WSP4626

N-Ch and P-Channel MOSFET

General Description

The WSP4626 is the highest performance trench N-ch and P-ch MOSFETs with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

The WSP4626 meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

Product Summery

BVDSS	RDSON	ID
20V	21mΩ	6.7A
-20V	48mΩ	-4.4A

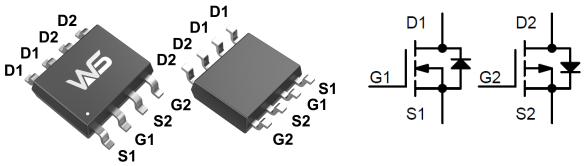
Applications

- MB/NB/UMPC/VGA
- DC-DC Power System
- Inverter

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

SOP-8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating		Units
		N-Ch	P-Ch	
V_{DS}	Drain-Source Voltage	20	-20	V
V_{GS}	Gate-Source Voltage	±10	±12	V
I_D@T_A=25℃	Continuous Drain Current	6.7	-4.4	A
I_D@T_A=70℃	Continuous Drain Current	5.3	-3.5	A
I_{DM}	Pulsed Drain Current	20	-20	A
P_D@T_A=25℃	Total Power Dissipation	2.0	2.0	W
T_{STG}	Storage Temperature Range	-55 to 150	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R_{thJA}	Thermal Resistance Junction-Ambient	---	62.5	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=6A	---	21	28	mΩ
		V_{GS}=2.5V , I_D=5.2A	---	28	38	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.4	0.72	1.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V , V_{GS}=0V .	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge	V_{DS}=10V,V_{GS}=4.5V,I_D=6.5A.	---	10	---	nC
Q_{gs}	Gate-Source Charge		---	1.4	---	
Q_{gd}	Gate-Drain Charge		---	3.2	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V,V_{GS}=4.5V,R_G=6Ω, I_D=1A .	---	14	---	ns
T_r	Rise Time		---	10	---	
$T_{d(off)}$	Turn-Off Delay Time		---	34	---	
T_f	Fall Time		---	11	---	
C_{iss}	Input Capacitance	V_{DS}=15V,V_{GS}=0V,f=1MHz .	---	910	---	pF
C_{oss}	Output Capacitance		---	230	---	
C_{rss}	Reverse Transfer Capacitance		---	163	---	
I_S	Continuous Source Current	V_G=V_D=0V , Force Current	---	---	2.6	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V , I_S=1A.	---	---	1.2	V

P-Channel Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=-250uA	-20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=-4.5V , I_D=-5A	---	48	65	mΩ
		V_{GS}=-2.5V , I_D=-3A	---	62	85	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =-250uA	-0.4	-0.68	-1.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-20V , V_{GS}=0V , T_J=25℃	---	---	1	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±100	nA
Q_g	Total Gate Charge	V_{DS}=-10V,V_{GS}=-4.5V,I_D=-4A.	---	11.5	---	nC
Q_{gs}	Gate-Source Charge		---	3.5	---	
Q_{gd}	Gate-Drain Charge		---	3.3	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=-10V,V_{GS}=-4.5V ,R_G=3Ω, I_D=-4A .	---	22	---	ns
T_r	Rise Time		---	15.7	---	
$T_{d(off)}$	Turn-Off Delay Time		---	59	---	
T_f	Fall Time		---	5.5	---	
C_{iss}	Input Capacitance	V_{DS}=-10V,V_{GS}=0V , f=1MHz.	---	1415	---	pF
C_{oss}	Output Capacitance		---	134	---	
C_{rss}	Reverse Transfer Capacitance		---	102	---	
I_S	Continuous Source Current	T_A =25°C	---	---	-2.4	A
V_{SD}	Diode Forward Voltage	I_{SD}= -1A , V_{GS}=0V.	---	---	-1.2	V

A: The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

N-Channel Typical Characteristics

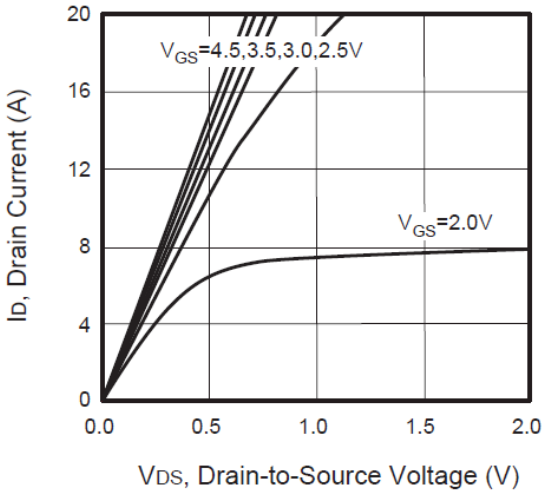


Figure 1. Output Characteristics

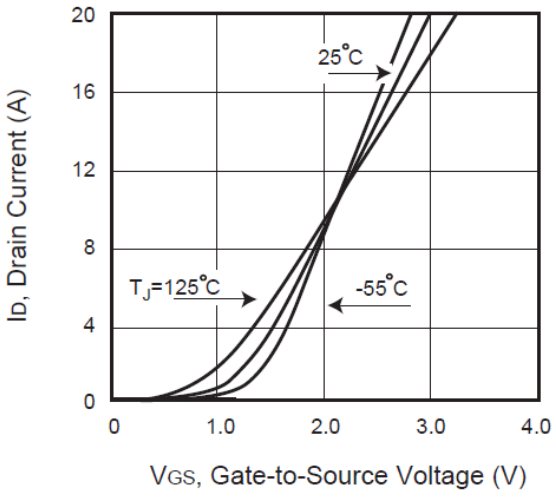


Figure 2. Transfer Characteristics

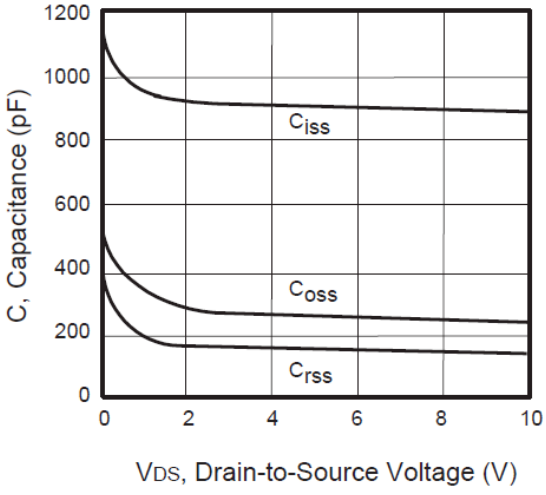


Figure 3. Capacitance

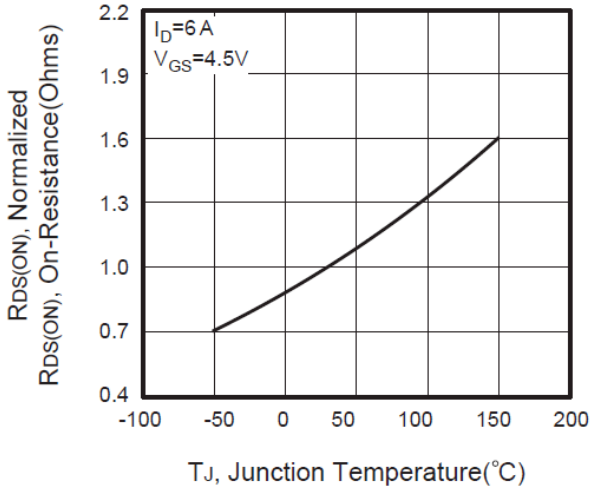


Figure 4. On-Resistance Variation with Temperature

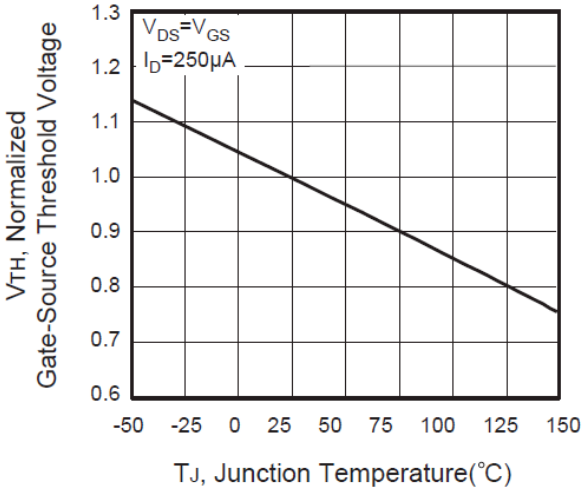


Figure 5. Gate Threshold Variation with Temperature

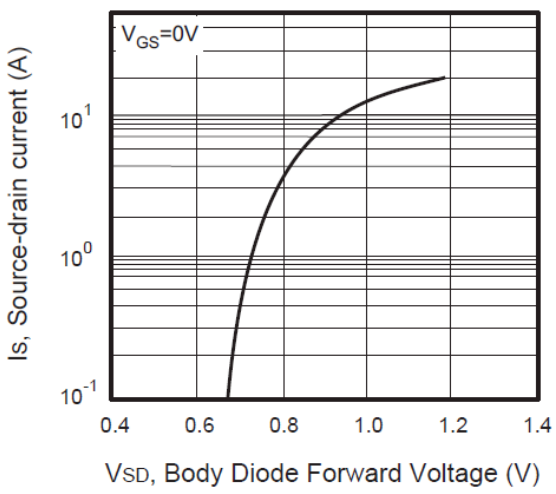


Figure 6. Body Diode Forward Voltage Variation with Source Current

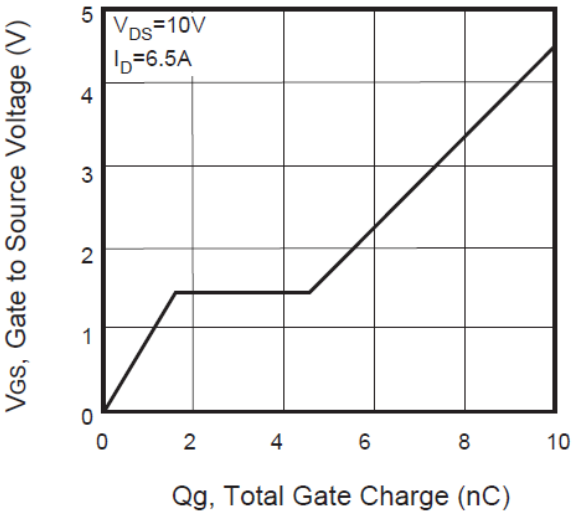


Figure 7. Gate Charge

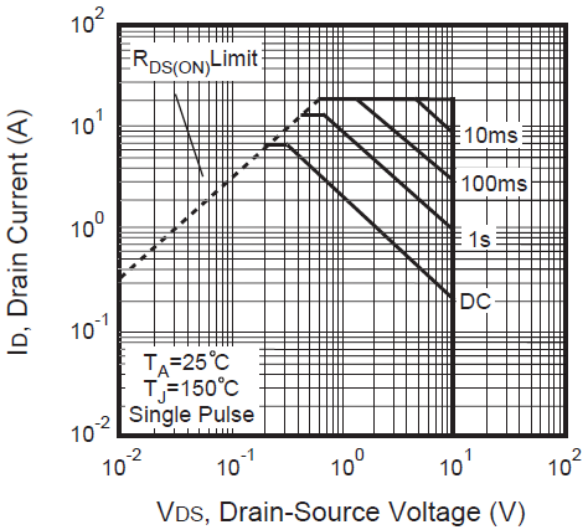


Figure 8. Maximum Safe Operating Area

P-Channel Typical Characteristics

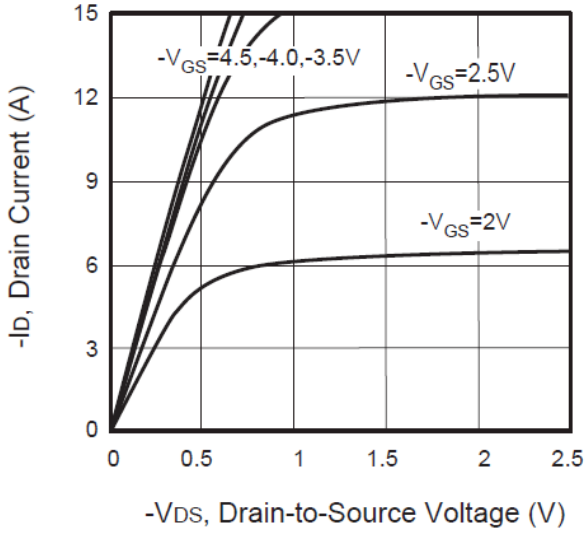


Figure 9. Output Characteristics

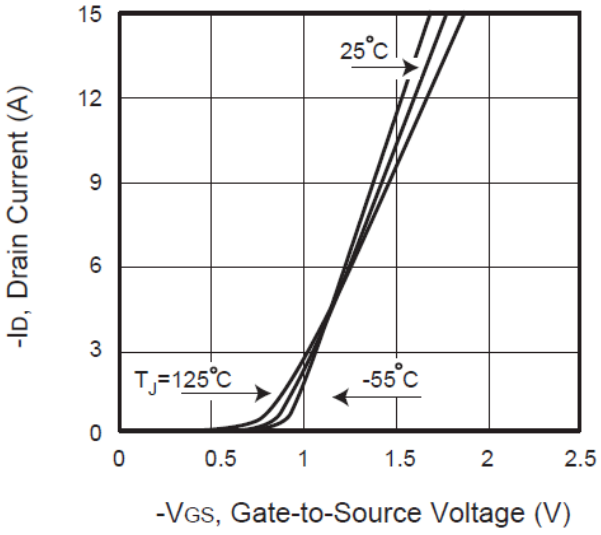


Figure 10. Transfer Characteristics

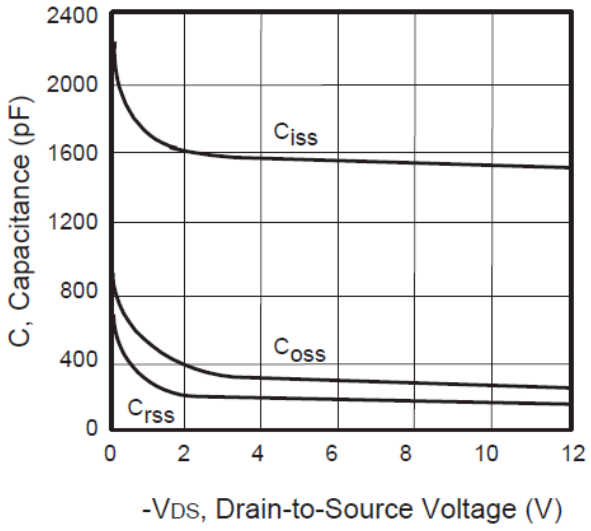


Figure 11. Capacitance

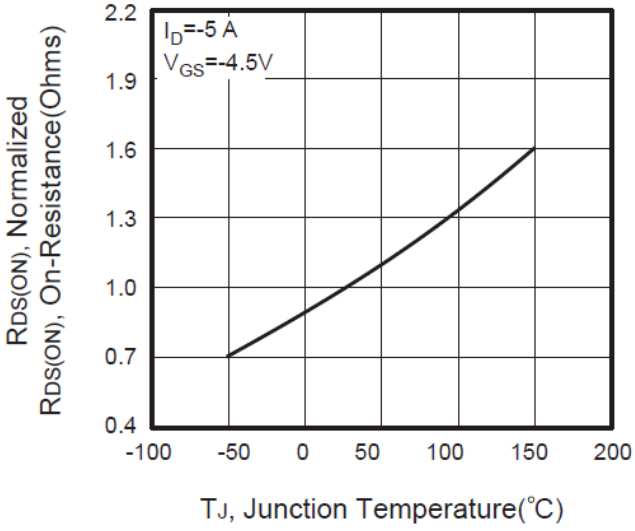


Figure 12. On-Resistance Variation with Temperature

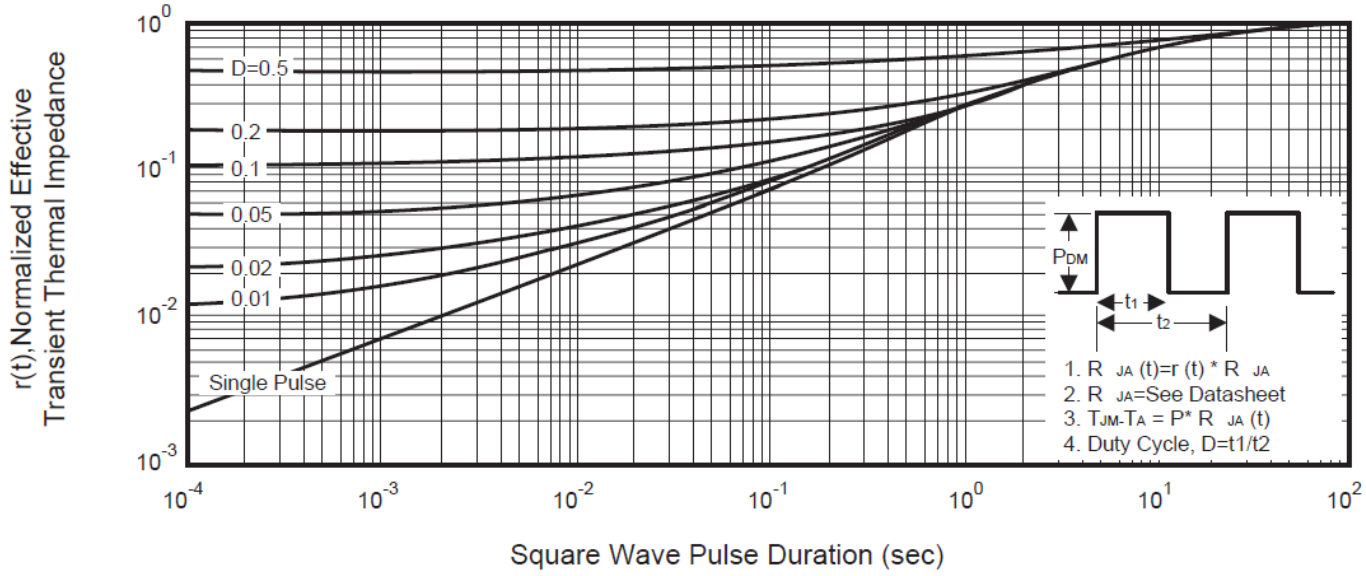


Figure 19. Normalized Thermal Transient Impedance Curve

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