





240V P-CHANNEL ENHANCEMENT MODE VERTICAL DMOS FET

Features

- BV_{DSS} > -240V
- $R_{DS(on)} \le 8.8\Omega @ V_{GS} = -3.5V$
- Low threshold and Fast switching
- 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

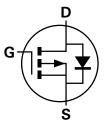
- Case: SOT89
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish @3
- Weight: 0.052 grams (approximate)

Application

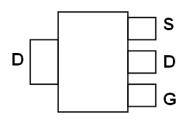
- Electronic hook switches
- · Telecoms and Battery powered equipment







Device symbol



Pin-out Top

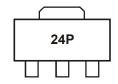
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZVP4424ZTA	AEC-Q101	24P	7	12	1,000
ZVP4424ZQTA	Automotive	24P	7	12	1,000

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. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified.
- 5. For packaging details, go to our website at http://www.diodes.com.

Marking Information



24P = 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	-200	mA
Pulsed Drain Current (Note 8)	I _{DM}	-1.0	A

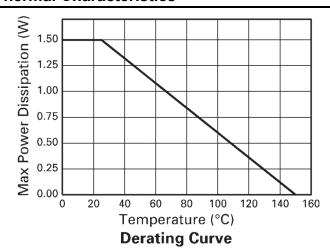
Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

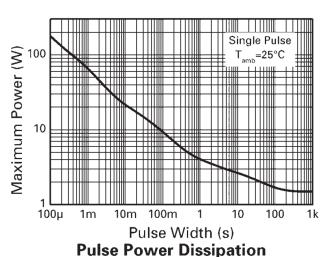
Characteristic	Symbol	Value	Unit	
Power Dissipation	(Note 6)		1.5	W
	(Note 7)	P _D	2.6	W
Thermal Desistance Junction to Ambient	(Note 6)	Б	83.3	°C/W
Thermal Resistance, Junction to Ambient	(Note 7)	$R_{\theta JA}$	47.4	°C/W
Thermal Resistance, Junction to Leads (Note 9)		R _{0JL}	3.64	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C	

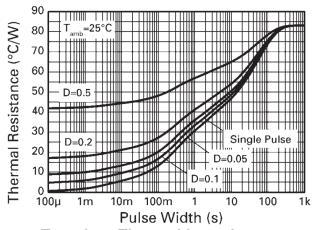
Notes:

- 6. For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
- 7. For a device surface mounted on FR4 PCB measured at t ≤ 10 sec.
 8. Repetitive rating 25mm x 25mm FR4 PCB, D = 0.02, pulse width 300µs pulse width limited by maximum junction temperature.
- 9. Thermal resistance from junction to solder-point (at the end of the drain lead).

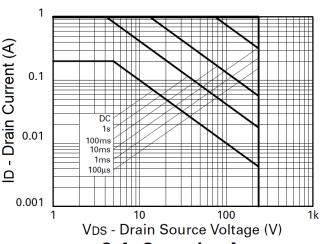
Thermal Characteristics







Transient Thermal Impedance





Electrical Characteristics @TA = 25°C unless otherwise specified

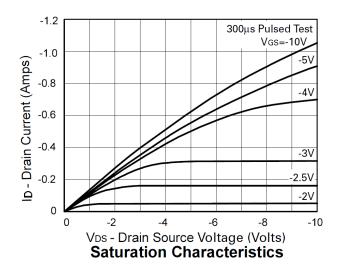
Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV _{DSS}	-240	_	_	V	$I_D = -1 \text{mA}$, $V_{GS} = 0 \text{V}$
Zero Gate Voltage Drain Current	I _{DSS}	_	_	-10	μА	$V_{DS} = -240V, V_{GS} = 0V$
Zero Gate Voltage Drain Current				-100	μА	$V_{DS} = -190V$, $V_{GS} = 0V$, $T_A = +125$ °C
Gate-Source Leakage	I_{GSS}	_	_	±100	nA	$V_{GS} = \pm 40V, V_{DS} = 0V$
ON CHARACTERISTICS						
On state Drain Current (Note 10)	I _{D(on)}	-0.75	-1.0	_	Α	$V_{DS} = -10V, V_{GS} = -10V$
Gate Threshold Voltage	$V_{GS(th)}$	-0.7	-1.4	-2.0	V	$I_D = -1 \text{mA}, V_{DS} = V_{GS}$
Static Drain-Source On-Resistance (Note 10)	R _{DS(on)}	_	7.1	9	Ω	$V_{GS} = -10V, I_D = -200mA$
Static Dialii-Source Oil-Resistance (Note 10)			8.8	11		$V_{GS} = -3.5V$, $I_{D} = -100$ mA
Forward Transconductance (Notes 10 & 12)	9 _{fs}	125	_	_	mS	$V_{DS} = -10V, I_D = -200mA$
DYNAMIC CHARACTERISTICS (Note 12)						
Input Capacitance	C _{iss}	_	100	200		V _{DS} = -25V, V _{GS} = 0V f = 1.0MHz
Output Capacitance	Coss	_	18	25	pF	
Reverse Transfer Capacitance	C _{rss}	_	5	15		
Turn-On Delay Time (Note 11)	t _{d(on)}	_	8	15		V _{DD} = -50V, I _D = -250mA
Rise Time (Note 11)	t _f	_	8	15	ns	
Turn-Off Delay Time (Note 11)	t _{d(off)}	_	26	40] '18	V _{GEN} = -10V
Fall Time (Note 11)	t _f	_	20	30		

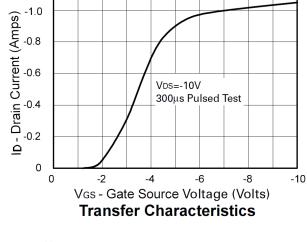
Notes:

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

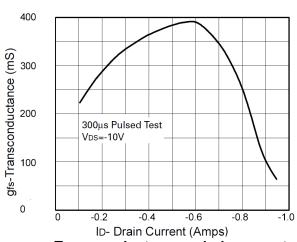


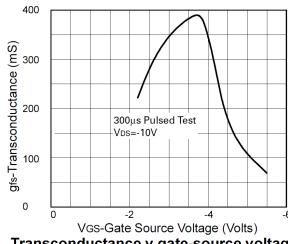
Typical Characteristics



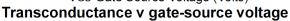


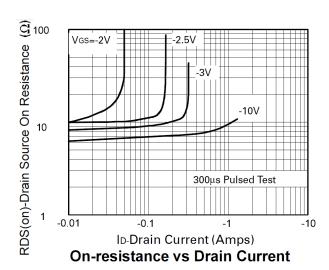
-1.2

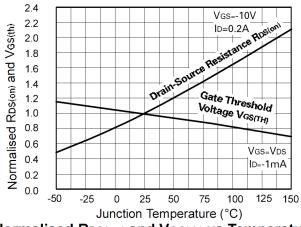










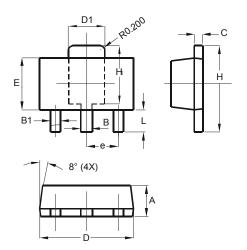


Normalised RDS(on) and VGS(th) vs Temperature



Package Outline Dimensions

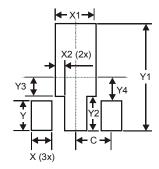
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



SOT89				
Dim	Min	Max		
Α	1.40	1.60		
В	0.44	0.62		
B1	0.35	0.54		
С	0.35	0.44		
D	4.40	4.60		
D1	1.62	1.83		
Е	2.29	2.60		
e	1.50 Typ			
Η	3.94	4.25		
H1	2.63	2.93		
L	0.89	1.20		
All Dimensions in mm				

Suggested Pad Layout

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



Dimensions	Value (in mm)
Х	0.900
X1	1.733
X2	0.416
Υ	1.300
Y1	4.600
Y2	1.475
Y3	0.950
Y4	1.125
С	1.500





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