

WSP6047

P-Ch MOSFET

General Description

The WSP6047 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The WSP6047 meet the RoHS and Green Product requirement , 100% EAS guaranteed with full function reliability approved.

Features

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

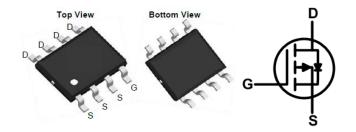
Product Summery

BVDSS	RDSON	ID
-60V	64mΩ	-4.0A

Applications

- High Frequency Point-of-Load Synchronous Buck Converter for MB/NB/UMPC/VGA
- Networking DC-DC Power System
- CCFL Back-light Inverter

SOP-8 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units	
V _{DS}	Drain-Source Voltage	-60	V	
V _{GS}	Gate-Source Voltage ±20		V	
I _D @T _C =25℃	Continuous Drain Current -4.0			
I _D @T _C =70℃	Continuous Drain Current	-2.2	А	
I _{DP}	Pulsed Drain Current -20		А	
P₀@T₀=25℃	Total Power Dissipation 2.0		W	
T _J /T _{STG}	Operating/Storage Temperature Range -55 to 150		°C	

Thermal Data

Symbol	Parameter	Typ. Max.		Unit	
R _{θJA}	Thermal Resistance Junction-Ambient		62	°C/W	
R _{eJC}	Thermal Resistance Junction-Case		4	°C/W	



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Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V_{GS} =0V , I _D =-250uA	-60			V
D	Statia Drain Source On Desistance	V _{GS} =-10V , I _D =-4A		64	84	
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V , I _D =-3A		80	104	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-1.74	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-60V , V _{GS} =0V			-1	uA
I _{GSS}	Gate-Source Leakage Current	$V_{GS}{=}{\pm}20V$, $V_{DS}{=}0V$			±100	nA
Qg	Total Gate Charge (-4.5V)	Vds = -30V, Id = -3.5A,		23		
Q _{gs}	Gate-Source Charge	VGS = -10V		2.4		nC
Q_gd	Gate-Drain Charge			5.7		
T _{d(on)}	Turn-On Delay Time			13		
Tr	Rise Time	VDD = -30V, ID = -1A,		4		ns
T _{d(off)}	Turn-Off Delay Time	Vgs = -10V, Rgen = 6Ω		45		115
T _f	Fall Time			6		
C _{iss}	Input Capacitance			1135		
C _{oss}	Output Capacitance	Vgs=0V, Vds= -30V, f=1MHz		95		pF
Crss	Reverse Transfer Capacitance			60		

P-Channel Electrical Characteristics (T_J=25⁻¹C, unless otherwise noted)

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Тур.	Max.	Unit
ls	Continuous Source Current	$V_G=V_D=0V$, Force Current			-4.0	А
V _{SD}	Diode Forward Voltage	V_{GS} =0V , I_{S} =-1A , T_{J} =25 $^{\circ}$ C			-1.2	V

A: The value of R & JA is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with TA=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.

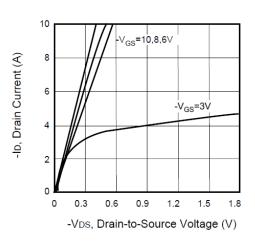
C: The current rating is based on the t≤ 10s junction to ambient thermal resistance rating.

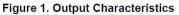


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P-Channel Typical Characteristics





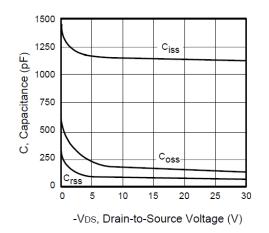
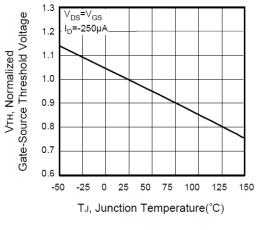
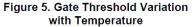


Figure 3. Capacitance





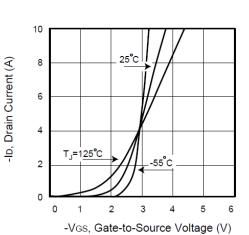


Figure 2. Transfer Characteristics

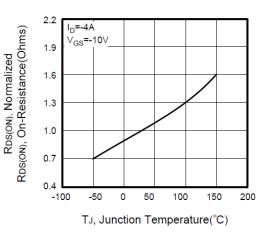


Figure 4. On-Resistance Variation with Temperature

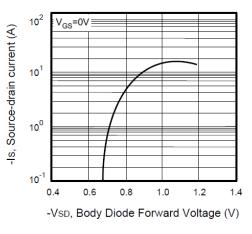
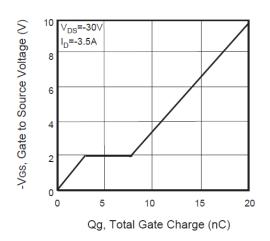


Figure 6. Body Diode Forward Voltage Variation with Source Current



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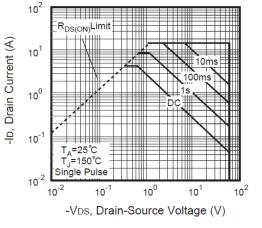
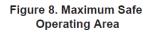


Figure 7. Gate Charge



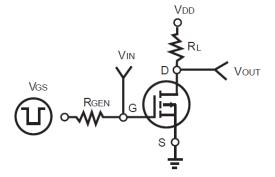
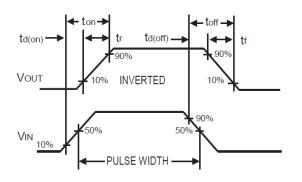


Figure 9. Switching Test Circuit





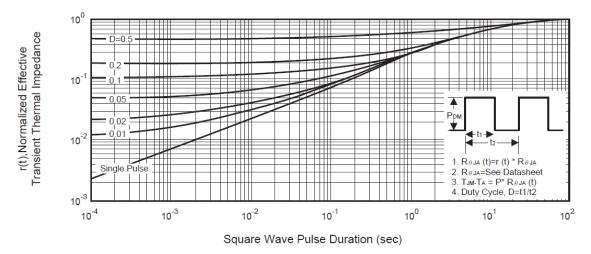


Figure 11. Normalized Thermal Transient Impedance Curve



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