60V N-CHANNEL ENHANCEMENT MODE VERTICAL DMOSFET IN SOT23

Features

- BV_{DSS} > 60V
- $R_{DS(on)}$ ≤ 2.5Ω @ V_{GS} = 10V
- Maximum continuous drain current I_D = 200mA
- **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**

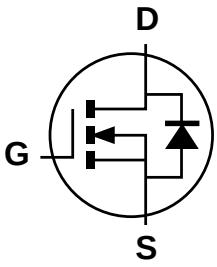
Mechanical Data

- Case: SOT23
- 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. Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.008 grams (approximate)

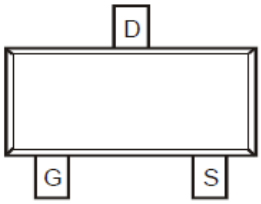
SOT23



Top View



Device symbol



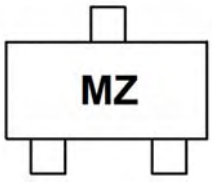
Pin-Out
Top View

Ordering Information (Note 4)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZVN4106FTA	MZ	7	8	3000

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



MZ = Product Type Marking Code

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

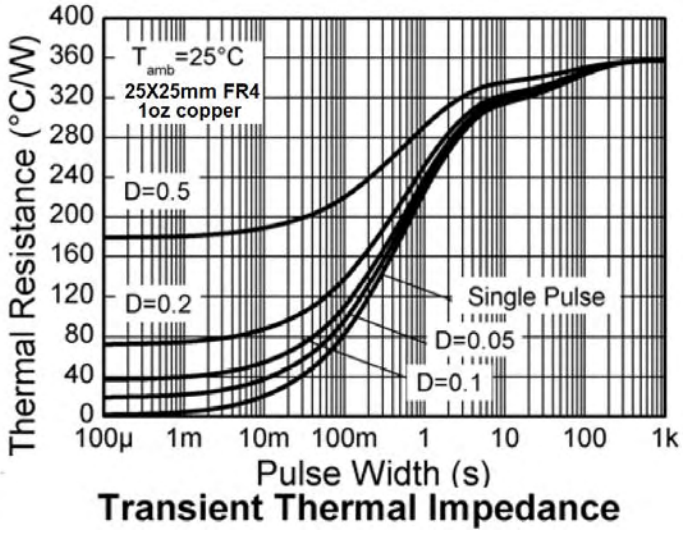
Characteristic	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Gate-Source Voltage	V_{GSS}	±20	V
Continuous Drain Current	I_D	200	mA
Pulsed Drain Current (Note 5)	I_{DM}	3	A

Thermal Characteristics

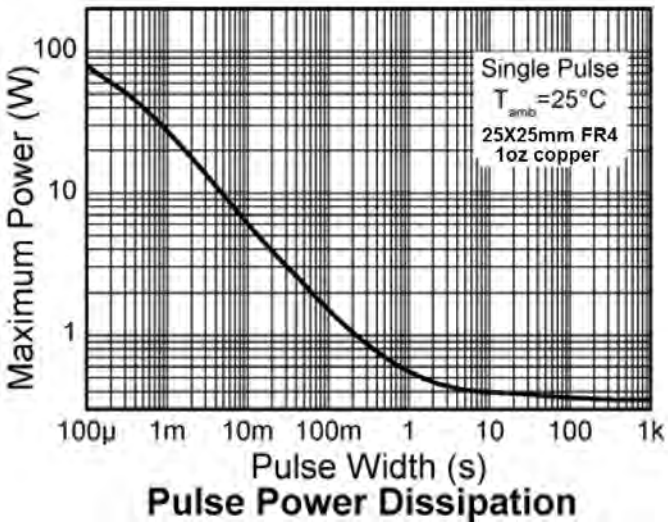
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 6)	P_D	350	mW
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	357	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes: 5. Device mounted on minimum recommended pad layout test board, 10 s pulse duty cycle = 1%.
6. For a device mounted on 25mm X 25mm X 1.6mm FR-4 PCV with high coverage of single sided 1oz copper, in still air condition.

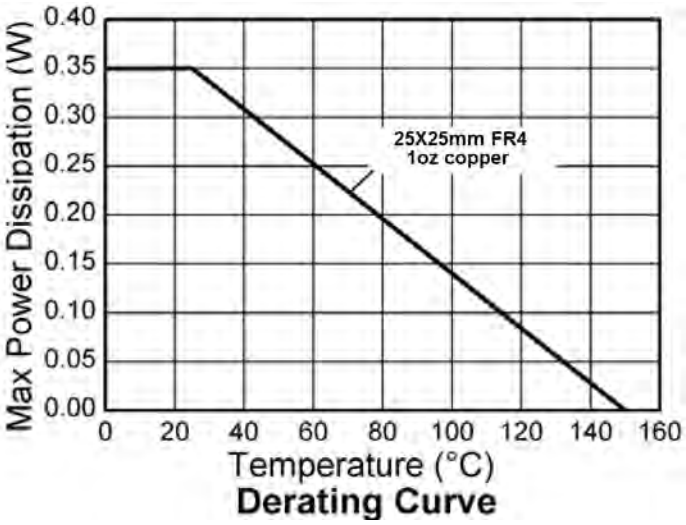
Thermal Characteristics



Transient Thermal Impedance



Pulse Power Dissipation



Derating Curve

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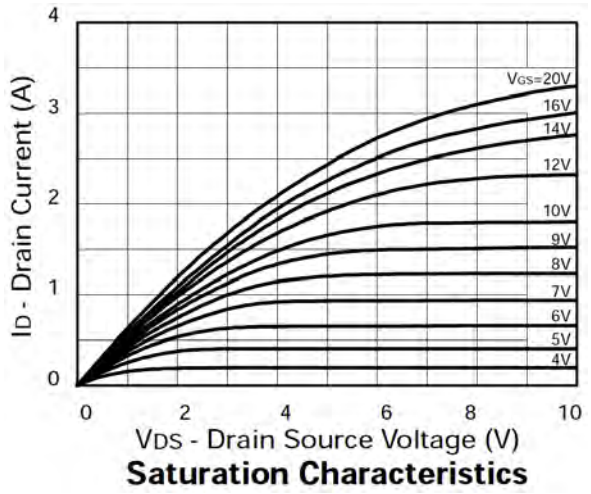
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)						
Drain-Source Breakdown Voltage	BV_{DSS}	60	—	—	V	V_{GS} = 0V, I_D = 10mA
Zero Gate Voltage Drain Current T_J = +25°C	I_{DSS}	—	—	10 50	μA	V_{DS} = 60V, V_{GS} = 0V V_{DS} = 48V, V_{GS} = 0V, T_A = +125°C
Gate-Source Leakage	I_{GSS}	—	—	100	nA	V_{GS} = ±20V, V_{DS} = 0V
On-State Drain Current	$I_{D(on)}$	1	—	-	A	V_{GS} = 10V, V_{DS} = 15V
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	$R_{DS\ (on)}$	—	—	2.5 5	Ω	V_{GS} = 10V, I_D = 500mA V_{GS} = 5V, I_D = 200mA
Forward Transconductance	g_{fs}	150	—	-	mS	V_{DS} = 25V, I_D = 250mA
DYNAMIC CHARACTERISTICS (Note 7)						
Input Capacitance	C_{iss}	—	—	35	pF	V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz
Output Capacitance	C_{oss}	—	—	25	pF	
Reverse Transfer Capacitance	C_{rss}	—	—	8	pF	
Turn-On Delay Time	$t_{D(on)}$	—	—	5	ns	V_{DS} = 25V, I_D = 150mA
Turn-On Rise Time	t_r	—	—	7	ns	
Turn-Off Delay Time	$t_{D(off)}$	—	—	6	ns	
Turn-Off Fall Time	t_f	—	—	8	ns	

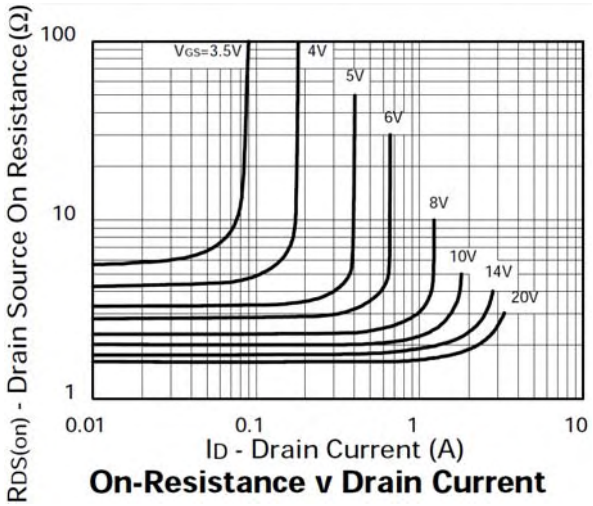
Notes: 7. Short duration pulse test used to minimize self-heating effect.

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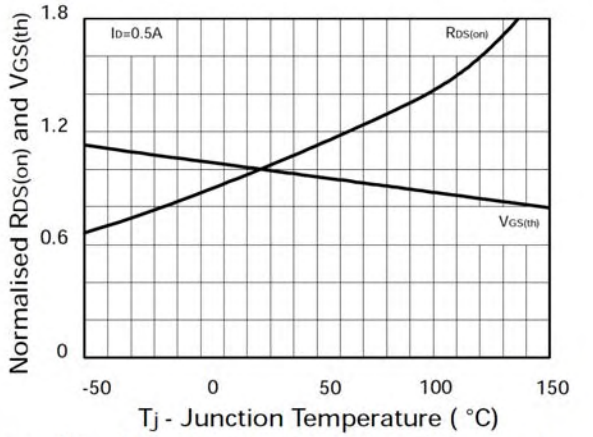
Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



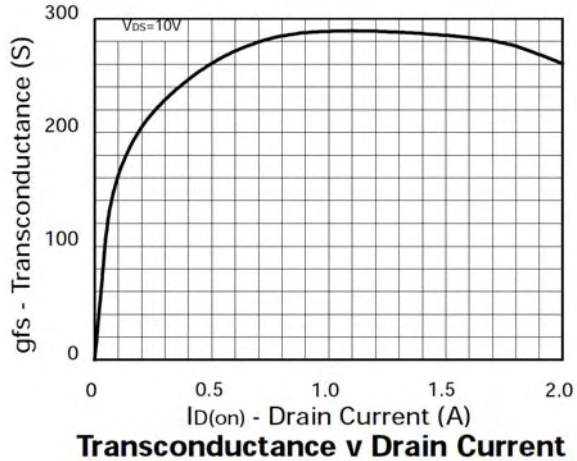
Saturation Characteristics



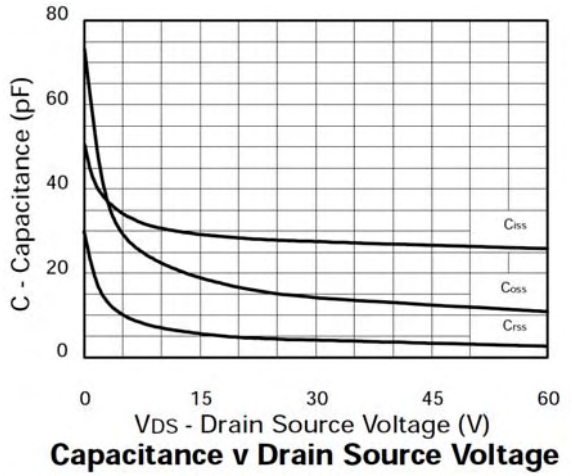
On-Resistance v Drain Current



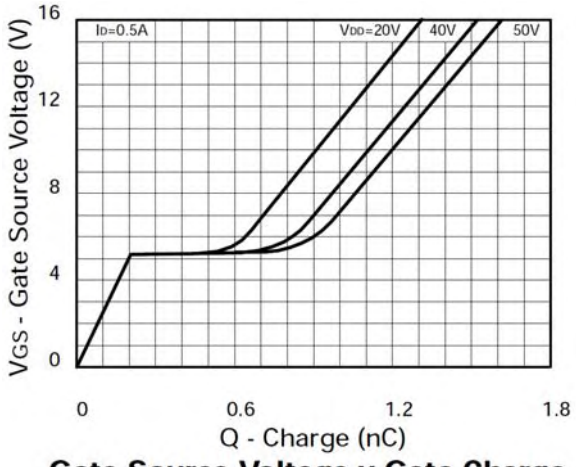
Normalised RDS(on) & VGS(th) v Temperature



Transconductance v Drain Current



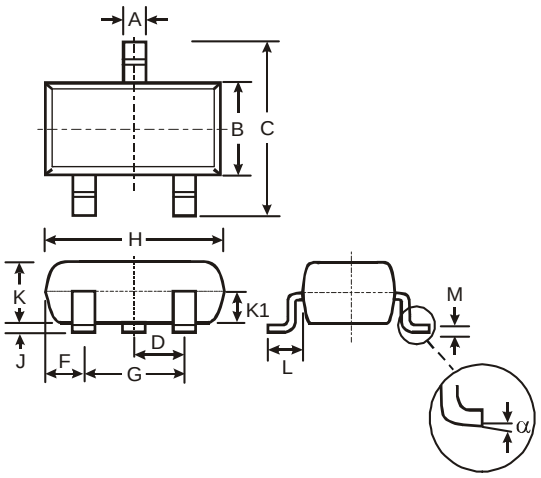
Capacitance v Drain Source Voltage



Gate Source Voltage v Gate Charge

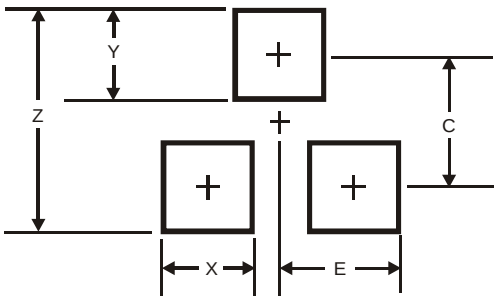
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Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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