

DMG3415U

P-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on) max}$	I_D $T_A = 25^\circ C$
-20V	42.5mΩ @ $V_{GS} = -4.5V$	-4.0A
	71mΩ @ $V_{GS} = -1.8V$	-2.0A

Description

This new generation 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.

Applications

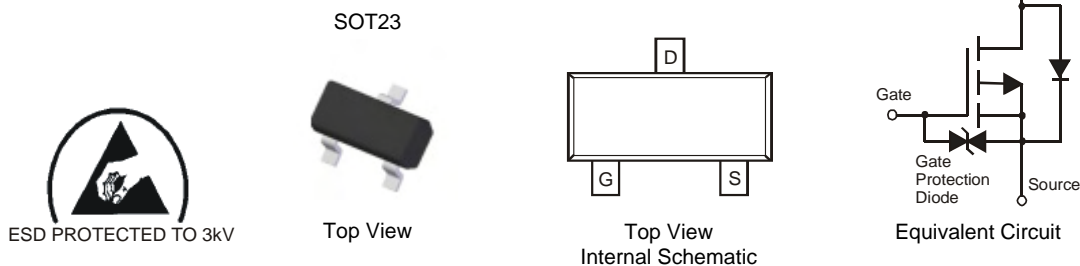
- DC-DC Converters
- Power management functions

Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- **ESD Protected Up To 3kV**
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

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: 0.008 grams (approximate)

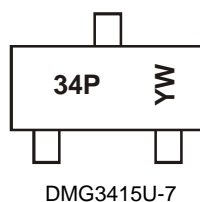


Ordering Information (Note 4)

Part Number	Qualification	Case	Packaging
DMG3415U-7	Commercial	SOT23	3,000/Tape & Reel
DMG3415UQ-7	Automotive	SOT23	3,000/Tape & Reel
DMG3415U-13	Commercial	SOT23	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

Marking Information



34P = Product Type Marking Code
 YW = Date Code Marking
 Y = Year (ex: W = 2009)
 W = Week (ex: A ~ Z = Weeks 1 ~ 26
 a ~ y = Weeks 27 ~ 51
 z = Weeks 52 and 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V _{DSS}	-20	V
Gate-Source Voltage	V _{GSS}	±8	V
Continuous Drain Current (Note 5) V _{GS} = -4.5V	I _D	T _A = +25°C	-4.0
		T _A = +70°C	-3.5
Pulsed Drain Current (10µs pulse, duty cycle = 1%)	I _{DM}	-30	A

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P _D	0.9	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	139	°C/W
Thermal Resistance, Junction to case (Note 5)	R _{θJC}	32	°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}	-20	—	—	V	V _{GS} = 0V, I _D = -250µA
Zero Gate Voltage Drain Current	I _{DSS}	—	—	-1	µA	V _{DS} = -20V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±10	µA	V _{GS} = ±8.0V, V _{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	V _{GS(th)}	-0.3	-0.55	-1.0	V	V _{DS} = V _{GS} , I _D = -250µA
Static Drain-Source On-Resistance	R _{DS(on)}	—	31	42.5	mΩ	V _{GS} = -4.5V, I _D = -4.0A
		—	40	53		V _{GS} = -2.5V, I _D = -3.5A
		—	51	71		V _{GS} = -1.8V, I _D = -2.0A
Forward Transfer Admittance	Y _{fs}	—	3	—	S	V _{DS} = -5V, I _D = -4A
DYNAMIC CHARACTERISTICS						
Input Capacitance	C _{iss}	—	294	—	pF	V _{DS} = -10V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	104	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	25	—	pF	
Gate Resistnace	R _g	—	250	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1.0MHz
SWITCHING CHARACTERISTICS						
Total Gate Charge	Q _g	—	9.1	—	nC	V _{GS} = -4.5V, V _{DS} = -10V I _D = -4A
Gate-Source Charge	Q _{gs}	—	1.5	—	nC	
Gate-Drain Charge	Q _{gd}	—	1.7	—	nC	
Turn-On Delay Time	t _{D(on)}	—	71	—	ns	V _{DS} = -10V, V _{GS} = -4.5V, R _D = 2.5Ω, R _G = 3.0Ω, I _D = -1A
Turn-On Rise Time	t _r	—	117	—	ns	
Turn-Off Delay Time	t _{D(off)}	—	795	—	ns	
Turn-Off Fall Time	t _f	—	393	—	ns	

Notes: 3. Device mounted on FR-4 substrate PC board, with minimum recommended pad layout.
4. Short duration pulse test used to minimize self-heating effect.