N-CHANNEL ENHANCEMENT MODE MOSFET

NEW PRODUCT

Features

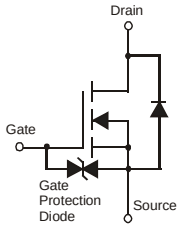
- Low On-Resistance:
  - 3.0 Ω @ 4.5V
  - 4.0 Ω @ 2.5V
  - 6.0 Ω @ 1.8V
  - 10 Ω @ 1.5V
- Very Low Gate Threshold Voltage, 1.0V max
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- ESD Protected Gate
- **Lead, Halogen, and Antimony Free By Design/RoHS Compliant (Note 2)**
- **"Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

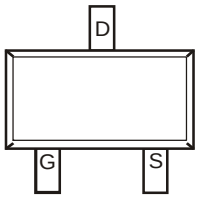
- Case: SOT-523
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Diagram
- Terminals: Finish – Matte Tin annealed over Alloy 42 leadframe. Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 4
- Ordering Information: See Page 4
- Weight: 0.002 grams (approximate)

ESD PROTECTED

TOP VIEW



EQUIVALENT CIRCUIT



TOP VIEW

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
Drain Current (Note 1)		I_D	230	mA
Pulsed Drain Current	T_P = 10µs	I_{DM}	805	mA

Thermal Characteristics @T_A = 25°C unless otherwise specified

Total Power Dissipation (Note 1)	P_D	300	mW
Thermal Resistance, Junction to Ambient (Note 1)	$R_{\theta JA}$	417	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes:
1. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
2. No purposefully added lead.
3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.

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Electrical Characteristics @T_A = 25°C unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 4)						
Drain-Source Breakdown Voltage	BV_{DSS}	20	—	—	V	V_{GS} = 0V, I_D = 100μA
Zero Gate Voltage Drain Current @ T_C = 25°C	I_{DSS}	—	—	500	nA	V_{DS} = 20V, V_{GS} = 0V
Gate-Body Leakage	I_{GSS}	—	—	±1 ±500 ±100	μA nA nA	V_{GS} = ±10V, V_{DS} = 0V V_{GS} = ±8V, V_{DS} = 0V V_{GS} = ±5V, V_{DS} = 0V
ON CHARACTERISTICS (Note 4)						
Gate Threshold Voltage	$V_{GS(th)}$	0.5	—	1.0	V	V_{DS} = V_{GS}, I_D = 250μA
Static Drain-Source On-Resistance	$R_{DS\ (ON)}$	— — — — —	1.8 2.4 2.9 3.7 5.4	3.0 4.0 6.0 10.0 15.0	Ω	V_{GS} = 4.5V, I_D = 100mA V_{GS} = 2.5V, I_D = 50mA V_{GS} = 1.8V, I_D = 20mA V_{GS} = 1.5V, I_D = 10mA V_{GS} = 1.2V, I_D = 1mA
Forward Transconductance	$\|Y_{fs}\|$	—	242	—	mS	V_{DS} =10V, I_D = 0.1A
Source-Drain Diode Forward Voltage	V_{SD}	0.5	—	1.0	V	V_{GS} = 0V, I_S = 115mA
DYNAMIC CHARACTERISTICS						
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 5)						
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: 4. Short duration pulse test used to minimize self-heating effect.
5. Switching characteristics are independent of operating junction temperature.

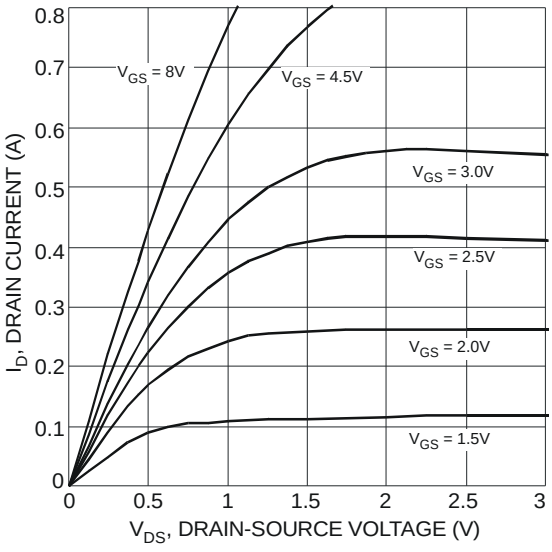

Fig. 1 Typical Output Characteristic

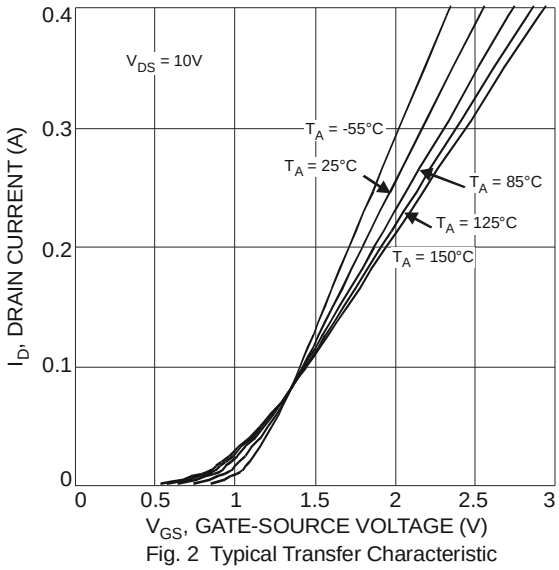

Fig. 2 Typical Transfer Characteristic

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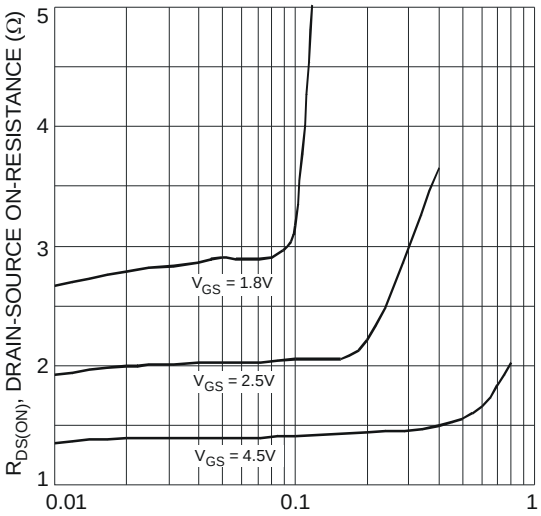

Fig. 3 Typical On-Resistance
vs. Drain Current and Gate Voltage

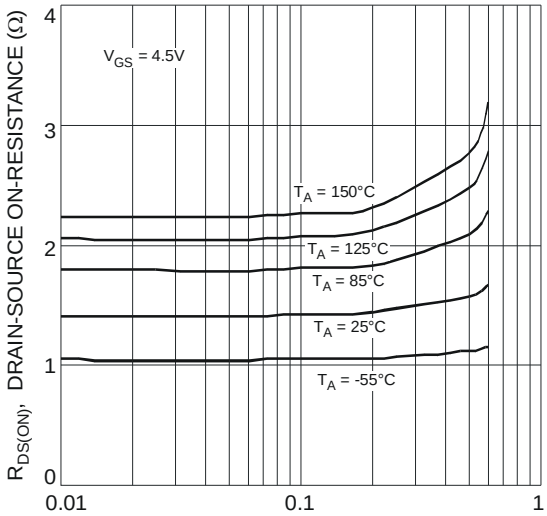

Fig. 4 Typical On-Resistance
vs. Drain Current and Temperature

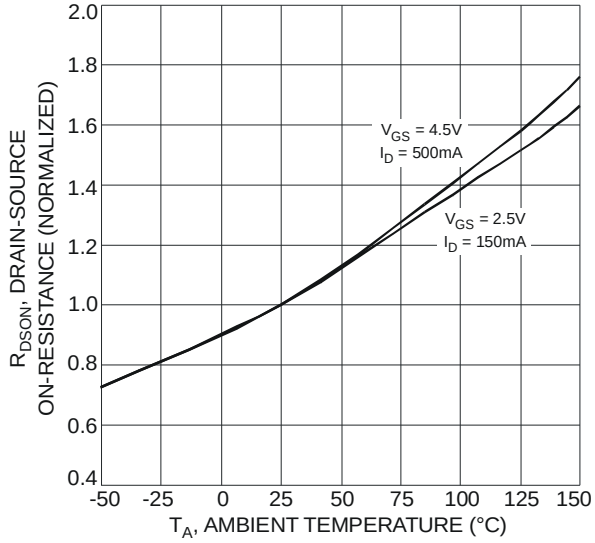

Fig. 5 On-Resistance Variation with Temperature

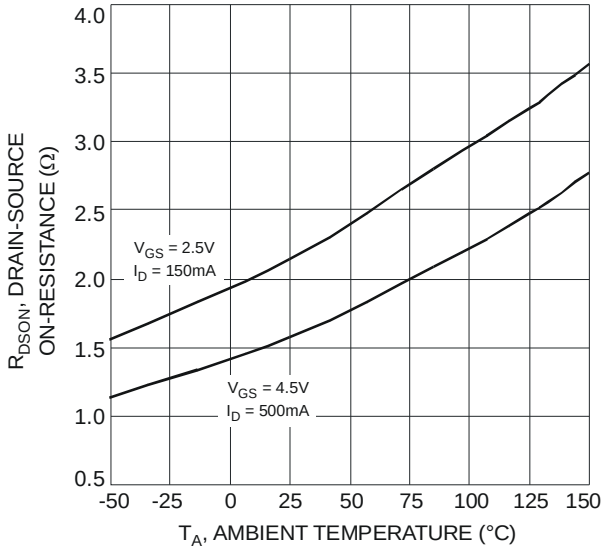

Fig. 6 On-Resistance Variation with Temperature

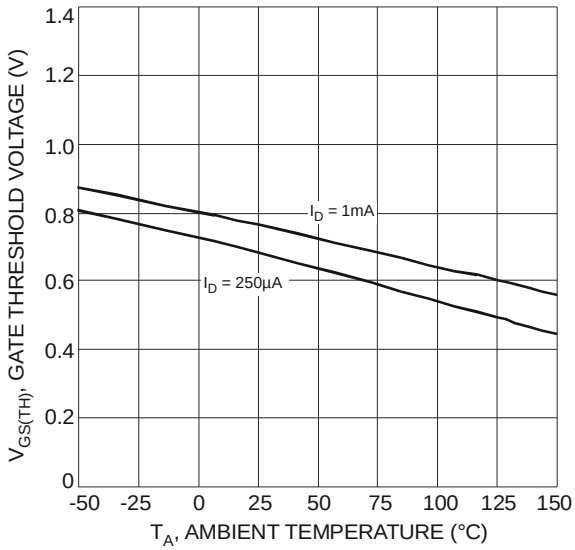

Fig. 7 Gate Threshold Variation vs. Ambient Temperature

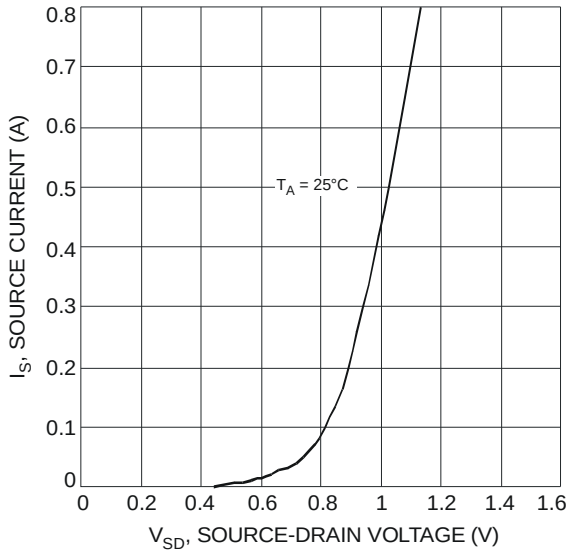

Fig. 8 Diode Forward Voltage vs. Current

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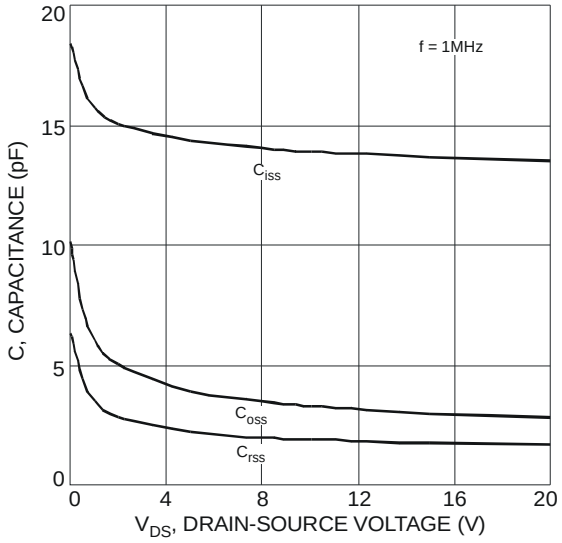


Fig. 9 Typical Total Capacitance

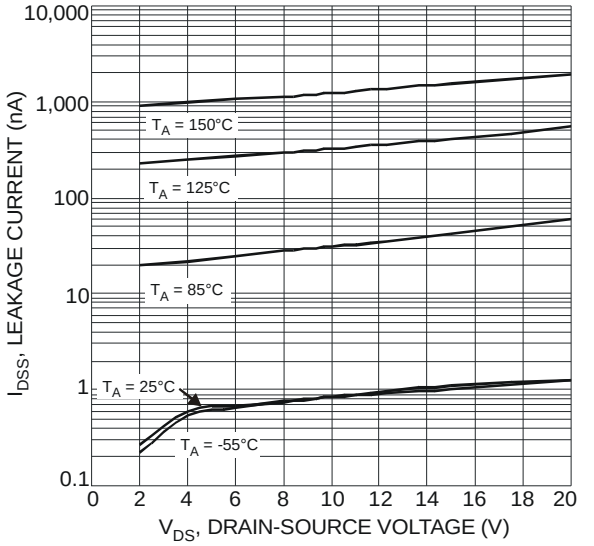


Fig. 10 Typical Leakage Current vs. Drain-Source Voltage

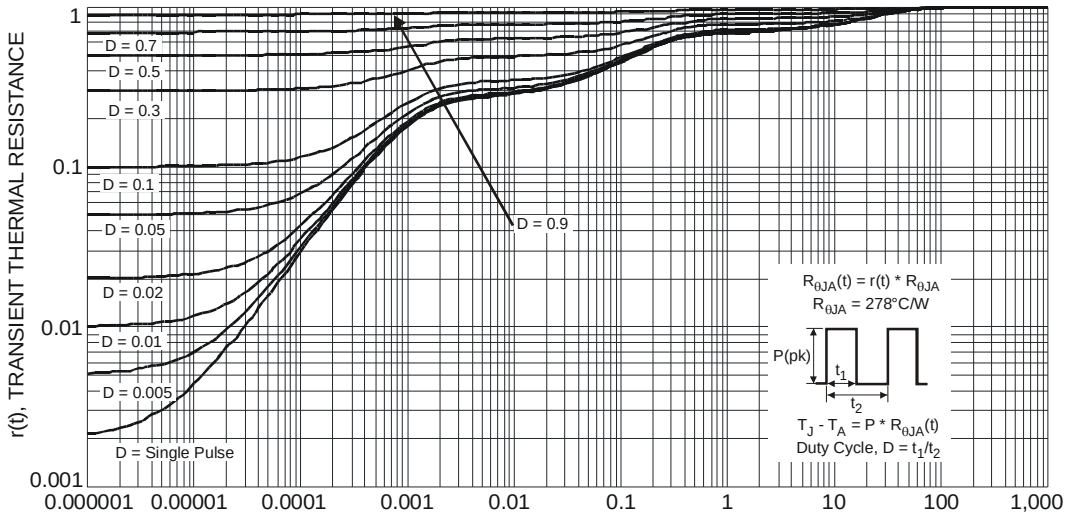


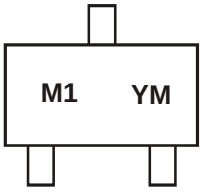
Fig. 11 Transient Thermal Response

Ordering Information (Note 6)

Part Number	Case	Packaging
DMN26D0UT-7	SOT-523	3,000/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information



M1 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: W = 2009)
M = Month (ex: 9 = September)

Date Code Key

Year	2009	2010	2011	2012	2013	2014	2015
Code	W	X	Y	Z	A	B	C

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

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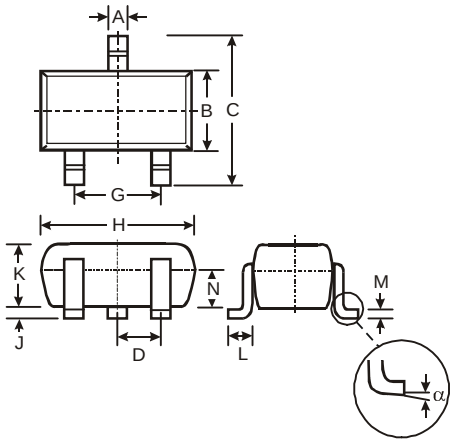
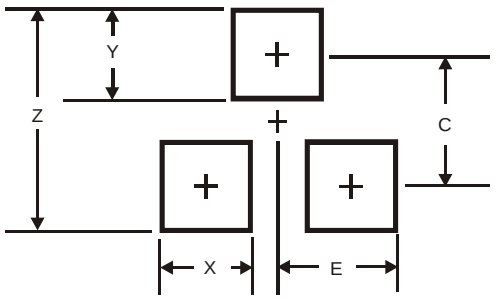
Package Outline Dimensions



SOT-523			
Dim	**Min**	**Max**	**Typ**
A	0.15	0.30	0.22
B	0.75	0.85	0.80
C	1.45	1.75	1.60
D	—	—	0.50
G	0.90	1.10	1.00
H	1.50	1.70	1.60
J	0.00	0.10	0.05
K	0.60	0.80	0.75
L	0.10	0.30	0.22
M	0.10	0.20	0.12
N	0.45	0.65	0.50
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	1.8
X	0.4
Y	0.51
C	1.3
E	0.7

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