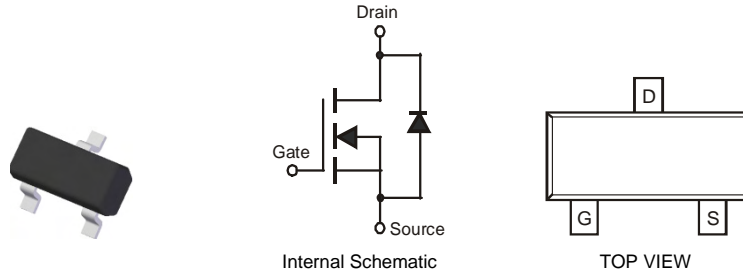


Features

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

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification 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
- Terminals Connections: See Diagram Below
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.008 grams (approximate)



Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	± 12	V
Continuous Drain Current (Note 3)	Steady State	$T_A = 25^\circ\text{C}$	I_D	5.47	A
		$T_A = 85^\circ\text{C}$		3.43	
Pulsed Drain Current (Note 4)			I_{DM}	20	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 3)	P_D	0.74	W
Thermal Resistance, Junction to Ambient @ $T_A = 25^\circ\text{C}$ (Note 3)	$R_{\theta JA}$	167	$^\circ\text{C}/\text{W}$
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.
 3. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 4. Repetitive rating, pulse width limited by junction temperature.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	-	-	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current $T_J = 25^\circ\text{C}$	I_{DSS}	-	-	1.0	μA	$V_{DS} = 20V, V_{GS} = 0V$
Gate-Source Leakage	I_{GSS}	-	-	± 100	nA	$V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 5)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	0.95	1.2	V	$V_{DS} = V_{GS}, I_D = 250\mu A$
Static Drain-Source On-Resistance	$R_{DS(on)}$	-	21	29	m Ω	$V_{GS} = 10V, I_D = 6A$
			25	35		$V_{GS} = 4.5V, I_D = 5A$
			34	48		$V_{GS} = 2.5V, I_D = 4A$
			65	91		$V_{GS} = 1.8V, I_D = 2A$
Forward Transfer Admittance	$ Y_{fs} $	-	9	-	S	$V_{DS} = 5V, I_D = 3.8A$
Diode Forward Voltage	V_{SD}	-	0.75	1.0	V	$V_{GS} = 0V, I_S = 1A$
DYNAMIC CHARACTERISTICS (Note 6)						
Input Capacitance	C_{iss}	-	434.7	-	pF	$V_{DS} = 10V, V_{GS} = 0V, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	-	69.1	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	61.2	-	pF	
Gate Resistance	R_g	-	1.53	-	Ω	$V_{DS} = 0V, V_{GS} = 0V, f = 1\text{MHz}$
Total Gate Charge	Q_g	-	5.4	-	nC	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 6A$
Gate-Source Charge	Q_{gs}	-	0.9	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.5	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	6.5	-	ns	$V_{DD} = 10V, V_{GS} = 5V, R_L = 1.7\Omega, R_G = 6\Omega$
Turn-On Rise Time	t_r	-	8.3	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	21.6	-	ns	
Turn-Off Fall Time	t_f	-	5.3	-	ns	

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

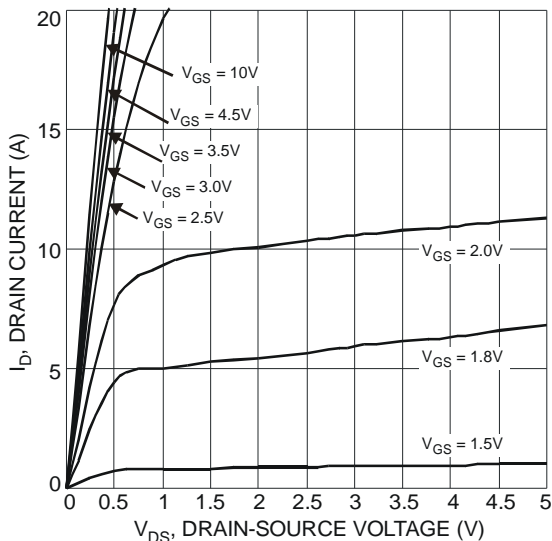


Fig. 1 Typical Output Characteristics

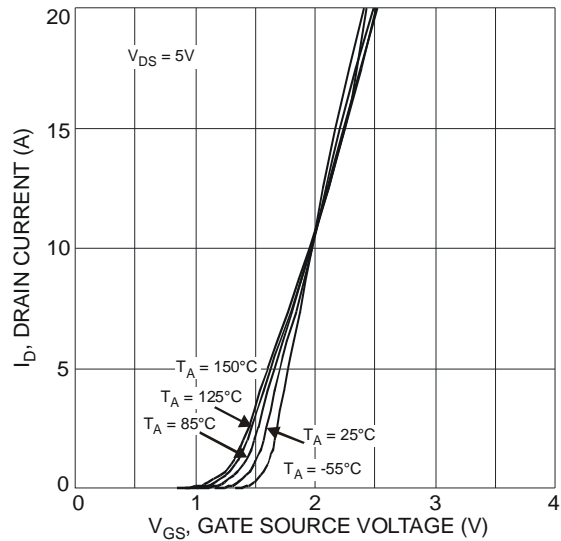


Fig. 2 Typical Transfer Characteristics

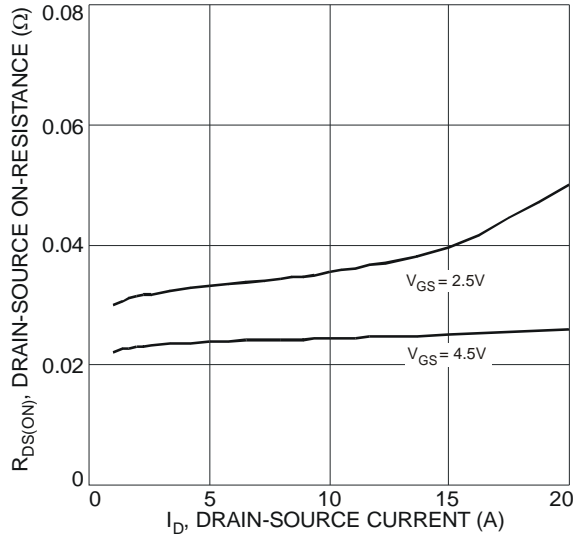


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

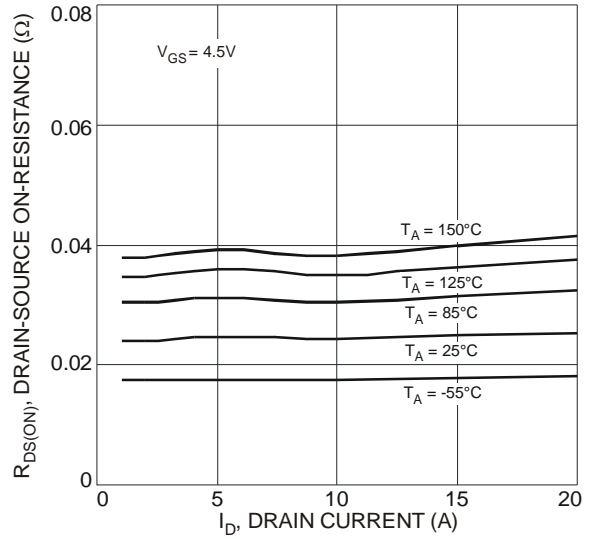


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

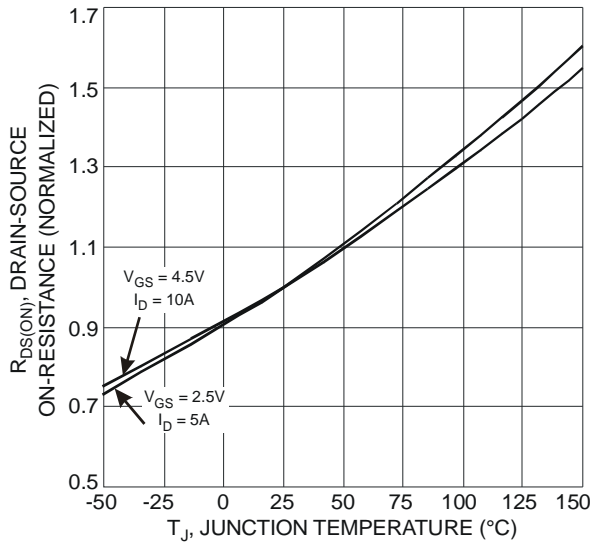


Fig. 5 On-Resistance Variation with Temperature

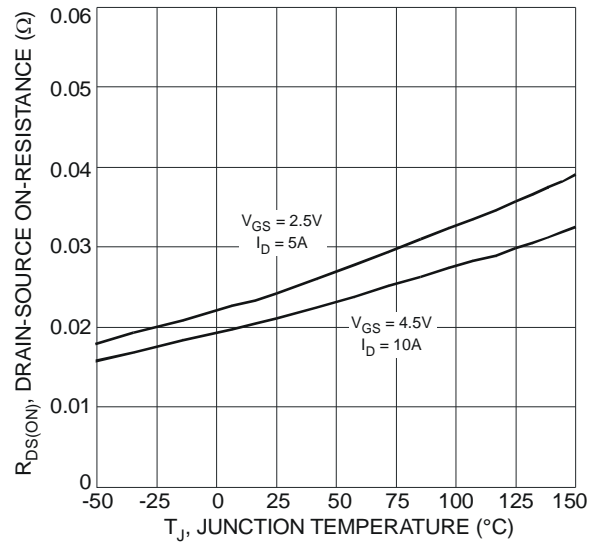


Fig. 6 On-Resistance Variation with Temperature

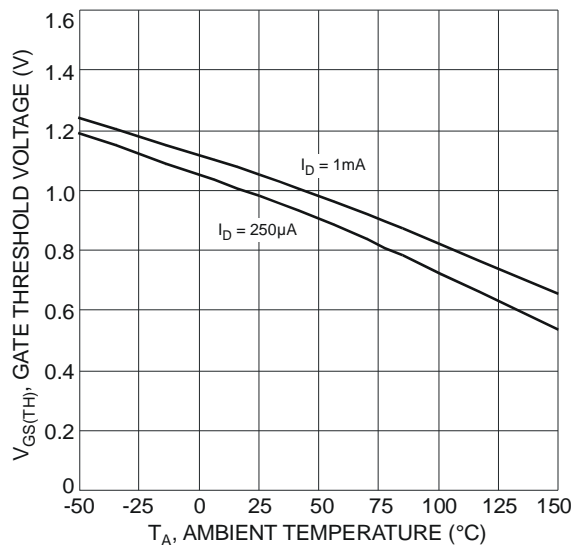


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

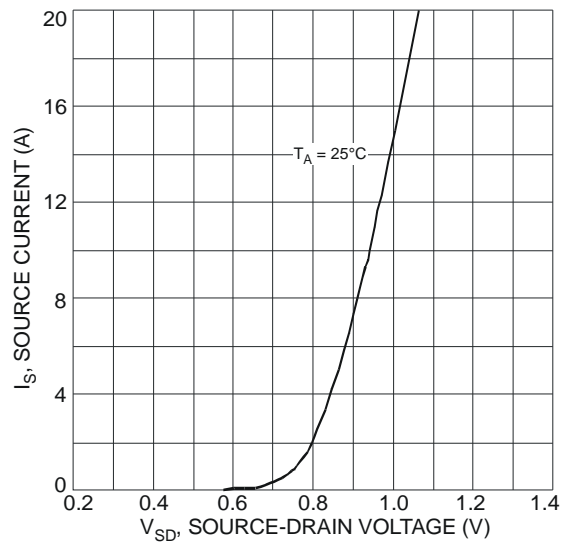
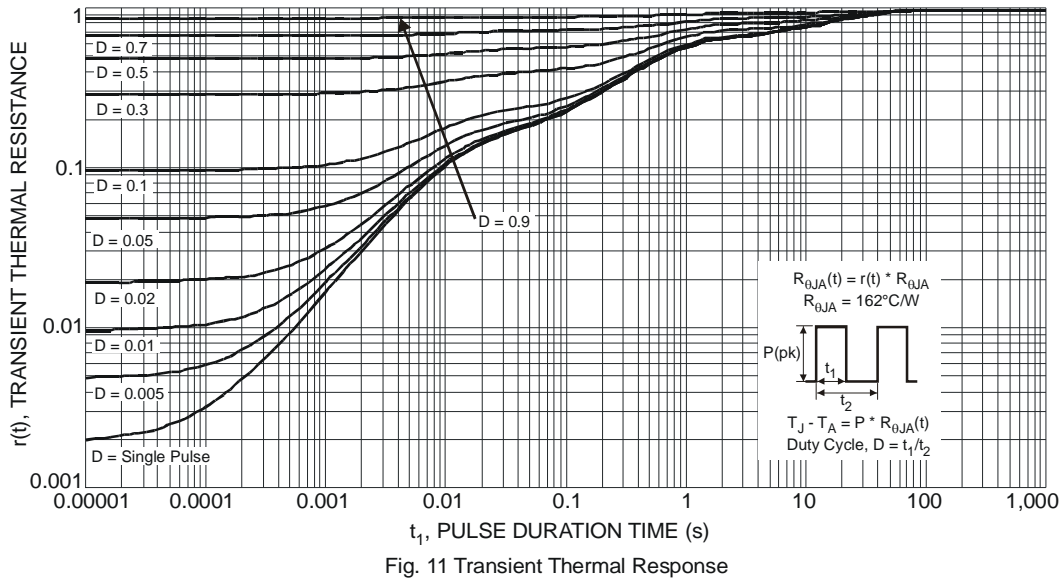
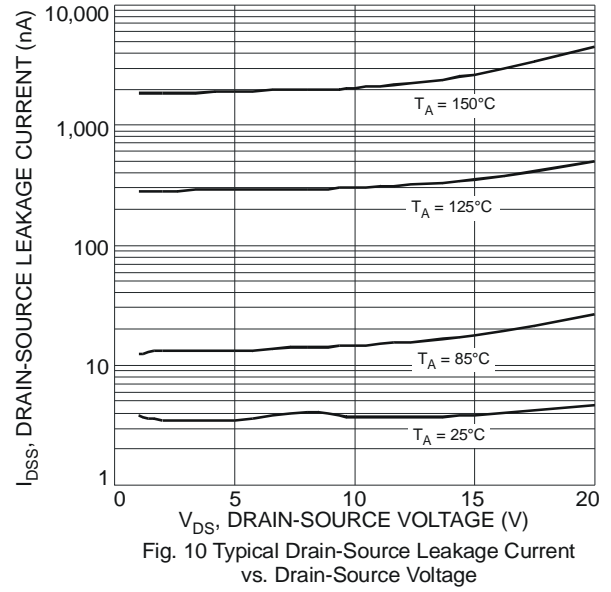
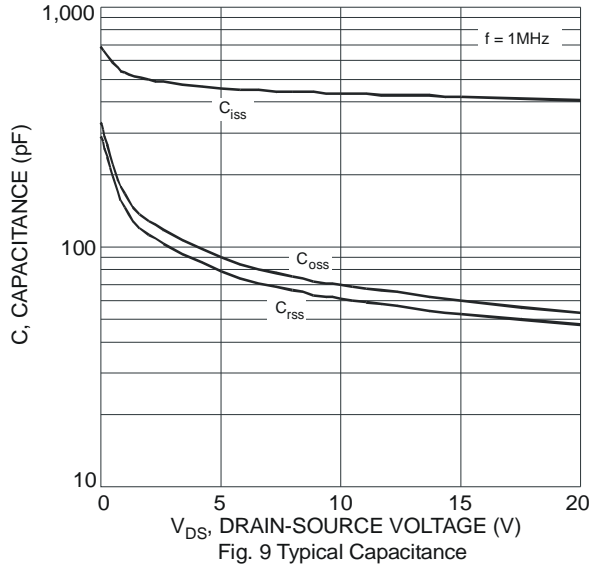


Fig. 8 Diode Forward Voltage vs. Current

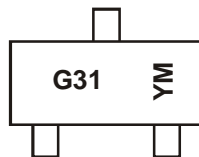


Ordering Information (Note 7)

Part Number	Case	Packaging
DMG3420U-7	SOT-23	3000/Tape & Reel

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

Marking Information



G31 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: W = 2009)
 M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015					
Code	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