

Product Summary

BV _{DSS}	R _{DS(ON)}	I _D T _A = +25°C
60V	2Ω @ V _{GS} = 10V	540mA
	3Ω @ V _{GS} = 5V	430mA

Description and Applications

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

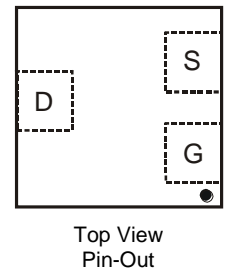
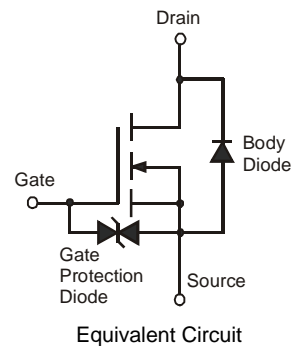
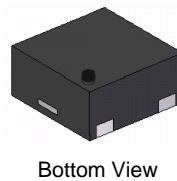
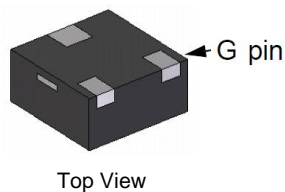
- DC-DC Converters
- Power Management Functions
- Battery Operated Systems and Solid-State Relays
- Load Switch

Features and Benefits

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- ESD Protected Gate to 2kV
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q- suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.**
<https://www.diodes.com/quality/product-definitions/>

Mechanical Data

- Case: X1-DFN1212-3
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminals: Finish – NiPdAu over Copper Leadframe. Solderable per MIL-STD-202, Method 208 (e4)
- Terminal Connections: See Diagram
- Weight: 0.005 grams (Approximate)



Ordering Information (Note 4)

Part Number	Case	Packaging
DMN62D0SFD-7	X1-DFN1212-3	3000/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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

Site 1:



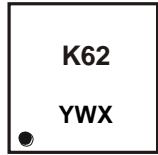
K62 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: I = 2021)
 M = Month (ex: 9 = September)

Date Code Key

Year	2011	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	Y	...	I	J	K	L	M	N	O	P	R	S

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

Site 2:



K62 = Product Type Marking Code
 YWX = Date Code Marking
 Y = Year (ex: 1 = 2021)
 W = Week (ex: a = Week 27; z Represents Week 52 and 53)
 X = Internal Code (ex: U = Monday)

Date Code Key

Year	2011	...	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	1	...	1	2	3	4	5	6	7	8	9	0

Week	1-26	27-52	53
Code	A-Z	a-z	z

Internal Code	Sun	Mon	Tue	Wed	Thu	Fri	Sat
Code	T	U	V	W	X	Y	Z

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

Characteristic			Symbol	Value	Unit
Drain-Source Voltage			V _{DSS}	60	V
Gate-Source Voltage			V _{GSS}	±20	V
Continuous Drain Current (Note 6) V _{GS} = 10V	Steady State	T _A = +25°C T _A = +70°C	I _D	540 430	mA
	t < 10s	T _A = +25°C T _A = +70°C	I _D	630 500	mA
Continuous Drain Current (Note 6) V _{GS} = 5V	Steady State	T _A = +25°C T _A = +70°C	I _D	430 340	mA
	t < 10s	T _A = +25°C T _A = +70°C	I _D	510 410	mA
Pulsed Drain Current (10µs Pulse, Duty Cycle = 1%)			I _{DM}	1.0	A
Maximum Body Diode Forward Current (Note 6)			I _S	540	mA

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

Characteristic			Symbol	Value	Unit
Total Power Dissipation (Note 5)			P _D	0.43	W
Thermal Resistance, Junction to Ambient (Note 5)	Steady State		R _{θJA}	260	°C/W
	t < 10s			182	°C/W
Total Power Dissipation (Note 6)			P _D	0.89	W
Thermal Resistance, Junction to Ambient (Note 6)	Steady State		R _{θJA}	140	°C/W
	t < 10s			98	°C/W
Thermal Resistance, Junction to Case (Note 6)			R _{θJC}	112	°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 7)						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	V _{GS} = 0V, I _D = 10µA
Zero Gate Voltage Drain Current @ T _J = +25°C	I _{DSS}	—	—	100	nA	V _{DS} = 60V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	10	µA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1.0	1.6	2.5	V	V _{DS} = 10V, I _D = 1mA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	—	2	Ω	V _{GS} = 10V, I _D = 500mA
		—	—	3		V _{GS} = 5V, I _D = 50mA
Forward Transfer Admittance	Y _{fs}	—	130	—	mS	V _{DS} = 3V, I _D = 30mA
Diode Forward Voltage	V _{SD}	—	0.8	1.2	V	V _{GS} = 0V, I _S = 300mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{iss}	—	30.2	—	pF	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz
Output Capacitance	C _{oss}	—	4.4	—	pF	
Reverse Transfer Capacitance	C _{rss}	—	2.8	—	pF	
Gate Resistance	R _g	—	131	—	Ω	V _{DS} = 0V, V _{GS} = 0V, f = 1MHz
Total Gate Charge (V _{GS} = 4.5V)	Q _g	—	0.39	—	nC	V _{DS} = 10V, I _D = 1A
Total Gate Charge (V _{GS} = 10.0V)	Q _g	—	0.87	—	nC	
Gate-Source Charge	Q _{gs}	—	0.14	—	nC	
Gate-Drain Charge	Q _{gd}	—	0.09	—	nC	
Turn-On Delay Time	t _{D(ON)}	—	3.95	—	ns	V _{DS} = 30V, I _D = 200mA V _{GS} = 10V, R _G = 25Ω
Turn-On Rise Time	t _r	—	3.81	—	ns	
Turn-Off Delay Time	t _{D(OFF)}	—	16.0	—	ns	
Turn-Off Fall Time	t _f	—	9.04	—	ns	

- Notes:
5. Device mounted on FR-4 PC board, with minimum recommended pad layout, single sided.
 6. Device mounted on FR-4 substrate PC board, 2oz copper, with thermal vias to bottom layer 1inch square copper plate.
 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to production testing.

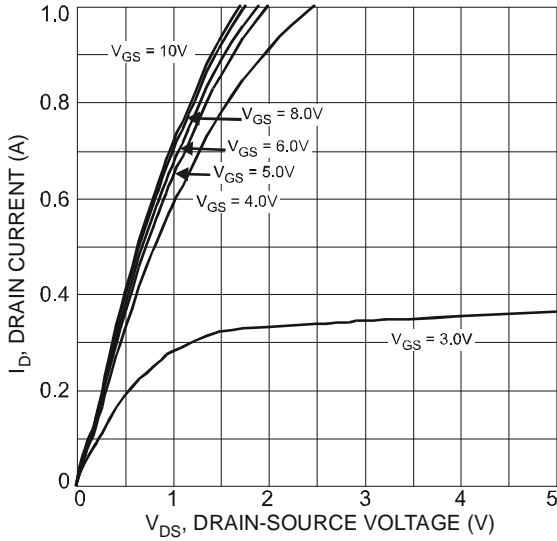


Fig. 1 Typical Output Characteristic

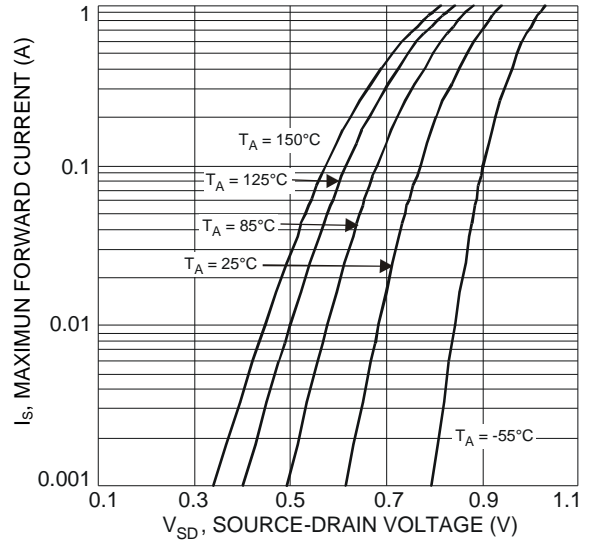


Fig. 2 Maximum Forward Current vs. Source-Drain Voltage

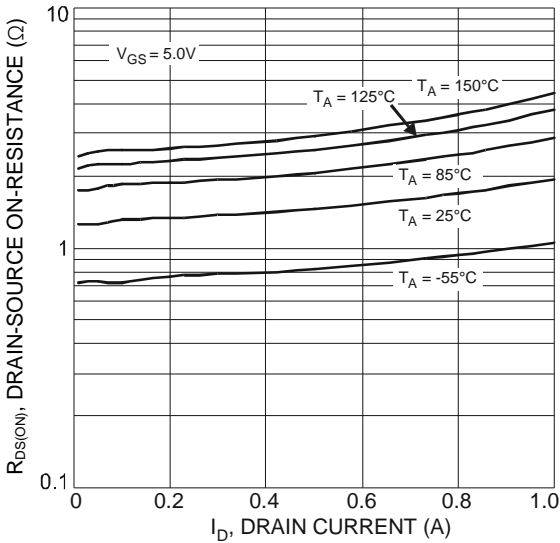


Fig. 3 Typical On-Resistance vs. Drain Current and Temperature

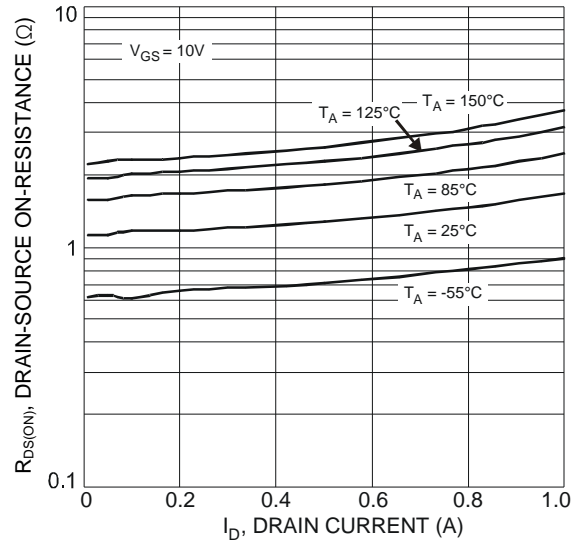


Fig. 4 Typical On-Resistance vs. Drain Current and Temperature

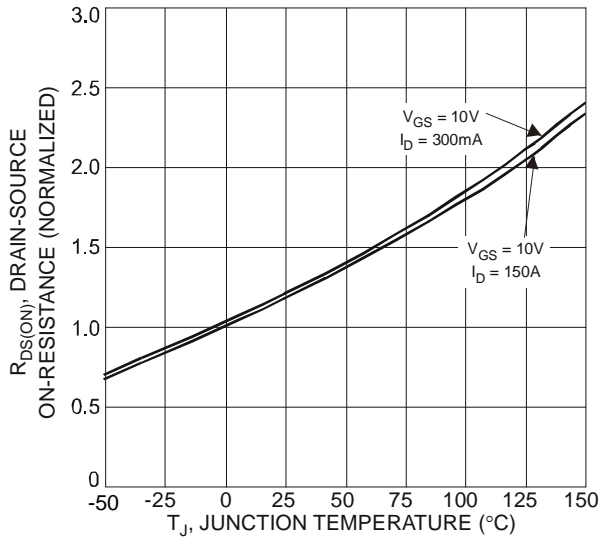


Fig. 5 On-Resistance Variation with Temperature

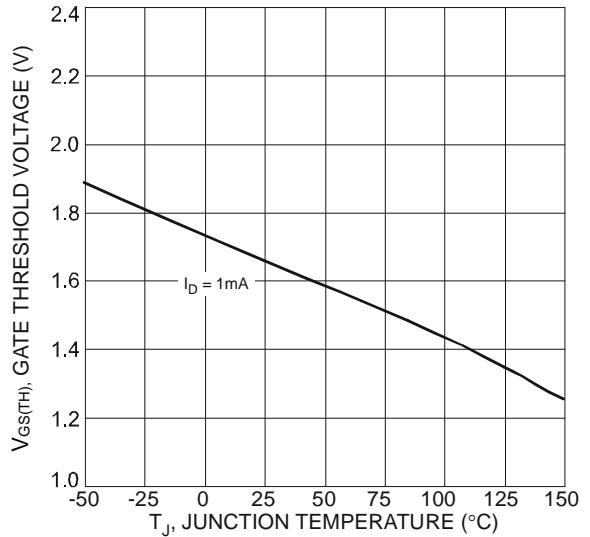


Fig. 6 Gate Threshold Variation vs. Junction Temperature

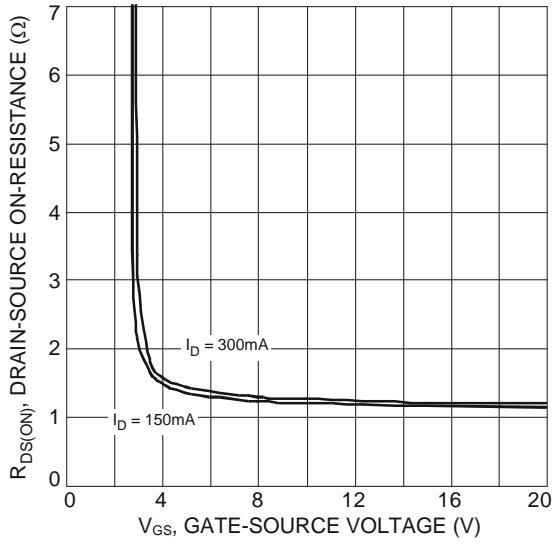


Fig. 7 Typical Transfer Characteristics

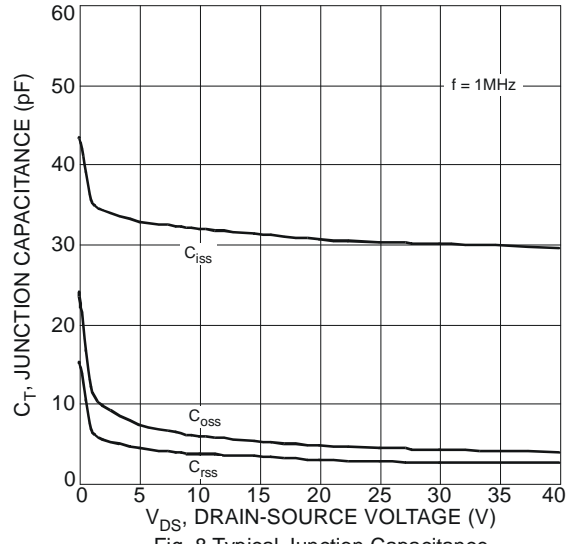


Fig. 8 Typical Junction Capacitance

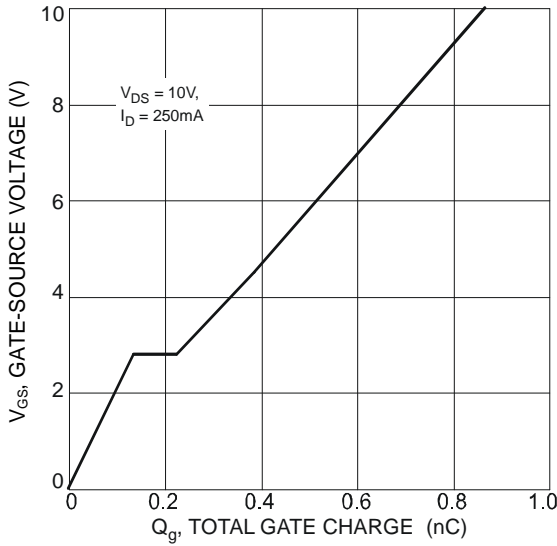


Fig. 9 Gate Charge

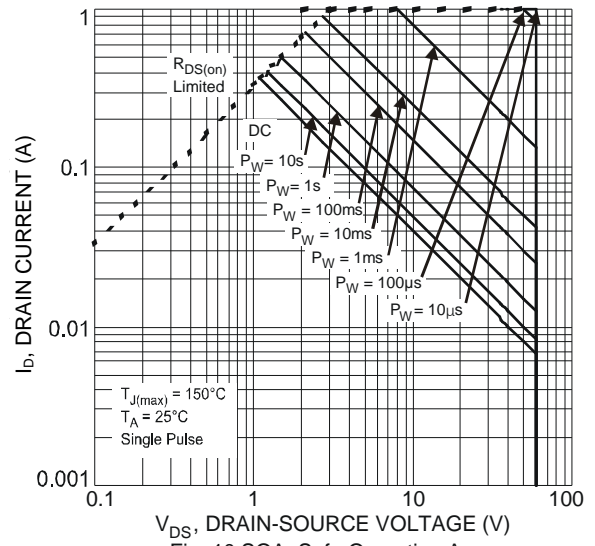


Fig. 10 SOA, Safe Operation Area

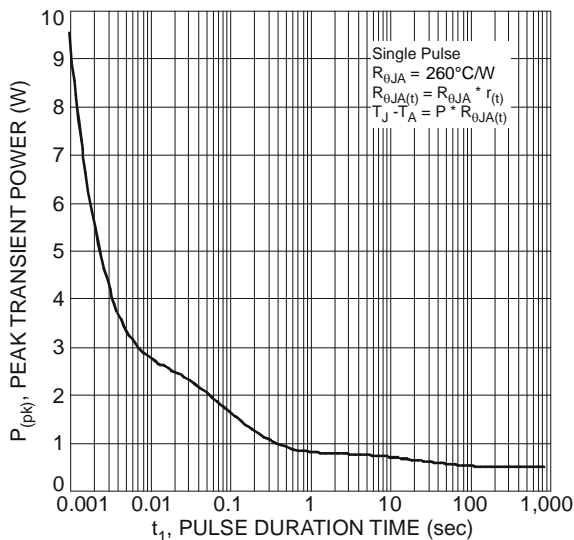
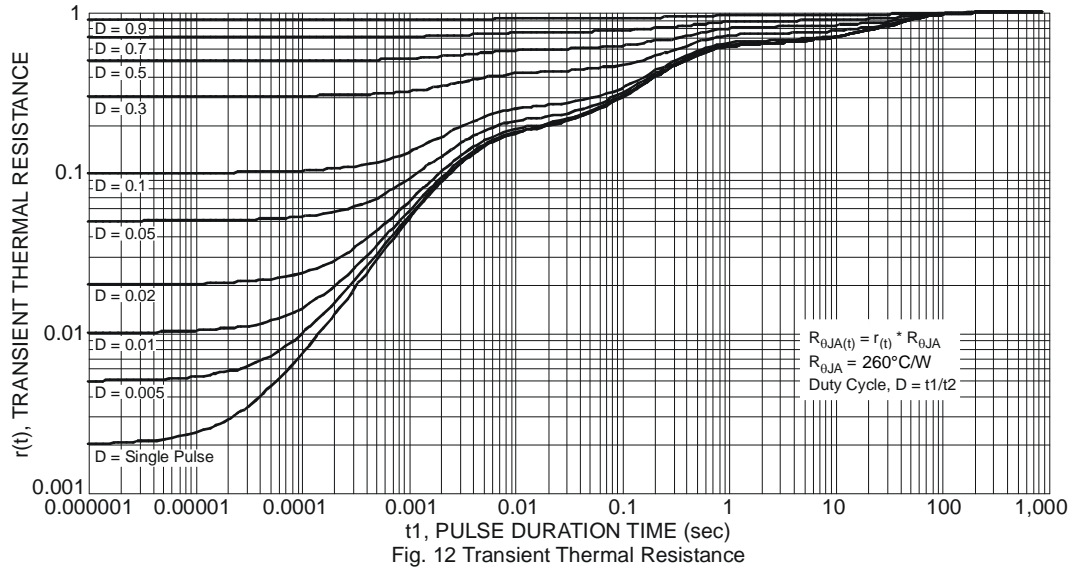


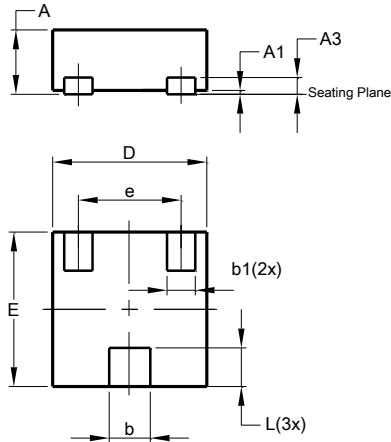
Fig. 11 Single Pulse Maximum Power Dissipation



Package Outline Dimensions

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

X1-DFN1212-3

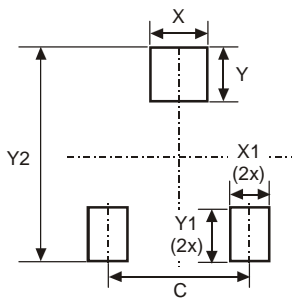


X1-DFN1212-3			
Dim	Min	Max	Typ
A	0.47	0.53	0.50
A1	0	0.05	0.02
A3	-	-	0.13
b	0.27	0.37	0.32
b1	0.17	0.27	0.22
D	1.15	1.25	1.20
E	1.15	1.25	1.20
e	-	-	0.80
L	0.25	0.35	0.30
All Dimensions in mm			

Suggested Pad Layout

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

X1-DFN1212-3



Dimensions	Value (in mm)
C	0.80
X	0.42
X1	0.32
Y	0.50
Y1	0.50
Y2	1.50

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