Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max T_A = 25°C
-30V	90mΩ @ V_{GS} = -10V	-3.8A
	134mΩ @ V_{GS} = -4.5V	-3.1A

Features and Benefits

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

Description and Applications

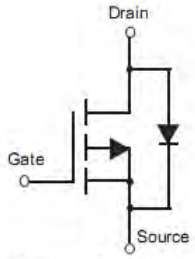
This MOSFET has been designed to minimize the on-state resistance ($R_{DS(on)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

- General Purpose Interfacing Switch
- Power Management Functions
- Load Switch for Portable Devices

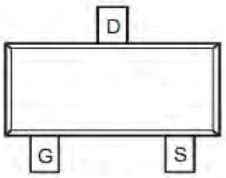
Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.08 grams (approximate)

TOP VIEW



Internal Schematic



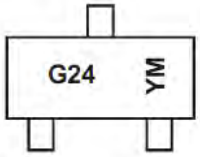
TOP VIEW

Ordering Information (Note 3)

Part Number	Case	Packaging
DMG2307L-7	SOT-23	3000Tape & Reel

Notes: 1. No purposefully added lead.
2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com.
3. For packaging details, go to our website at http://www.diodes.com.

Marking Information



G24 = 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

Maximum Ratings @T_A = 25°C unless otherwise specified

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	-30	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 4) V_{GS} = -10V	Steady State	T_A = 25°C T_A = 70°C	I_D	-2.5 -2.0	A
Continuous Drain Current (Note 5) V_{GS} = -10V	Steady State	T_A = 25°C T_A = 70°C	I_D	-3.8 -3.0	A
Continuous Drain Current (Note 5) V_{GS} = -10V	t≦10sec	T_A = 25°C T_A = 70°C	I_D	-4.6 -3.6	A
Continuous Drain Current (Note 5) V_{GS} = -4.5V	Steady State	T_A = 25°C T_A = 70°C	I_D	-3.1 -2.5	A
Pulsed Drain Current (Note 5)			I_{DM}	-20	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 4)	P_D	0.76	W
Thermal Resistance, Junction to Ambient (Note 4)	$R_{\theta JA}$	159	°C/W
Total Power Dissipation (Note 5)	P_D	1.36	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	94	°C/W
Total Power Dissipation (Note 5) t ≦ 10sec	P_D	1.9	W
Thermal Resistance, Junction to Ambient (Note 5) t ≦ 10sec	$R_{\theta JA}$	65.8	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	-30	-	-	V	V_{GS} = 0V, I_D = -250μA
Zero Gate Voltage Drain Current @T_c = 25°C	I_{DSS}	-	-	-1.0	μA	V_{DS} = -30V, V_{GS} = 0V
Gate-Source Leakage	I_{GSS}	-	-	±100	nA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	-1.0	-	-3.0	V	V_{DS} = V_{GS}, I_D = -250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	70	90	mΩ	V_{GS} = -10V, I_D = -2.5A
		-	105	134		V_{GS} = -4.5V, I_D = -2.5A
Forward Transfer Admittance	$\|Y_{fs}\|$	-	4.8	-	S	V_{DS} = -10V, I_D = -2.5A
Diode Forward Voltage (Note 6)	V_{SD}	-	-0.75	-1.0	V	V_{GS} = 0V, I_S = -1A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	-	371.3	-	pF	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	51.3	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	45.9	-	pF	
Gate Resistance	R_g	-	17	-	Ω	V_{DS} = 0V, V_{GS} = 0V, f = 1.0MHz
Total Gate Charge (V_{GS} = -4.5V)	Q_g	-	4.0	-	nC	V_{GS} = -10V, V_{DS} = -15V, I_D = -3A
Total Gate Charge (V_{GS} = -10V)	Q_g		8.2	-	nC	
Gate-Source Charge	Q_{gs}	-	0.9	-	nC	
Gate-Drain Charge	Q_{gd}	-	1.2	-	nC	
Turn-On Delay Time	$t_{D(on)}$	-	4.8	-	ns	V_{DS} = -15V, V_{GS} = -10V, R_L = 15Ω, R_G = 6Ω, I_D = -1A
Turn-On Rise Time	t_r	-	7.3	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	22.4	-	ns	
Turn-Off Fall Time	t_f	-	13.4	-	ns	

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

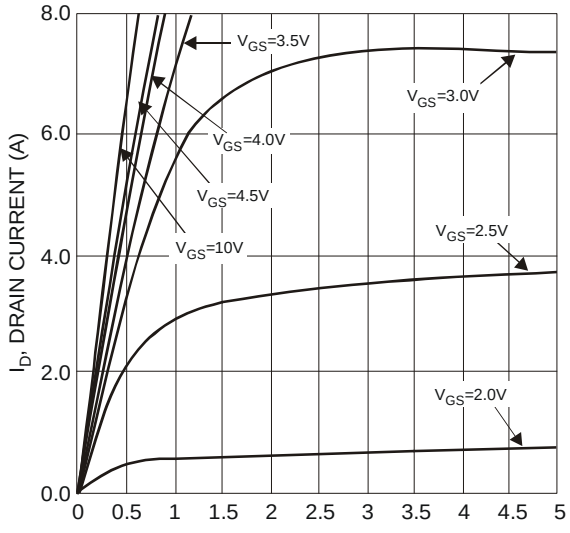


Fig. 1 Typical Output Characteristics

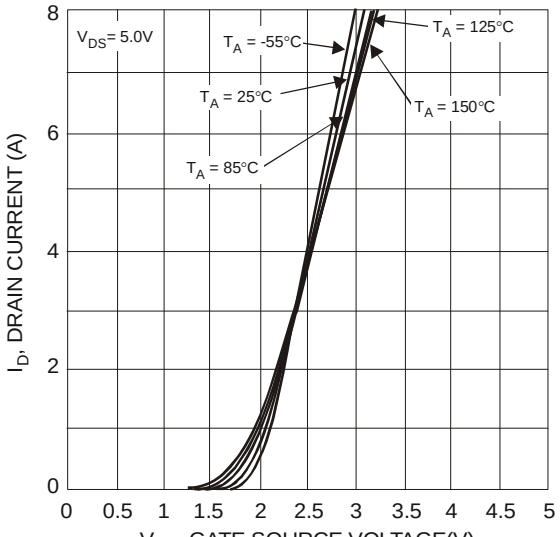


Fig. 2 Typical Transfer Characteristics

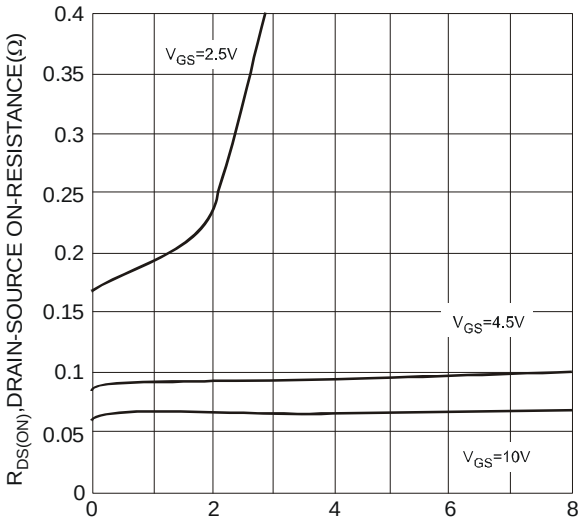


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

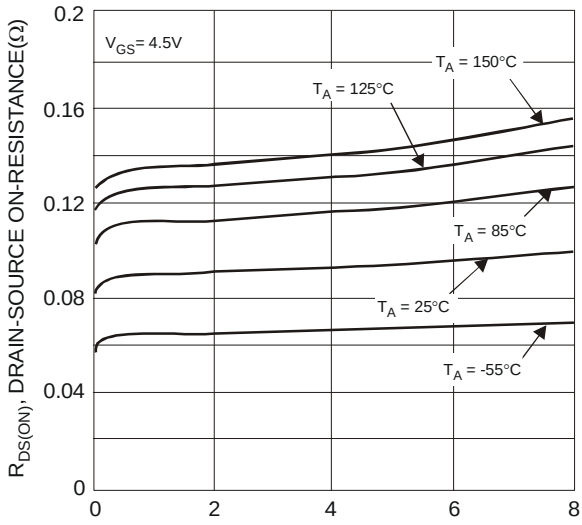


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

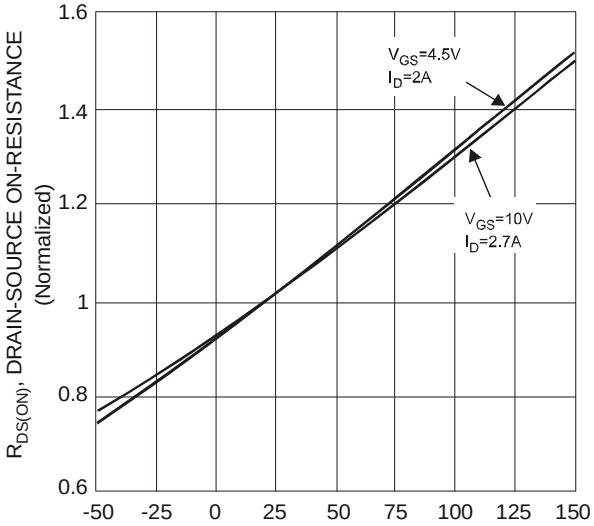


Fig. 5 On-Resistance Variation with Temperature

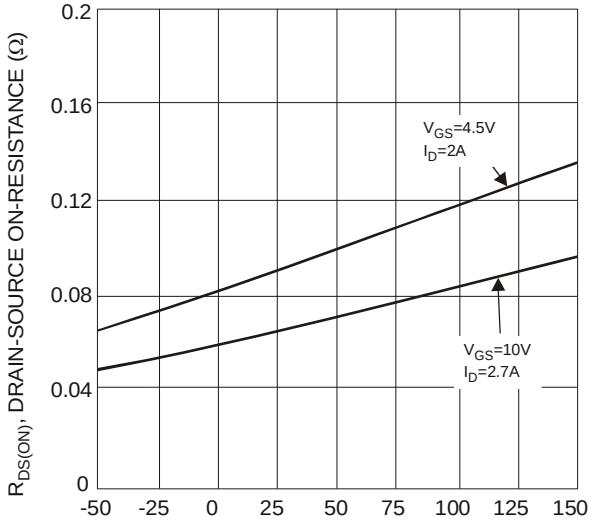


Fig. 6 On-Resistance Variation with Temperature

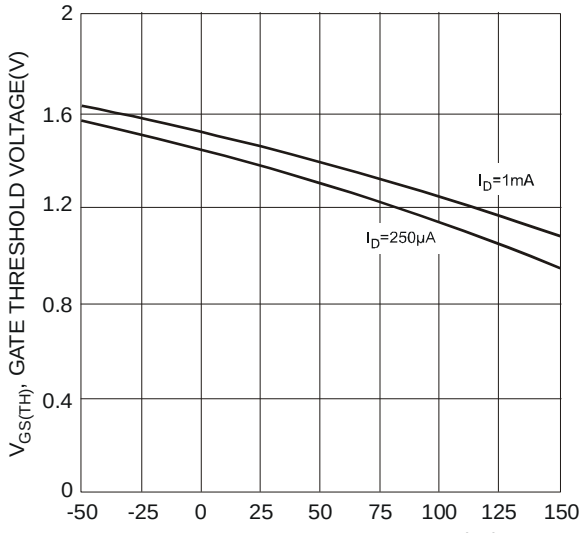


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

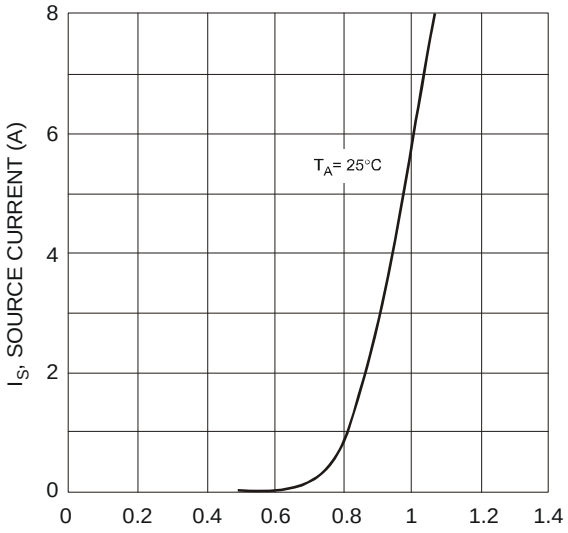


Fig. 8 Diode Forward Voltage vs. Current

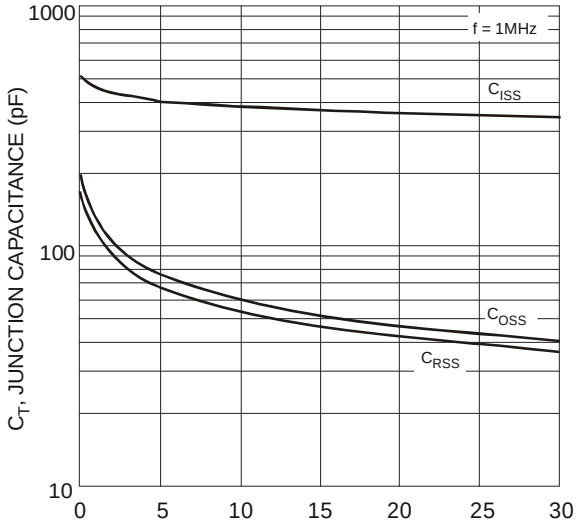


Fig. 9 Typical Junction Capacitance

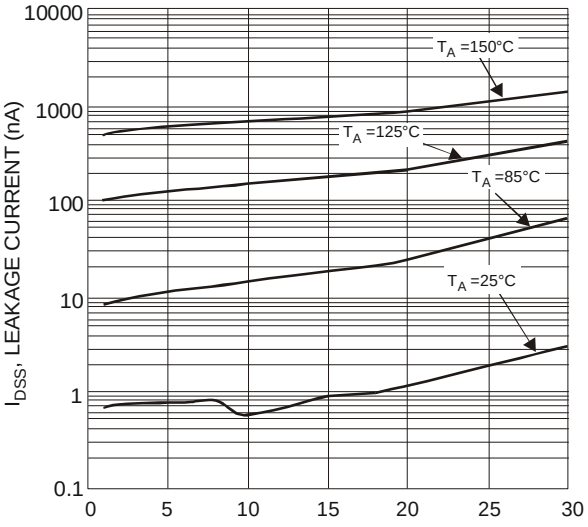


Fig. 10 Typical Drain-Source Leakage Current vs. Voltage

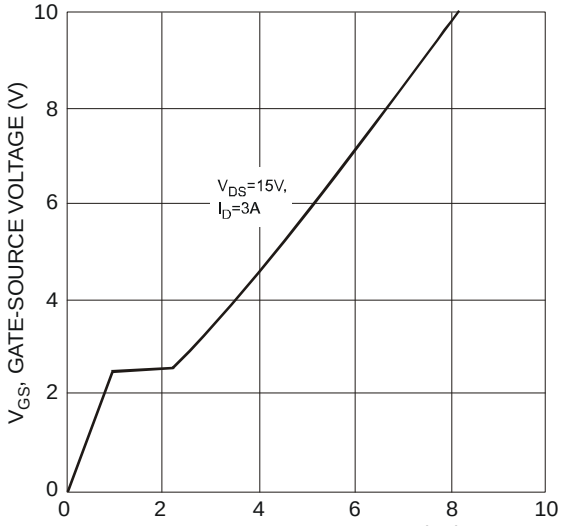


Fig. 11 Gate-Charge Characteristics

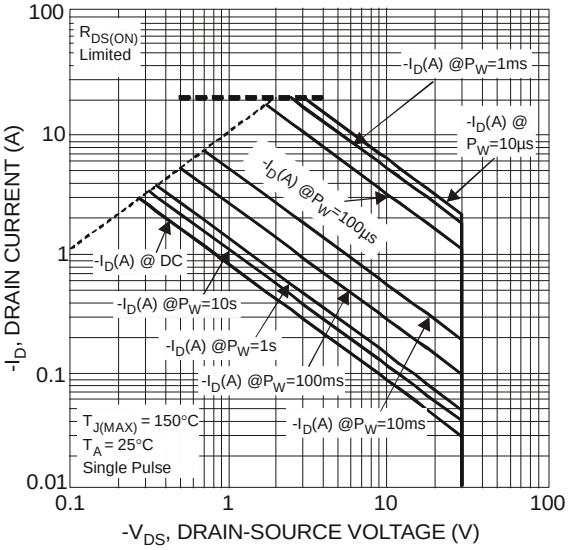


Fig. 12 SOA, Safe Operation Area

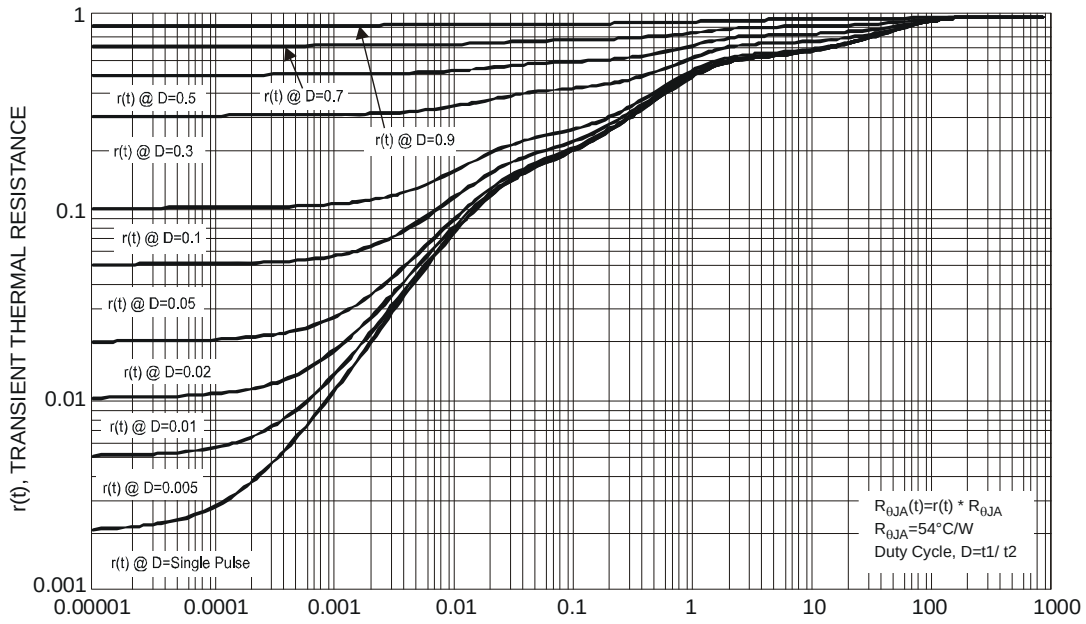
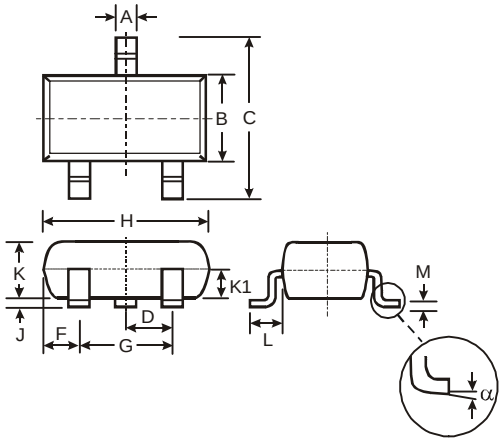


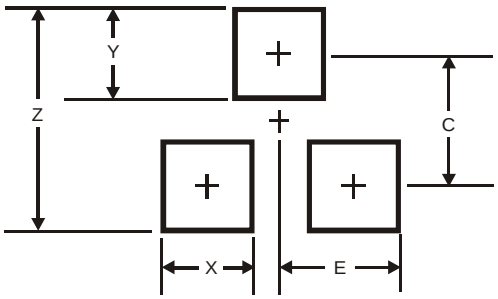
Fig. 13 Transient Thermal Resistance

Package Outline Dimensions



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
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



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

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2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

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