

60V N-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET IN E-LINE

Product Summary

BV _{DSS}	Max R _{DS(ON)}	Max I _D @ T _A = +25°C
60V	330mΩ @ V _{GS} = 10V	1.4A
	450mΩ @ V _{GS} = 5V	1.2A

Application

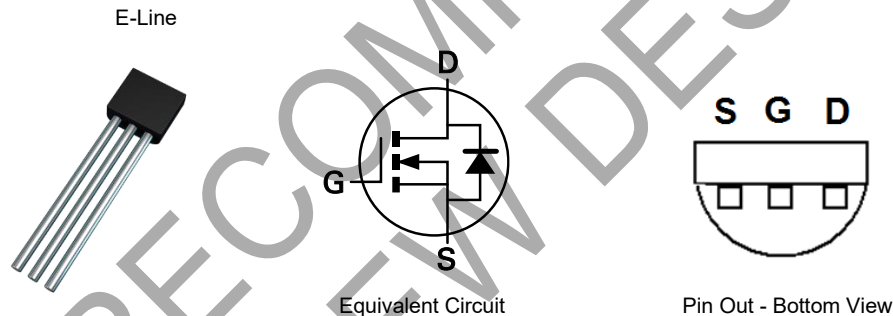
- DC - DC convertors
- Solenoids/relay drivers for automotive

Features and Benefits

- Breakdown Voltage BV_{DSS} > 60V
- R_{DS(ON)} ≤ 0.33Ω @ V_{GS} = 10V
- Maximum Continuous Drain Current I_D = 1.1A
- **Lead-Free Finish; 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 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

- Package: E-Line (TO-92 Compatible)
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Terminals: Matte Tin Finish (3)
- Weight: 0.159 grams (Approximate)

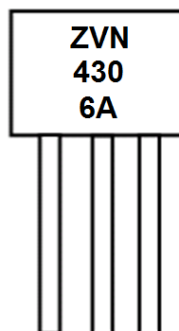


Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Packing	
			Qty.	Carrier
ZVN4306ASTZ	E-Line	ZVN4306A	2,000	Ammo Pack
ZVN4306A	E-Line	ZVN4306A	4,000	Loose per Box

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
 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



ZVN4306A = Product Type Marking Code on Rounded Face

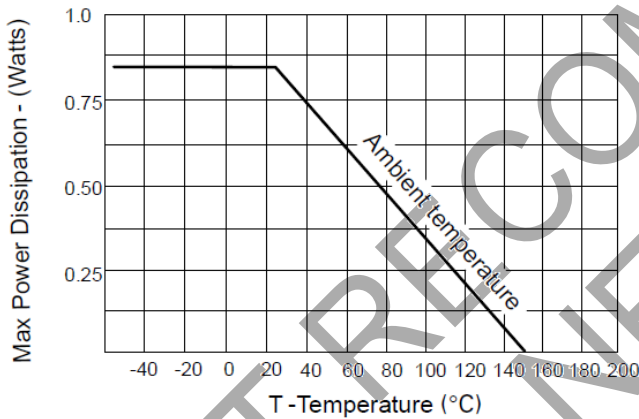
Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	60	V
Gate-Source Voltage	V _{GSS}	±20	V
Continuous Drain Current	I _D	1.1	A
Practical Continuous Drain Current	I _{DP}	1.3	A
Pulsed Drain Current	I _{DM}	15	A

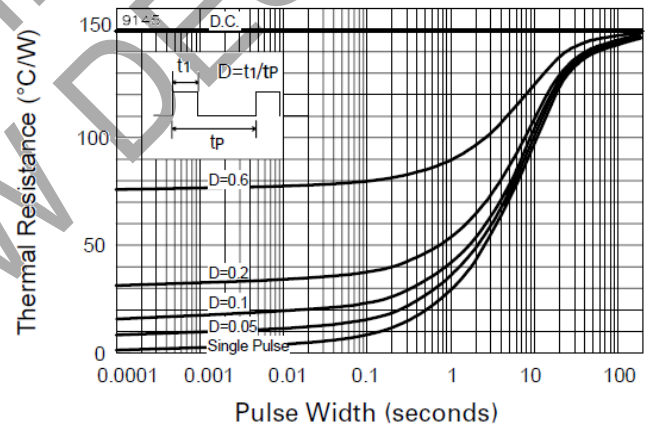
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	850	mW
Practical Power Dissipation (Note 5)	P _{DP}	1.13	W
Thermal Resistance, Junction to Ambient	R _{θJA}	150	°C/W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	111	°C/W
Thermal Resistance, Junction to Leads (Note 6)	R _{θJL}	50	°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. Thermal resistance from junction to solder-point.



Derating curve



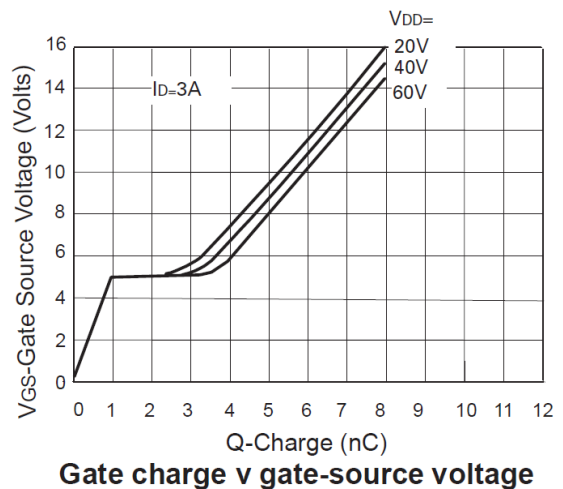
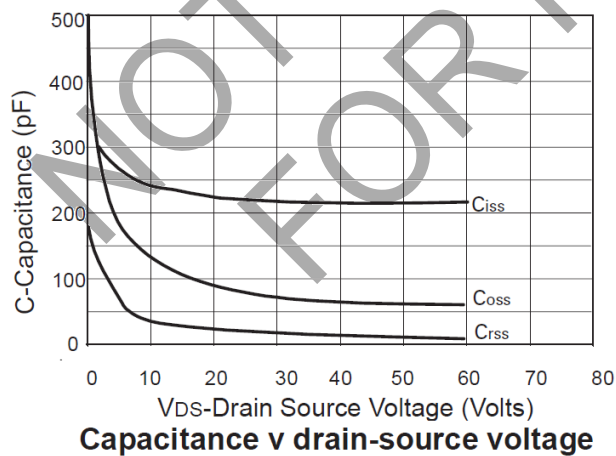
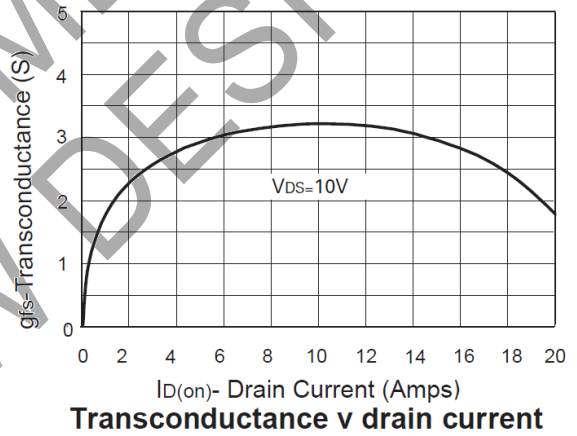
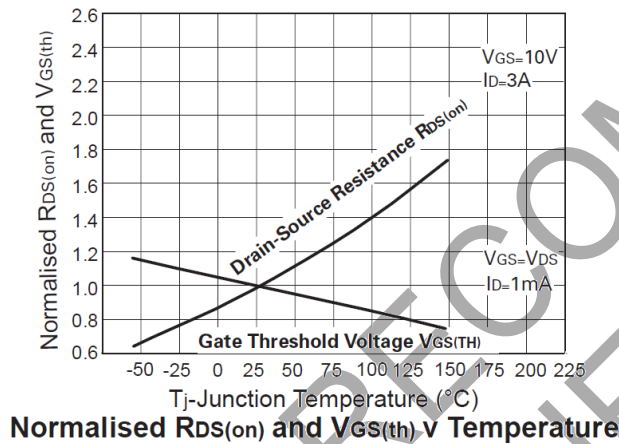
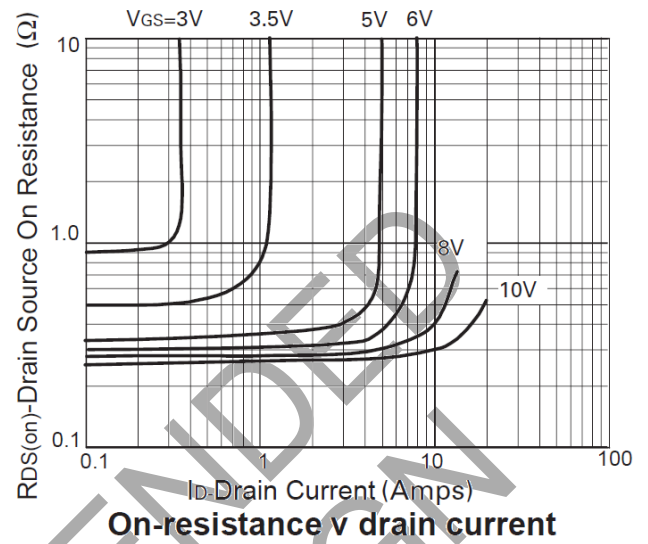
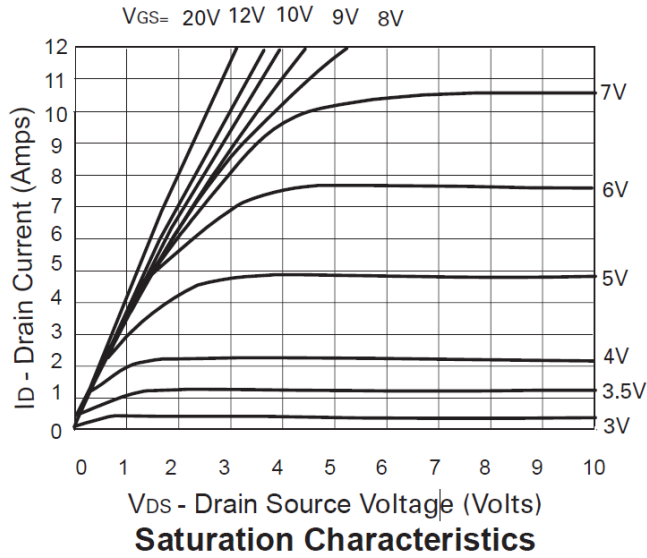
Maximum transient thermal impedance

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} = 0, I _D = 1mA
Zero Gate Voltage Drain Current T _J = +25°C	I _{DSS}	—	—	1 20	μA	V _{DS} = 60V, V _{GS} = 0 V _{DS} = 48V, V _{GS} = 0, T _A = +125°C
Gate-Source Leakage	I _{GSS}	—	—	±100	nA	V _{GS} = ±20V, V _{DS} = 0
On-State Drain Current	I _{D(ON)}	12	—	—	A	V _{GS} = 10V, V _{DS} = 10
ON CHARACTERISTICS (Note 7)						
Gate Threshold Voltage	V _{GS(TH)}	1.3	—	3	V	V _{DS} = V _{GS} , I _D = 1mA
Static Drain-Source On-Resistance	R _{DS(ON)}	—	0.22 0.32	0.33 0.45	Ω	V _{GS} = 10V, I _D = 3A V _{GS} = 5V, I _D = 1.5A
Forward Transconductance	g _{fs}	700	—	—	mS	V _{DS} = 10V, I _D = 3A
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C _{iss}	—	—	350	pF	V _{DS} = 25V, V _{GS} = 0, f = 1.0MHz
Output Capacitance	C _{oss}	—	—	140	pF	
Reverse Transfer Capacitance	C _{rss}	—	—	30	pF	
Turn-On Delay Time (Note 8)	t _{D(ON)}	—	—	8	ns	V _{DD} = 25V, I _D = 3A, V _{GEM} = 10V
Turn-On Rise Time (Note 8)	t _r	—	—	25	ns	
Turn-Off Delay Time (Note 8)	t _{D(OFF)}	—	—	30	ns	
Turn-Off Fall Time (Note 8)	t _f	—	—	16	ns	

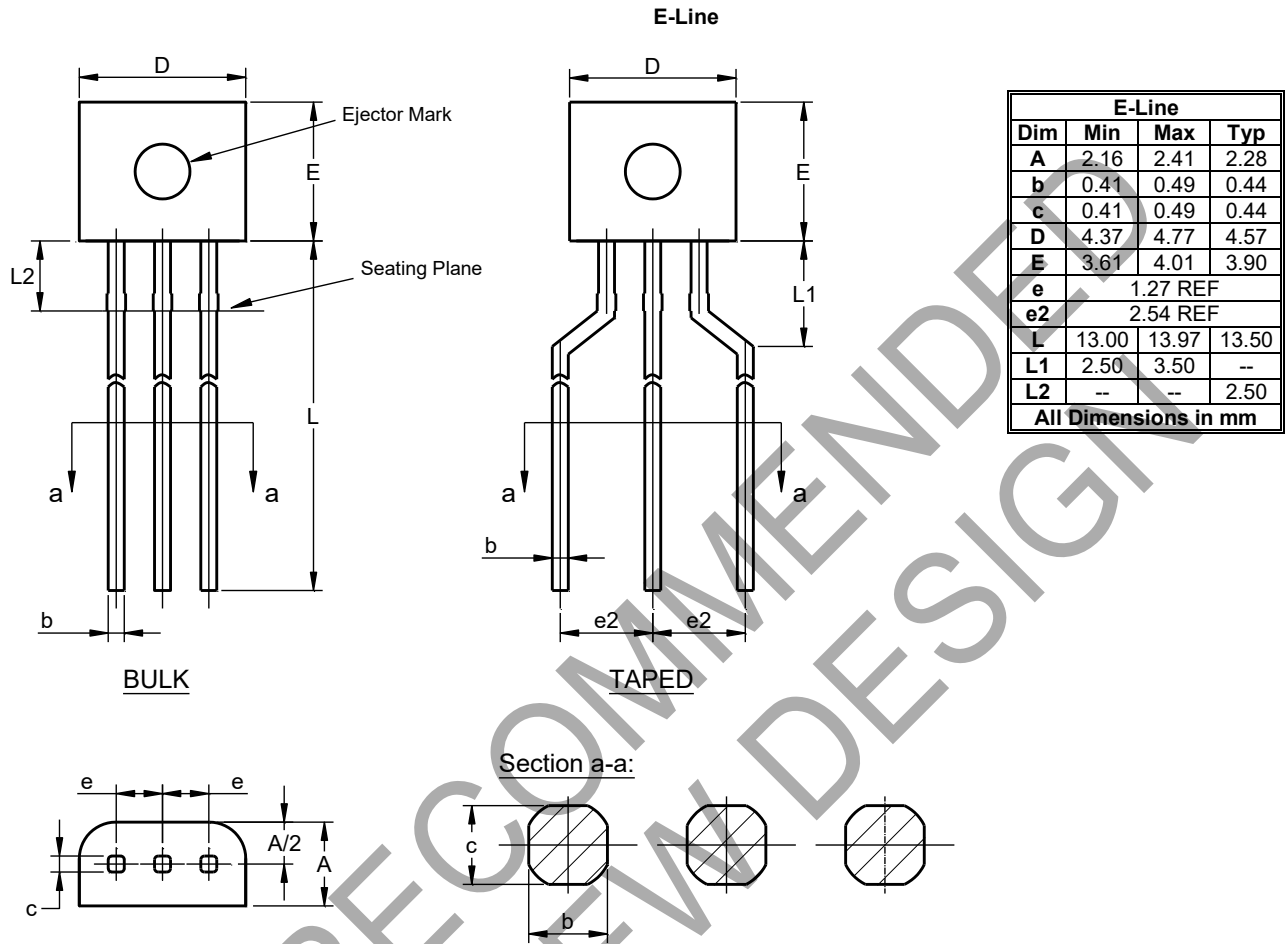
Notes: 7. Measured under pulsed conditions. Width = 300μs. Duty cycle ≤ 2%.
 8. Switching times measured with 50Ω source impedance and < 5ns rise time on a pulse generator.

Electrical Characteristics



Package Outline Dimensions

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



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