250V N-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

 $V_{(BR)DSS}=250V$; $R_{DS(ON)}=8.5\Omega$; $I_{D}=240mA$

DESCRIPTION

This 250V enhancement mode N-channel MOSFET provides users with a competitive specification offering efficient power handling capability, high impedance and is free from thermal runaway and thermally induced secondary breakdown. Applications benefiting from this device include a variety of Telecom and general high voltage circuits.

SOT223 and SOT23-6 versions are also available.



- High voltage
- · Low on-resistance
- Fast switching speed
- · Low gate drive
- Low threshold
- Complementary P-channel Type ZVP4525G
- SOT223 package

APPLICATIONS

- Earth Recall and dialling switches
- · Electronic hook switches
- High Voltage Power MOSFET Drivers
- · Telecom call routers
- Solid state relays

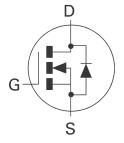
ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZVN4525ZTA	7	8mm embossed	1000 units

DEVICE MARKING

N52









ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V _{DSS}	250	V
Gate Source Voltage	V _{GS}	±40	V
Continuous Drain Current $(V_{GS}=10V; TA=25^{\circ}C)(a)$ $(V_{GS}=10V; TA=70^{\circ}C)(a)$	I _D	240 192	mA mA
Pulsed Drain Current (c)	I _{DM}	1.44	А
Continuous Source Current (Body Diode)	Is	1.1	А
Pulsed Source Current (Body Diode)	I _{sm}	1.44	А
Power Dissipation at T _A =25°C (a) Linear Derating Factor	P _D	1.2 9.6	W mW/°C
Operating and Storage Temperature Range	T_j : T_{stg}	-55 to +150	°C

THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)	$R_{\theta JA}$	103	°C/W
Junction to Ambient (b)	$R_{\theta JA}$	50	°C/W

NOTES

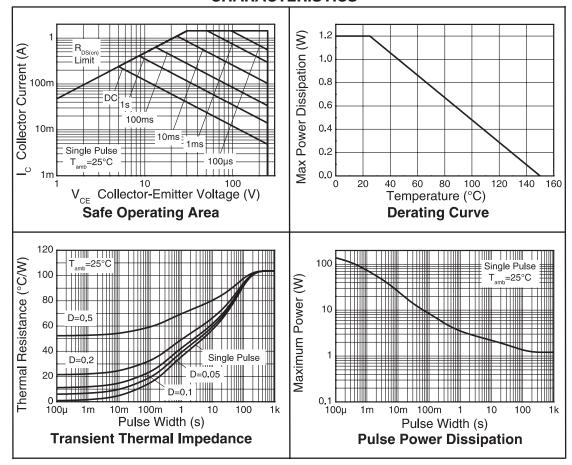
- (a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
- (b) For a device surface mounted on FR4 PCB measured at t≤5 secs.
- (c) Repetitive rating pulse width limited by maximum junction temperature. Refer to Transient Thermal

NB High Voltage Applications

For high voltage applications, the appropriate industry sector guidelines should be considered with regard to voltage spacing between conductors.



CHARACTERISTICS





ELECTRICAL CHARACTERISTICS (at T_{amb} = 25°C unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNI T	CONDITIONS.	
STATIC	•	•	•	•		•	
Drain-Source Breakdown Voltage	V _{(BR)DSS}	250	285		V	I _D =1mA, V _{GS} =0V	
Zero Gate Voltage Drain Current	I _{DSS}		35	500	nA	V _{DS} =250V, V _{GS} =0V	
Gate-Body Leakage	I _{GSS}		±1	±100	nA	V _{GS} =±40V, V _{DS} =0V	
Gate-Source Threshold Voltage	$V_{GS(th)}$	0.8	1.4	1.8	V	$I_D = 1 \text{mA}, V_{DS} = V_{GS}$	
Static Drain-Source On-State Resistance (1)	R _{DS(on)}		5.6 5.9 6.4	8.5 9.0 9.5	Ω Ω Ω	$V_{\rm GS}$ =10V, $I_{\rm D}$ =500mA $V_{\rm GS}$ =4.5V, $I_{\rm D}$ =360mA $V_{\rm GS}$ =2.4V, $I_{\rm D}$ =20mA	
Forward Transconductance (3)	g _{fs}	0.3	475		s	V _{DS} =10V,I _D =0.3A	
DYNAMIC (3)	_						
Input Capacitance	C _{iss}		72		pF		
Output Capacitance	C _{oss}		11		pF	V _{DS} =25 V, V _{GS} =0V, f=1MHz	
Reverse Transfer Capacitance	C _{rss}		3.6		pF		
SWITCHING(2) (3)							
Turn-On Delay Time	t _{d(on)}		1.25		ns		
Rise Time	t _r		1.70		ns	$V_{DD} = 50V, I_{D} = 200 \text{mA}$ $R_{G} = 6.0\Omega, R_{D} = 4.4\Omega$	
Turn-Off Delay Time	t _{d(off)}		11.40		ns	(refer to test circuit)	
Fall Time	t _f		3.50		ns		
Total Gate Charge	Q_g		2.6	3.65	nC	V _{DS} =25V,V _{GS} =10V, I _D =360mA(refer to test circuit)	
Gate-Source Charge	Q _{gs}		0.2	0.28	nC		
Gate Drain Charge	Q_{gd}		0.5	0.70	nC		
SOURCE-DRAIN DIODE			•				
Diode Forward Voltage (1)	V _{SD}			0.97	V	T _j =25°C, I _S =360mA, V _{GS} =0V	
Reverse Recovery Time (3)	t _{rr}		186	260	ns	T _j =25°C, I _F =360mA, di/dt= 100A/μs	
Reverse Recovery Charge (3)	O _{rr}		34	48	nC		

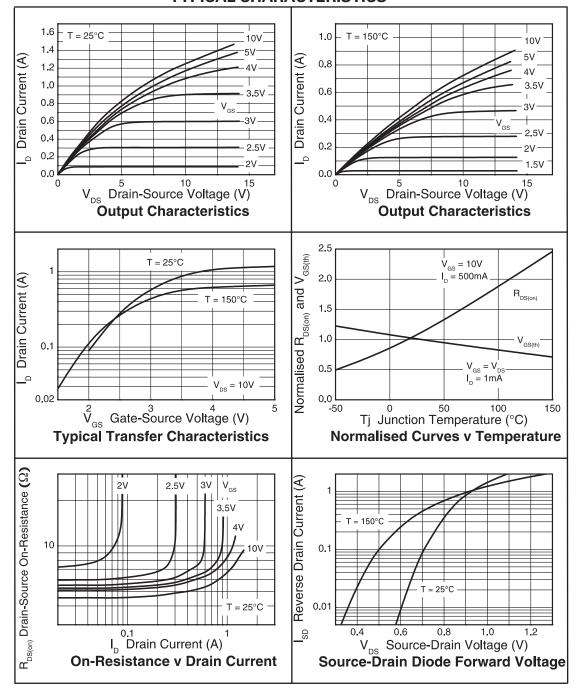
⁽¹⁾ Measured under pulsed conditions. Width=300µs. Duty cycle ≤2%.



⁽²⁾ Switching characteristics are independent of operating junction temperature.

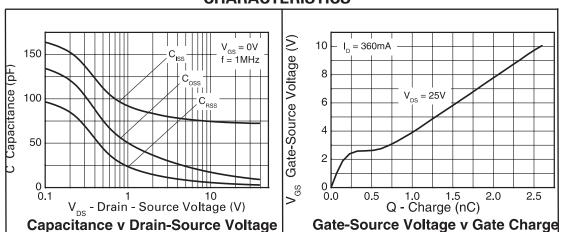
⁽³⁾ For design aid only, not subject to production testing.

TYPICAL CHARACTERISTICS



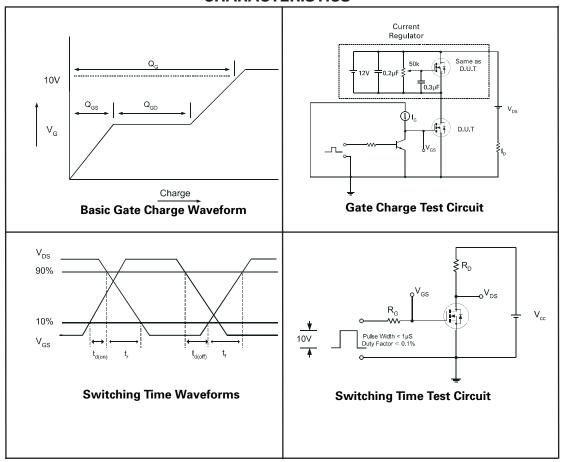


CHARACTERISTICS





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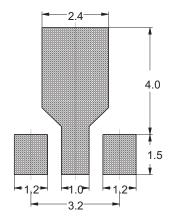




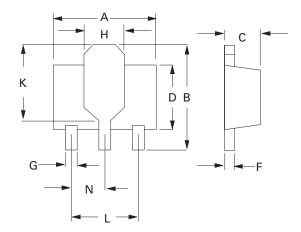
PACKAGE DIMENSIONS

Dim	Millimeters		Inches	
	Min	Max	Min	Max
Α	4.40	4.6	0.173	0.181
В	3.75	4.25	0.150	0.167
С	1.40	1.6	0.550	0.630
D	_	2.6	-	0.102
F	0.28	0.45	0.011	0.018
G	0.38	0.55	0.015	0.022
Н	1.5	1.80	0.060	0.072
K	2.6	2.85	0.102	0.112
L	2.90	3.10	0.114	0.122
N	1.4	1.60	0.055	0.063

PAD LAYOUT DETAILS



SOT89 pattern. Minimum Pad Size (dimensions in mm)





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