250V P-CHANNEL ENHANCEMENT MODE MOSFET

SUMMARY

V(BR)DSS=-250V; $RDS(ON)=14\Omega$; ID=-205mA

DESCRIPTION

This 250V enhancement mode P-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 switching circuits.

SOT223 and SOT23-6 versions are also available.



- · High voltage
- Low on-resistance
- · Fast switching speed
- Low gate drive
- Low threshold
- Complementary N-channel Type ZVN4525Z
- SOT89 package

APPLICATIONS

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

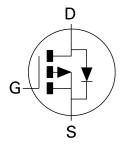
ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZVP4525ZTA	7	12mm embossed	1000 units
ZVP4525ZTC	13	12mm embossed	4000 units

DEVICE MARKING

• P52









ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V _{DSS}	250	V
Gate Source Voltage	V _{GS}	±40	V
Continuous Drain Current (VGS=10V; TA=25°C)(a) (VGS=10V; TA=70°C)(a)	I _D	-205 -164	mA mA
Pulsed Drain Current (c)	I _{DM}	-1	A
Continuous Source Current (Body Diode)	IS	-0.75	А
Pulsed Source Current (Body Diode)	I _{SM}	-1	A
Power Dissipation at T _A =25°C (a) Linear Derating Factor	PD	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

 $(a) For a device surface mounted on 25 mm\ x\ 25 mm\ FR4\ PCB\ with\ high\ coverage\ of\ single\ sided\ 1oz\ copper,\ in\ still\ air\ conditions$

(b) For a device surface mounted on FR4 PCB measured at t $\!\!<\!\!5$ secs.

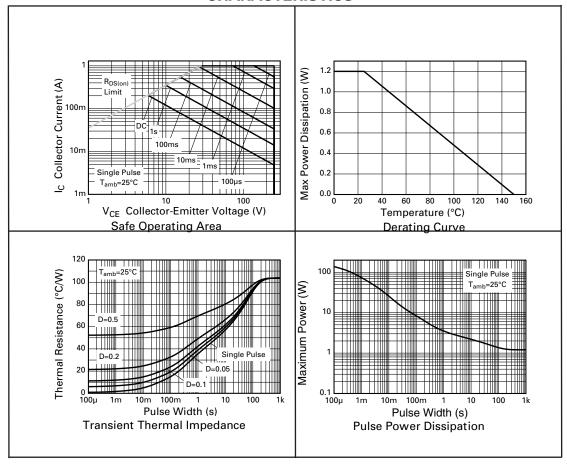
(c) Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

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)

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PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.	
STATIC		!		'			
Drain-Source Breakdown Voltage	V _{(BR)DSS}	-250	-285		V	I _D =-1mA, V _G S=0V	
Zero Gate Voltage Drain Current	I _{DSS}		-30	-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	-1.5	-2.0	V	I _D =-1mA, V _{DS} = V _{GS}	
Static Drain-Source On-State Resistance (1)	R _{DS(on)}		10 13	14 18	ΩΩ	V _{GS} =-10V, I _D =-200mA V _{GS} =-3.5V, I _D =-100mA	
Forward Transconductance (3)	9fs	80	200		mS	V _{DS} =-10V,I _D =-0.15A	
DYNAMIC (3)							
Input Capacitance	C _{iss}		73		pF	\/ 25 \/ \/ 0\/	
Output Capacitance	Coss		12.8		pF	V _{DS} =-25 V, V _{GS} =0V, f=1MHz	
Reverse Transfer Capacitance	C _{rss}		3.91		pF	1	
SWITCHING(2) (3)	•	•		<u>'</u>	•		
Turn-On Delay Time	t _{d(on)}		1.53		ns		
Rise Time	t _r		3.78		ns	V _{DD} =-30V, I _D =-200m	
Turn-Off Delay Time	t _{d(off)}		17.5		ns	R _G =50Ω, V _G S=-10V (refer to test circuit)	
Fall Time	tf		7.85		ns		
Total Gate Charge	Ωg		2.45	3.45	nC		
Gate-Source Charge	Qgs		0.22	0.31	nC	V _{DS} =-25V,V _{GS} =-10V I _D =-200mA(refer to	
Gate Drain Charge	Q _{gd}		0.45	0.63	nC	test circuit)	
SOURCE-DRAIN DIODE	•			-	•		
Diode Forward Voltage (1)	V _{SD}			0.97	V	T _j =25°C, I _S =-200mA, V _{GS} =0V	
Reverse Recovery Time (3)	t _{rr}		205	290	ns	T _j =25°C, I _F =-200mA,	
Reverse Recovery Charge (3)	Q _{rr}		21	29	nC	di/dt=100Å/μs	

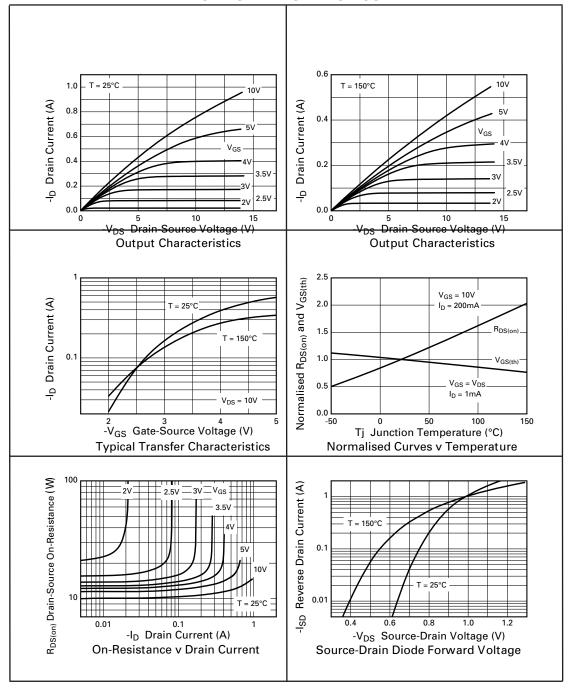
⁽¹⁾ Measured under pulsed conditions. Width=300 $\mu s.$ Duty cycle $\leq~2\%$.



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

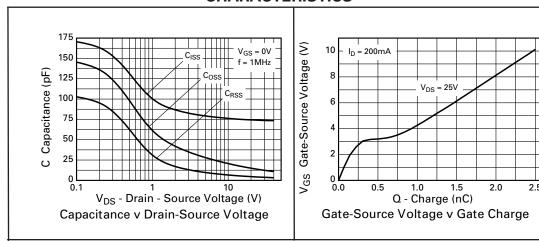
⁽³⁾ For design aid only, not subject to production testing.

TYPICAL CHARACTERISTICS



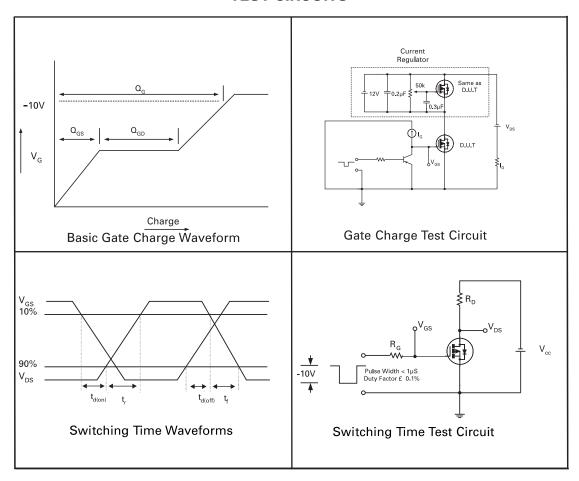


CHARACTERISTICS





TEST CIRCUITS



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- "Last time buy (LTB)"Device will be discontinued and last time buy period and delivery is in effect
- "Not recommended for new designs"Device is still in production to support existing designs and production
- "Obsolete"Production has been discontinued

Datasheet status key:

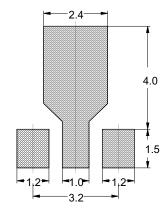
- "Draft version"This term denotes a very early datasheet version and contains highly provisional
- information, which may change in any manner without notice.
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PACKAGE DIMENSIONS

DIM	Millimetres		Inc	hes
	Min	Max	Min	Max
А	4.40	4.60	0.173	0.181
В	3.75	4.25	0.150	0.167
С	1.40	1.60	0.550	0.630
D	-	2.60	-	0.102
F	0.28	0.45	0.011	0.018
G	0.38	0.55	0.015	0.022
Н	1.50	1.80	0.060	0.072
K	2.60	2.85	0.102	0.112
L	2.90	3.10	0.114	0.122
N	1.40	1.60	0.055	0.063

PAD LAYOUT DETAILS



SOT89 pattern.
Minimum Pad Size (dimensions in mm)

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