


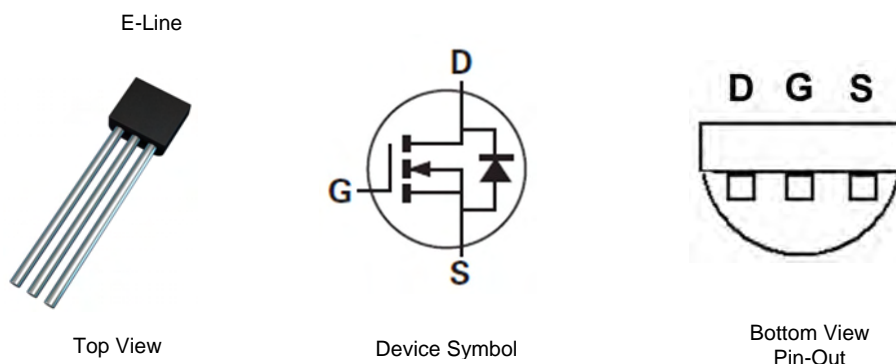
60V N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

Features

- $BV_{DSS} > 60V$
- $R_{DS(on)} \leq 5\Omega @ V_{GS} = 10V$
- Maximum continuous drain current $I_D = 270mA$
- **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**

Mechanical Data

- Case: E-Line (TO-92 Compatible)
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish 
- Weight: 0.159 grams (approximate)



Ordering Information (Note 4)

Product	Marking	Package	Quantity per box on tape
VN10LPSTZ	VN10LP	E-Line	2,000 per ammo box
VN10LP	VN10LP	E-Line	4,000 loose

- 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> 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 <http://www.diodes.com>.

Marking Information

(Flat Face View)



VN10LP = Product type Marking Code

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	I _D	270	mA
Pulsed Drain Current (Note 6)	I _{DM}	3	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	625	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	200	°C/W
Thermal Resistance, Junction to Leads (Note 7)	R _{θJL}	71	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

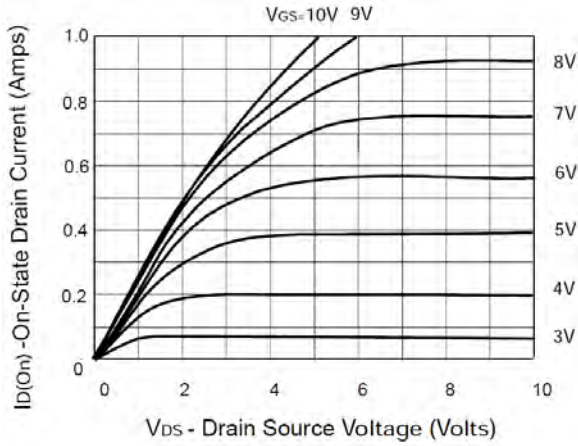
- Notes:
5. For a device mounted on 25mm X 25mm X 1.6mm FR-4 PCB with high coverage of single sided 1oz copper, in still air condition.
 6. Device mounted on minimum recommended pad layout test board, 10μs pulse duty cycle = 1%.
 7. Thermal resistance from junction to Drain leads 2mm outside plastic compound.

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

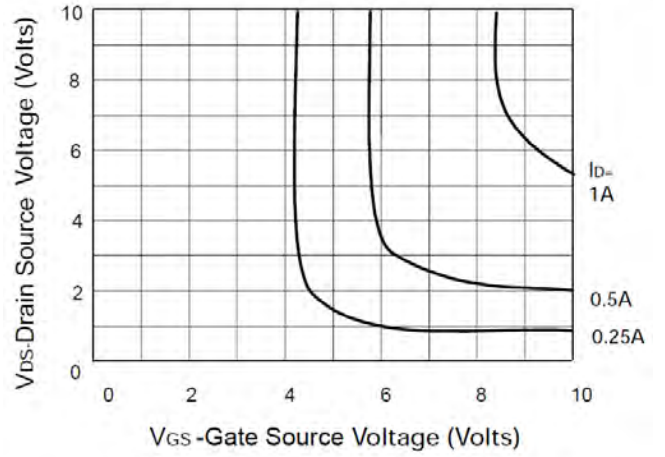
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	60	—	—	V	I _D = 250μA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	10	μA	V _{DS} = 60V, V _{GS} = 0V
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0V
ON CHARACTERISTICS						
On state Drain Current (Note 8)	I _{D(on)}	750	—	—	mA	V _{DS} =15 V, V _{GS} =10V
Gate Threshold Voltage	V _{GS(th)}	0.8	—	2.5	V	I _D = 1mA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 8)	R _{DS(on)}	—	—	5.0	Ω	V _{GS} = 10V, I _D = 500mA
				7.5		V _{GS} = 5V, I _D = 200mA
Forward Transconductance (Notes 8 and 10)	g _{fs}	100	—	—	mS	V _{DS} = 15V, I _D = 500mA
DYNAMIC CHARACTERISTICS (Note 10)						
Input Capacitance	C _{iss}	—	—	60	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	—	25		
Reverse Transfer Capacitance	C _{rss}	—	—	5		
Turn-On Time (Note 9)	t _(on)	—	—	10	ns	V _{DD} = 15V, I _D = 600mA
Turn-Off Time (Note 9)	t _(off)	—	—	10		

- Notes:
- 8. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤ 2%.
 - 9. Switching characteristics are independent of operating junction temperature.
 - 10. For design aid only, not subject to production testing.

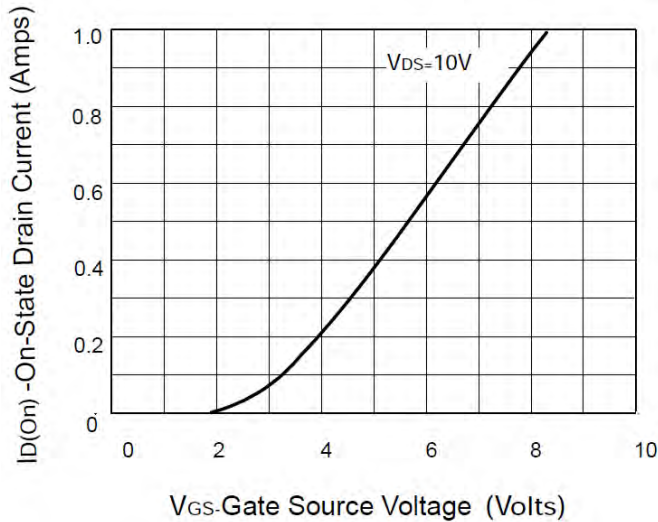
Typical Characteristics



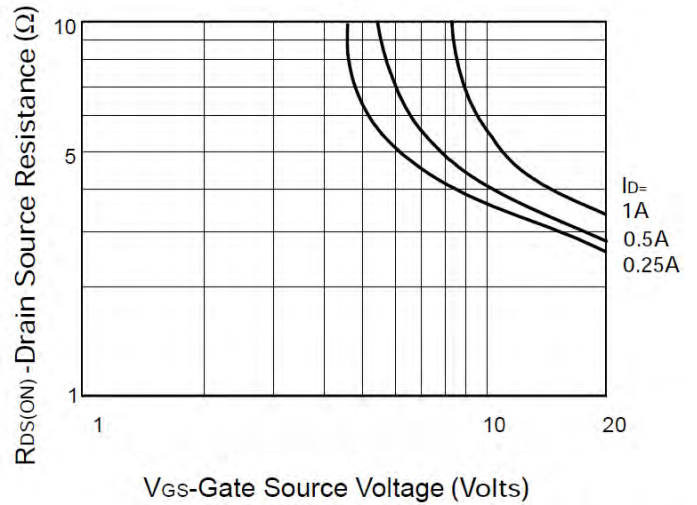
Saturation Characteristics



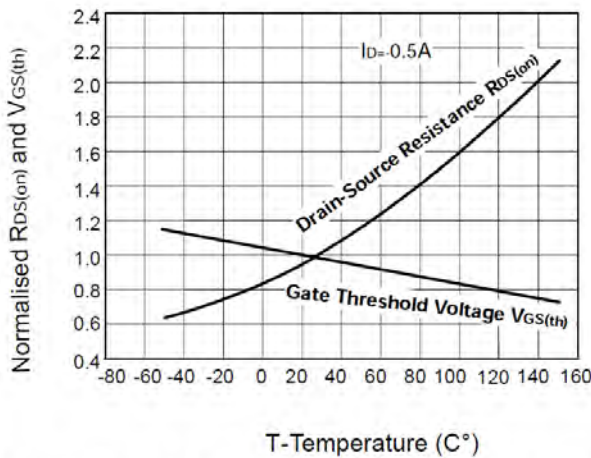
Voltage Saturation Characteristics



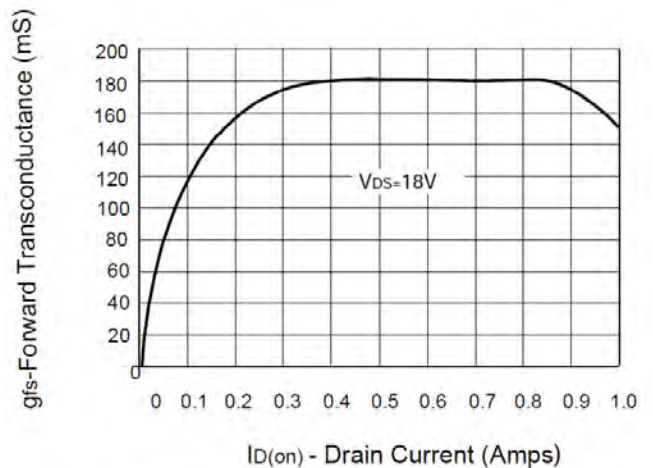
Transfer Characteristics



On-resistance vs gate-source voltage



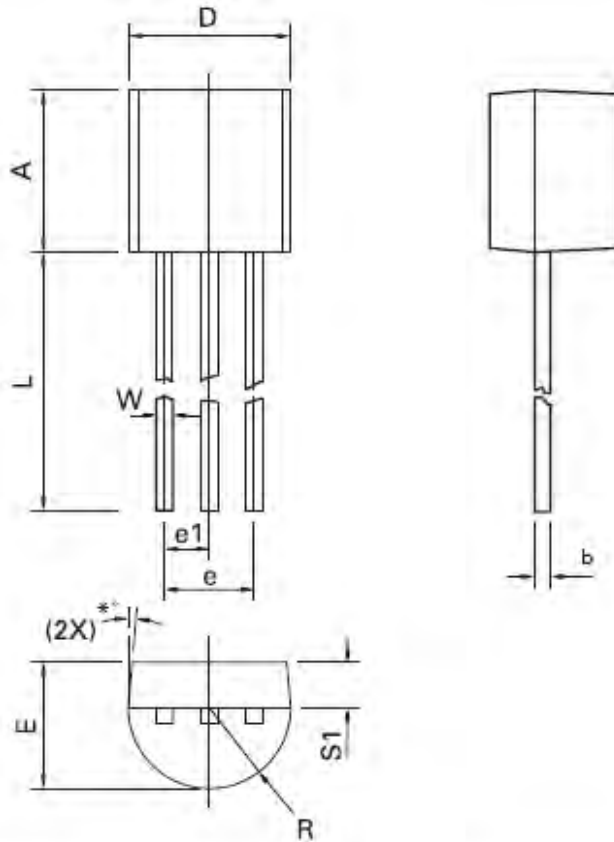
Normalised $R_{DS(on)}$ and $V_{GS(th)}$ vs Temperature



Transconductance v drain current

Package Outline Dimensions

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



Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.95	0.170	0.195
b	0.36	0.51	0.014	0.020
E	3.30	3.94	0.130	0.155
e	2.41	2.67	0.095	0.105
e1	1.14	1.40	0.045	0.055
L	12.70	15.49	0.500	0.610
R	2.16	2.41	0.085	0.095
S1	1.14	1.52	0.045	0.060
W	0.41	0.56	0.016	0.022
D	4.45	4.95	0.175	0.195
*°	4°	6°	4°	6°

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

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