DUAL N-CHANNEL ENHANCEMENT MODE MOSFET

Product Summary

BV_{DSS}	$R_{DS(ON)}$	I_D T_A = +25°C
20V	3.0Ω @ V_{GS} = 4.5V	240mA
	6.0Ω @ V_{GS} = 1.8V	180mA

Description

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

Applications

- DC-DC converters
- Power management functions

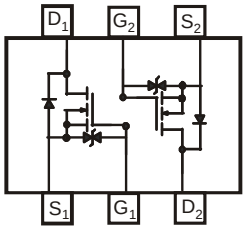
Features

- Dual N-Channel MOSFET
- Low On-Resistance:
  - 3.0Ω @ 4.5V
  - 4.0Ω @ 2.5V
  - 6.0Ω @ 1.8V
  - 10Ω @ 1.5V
- Very Low Gate Threshold Voltage, 1.05V Max
- Low Input Capacitance
- Fast Switching Speed
- Ultra-Small Surface Mount Package
- ESD Protected Gate (HBM 300V)
- **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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

Mechanical Data

- Package: SOT963
- Package 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 – Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.0027 grams (Approximate)

Top View



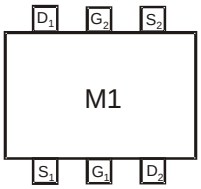
Top View
Schematic and Transistor Diagram

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
DMN26D0UDJ-7	SOT963	10,000	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 (Note 5)



M1 = Product Type Marking Code

Note: 5. Package is non-polarized. Parts may be on reel in orientation illustrated, 180° rotated, or mixed (both ways).

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

Characteristic			Symbol	Value	Unit
Drain Source Voltage			V_{DSS}	20	V
Gate-Source Voltage			V_{GSS}	±10	V
Continuous Drain Current (Note 6) V_{GS} = 4.5V	Steady State	T_A = +25°C T_A = +70°C	I_D	240 190	mA
Continuous Drain Current (Note 6) V_{GS} = 1.8V	Steady State	T_A = +25°C T_A = +70°C	I_D	180 140	mA
Pulsed Drain Current t_P = 10µs			I_{DM}	805	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Total Power Dissipation (Note 6)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 6)	$R_{\theta JA}$	409	°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}	20	—	—	V	V_{GS} = 0V, I_D = 100µA
Zero Gate Voltage Drain Current @ T_J = +25°C	I_{DSS}	—	—	500	nA	V_{DS} = 20V, V_{GS} = 0V
Zero Gate Voltage Drain Current @T_J = +85°C (Note 8)	I_{DSS}	—	—	1.7	µA	V_{DS} = 2.6V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	±1	µA	V_{GS} = ±10V, V_{DS} = 0V
	I_{GSS}	—	—	±100	nA	V_{GS} = ±5V, V_{DS} = 0V
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	$V_{GS(TH)}$	0.45	0.8	1.05	V	V_{DS} = V_{GS}, I_D = 250µA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	—	1.8	3.0	Ω	V_{GS} = 4.5V, I_D = 100mA
		—	2.5	4.0		V_{GS} = 2.5V, I_D = 50mA
		—	3.4	6.0		V_{GS} = 1.8V, I_D = 20mA
		—	4.7	10.0		V_{GS} = 1.5V, I_D = 10mA
		—	9.5	—		V_{GS} = 1.2V, I_D = 1mA
Forward Transconductance	$\|Y_{fs}\|$	180	240	—	mS	V_{DS} =10V, I_D = 0.1A
Source-Drain Diode Forward Voltage	V_{SD}	0.5	0.8	1.0	V	V_{GS} = 0V, I_S = 10mA
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C_{iss}	—	14.1	—	pF	V_{DS} = 15V, V_{GS} = 0V f = 1.0MHz
Output Capacitance	C_{oss}	—	2.9	—	pF	
Reverse Transfer Capacitance	C_{rss}	—	1.6	—	pF	
SWITCHING CHARACTERISTICS, V_{GS} = 4.5V (Note 8)						
Turn-On Delay Time	$t_{D(ON)}$	—	3.8	—	ns	V_{GS} = 4.5V, V_{DD} = 10V I_D = 200mA, R_G = 2.0Ω
Rise Time	t_R	—	7.9	—		
Turn-Off Delay Time	$t_{D(OFF)}$	—	13.4	—		
Fall Time	t_F	—	15.2	—		

Notes: 6. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch with minimum recommended pad layout; pad layout as shown on Diodes Incorporated's suggested pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.
7. Short duration pulse test used to minimize self-heating effect.
8. Guaranteed by design, not subject to production testing.

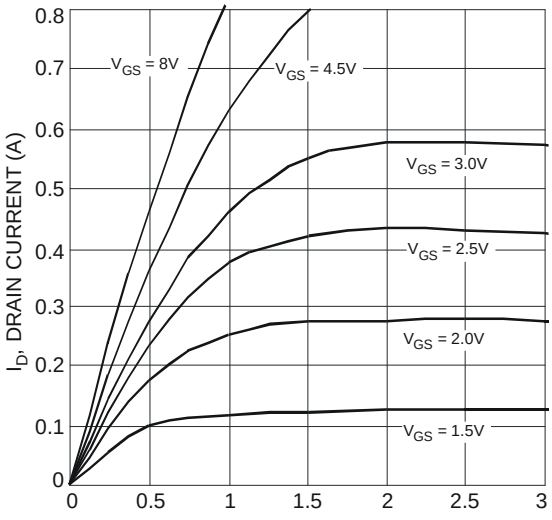


Fig. 1 Typical Output Characteristic

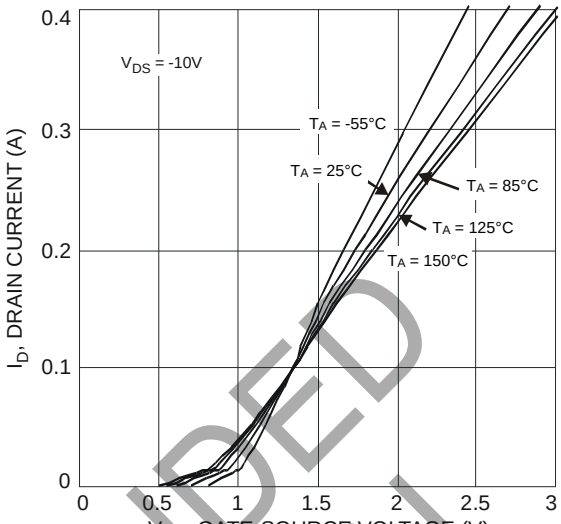


Fig. 2 Typical Transfer Characteristic

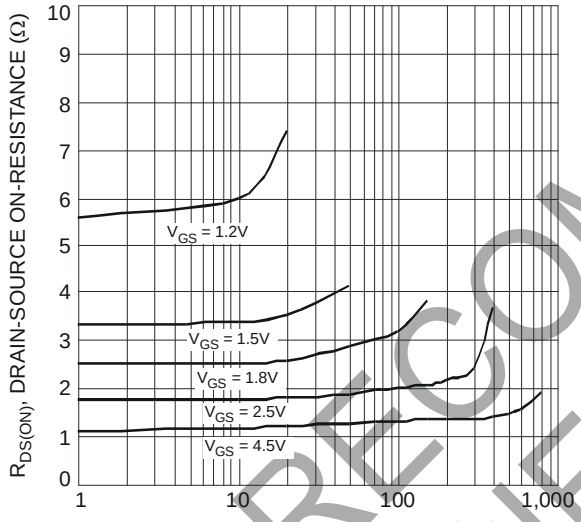


Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

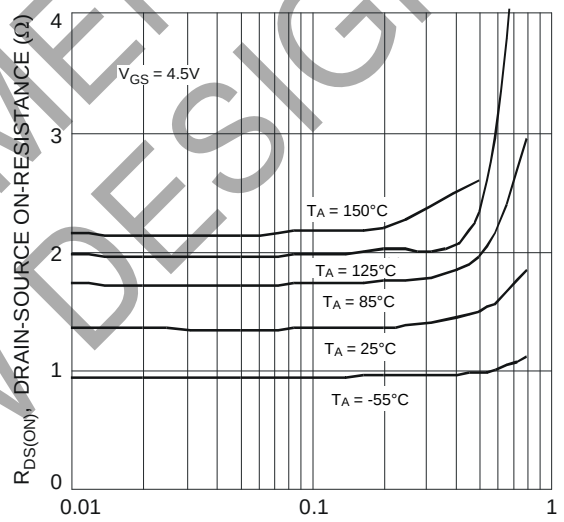


Fig. 4 Typical On-Resistance
vs. Drain Current and Temperature

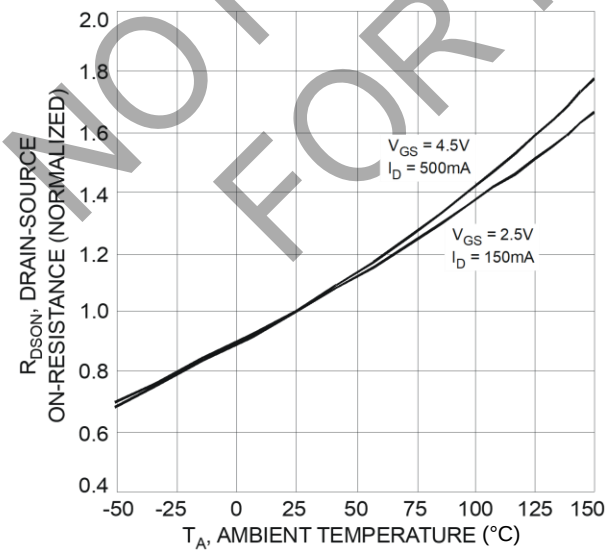


Fig. 5 On-Resistance Variation with Temperature

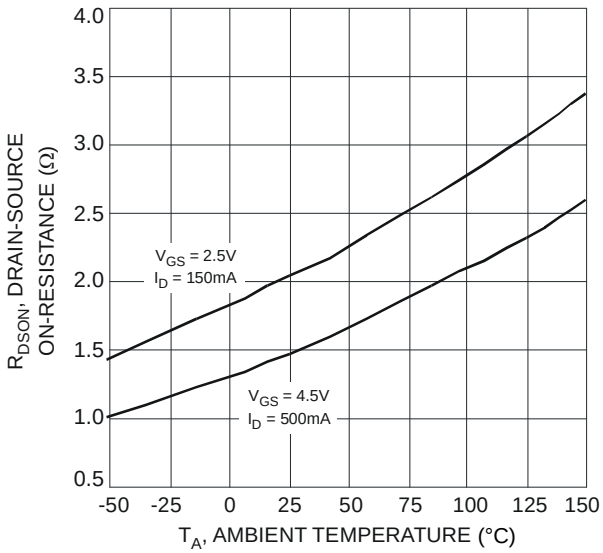


Fig. 6 On-Resistance Variation with Temperature

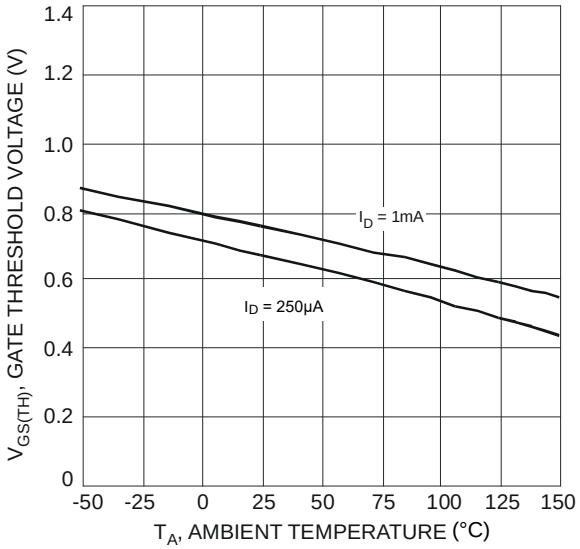


Fig. 7 Gate Threshold Variation vs. Ambient Temperature

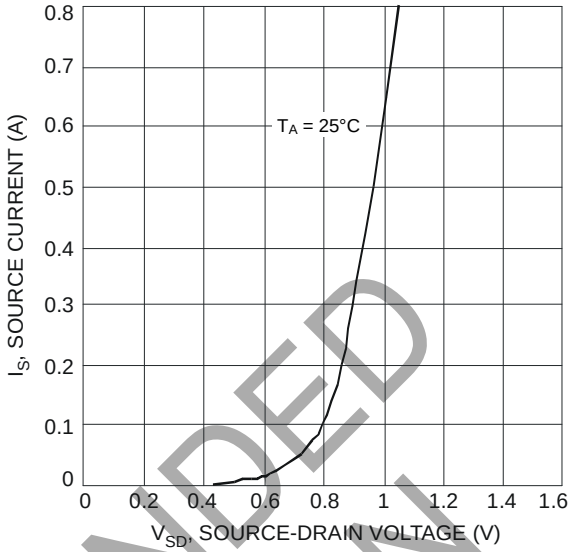


Fig. 8 Diode Forward Voltage vs. Current

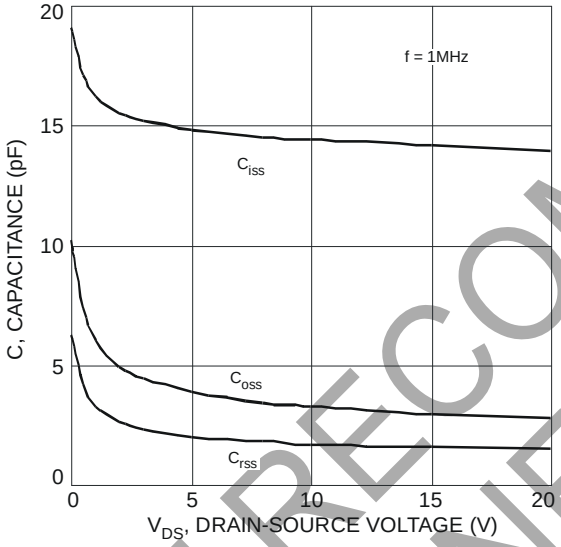


Fig. 9 Typical Total Capacitance

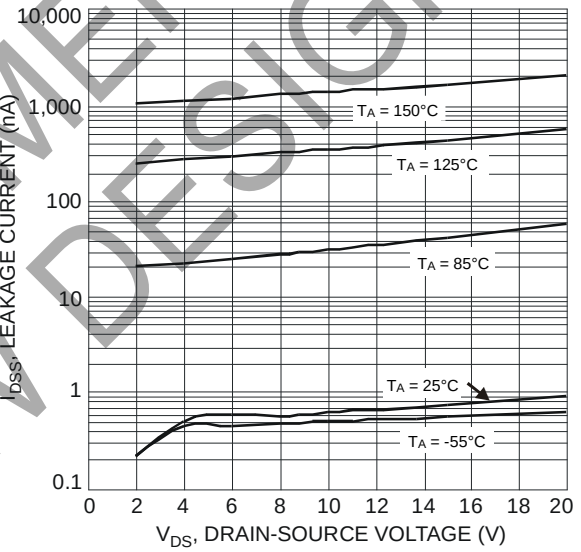
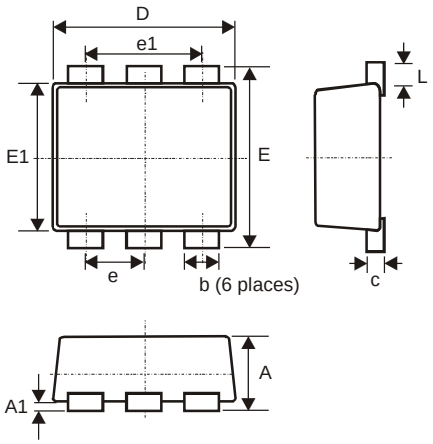


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

Package Outline Dimensions

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

SOT963



SOT963			
Dim	**Min**	**Max**	**Typ**
A	0.40	0.50	0.45
A1	0	0.05	-
c	0.120	0.180	0.150
D	0.95	1.05	1.00
E	0.95	1.05	1.00
E1	0.75	0.85	0.80
L	0.05	0.15	0.10
b	0.10	0.20	0.15
e	0.35 Typ		
e1	0.70 Typ		
All Dimensions in mm			

Suggested Pad Layout

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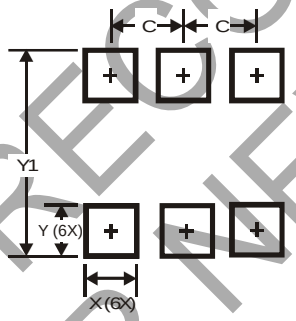
SOT963



Dimensions	Value (in mm)
C	0.350
X	0.200
Y	0.200
Y1	1.100

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