

WSP16N10

N-Ch MOSFET

General Description

The WSP16N10 is the highest performance trench N-Ch MOSFET with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The WSF16N10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summery

BVDSS	RDSON	ID
100V	8.9mΩ	16A

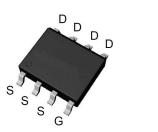
Applications

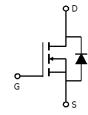
DC/DC Converter

SOP-8 Pin Configuration

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available





Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	100	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25℃	Continuous Drain Current, V _{GS} @ 10V ¹	16	А
I _D @T _C =100℃	Continuous Drain Current, V _{GS} @ 10V ¹	10	A
I _{DM}	Pulsed Drain Current ²	56	А
EAS	Single Pulse Avalanche Energy ³ L=0.1mH	30	mJ
I _{AS}	Avalanche Current	28	А
P₀@T _A =25℃	Total Power Dissipation ⁴	3.1	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Тур.	Max.	Unit
R _{eJA}	Thermal Resistance Junction-ambient ¹		40	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹		24	°C/W



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Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	100			V
$\triangle BV_{DSS} / \triangle T_J$	BVDSS Temperature Coefficient	Reference to 25 $^\circ\!\mathrm{C}$, I_D=1mA		0.098		V/℃
Б	Static Drain-Source On-Resistance ²	V _{GS} =10V , I _D =11.5A		8.9	11	mΩ
R _{DS(ON)}		V _{GS} =4.5V , I _D =9.5A		9.9	13	
V _{GS(th)}	Gate Threshold Voltage		1.4	1.7	2.5	V
$ riangle V_{GS(th)}$	V _{GS(th)} Temperature Coefficient	$V_{GS} - V_{DS}$, $I_D - 2500A$		-5.52		mV/℃
	Drain-Source Leakage Current	V_{DS} =100V , V_{GS} =0V , T_J =25 $^\circ C$			1	
I _{DSS}	Drain-Source Leakage Current	V_{DS} =100V , V_{GS} =0V , TJ=55 $^\circ C$			5	— uA
I _{GSS}	Gate-Source Leakage Current	V_{GS} = $\pm20V$, V_{DS} = $0V$			±100	nA
Rg	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz		0.55	1.0	Ω
Qg	Total Gate Charge (10V)			15		
Q _{gs}	Gate-Source Charge	V _{DS} =50V , V _{GS} =10V , I _D =11.5A		7		nC
Q _{gd}	Gate-Drain Charge			4		
T _{d(on)}	Turn-On Delay Time			8		
Tr	Rise Time	V_{DD} =50V , V_{GEN} =10V ,		3		20
T _{d(off)}	Turn-Off Delay Time	$R_G=3\Omega I_D=1A$, $R_L=4.35\Omega$		25		ns
T _f	Fall Time			4		
Ciss	Input Capacitance	V _{DS} =50V , V _{GS} =0V , f=1MHz		4000		
C _{oss}	Output Capacitance			898		pF
C _{rss}	Reverse Transfer Capacitance			39		

Guaranteed Avalanche Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
EAS	Single Pulse Avalanche Energy⁵	V _{DD} =50V , L=0.1mH , I _{AS} =10A	18			mJ

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
I _S	Continuous Source Current ^{1,6}	$V_G = V_D = 0V$, Force Current			4	А
I _{SM}	Pulsed Source Current ^{2,6}				16	А
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =6A , T _J =25℃			1.1	V
t _{rr}	Reverse Recovery Time	- IF=1A , dl/dt=100A/μs , T J=25℃		25		nS
Qrr	Reverse Recovery Charge			110		nC

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper,t<10sec.

2.The data tested by pulsed , pulse width $\,\leq\,$ 300us , duty cycle $\,\leq\,$ 2%

3. The EAS data shows Max. rating . The test condition is V_{DD} =25V, V_{GS} =10V, L=0.1mH, I_{AS}=10A

4.The power dissipation is limited by 150 $^\circ\!\!\mathbb{C}$ junction temperature

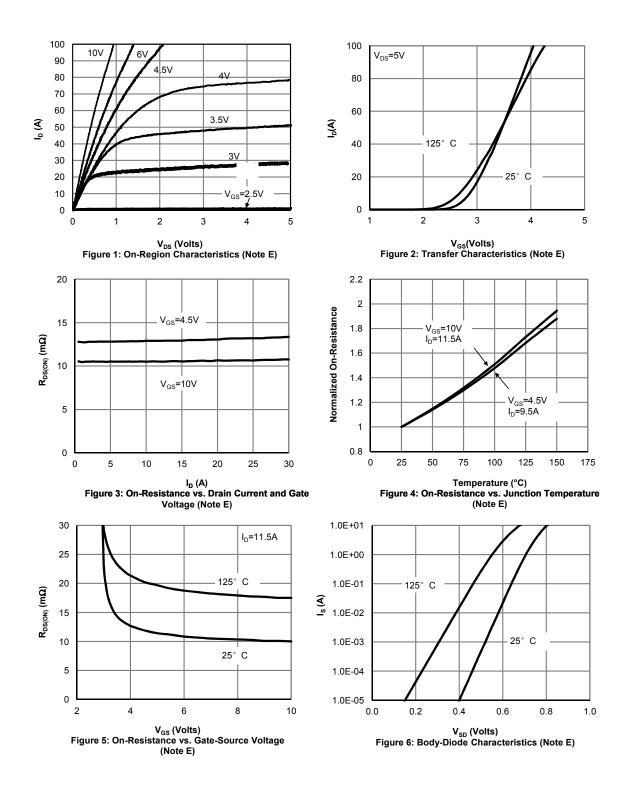
5.The Min. value is 100% EAS tested guarantee.

6. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.



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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

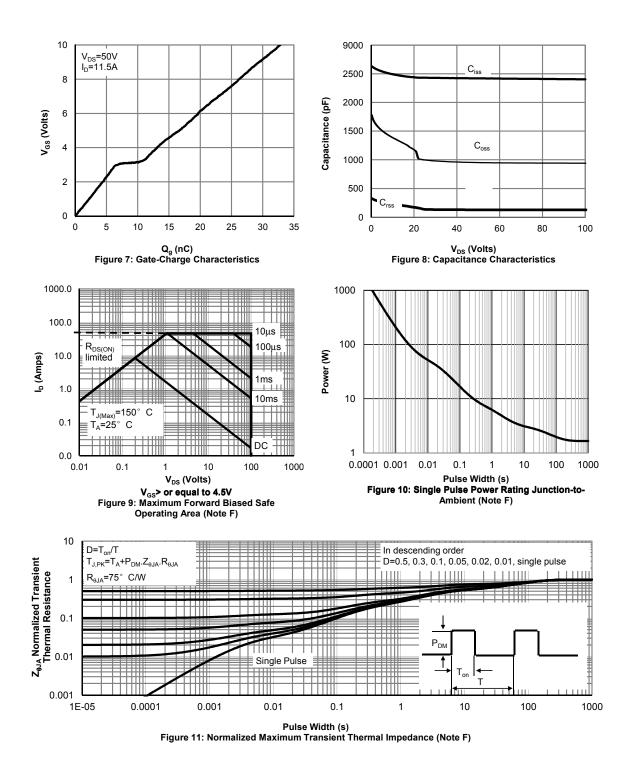




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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS





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