

Features

- $BV_{DSS} > 240V$
- $R_{DS(ON)} \leq 6\Omega$ @ $V_{GS} = 2.5V$
- $I_D = 260mA$ Maximum Continuous Drain Current
- Fast Switching Speed
- Low Threshold
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

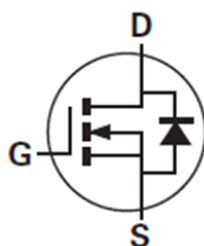
Mechanical Data

- Case: E-Line (TO92 Compatible)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Rating 94V-0
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208**③**
- Weight: 0.159 grams (Approximate)

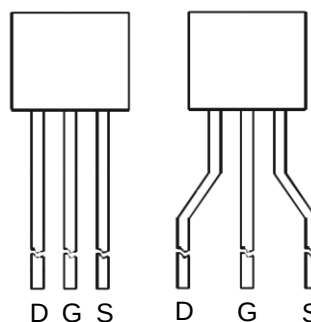
E-Line
(TO92 Compatible)



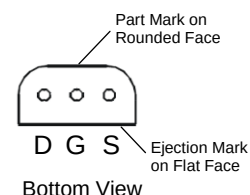
Flat Face View



Device Symbol



Rounded Face View



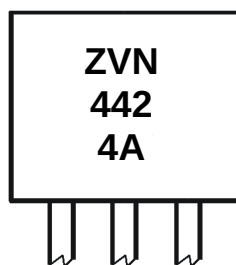
Bottom View

Ordering Information (Note 4)

Part Number	Compliance	Package	Leads	Quantity
ZVN4424A	AEC-Q101	E-Line	Straight	4,000 Loose in a Box
ZVN4424ASTZ	AEC-Q101	E-Line	Joggled	2,000 Taped per Ammo Box

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



Rounded Face View

ZVN
442
4A = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V _{DSS}	240	V
Gate-Source Voltage	V _{GSS}	±40	V
Continuous Drain Current	I _D	260	mA
Pulsed Drain Current	I _{DM}	1.5	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	750	mW
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	167	°C/W
Thermal Resistance, Junction to Lead (Note 6)	R _{θJL}	71	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

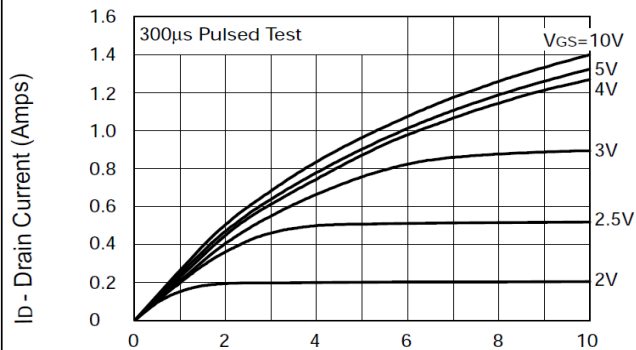
- Notes:
- For a through-hole device mounted on the minimum recommended pad layout with 12mm lead length from the bottom of package to the single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Thermal resistance from junction to solder-point at the seating plane (2.5mm from the bottom of package along the collector lead).

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

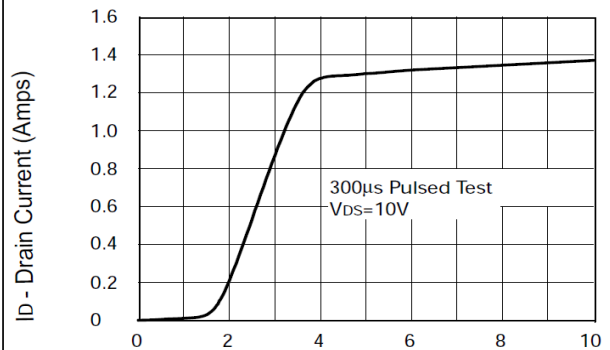
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	240	—	—	V	I _D = 1mA, V _{GS} = 0V
Zero Gate Voltage Drain Current	I _{DSS}	—	—	10 100	μA	V _{DS} = 240V, V _{GS} = 0V V _{DS} = 190V, V _{GS} = 0V, T = +125°C
Gate-Source Leakage	I _{GSS}	—	—	100	nA	V _{GS} = ±40V, V _{DS} = 0V
ON CHARACTERISTICS						
Gate Threshold Voltage	V _{GS(TH)}	0.8	1.3	1.8	V	I _D = 1mA, V _{DS} = V _{GS}
Static Drain-Source On-Resistance (Note 7)	R _{DS(ON)}	—	4	5.5	Ω	V _{GS} = 10V, I _D = 500mA
			4.3	6		V _{GS} = 2.5V, I _D = 500mA
Forward Transconductance (Notes 7 & 9)	g _{FS}	0.4	0.75	—	S	V _{DS} = 10V, I _D = 0.5A
DYNAMIC CHARACTERISTICS (Note 9)						
Input Capacitance	C _{iss}	—	110	200	pF	V _{DS} = 25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	C _{oss}	—	15	25		
Reverse Transfer Capacitance	C _{rss}	—	3.5	15		
Turn-On Delay Time (Note 8)	t _{D(ON)}	—	2.5	5	ns	V _{DD} = 50V, V _{GEN} = 10V I _D = 0.25A
Turn-On Rise Time (Note 8)	t _R	—	5	8		
Turn-Off Delay Time (Note 8)	t _{D(OFF)}	—	40	60		
Turn-Off Fall Time (Note 8)	t _F	—	16	25		

- Notes:
- Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.
 - Switching characteristics are independent of operating junction temperature. Switching times are measured with 50Ω source impedance and <5ns rise time on a pulse generator.
 - For design aid only, not subject to production testing.

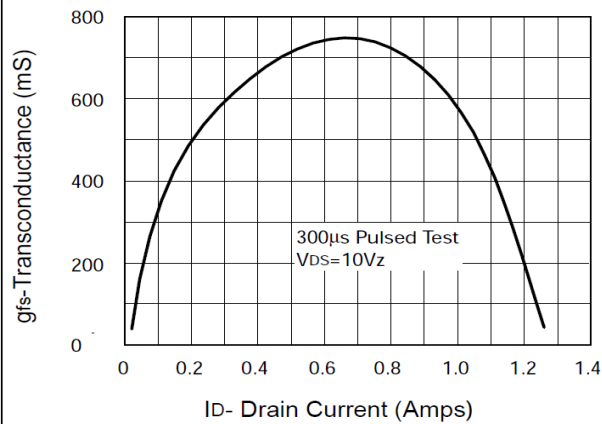
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



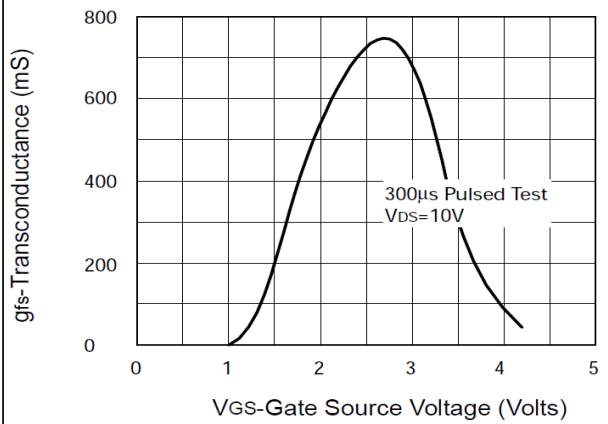
Saturation Characteristics



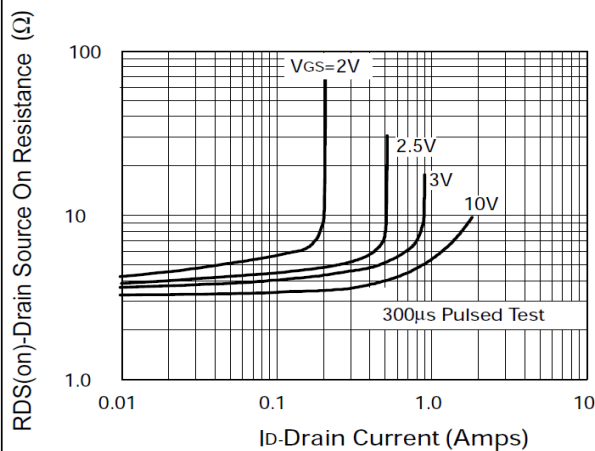
Transfer Characteristics



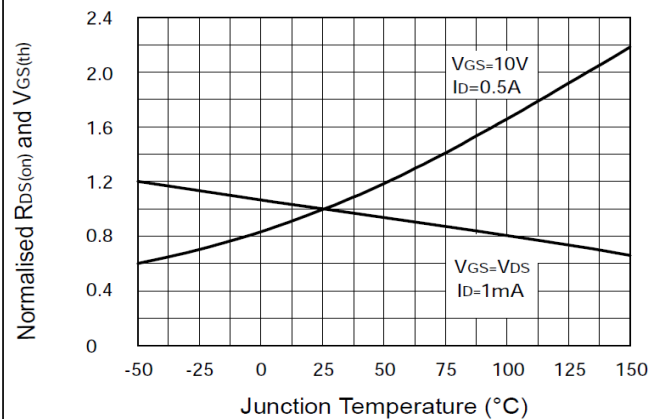
Transconductance v drain current



Transconductance v gate-source voltage



On-resistance vs Drain Current



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

Typical Electrical Characteristics (Cont.) (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

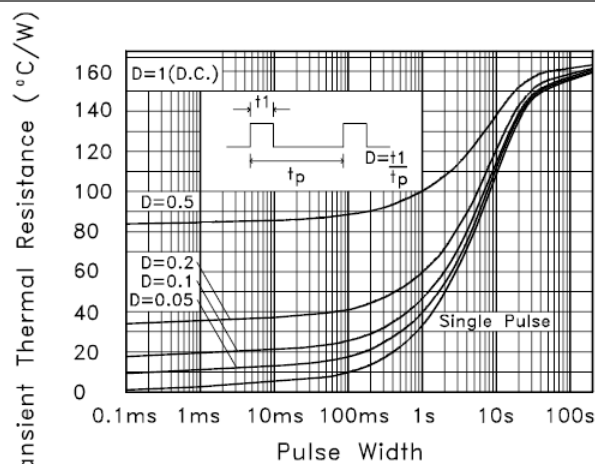
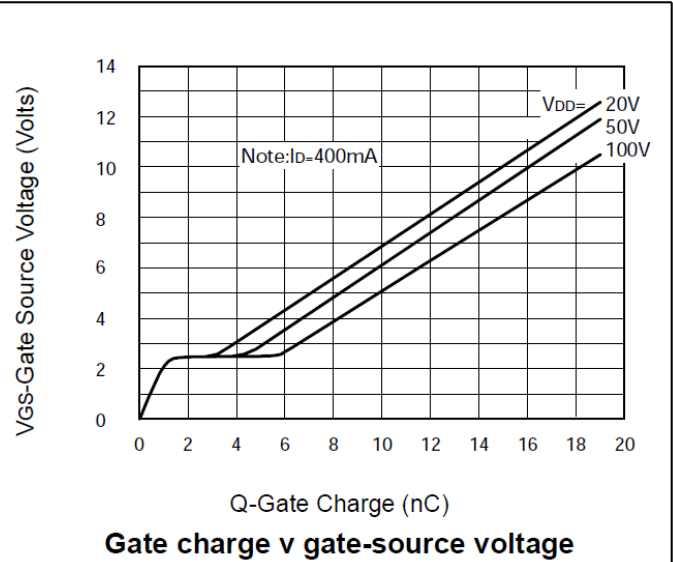
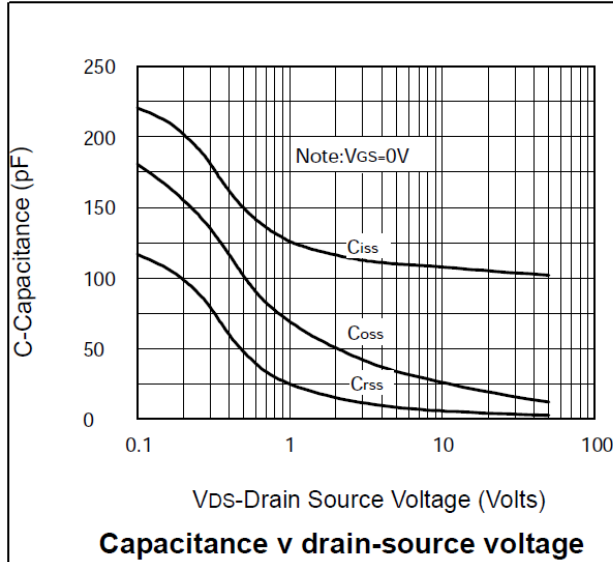


FIG. 9 Transient Thermal Resistance

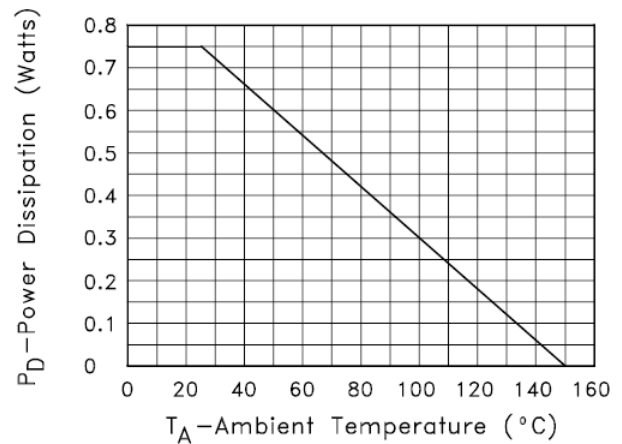
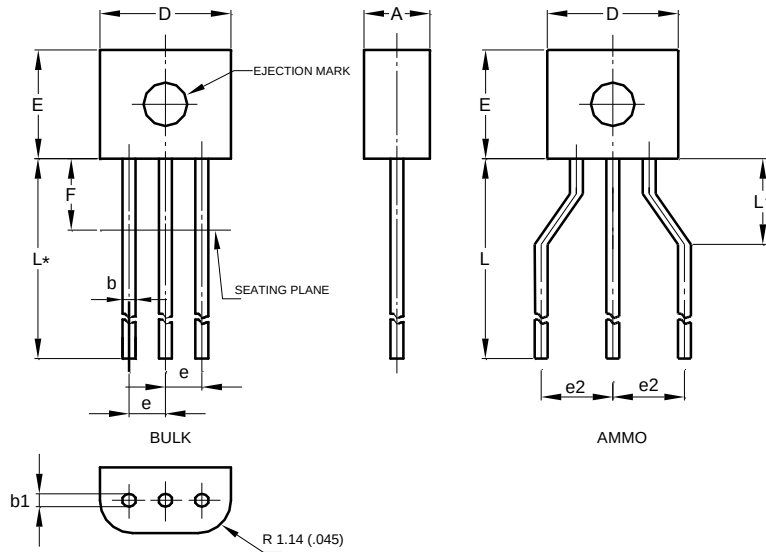


FIG. 10 Power vs. Temperature Derating Curve (Ambient)

Package Outline Dimensions

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

E-Line



E-Line			
Dim	Min	Max	Typ
A	2.16	2.41	–
b	0.41	0.495	–
b1	0.41	0.495	–
D	4.37	4.77	–
E	3.61	4.01	–
e	–	–	1.27
e2	–	–	2.54
F	–	2.50	–
L	13.00	13.97	–
L1	2.50	3.50	–
All Dimensions in mm			

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