



N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV _{DSS}	R _{DS(ON)} max	I _D max
	42mΩ @ V _{GS} = 10V	4.6A
40V	52mΩ @ V _{GS} = 4.5V	4.1A

Description and Applications

This MOSFET is designed to meet the stringent requirements of Automotive applications. It is qualified to AEC-Q101, supported by a PPAP and is ideal for use in:

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

Features and Benefits

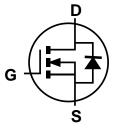
- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

Mechanical Data

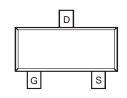
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Annealed over Copper Leadframe.
 Solderable per MIL-STD-202, Method 208 <a>(3)
- Terminals Connections: See Diagram Below
- Weight: 0.008 grams (Approximate)







Internal Schematic



Top View

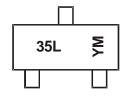
Ordering Information (Note 5)

Part Number	Case	Packaging
DMN4035LQ-7	SOT23	3000/Tape & Reel
DMN4035LQ-13	SOT23	10000/Tape & Reel

Notes: 1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.

- 2. See https://www.diodes.com/quality/lead-free/ 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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to https://www.diodes.com/quality/.
- 5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/

Marking Information



35L = Product Type Marking Code YM = Date Code Marking Y = Year (ex: G = 2019) M = Month (ex: 9 = September)

Date Code Key

Year	2019	20:	20	2021	2022	20	23	2024	2025	20	26	2027
Code	G	F	1	I	J	ŀ	<	L	М	١	1	0
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	40	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current (Note 7) V _{GS} = 10V	I _D	4.6 3.7	А
Maximum Body Diode Forward Current (Note 7)	I _S	1.5	Α
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)	I _{DM}	25	Α
Pulsed Source Current (10µs Pulse, Duty Cycle = 1%	I _{SM}	25	Α

Thermal Characteristics

Characteristic		Symbol	Value	Unit
Power Dissipation (Note 6)		P_{D}	0.72	W
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	171	°C/W	
Power Dissipation (Note 7)		P_{D}	1.4	W
Thermal Resistance, Junction to Ambient (Note 7)	Steady State	$R_{\theta JA}$	93	°C/W
Operating and Storage Temperature Range		T _J , T _{STG}	-55 to +150	°C

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

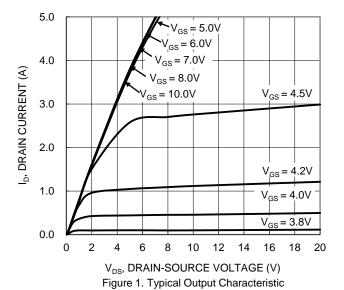
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS (Note 8)							
Drain-Source Breakdown Voltage	BV _{DSS}	40	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μA	$V_{DS} = 40V$, $V_{GS} = 0V$	
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$	
ON CHARACTERISTICS (Note 8)							
Gate Threshold Voltage	V _{GS(TH)}	1	_	3	V	$V_{DS} = V_{GS}$, $I_D = 250\mu A$	
Static Drain-Source On-Resistance	D	_	30	42	mO.	$V_{GS} = 10V, I_D = 4.3A$	
Static Dialii-Source Oil-Resistance	R _{DS(ON)}	_	40	40 52 mΩ	11122	$V_{GS} = 4.5V, I_D = 3.9A$	
Diode Forward Voltage	V _{SD}	_	0.7	1.1	V	V _{GS} = 0V, I _S = 1.25A	
DYNAMIC CHARACTERISTICS (Note 9)							
Input Capacitance	C _{iss}	_	574	_		V _{DS} = 20V, V _{GS} = 0V, f = 1MHz	
Output Capacitance	Coss	_	87.8	_	pF		
Reverse Transfer Capacitance	C _{rss}	_	38.7	_			
Gate Resistance	Rg	_	1.6	_	Ω	$V_{DS} = 0V$, $V_{GS} = 0V$, $f = 1MHz$	
Total Gate Charge (V _{GS} = 4.5V)	Qg	_	5.9	_			
Total Gate Charge (V _{GS} = 10V)	Qg	_	12.5	_	nC	V _{DS} = 20V, I _D = 3.9A	
Gate-Source Charge	Qgs	_	1.7	_	IIC	$V_{DS} = 20V, I_{D} = 3.9A$	
Gate-Drain Charge	Q_{gd}	_	2.2	_			
Turn-On Delay Time	t _{D(ON)}	_	3.1	_		V _{DD} = 20V, V _{GS} = 10V,	
Turn-On Rise Time	t _R	_	2.6	_	no		
Turn-Off Delay Time	t _{D(OFF)}	_	15	_	ns	$R_L = 20\Omega$, $R_G = 6\Omega$	
Turn-Off Fall Time	t _F	_	5.5	_	İ		
Reverse Recovery Time	t _{RR}	_	6.5	_	ns	2.04 4:/4+ 5004/	
Reverse Recovery Charge	Q_{RR}	_	1.2	_	nC	$I_F = 3.9A$, di/dt = 500A/ μ s	

Notes:

^{6.} Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.7. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate.8. Short duration pulse test used to minimize self-heating effect.

^{9.} Guaranteed by design. Not subject to product testing.





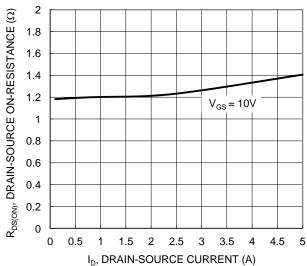


Figure 3. Typical On-Resistance vs. Drain Current and Gate Voltage

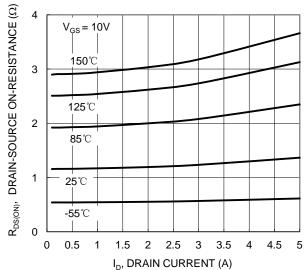


Figure 5. Typical On-Resistance vs. Drain Current and Temperature

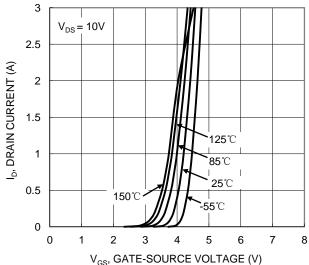


Figure 2. Typical Transfer Characteristic

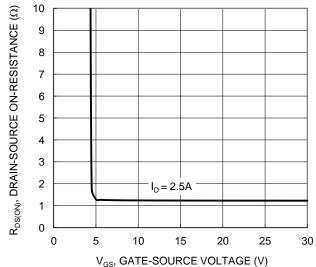


Figure 4. Typical Transfer Characteristic

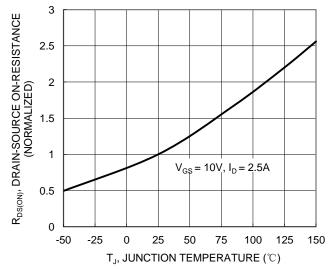


Figure 6. On-Resistance Variation with Temperature



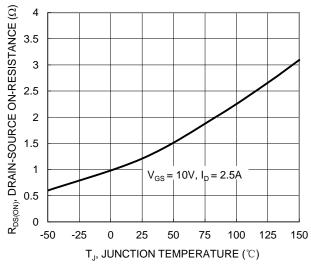
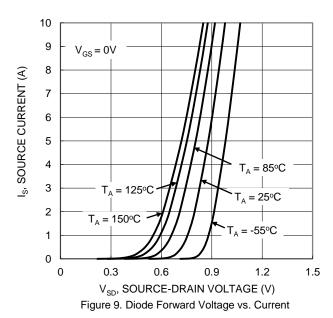


Figure 7. On-Resistance Variation with Temperature



10 8 6 $V_{GS}(V)$ 4 $V_{DS} = 400V, I_{D} = 5A$ 2 0 0 8 2 10 12 14 16 Q_q (nC)

Figure 11. Gate Charge

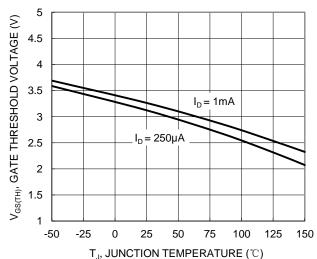
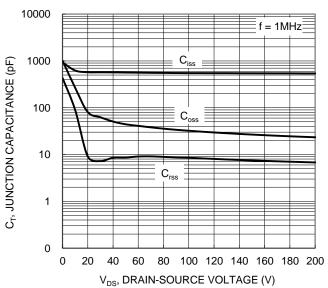


Figure 8. Gate Threshold Variation vs. Junction Temperature



V_{DS}, DRAIN-SOURCE VOLTAGE (V) Figure 10. Typical Junction Capacitance

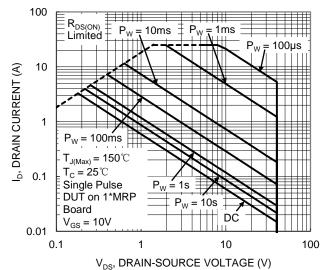


Figure 12. SOA, Safe Operation Area



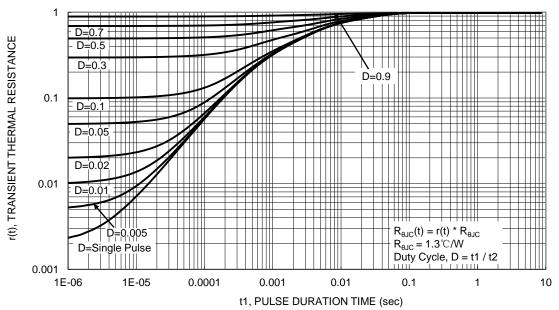


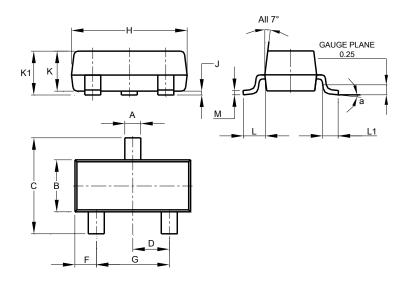
Figure 13. Transient Thermal Resistance



Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23

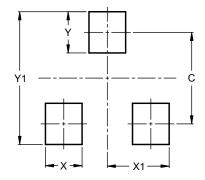


SOT23							
Dim	Min	Max	Тур				
Α	0.37	0.51	0.40				
В	1.20	1.40	1.30				
С	2.30	2.50	2.40				
D	0.89	1.03	0.915				
F	0.45	0.60	0.535				
G	1.78	2.05	1.83				
Н	2.80	3.00	2.90				
J	0.013	0.10	0.05				
K	0.890	1.00	0.975				
K1	0.903	1.10	1.025				
L	0.45	0.61	0.55				
L1	0.25	0.55	0.40				
М	0.085	0.150	0.110				
а	0°	8°					
All Dimensions in mm							

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT23



Dimensions	Value (in mm)
С	2.0
Х	0.8
X1	1.35
Y	0.9
Y1	2.9

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