

40V DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

V _{(BR)DSS}	R _{DS(on)}	I _D T _A = 25°C
40V	34mΩ @ V _{GS} = 10V	6.3A
40 V	59m $Ω$ @ V _{GS} = 4.5V	4.8A

Description and Applications

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

- Motor control
- Backlighting
- DC-DC Converters
- Power management functions

Features and Benefits

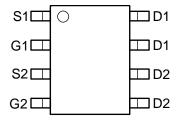
- 100% Unclamped Inductive Switch (UIS) test in production
- Low on-resistance
- Fast switching speed
- Max Q_q rated
- "Green" component and RoHS compliant (Note 1)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

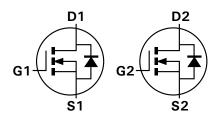
- Case: SO-8
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0 (Note 1)
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals Connections: See diagram below
- Terminals: Finish Matte Tin annealed over Copper lead frame.
 Solderable per MIL-STD-202, Method 208
- Weight: 0.074 grams (approximate)







Top View



Equivalent Circuit

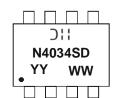
Ordering Information (Note 1)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
DMN4034SSD-13	N4034SD	13	12	2,500

1. Diodes, Inc. defines "Green" products as those which are RoHS compliant and contain no halogens or antimony compounds; further information about Diodes Inc.'s "Green" Policy can be found on our website. For packaging details, go to our website.

Marking Information

Notes:



DII = Manufacturer's Marking N4034SD = Product Type Marking Code YYWW = Date Code Marking YY = Year (ex: 09 = 2009) WW = Week (01 - 53)





Maximum Ratings @T_A = 25°C unless otherwise specified

	Characteristic		Symbol	Value	Unit
Drain-Source voltage			V _{DSS}	40	V
Gate-Source voltage		(Note 2)	V_{GS}	±20	V
Single Pulsed Avalanche Energy		(Note 9)	E _{AS}	27	mJ
Single Pulsed Avalanche Current		(Note 9)	I _{AS}	15.25	Α
Continuous Drain current		(Note 4)		6.3	
	$V_{GS} = 10V$	$T_A = 70$ °C (Note 4)	I_{D}	5.0	Α
		(Note 3)		4.8	
Pulsed Drain current	nt $V_{GS} = 10V$ (Note 5)		I _{DM}	24.8	Α
Continuous Source current (ntinuous Source current (Body diode) (Note 4)		I _S	3.3	Α
Pulsed Source current (Body diode)		(Note 5)	I _{SM}	24.8	Α

Thermal Characteristics @TA = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit		
	(Notes 3 & 6)		1.25 10.0		
Power dissipation Linear derating factor	(Notes 3 & 7)	P_{D}	1.80 14.3	W mW/°C	
	(Notes 4 & 6)		2.14 17.2		
	(Notes 3 & 6)		100		
Thermal Resistance, Junction to Ambient	(Notes 3 & 7)	R _θ JA	70	20044	
	(Notes 4 & 6)		58	°C/W	
Thermal Resistance, Junction to Lead	(Notes 6 & 8)	$R_{ hetaJL}$	55		
Operating and storage temperature range	•	T _J , T _{STG}	-55 to 150	°C	

Notes:

- 2. AEC-Q101 V_{GS} maximum is $\pm 16V$.
- 3. For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
- 4. Same as note (3), except the device is measured at t \leq 10 sec.
- 5. Same as note (3), except the device is measured at t ≥ 10 sec.

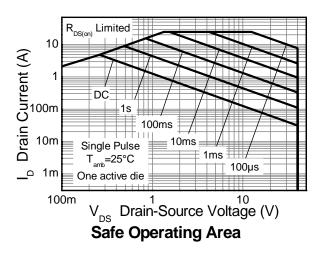
 5. Same as note (3), except the device is pulsed with D = 0.02 and pulse width 300μs. The pulse current is limited by the maximum junction temperature.

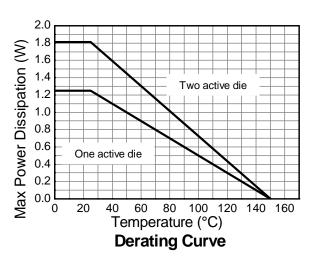
 6. For a dual device with one active die.
- 7. For a device with two active die running at equal power.
- 8. Thermal resistance from junction to solder-point (at the end of the drain lead).
- 9. UIS in production with $L = 100 \mu H$, $V_{DD} = 40 V$.

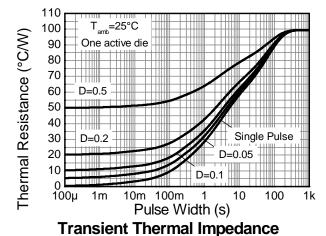


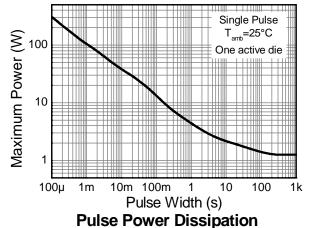


Thermal Characteristics













Electrical Characteristics @T_A = 25°C unless otherwise specified

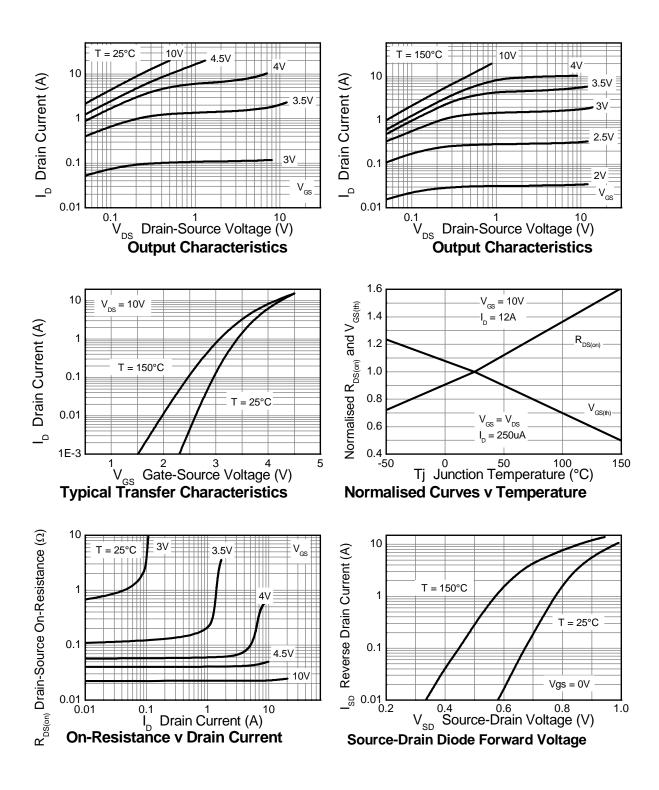
Characteristic	Symbol	Min	Тур	Max	Unit	Test Co	ondition
OFF CHARACTERISTICS							
Drain-Source Breakdown Voltage	BV _{DSS}	40	_	_	V	$I_D = 250 \mu A, V_{GS} = 0 V$	
Zero Gate Voltage Drain Current	I _{DSS}	_	_	1	μΑ	V _{DS} = 40V, V _{GS} :	= 0V
Gate-Source Leakage	I _{GSS}	_	_	±100	nA	$V_{GS} = \pm 20V, V_{DS}$	s = 0V
ON CHARACTERISTICS				•	•	•	
Gate Threshold Voltage	V _{GS(th)}	1.0		3.0	V	$I_D = 250 \mu A$, V_{DS}	= V _G S
Static Drain Source On Decistones (Note 10)	5		0.023	0.034	Ω	$V_{GS} = 10V, I_D = 0$	6A
Static Drain-Source On-Resistance (Note 10)	R _{DS (ON)}		0.039	0.059	12	$V_{GS} = 4.5V, I_{D} =$	5A
Forward Transconductance (Notes 10 & 11)	9fs		20.5	_	S	$V_{DS} = 15V, I_{D} = 6$	6A
Diode Forward Voltage (Note 10)	V_{SD}	_	0.87	1.1	V	$I_S = 6A, V_{GS} = 0$	/
Reverse recovery time (Note 11)	t _{rr}		11.2	_	ns	I _S = 2A, di/dt= 100A/μs	
Reverse recovery charge (Note 11)	Q _{rr}		4.8	_	nC		
DYNAMIC CHARACTERISTICS (Note 11)							
Input Capacitance	C _{iss}		453	_	pF	.,	
Output Capacitance	Coss		79.1	_	рF	$V_{DS} = 20V, V_{GS} = 0V$ f = 1MHz	
Reverse Transfer Capacitance	Crss		40.5	_	pF	1 = 1101112	
Total Gate Charge (Note 12)	Q_g	_	4.9	8	nC	$V_{GS} = 4.5V$	
Total Gate Charge (Note 12)	Qg	_	10	18	nC		$V_{DS} = 20V$
Gate-Source Charge (Note 12)	Q _{gs}	_	1.8	_	nC	$V_{GS} = 10V$	$I_D = 6A$
Gate-Drain Charge (Note 12)	Q_{gd}	_	2.4	_	nC	1	
Turn-On Delay Time (Note 12)	t _{D(on)}		2.7	_	ns		
Turn-On Rise Time (Note 12)	t _r	_	2.7	_	ns	V _{DD} = 20V, V _{GS} = 10V	
Turn-Off Delay Time (Note 12)	t _{D(off)}	_	14	_	ns	$I_D = 1A, R_G \cong 6.0\Omega$	
Turn-Off Fall Time (Note 12)	t _f		6	_	ns		

Notes:

^{10.} Measured under pulsed conditions. Pulse width $\leq 300 \mu s$; duty cycle $\leq 2\%$ 11. For design aid only, not subject to production testing. 12. Switching characteristics are independent of operating junction temperatures.



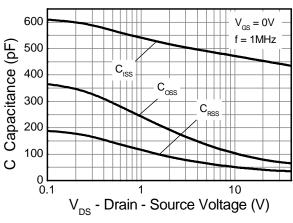
Typical Characteristics

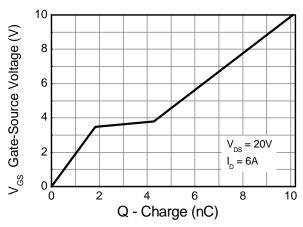






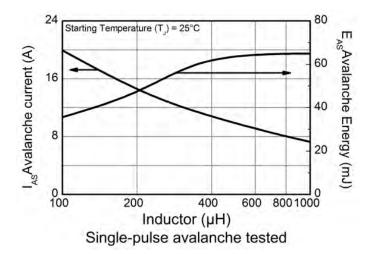
Typical Characteristics – continued





Capacitance v Drain-Source Voltage

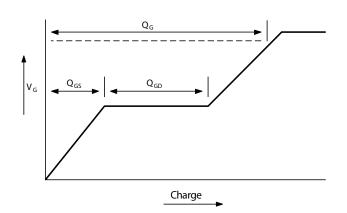
Gate-Source Voltage v Gate Charge

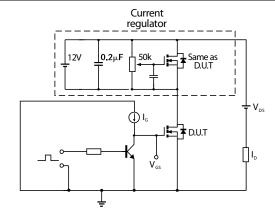






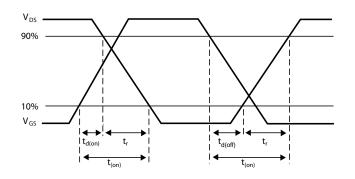
Test Circuits

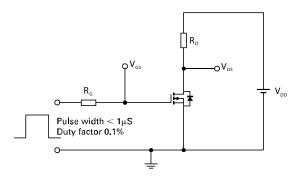




Basic gate charge waveform

Gate charge test circuit



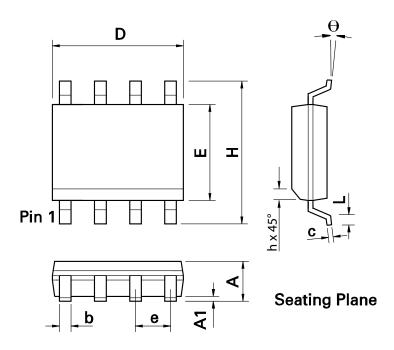


Switching time waveforms

Switching time test circuit

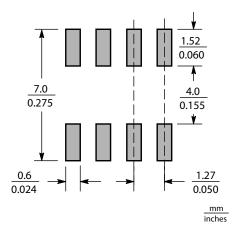


Package Outline Dimensions



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
Α	0.053	0.069	1.35	1.75	е	0.050 BSC		1.27 BSC	
A1	0.004	0.010	0.10	0.25	b	0.013	0.020	0.33	0.51
D	0.189	0.197	4.80	5.00	С	0.008	0.010	0.19	0.25
Н	0.228	0.244	5.80	6.20	θ	0°	8°	0°	8°
Е	0.150	0.157	3.80	4.00	h	0.010	0.020	0.25	0.50
L	0.016	0.050	0.40	1.27	-	-	-	-	-

Suggested Pad Layout







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