





N-CHANNEL ENHANCEMENT MODE MOSFET

Features

- Low On-Resistance
- Very Low Gate Threshold Voltage
- Low Input Capacitance
- ESD Protected Gate to 2kV
- Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP Capable (Note 4)

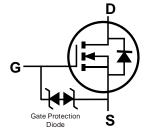
Mechanical Data

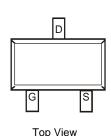
- Case: SOT523
- Case Material: Molded Plastic, "Green" Molding Compound.
 UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe.
 Solderable per MIL-STD-202, Method 208 (3)
- Terminal Connections: See Diagram
- Weight: 0.002 grams (Approximate)





SOT523





Top View

Equivalent Circuit

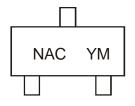
Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
DMN55D0UT -7	Commercial	SOT523	3,000/Tape & Reel
DMN55D0UTQ -7	Automotive	SOT523	3,000/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. Automotive products are AEC-Q10x qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
- 5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



NAC = Product Type Marking Code YM = Date Code Marking Y = Year (ex: U = 2007) M = Month (ex: 9 = September)

Date Code Key

- Date Code Hoj												
Year	2007		2015	2016	201	7 20)18	2019	2020	2021	2022	2023
Code	U		С	D	Е		F	G	Н	I	J	K
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	N	D



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

Characteristic	Symbol	Value	Units
Drain-Source Voltage	V_{DSS}	50	V
Gate-Source Voltage	V _{GSS}	±12	V
Drain Current (Note 6) Continuous	I _D	160	mA
Pulsed Drain Current (Note 6)	I _{DM}	560	mA

Thermal Characteristics

Characteristic	Symbol	Value	Units
Total Power Dissipation (Note 6)	P_{D}	200	mW
Thermal Resistance, Junction to Ambient	R _{0JA}	625	°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	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)	- Julia		. , , ,	mux	O.m.	1001 00114114011
Drain-Source Breakdown Voltage	BV _{DSS}	50	_	_	V	$V_{GS} = 0V, I_D = 250\mu A$
Zero Gate Voltage Drain Current	I _{DSS}	_		1	μA	$V_{DS} = 50V$, $V_{GS} = 0V$
Gate-Source Leakage	I _{GSS}			1.0 5.0	μΑ	$V_{GS} = \pm 8V, V_{DS} = 0V$ $V_{GS} = \pm 12V, V_{DS} = 0V$
ON CHARACTERISTICS (Note 7)						, 50
Gate Threshold Voltage	V _{GS(TH)}	0.7	0.8	1.0	V	$V_{DS} = V_{GS}, I_{D} = 250 \mu A$
Static Drain-Source On-Resistance		_	3.1	4	Ω	V _{GS} = 4V, I _D = 100mA
Static Drain-Source On-Resistance	R _{DS(ON)}		4	5	Ω	$V_{GS} = 2.5V, I_D = 80mA$
Forward Transconductance	g FS	180	_	_	mS	$V_{DS} = 10V$, $I_D = 100mA$, $f = 1.0KHz$
Diode Forward Voltage	V _{SD}	_	0.70	1.3	V	$V_{GS} = 0V, I_S = 100mA$
DYNAMIC CHARACTERISTICS (Note 8)						
Input Capacitance	C _{ISS}	_	25	_	pF	
Output Capacitance	Coss		5	_	pF	$V_{DS} = 10V, V_{GS} = 0V, f = 1.0MHz$
Reverse Transfer Capacitance	C _{RSS}	_	2.1	_	pF	
Gate Resistance	R _G	_	500	_	Ω	$f = 1MHz$, $V_{GS} = 0V$, $V_{DS} = 0V$
Total Gate Charge (V _{GS} = 4V)	Q_G		295	_	рC	
Total Gate Charge (V _{GS} = 8V)	Q_G		636		рC	$V_{DS} = 10V$,
Gate-Source Charge	Q _{GS}	_	72	_	рC	$I_D = 100 \text{mA}$
Gate-Drain Charge	Q_GD	_	18	_	рC	
Turn-On Delay Time	t _{D(ON)}	_	6.0	_	ns	
Turn-On Rise Time	t _R	_	4.4	_	ns	$V_{DD} = 10V, V_{GS} = 4V,$
Turn-Off Delay Time	t _{D(OFF)}	_	23.4	_	ns	$R_G = 25\Omega$, $I_D = 100mA$
Turn-Off Fall Time	t _F		11.0	_	ns	

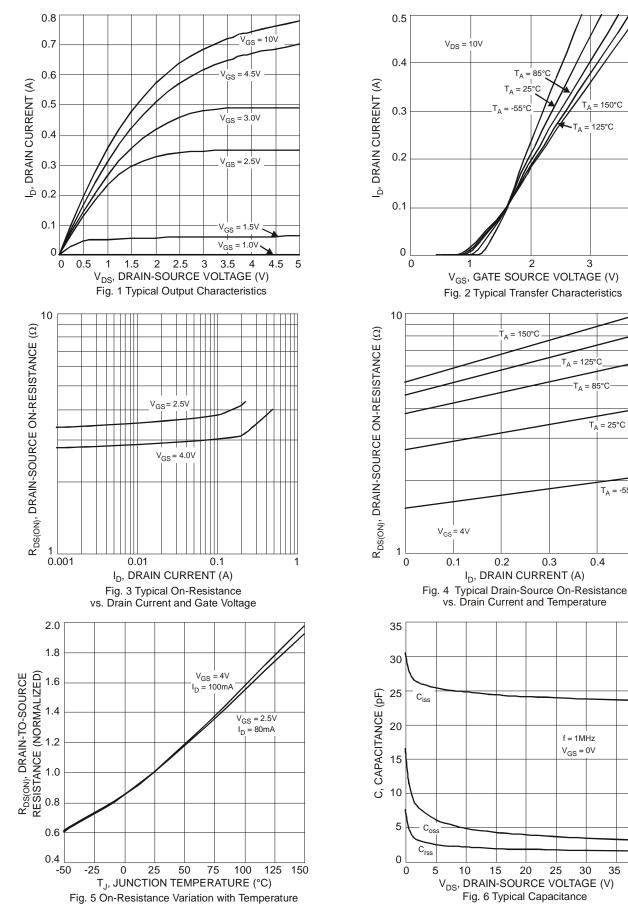
Notes:

- 6. Device mounted on FR-4 PCB, with minimum recommended pad layout.
- 7. Short duration pulse test used to minimize self-heating effect.
 8. Guaranteed by design. Not subject to product testing.

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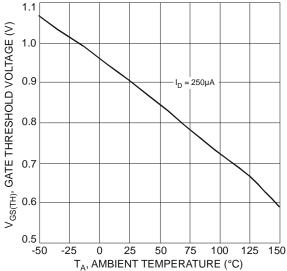
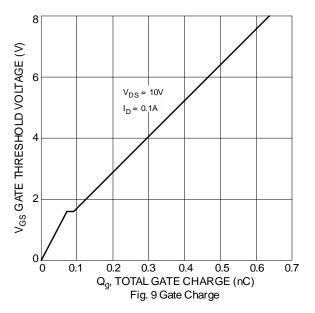
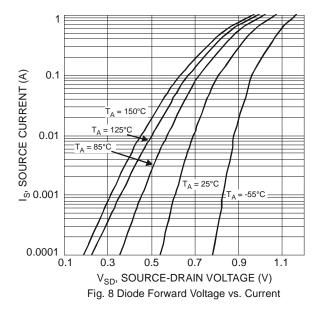


Fig. 7 Gate Threshold Variation vs. Ambient Temperature







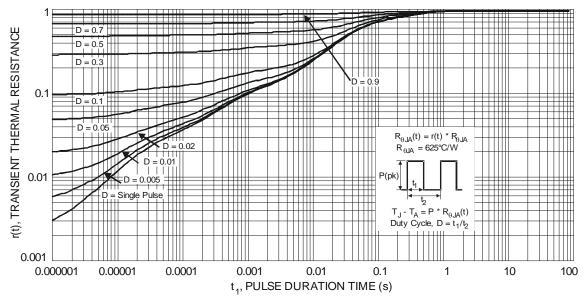


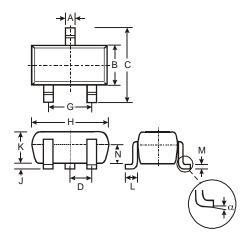
Fig. 10 Transient Thermal Response



Package Outline Dimensions

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

SOT523

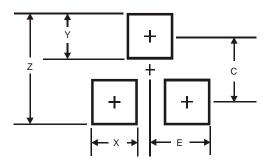


SOT523						
Dim	Min	Max	Тур			
Α	0.15	0.30	0.22			
В	0.75	0.85	0.80			
C	1.45	1.75	1.60			
D	_		0.50			
G	0.90	1.10	1.00			
Н	1.50	1.70	1.60			
۲	0.00	0.10	0.05			
K	0.60	0.80	0.75			
L	0.10	0.30	0.22			
M	0.10	0.20	0.12			
N	0.45	0.65	0.50			
α	0°	8°				
All Dimensions in mm						

Suggested Pad Layout

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

SOT523



Dimensions	Value (in mm)
Z	1.8
Х	0.4
Y	0.51
С	1.3
E	0.7



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