

Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)} \text{ max}$	$I_D \text{ max}$ $T_A = +25^\circ\text{C}$
30V	3Ω @ $V_{GS} = 4.5\text{V}$	250 mA
	5Ω @ $V_{GS} = 4.0\text{V}$	200 mA
	7Ω @ $V_{GS} = 2.5\text{V}$	100 mA

Description

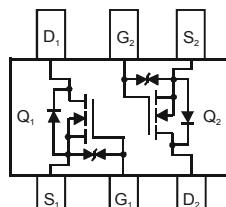
This MOSFET has been designed to minimize the on-state resistance ($R_{DS(ON)}$) and yet maintain superior switching performance, making it ideal for high efficiency power management applications.

Applications

- Motor Control
- Power Management Functions
- DC-DC Converters
- Backlighting



Top View

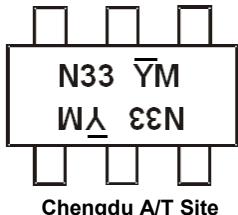
Top View
Internal Schematic

Ordering Information (Note 4)

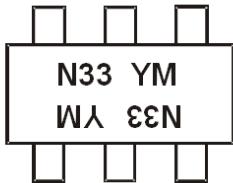
Part Number	Case	Packaging
DMN33D8LDW-7	SOT363	3K/Tape & Reel
DMN33D8LDW-13	SOT363	10K/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See http://www.diodes.com/quality/lead_free.html 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>

Marking Information



Chengdu A/T Site



Shanghai A/T Site

N33 = Product Type Marking Code

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

YM = Date Code Marking for CAT (Chengdu Assembly/ Test site)

Y or YM = Year (ex: A = 2013)

M = Month (ex: 9 = September)

Date Code Key

Year	2011	2012	2013	2014	2015	2016	2017					
Code	Y	Z	A	B	C	D	E					
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 (@ $T_A = +25^\circ\text{C}$, 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 5) $V_{GS} = 4.5\text{V}$	Steady State	$T_A = +25^\circ\text{C}$ $T_A = +70^\circ\text{C}$	I_D	250 200	mA
Maximum Continuous Body Diode Forward Current (Note 5)			I_S	0.5	A
Pulsed Drain Current (10 μs pulse, duty cycle=1%)			I_{DM}	0.8	A

Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 5)	P_D	0.35	W
		0.22	
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	360	°C/W
		126	
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)						
Drain-Source Breakdown Voltage	BV_{DSS}	30	—	—	V	$V_{GS} = 0\text{V}, I_D = 1\text{mA}$
Zero Gate Voltage Drain Current @ $T_C = +25^\circ\text{C}$	I_{DSS}	—	—	1	μA	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}$
Gate-Source Leakage	I_{GSS}	—	—	± 10	μA	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	0.8	—	1.5	V	$V_{DS} = 3\text{V}, I_D = 100\mu\text{A}$
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	—	2.4	Ω	$V_{GS} = 10\text{V}, I_D = 250\text{mA}$
		—	—	3.0		$V_{GS} = 4.5\text{V}, I_D = 250\text{mA}$
		—	—	5.0		$V_{GS} = 4.0\text{V}, I_D = 10\text{mA}$
		—	—	7.0		$V_{GS} = 2.5\text{V}, I_D = 5\text{mA}$
		—	—	20		$V_{GS} = 1.8\text{V}, I_D = 5\text{mA}$
Forward Transfer Admittance	$ Y_{fs} $	10	—	-	mS	$V_{DS} = 3\text{V}, I_D = 10\text{mA}$
Diode Forward Voltage	V_{SD}	—	—	1.2	V	$V_{GS} = 0\text{V}, I_S = 115\text{mA}$
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	48	—	pF	$V_{DS} = 5\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$
Output Capacitance	C_{oss}	—	11	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	8	—	pF	
Gate Resistance	R_g	—	57	—	Ω	$f=1\text{MHz}, V_{GS}=0\text{V}, V_{DS}=0\text{V}$
Total Gate Charge ($V_{GS} = 4.5\text{V}$)	Q_g	—	0.55	—	nC	$V_{GS} = 10\text{V}, V_{DS} = 10\text{V}, I_D = 250\text{mA}$
Total Gate Charge ($V_{GS} = 10\text{V}$)	Q_g	—	1.23	—	nC	
Gate-Source Charge	Q_{gs}	—	0.14	—	nC	
Gate-Drain Charge	Q_{qd}	—	0.14	—	nC	$V_{DD} = 30\text{V}, V_{GS} = 10\text{V}, R_G = 25\Omega, I_D = 200\text{mA}$
Turn-On Delay Time	$t_{D(on)}$	—	2.9	—	ns	
Turn-On Rise Time	t_r	—	2.6	—	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	18.2	—	ns	
Turn-Off Fall Time	t_f	—	13.6	—	ns	

Notes: 5. Device mounted on 1" x 1" FR-4 PCB with high coverage 2oz. Copper, single sided.

6. Short duration pulse test used to minimize self-heating effect.

7. Guaranteed by design. Not subject to product testing.

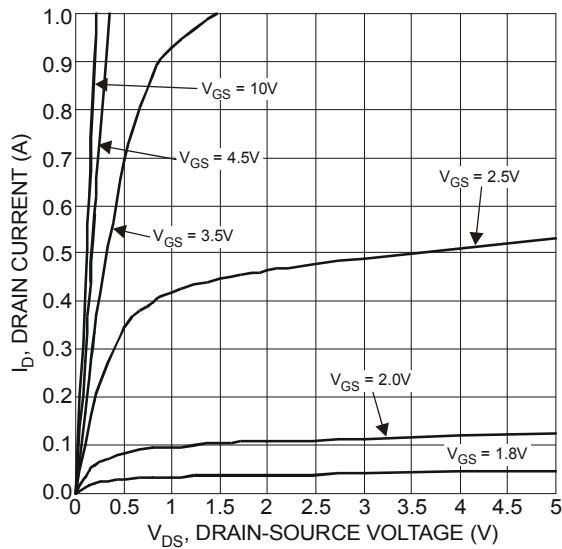


Figure 1 Typical Output Characteristics

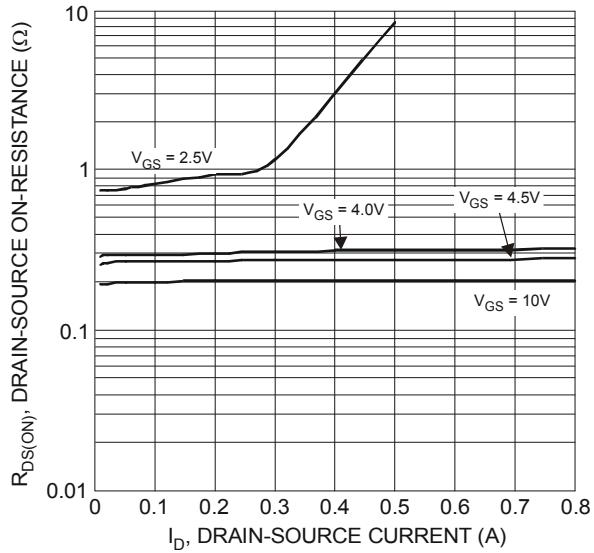
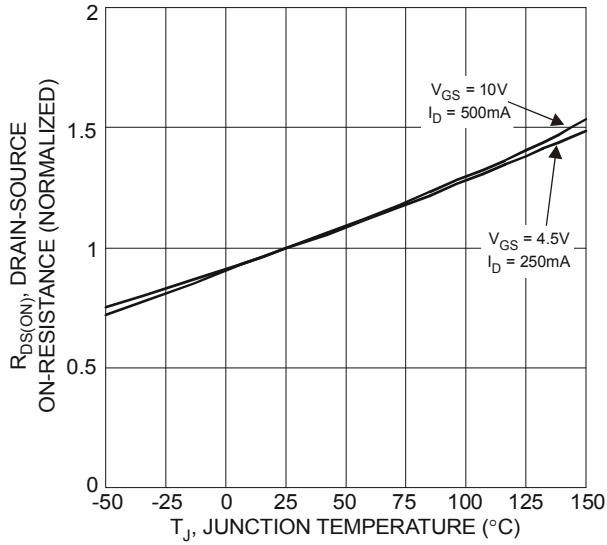
Figure 3 Typical On-Resistance vs.
Drain Current and Gate Voltage

Figure 5 On-Resistance Variation with Temperature

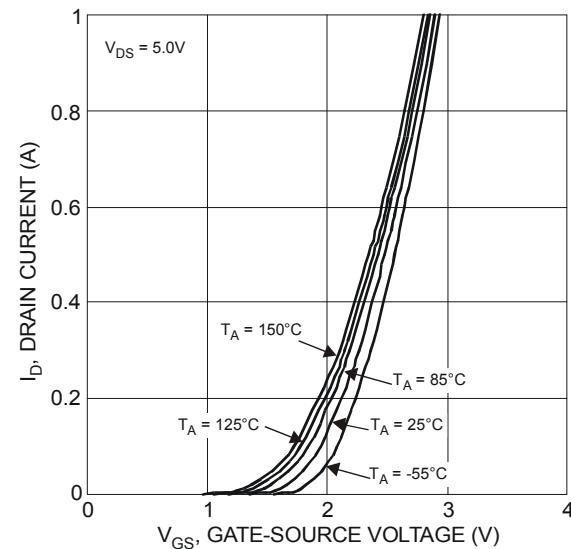


Figure 2 Typical Transfer Characteristics

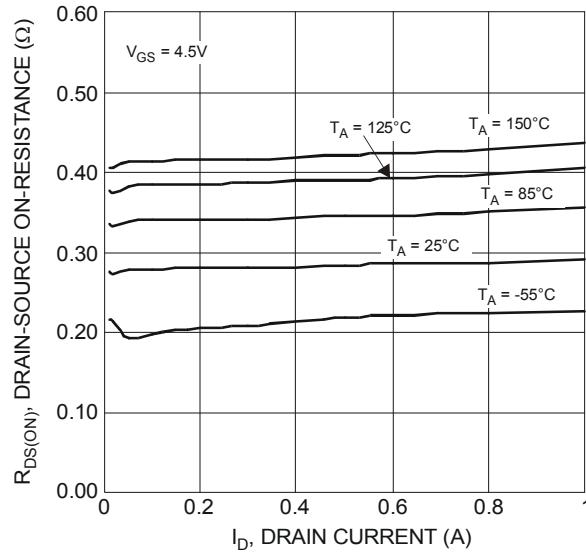
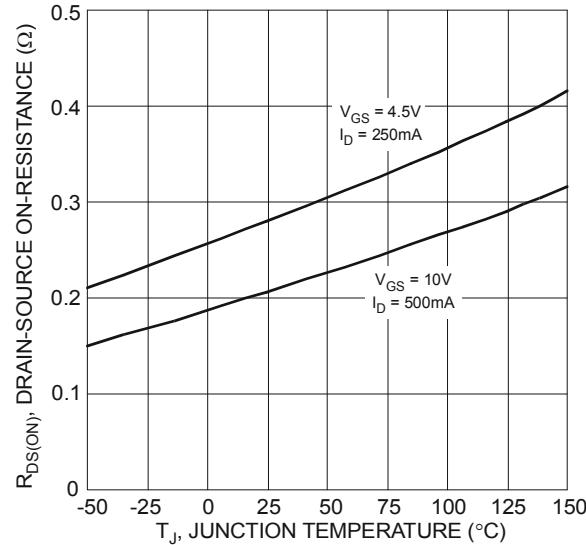
Figure 4 Typical On-Resistance vs.
Drain Current and Temperature

Figure 6 On-Resistance Variation with Temperature

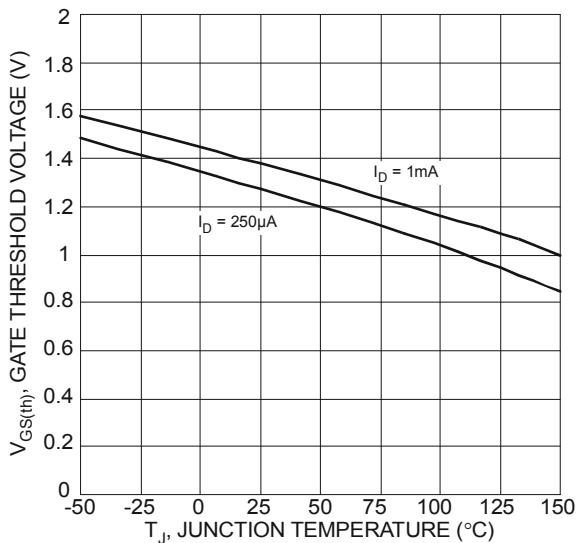


Figure 7 Gate Threshold Variation vs. Ambient Temperature

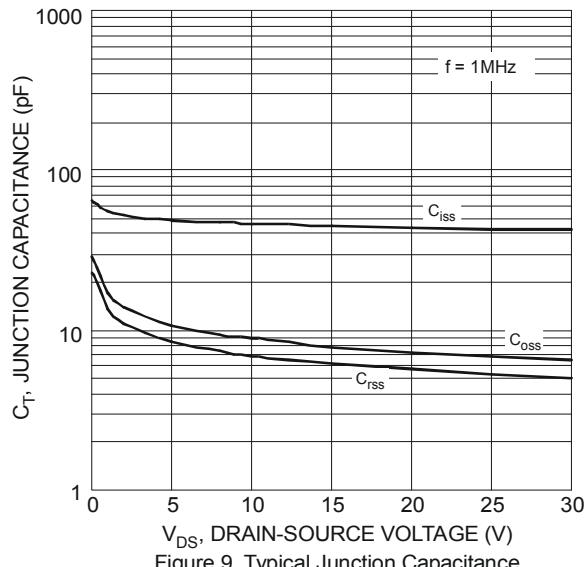


Figure 9 Typical Junction Capacitance

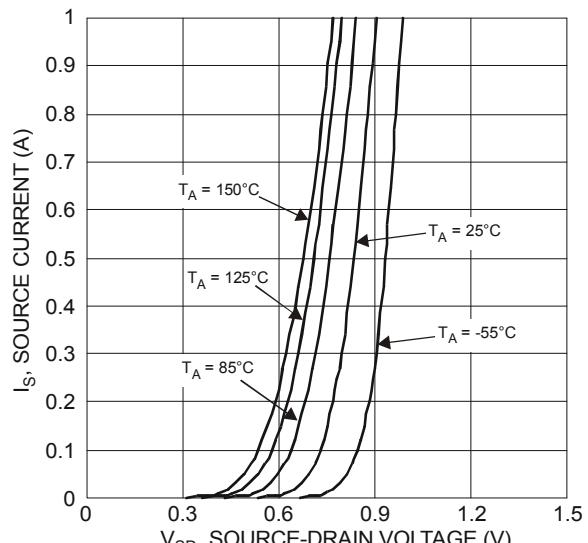


Figure 8 Diode Forward Voltage vs. Current

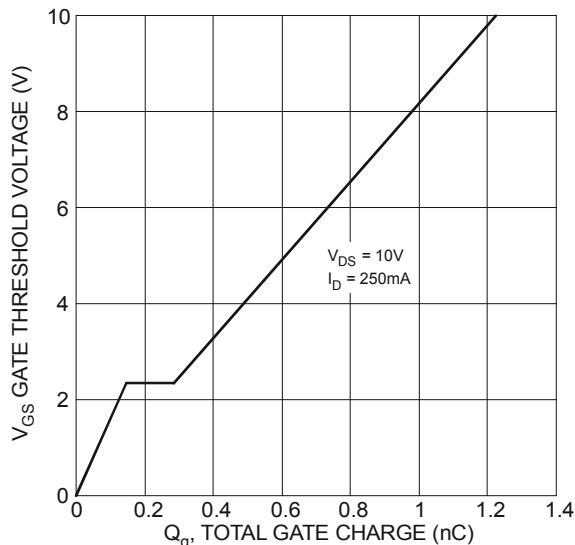


Figure 10 Gate Charge

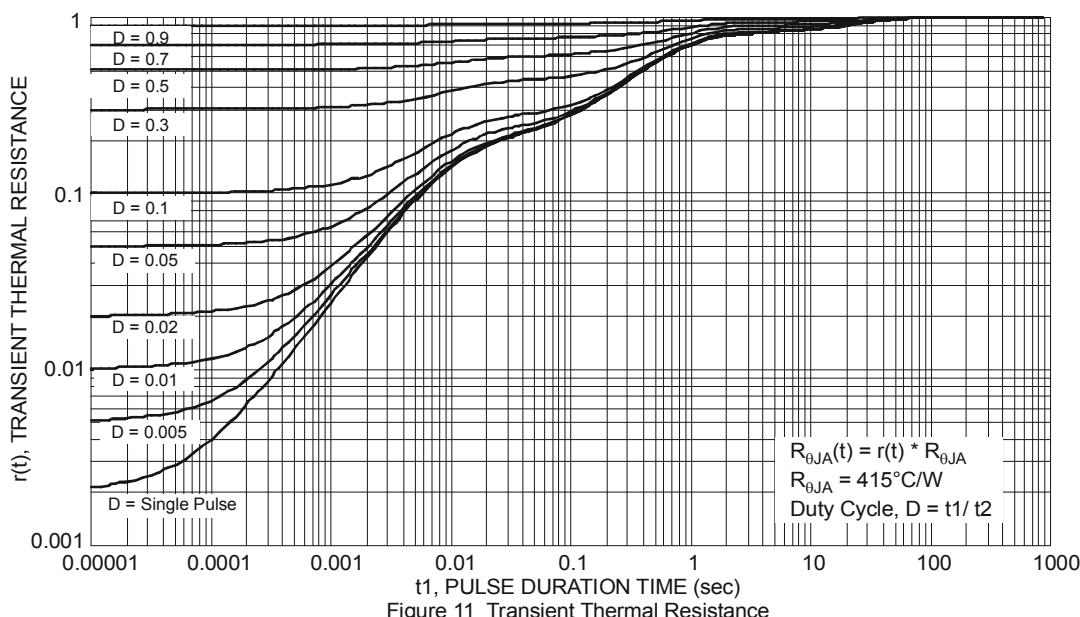
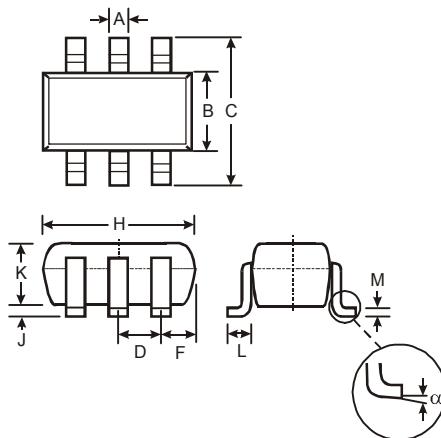


Figure 11 Transient Thermal Resistance

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.

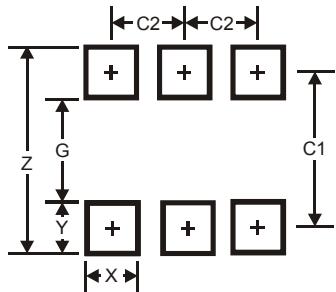


SOT363			
Dim	Min	Max	Typ
A	0.10	0.30	0.25
B	1.15	1.35	1.30
C	2.00	2.20	2.10
D	0.65 Typ		
F	0.40	0.45	0.425
H	1.80	2.20	2.15
J	0	0.10	0.05
K	0.90	1.00	1.00
L	0.25	0.40	0.30
M	0.10	0.22	0.11
α	0°	8°	-

All Dimensions in mm

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



Dimensions	Value (in mm)
Z	2.5
G	1.3
X	0.42
Y	0.6
C1	1.9
C2	0.65

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