

DMG2307L

P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$ max	I_D max $T_A = 25^\circ C$
-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.

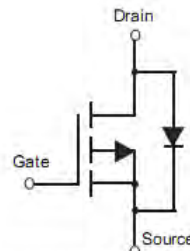
- General Purpose Interfacing Switch
- Power Management Functions
- Load Switch for Portable Devices

Mechanical Data

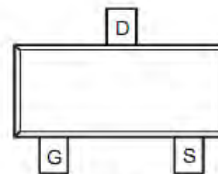
- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections Indicator: See diagram
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202,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

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	I _D	-2.5	A
		T _A = 70°C		-2.0	
Continuous Drain Current (Note 5) V _{GS} = -10V	Steady State	T _A = 25°C	I _D	-3.8	A
		T _A = 70°C		-3.0	
Continuous Drain Current (Note 5) V _{GS} = -10V	t ≤ 10sec	T _A = 25°C	I _D	-4.6	A
		T _A = 70°C		-3.6	
Continuous Drain Current (Note 5) V _{GS} = -4.5V	Steady State	T _A = 25°C	I _D	-3.1	A
		T _A = 70°C		-2.5	
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 _{θJA}	159	°C/W
Total Power Dissipation (Note 5)	P _D	1.36	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	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 _{θJA}	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:
2. Device mounted on FR-4 PCB, with minimum recommended pad layout.
 3. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate.
 4. Short duration pulse test used to minimize self-heating effect.
 5. Guaranteed by design. Not subject to product testing.