

Product Summary

BV_{DSS}	R_{Ds(ON)} Max	I_D Max T_A = +25°C
30V	25mΩ @ V _{GS} = 10V	5.8A
	35mΩ @ V _{GS} = 4.5V	4.8A

Description and Applications

This MOSFET has been designed to minimize the on-state resistance (R_{Ds(ON)}) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- Battery Charging
- Power Management Functions
- DC-DC Converters
- Portable Power Adaptors

Features and Benefits

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)

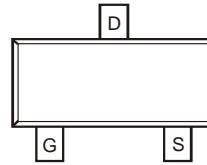
Mechanical Data

- Case: SOT23
- 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 (e3)
- Terminals Connections: See Diagram Below
- Weight: 0.009138 grams (Approximate)

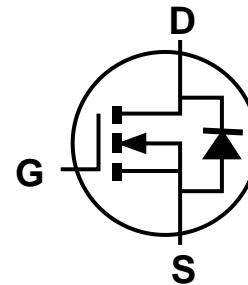
SOT23



Top View



Top View
Pin Configuration



Equivalent Circuit

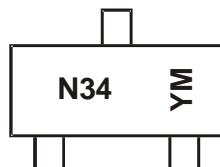
Ordering Information (Note 4)

Part Number	Case	Packaging
DMG3404L-7	SOT23	3000/Tape & Reel
DMG3404L-13	SOT23	10000/Tape & Reel

Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



N34 = Product Type Marking Code

YM = Date Code Marking

Y or \bar{Y} = Year (ex: D = 2016)

M = Month (ex: 9 = September)

Date Code Key

Year	2012	2013	2014	2015	2016	2017	2018	2019				
Code	Z	A	B	C	D	E	F	G				
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

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}	± 20	V
Continuous Drain Current (Note 5) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	4.2 3.5	A
Continuous Drain Current (Note 6) $V_{GS} = 10\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	5.8 4.9	A
Pulsed Drain Current (Pulse Width $\leq 10\mu\text{s}$, Duty Cycle $\leq 1\%$)			I_{DM}	30	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	0.78	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	164	$^\circ\text{C}/\text{W}$
Power Dissipation (Note 6)	P_D	1.33	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	96	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$
Zero Gate Voltage Drain Current $T_J = +25^\circ\text{C}$	I_{DSS}	—	—	1.0	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	1.0	1.5	2.0	V	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	21 24	25 35	$\text{m}\Omega$	$V_{GS} = 10\text{V}, I_D = 5.8\text{A}$ $V_{GS} = 4.5\text{V}, I_D = 4.8\text{A}$
Diode Forward Voltage	V_{SD}	—	0.75	1.0	V	$V_{GS} = 0\text{V}, I_S = 1\text{A}$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	641	—	pF	$V_{DS} = 15\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	66	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	51	—	pF	$V_{DS} = 0\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$
Gate Resistance	R_g	—	2.2	—	Ω	
Total Gate Charge	Q_g	—	13.2	—	nC	$V_{GS} = 10\text{V}, V_{DS} = 15\text{V}, I_D = 5.8\text{A}$
Gate-Source Charge	Q_{gs}	—	1.7	—	nC	
Gate-Drain Charge	Q_{gd}	—	2.2	—	nC	$V_{DD} = 15\text{V}, V_{GS} = 10\text{V}, R_L = 1.25\Omega, R_g = 3\Omega$
Turn-On Delay Time	$t_{D(ON)}$	—	3.3	—	ns	
Turn-On Rise Time	t_r	—	4.4	—	ns	
Turn-Off Delay Time	$t_{D(OFF)}$	—	22	—	ns	
Turn-Off Fall Time	t_f	—	5.2	—	ns	

Notes:

5. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.
6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design. Not subject to production testing.

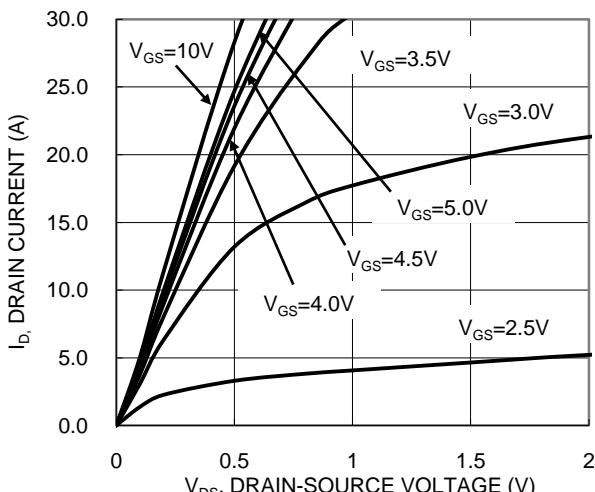


Figure 1. Typical Output Characteristic

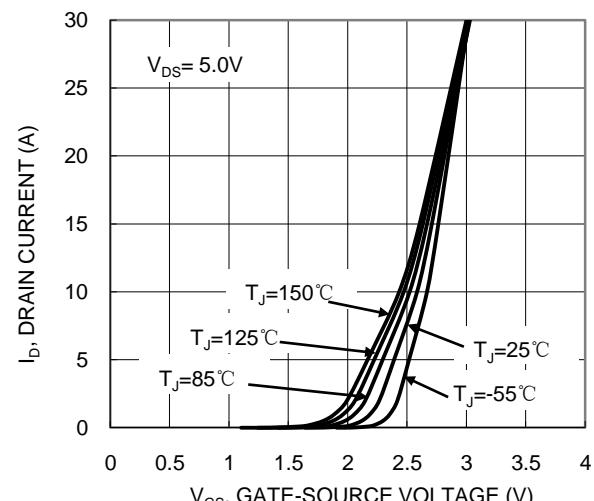


Figure 2. Typical Transfer Characteristic

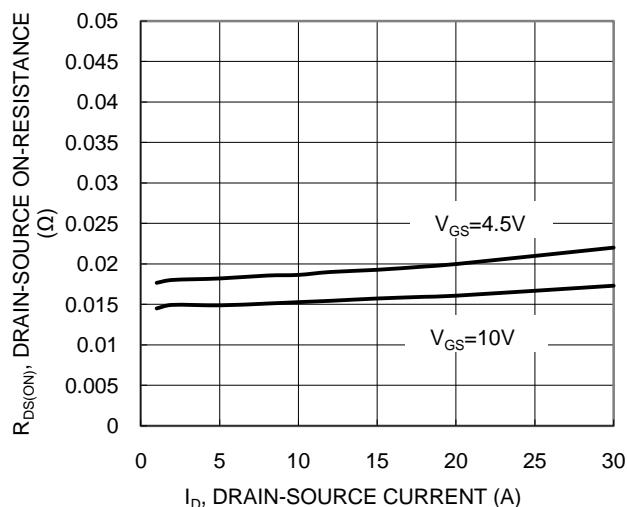


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

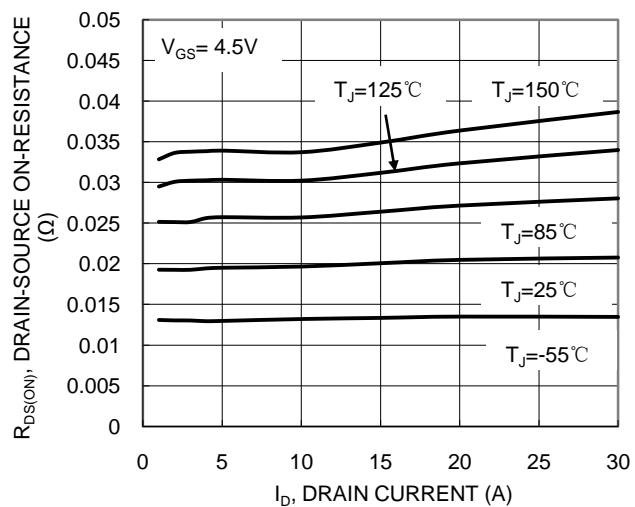


Figure 4. Typical On-Resistance vs. Drain Current and Temperature

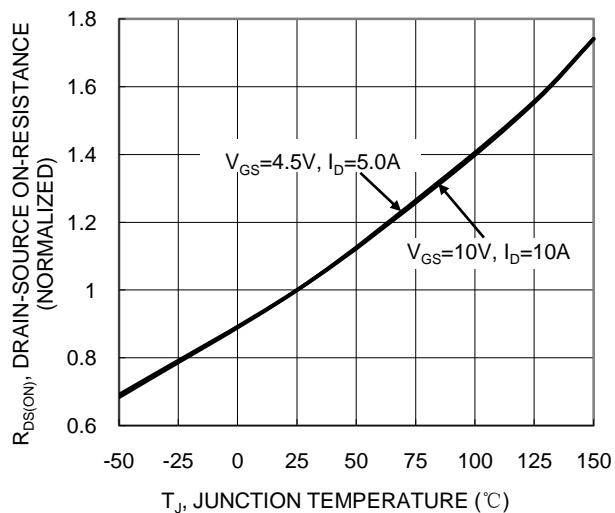


Figure 5. On-Resistance Variation with Temperature

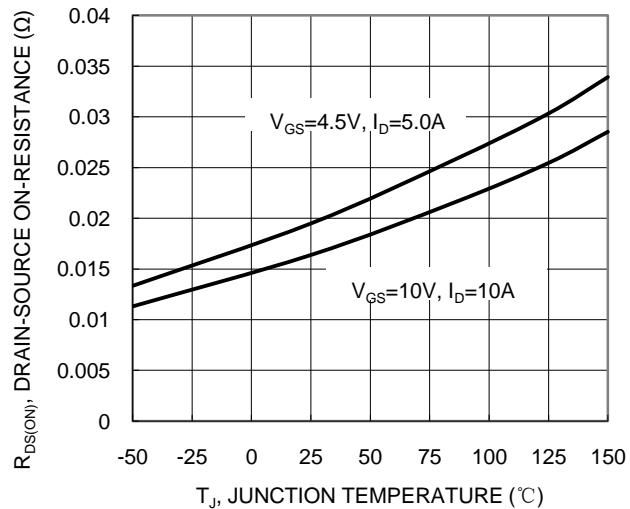
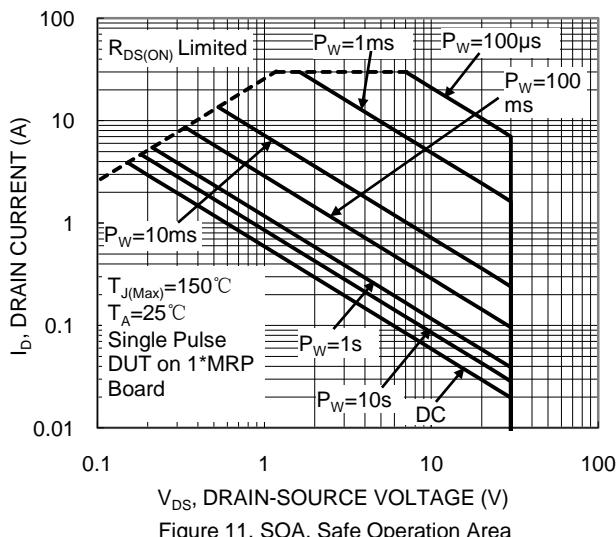
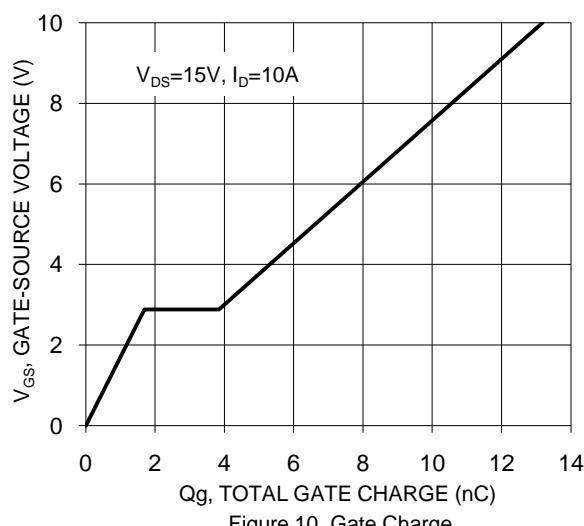
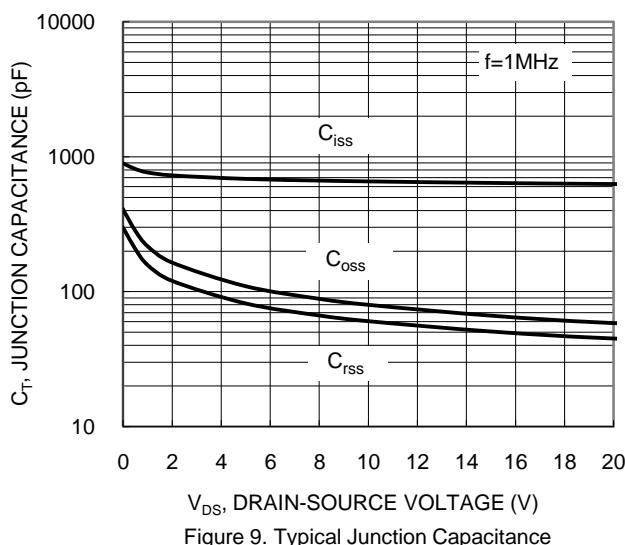
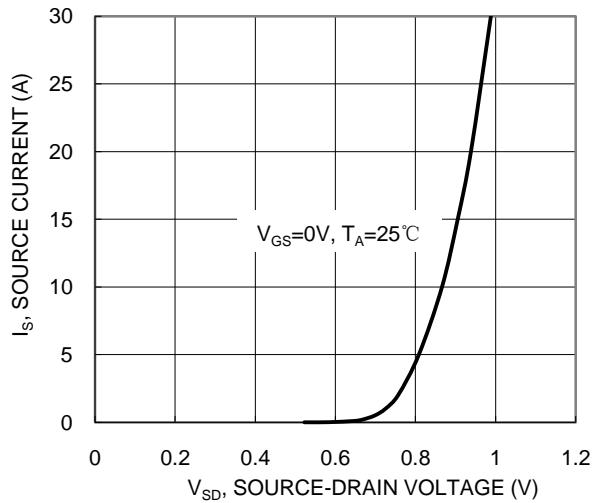
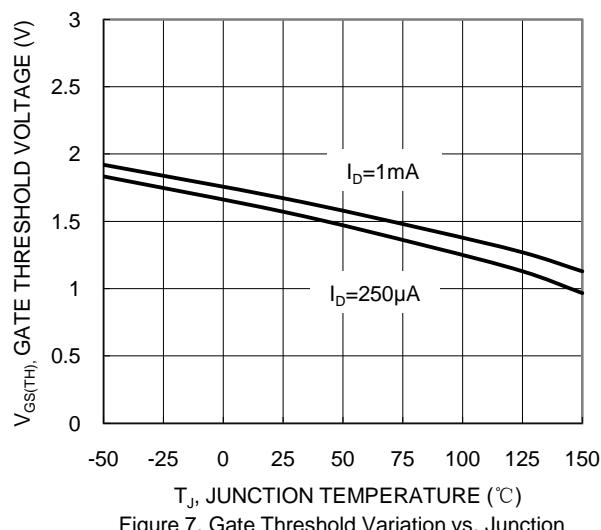


Figure 6. On-Resistance Variation with Temperature



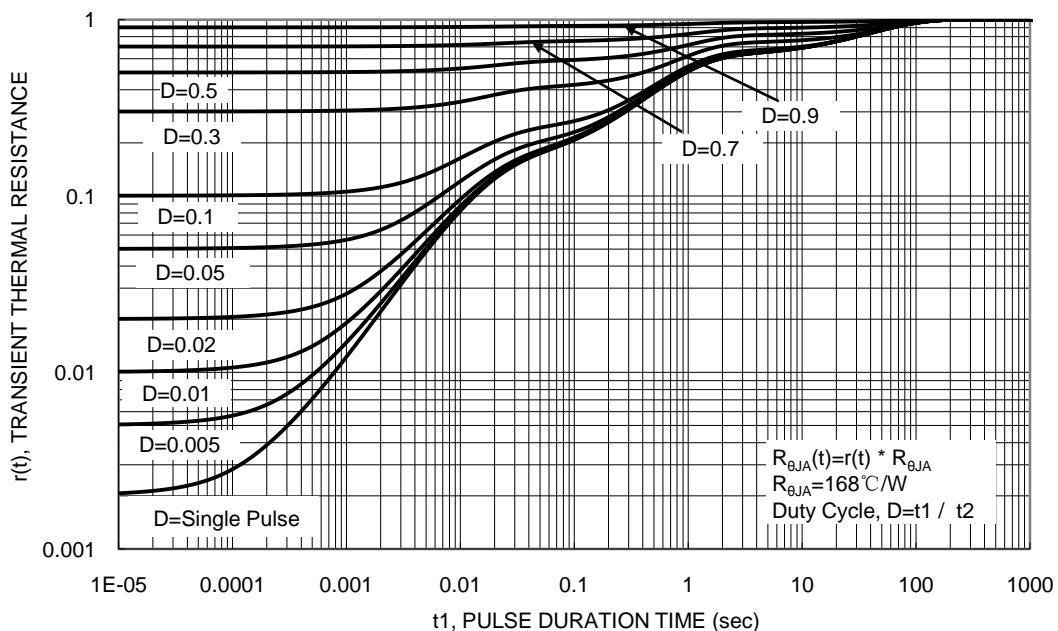
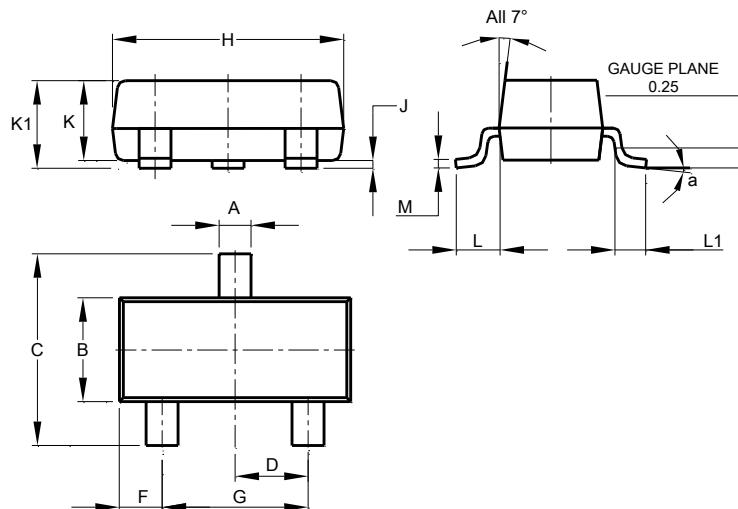


Figure 12. Transient Thermal Resistance

Package Outline Dimensions

Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.

SOT23

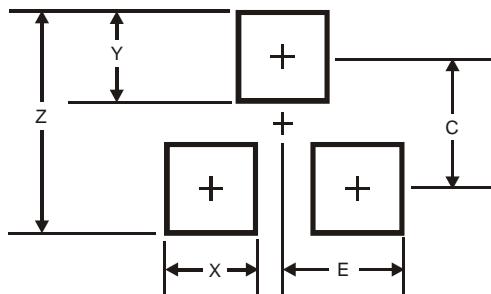


SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
E	0.45	0.60	0.535
F	1.78	2.05	1.83
G	2.80	3.00	2.90
H	0.013	0.10	0.05
J	0.890	1.00	0.975
K	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	8°		
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.

SOT23



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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