Product Summary

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D T_A = 25°C
60V	3.0Ω @ V_{GS} = 10V	400mA
	4.0Ω @ V_{GS} = 5V	330mA

Features and Benefits

- N-Channel MOSFET
- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Small Surface Mount Package
- **ESD Protected Gate, 1.2kV HBM**
- **Lead, Halogen and Antimony Free, RoHS Compliant**
- **"Green" Device (Notes 1 and 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Description and Applications

These N-Channel enhancement mode field effect transistors are produced using DIODES proprietary, high density, uses advanced trench technology.These products have been designed to minimize on-state resistance while provide rugged, reliable, and fast switching performance.These products are particularly suited for low voltage, low current applications such as small

- Load switching

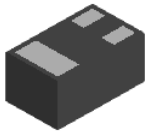
.

Mechanical Data

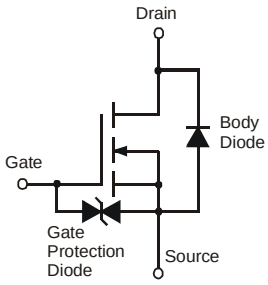
- Case: X1-DFN1006-3
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – NiPdAu over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.001 grams (approximate)

ESD PROTECTED TO 1.2kV

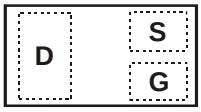
X1-DFN1006-3



Bottom View



Equivalent Circuit



Top View
Pin Configuration

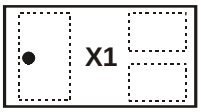
Ordering Information (Note 3)

Part Number	Case	Packaging
DMN65D8LFB-7	X1-DFN1006-3	3,000/Tape & Reel
DMN65D8LFB-7B	X1-DFN1006-3	10,000/Tape & Reel

Notes:
1. No purposefully added lead. Halogen and Antimony Free.
2. Diodes Inc.`s “Green” Policy can be found on our website at http://www.diodes.com
3. For packaging details, go to our website at http://www.diodes.com

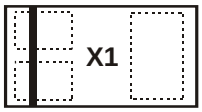
Marking Information

DMN65D8LFB-7



Top View
Dot Denotes Drain Side

DMN65D8LFB-7B



Top View
Bar Denotes Gate and Source Side

X1 = Product Type Marking Code

ate 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

Characteristic			Symbol	Value	Units
Drain-Source Voltage			V_{DSS}	60	V
Gate-Source Voltage			V_{GSS}	±20	V
Continuous Drain Current (Note 4) V_{GS} = 10V	Steady State	T_A = 25°C T_A = 70°C	I_D	260 210	mA
Continuous Drain Current (Note 5) V_{GS} = 10V	Steady State	T_A = 25°C T_A = 70°C	I_D	400 310	mA

Thermal Characteristics

Characteristic	Symbol	Value	Units
Power Dissipation, @T_A = 25°C (Note 4)	P_D	430	mW
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 4)	$R_{\theta JA}$	290	°C/W
Power Dissipation, @T_A = 25°C (Note 5)	P_D	840	mW
Thermal Resistance, Junction to Ambient @T_A = 25°C (Note 5)	$R_{\theta JSA}$	147	°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}	60	-	-	V	V_{GS} = 0V, I_D = 250μA
Zero Gate Voltage Drain Current T_J = 25°C	I_{DSS}	-	-	0.1	μA	V_{DS} = 60V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	-	-	±10	μA	V_{GS} = ±20V, V_{DS} = 0V
ON CHARACTERISTICS (Note 6)						
Gate Threshold Voltage	$V_{GS(th)}$	1.2	-	2.0	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	-	-	3.0 4.0	Ω	V_{GS} = 10V, I_D = 0.115A V_{GS} = 5V, I_D = 0.1115A
Forward Transfer Admittance	$\|Y_{fs}\|$	80	320	-	mS	V_{DS} = 10V, I_D = 0.115A
Diode Forward Voltage	V_{SD}	-	0.7	1.2	V	V_{GS} = 0V, I_S = 0.115A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	-	25	-	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	-	4.7	-	pF	
Reverse Transfer Capacitance	C_{rss}	-	2.5	-	pF	
Turn-On Delay Time	$t_{D(on)}$	-	3.27	-	ns	V_{DD} = 30V, V_{GEN} = 10V, R_{GEN} = 25Ω, I_D = 0.115A
Turn-On Rise Time	t_r	-	3.15	-	ns	
Turn-Off Delay Time	$t_{D(off)}$	-	12.025	-	ns	
Turn-Off Fall Time	t_f	-	6.29	-	ns	

Notes:
4. Device mounted on FR-4 PCB with minimum recommended pad layout, single sided.
5. Device mounted on 2" x 2" FR-4 PCB with high coverage 2 oz. Copper, single sided.
6. Short duration pulse test used to minimize self-heating effect.
7. Guaranteed by design. Not subject to production testing.

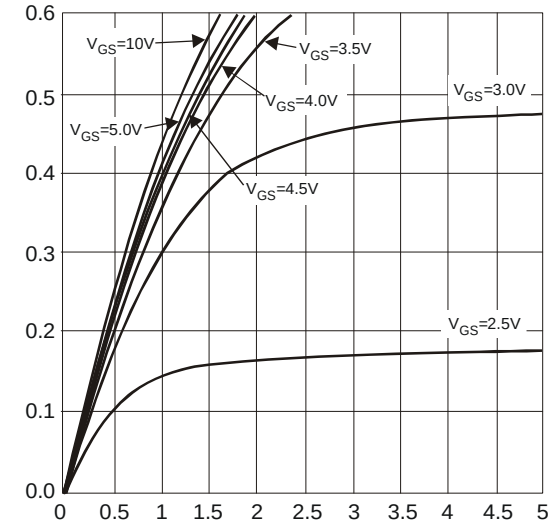


Fig.1 Typical Output Characteristics

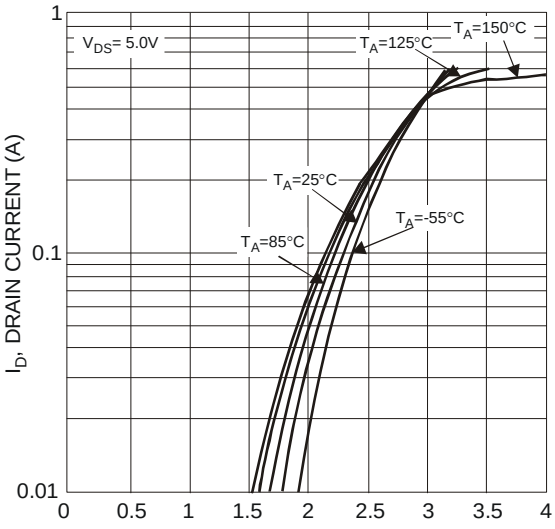


Fig. 2 Typical Transfer Characteristics

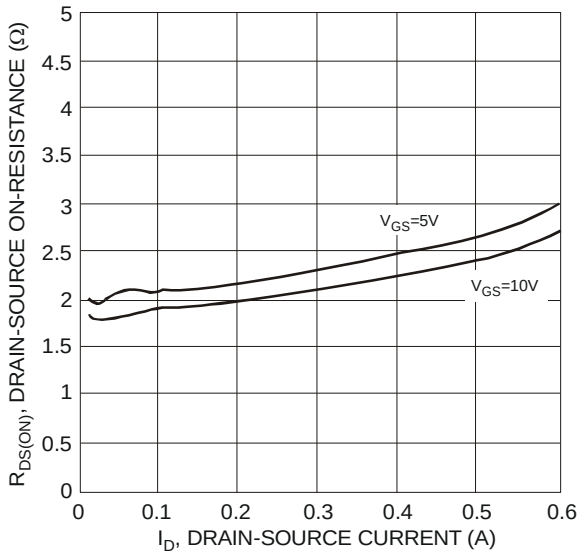


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Charge

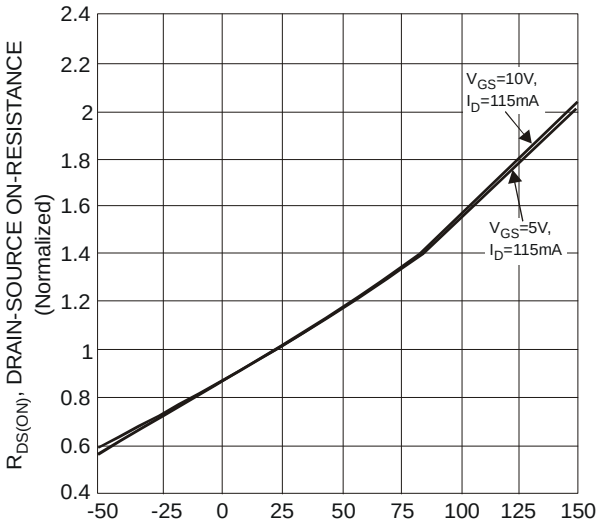


Fig. 4 On-Resistance Variation with Temperature

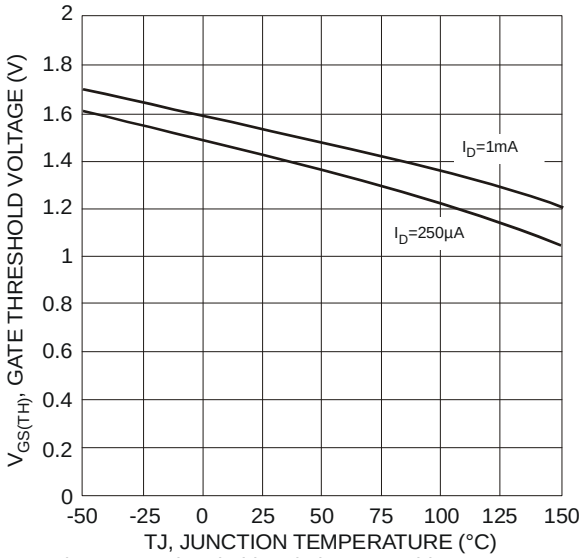


Fig. 5 Gate Threshold Variation vs. Ambient Temperature

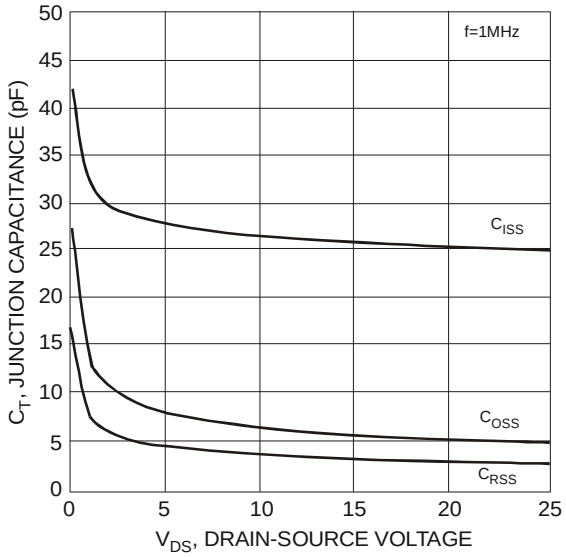


Fig. 6 Typical Junction Capacitance

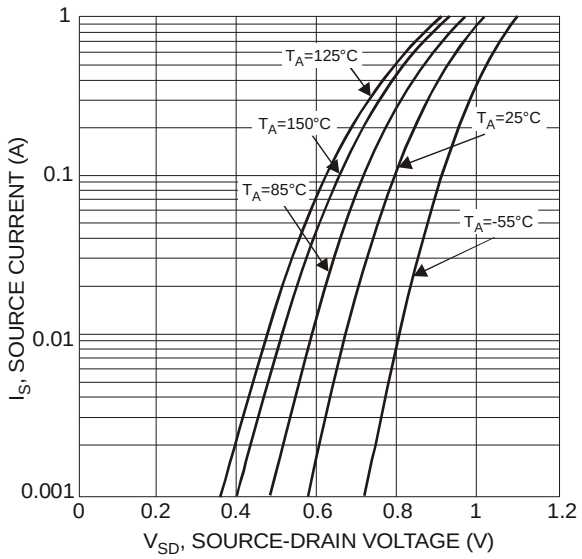
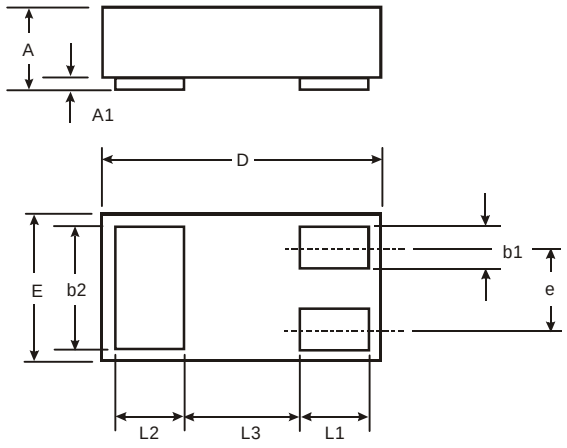


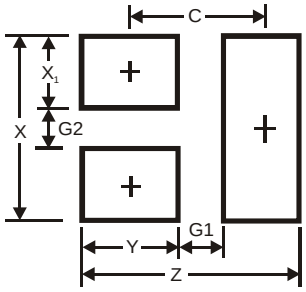
Fig. 7 Diode Forward Voltage vs. Current

Package Outline Dimensions



X1-DFN1006-3			
Dim	**Min**	**Max**	**Typ**
A	0.47	0.53	0.50
A1	0	0.05	0.03
b1	0.10	0.20	0.15
b2	0.45	0.55	0.50
D	0.95	1.075	1.00
E	0.55	0.675	0.60
e	—	—	0.35
L1	0.20	0.30	0.25
L2	0.20	0.30	0.25
L3	—	—	0.40
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.1
G1	0.3
G2	0.2
X	0.7
X1	0.25
Y	0.4
C	0.7

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