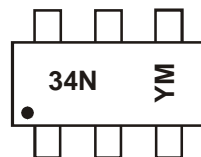


**Ordering Information** (Note 7)

Part Number	Case	Packaging
DMG6402LDM-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**



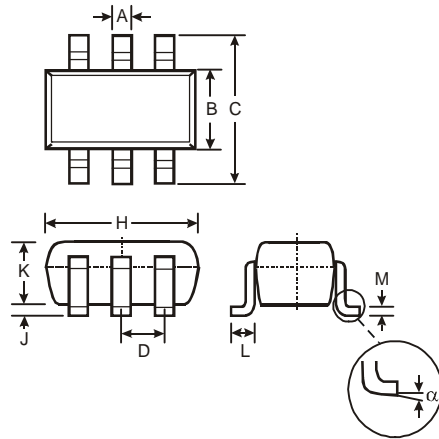
34N= Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: V = 2008)  
 M = Month (ex: 9 = September)

Date Code Key

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

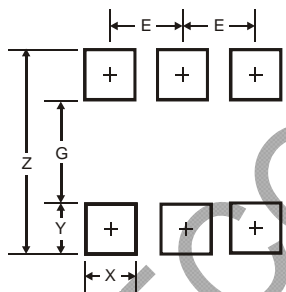
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**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
C	2.40
E	0.95

NOT RECOMMENDED FOR NEW DESIGN

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