SPN2306W
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN2306W is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

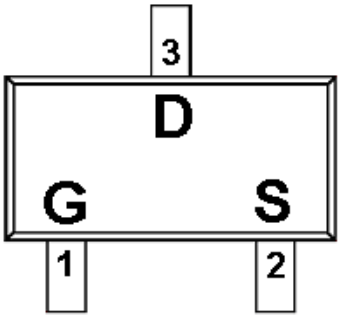
APPLICATIONS

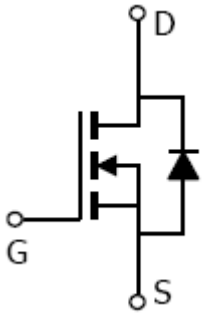
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES

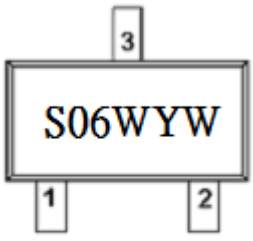
- 30V/5.4A,$R_{DS(ON)}$=38mΩ@V_{GS}=10V
- 30V/4.6A,$R_{DS(ON)}$=42mΩ@V_{GS}=4.5V
- 30V/3.8A,$R_{DS(ON)}$=55mΩ@V_{GS}=2.5V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

PIN CONFIGURATION(SOT-23)





PART MARKING



S06W: Device code
Y : Year
W : Week

SPN2306W
N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN2306WS23RGB	SOT-23	S06W

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)
※ SPN2306WS23RGB : Tape Reel ; Pb – Free

ABSOULTE MAXIMUM RATINGS
(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate –Source Voltage		V_{GSS}	±12	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	4.5	A
	T_A=70℃		3.5	
Pulsed Drain Current		I_{DM}	25	A
Continuous Source Current(Diode Conduction)		I_S	1.7	A
Power Dissipation	T_A=25℃	P_D	1.25	W
	T_A=70℃		0.8	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	140	℃/W

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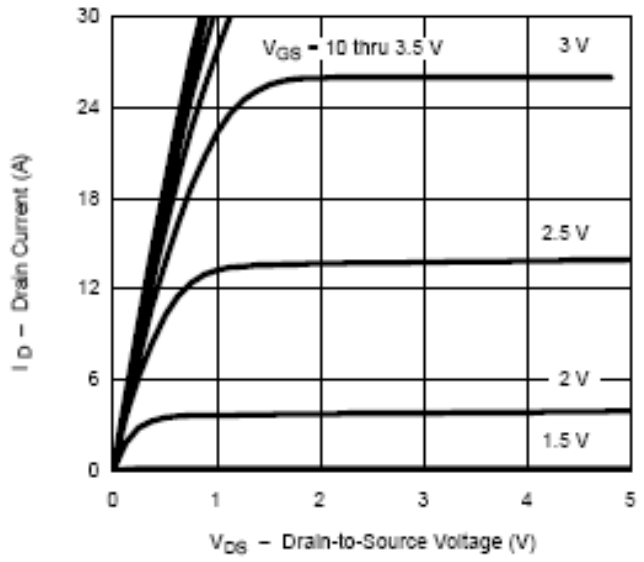
ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

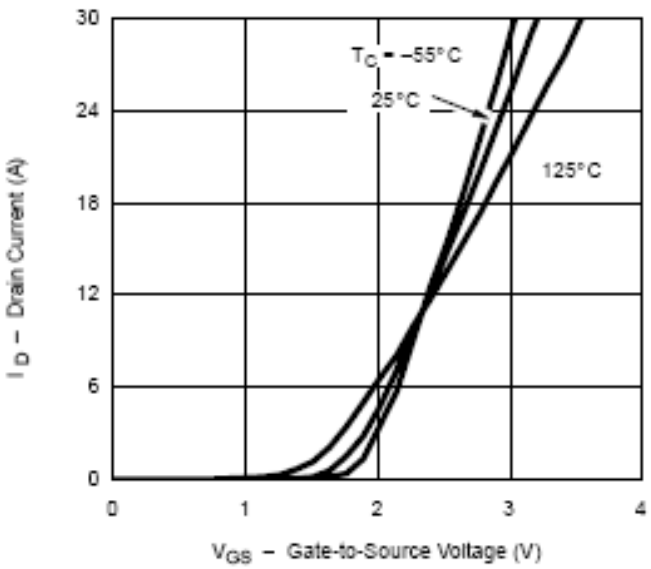
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	0.8		1.6	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±12V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=1.0V			1	uA
		V_{DS}=24V,V_{GS}=0.0V T_J=55℃			10	
On-State Drain Current	$I_{D(on)}$	V_{DS}≧4.5V,V_{GS}=4.5V	10			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS} = 10V,I_D=5.4A		0.033	0.038	Ω
		V_{GS} =4.5V,I_D=4.6A		0.038	0.042	
		V_{GS} =2.5V,I_D=3.8A		0.050	0.055	
Forward Transconductance	gfs	V_{DS}=4.5V,I_D=5.4A		12		S
Diode Forward Voltage	V_{SD}	I_S=1.7A,V_{GS}=0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V_{GS}=10V I_D≡6.7A		10	18	nC
Gate-Source Charge	Q_{gs}			1.6		
Gate-Drain Charge	Q_{gd}			3.2		
Input Capacitance	C_{iss}	V_{DS}=15V_{GS}=0V f=1MHz		450		pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			38		
Turn-On Time	$t_{d(on)}$	V_{DD}=15R_L=15 I_D≡1.0A,V_{GEN}=10 R_G=6Ω		7	15	nS
	t_r			10	20	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			11	20	

TYPICAL CHARACTERISTICS

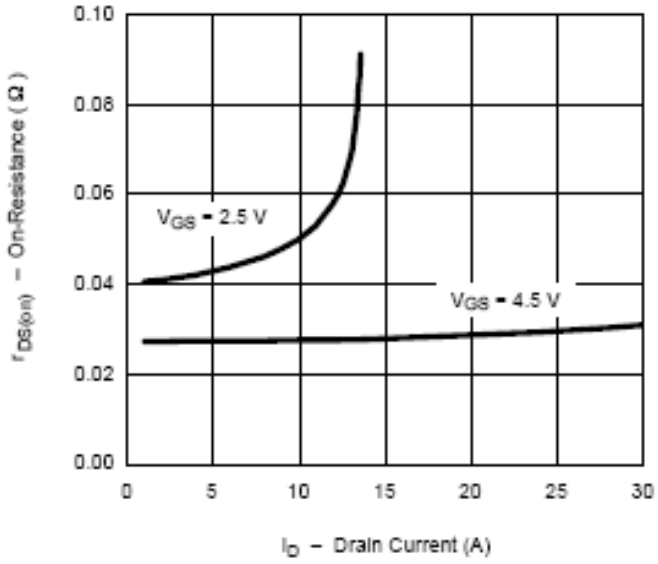
Output Characteristics



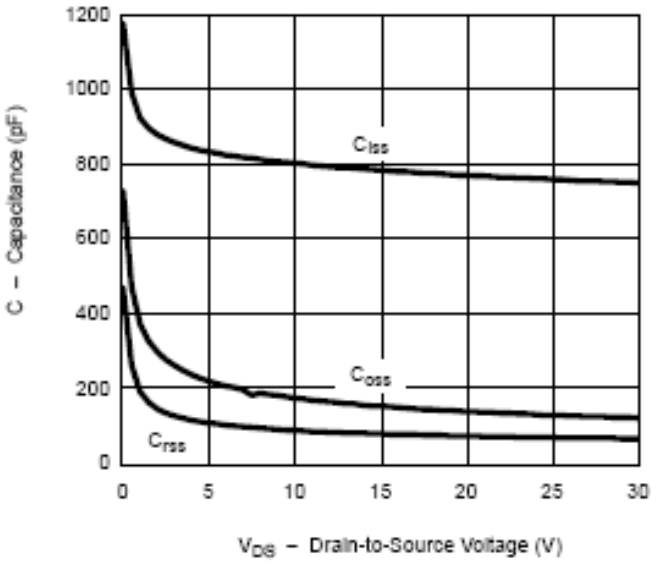
Transfer Characteristics



On-Resistance vs. Drain Current

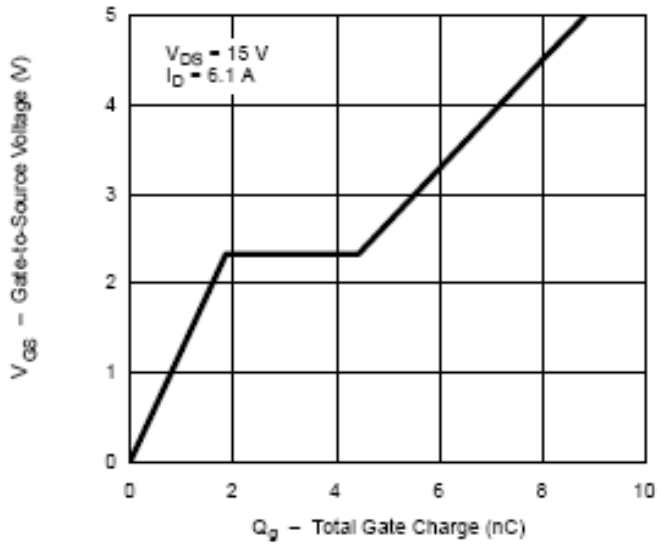


Capacitance

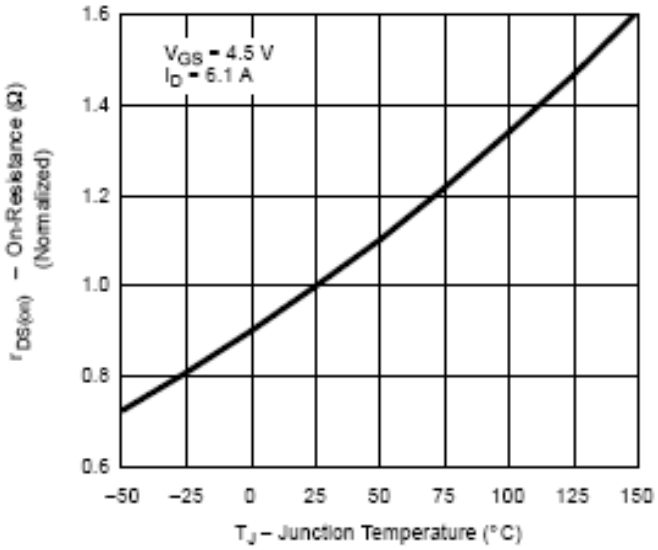


TYPICAL CHARACTERISTICS

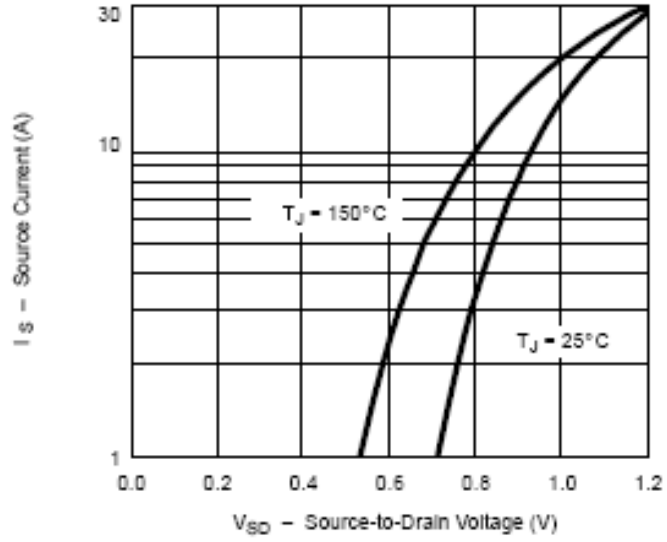
Gate Charge



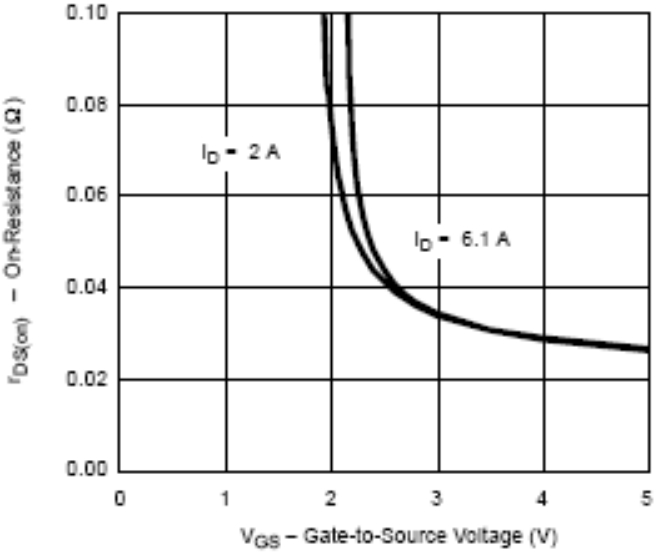
On-Resistance vs. Junction Temperature



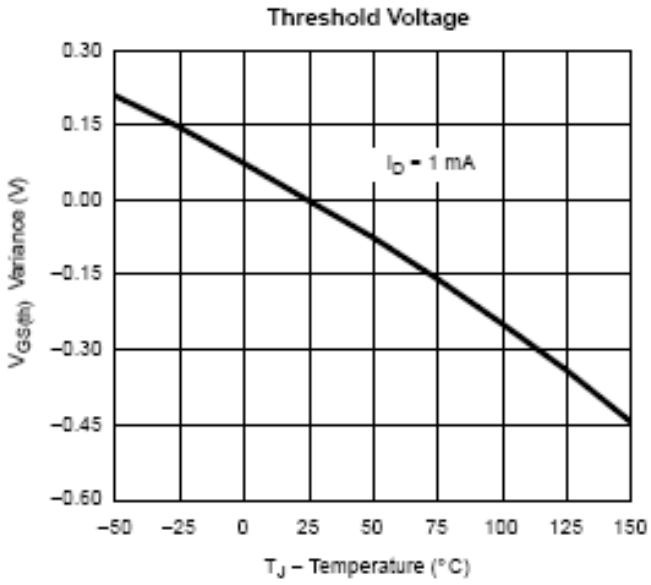
Source-Drain Diode Forward Voltage

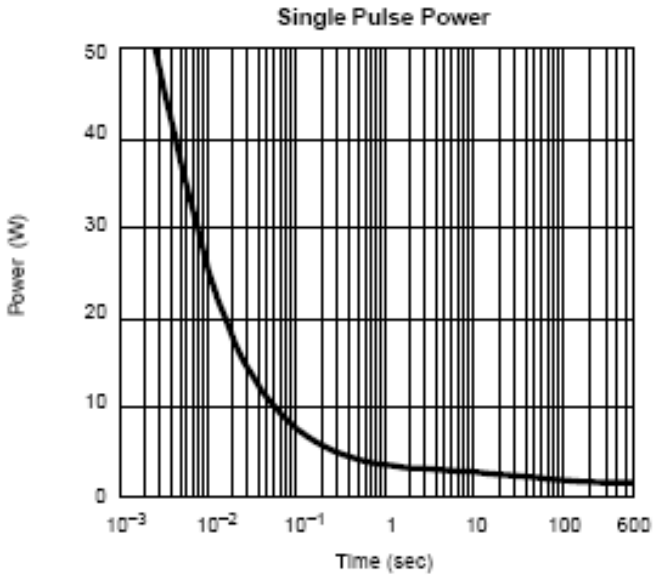


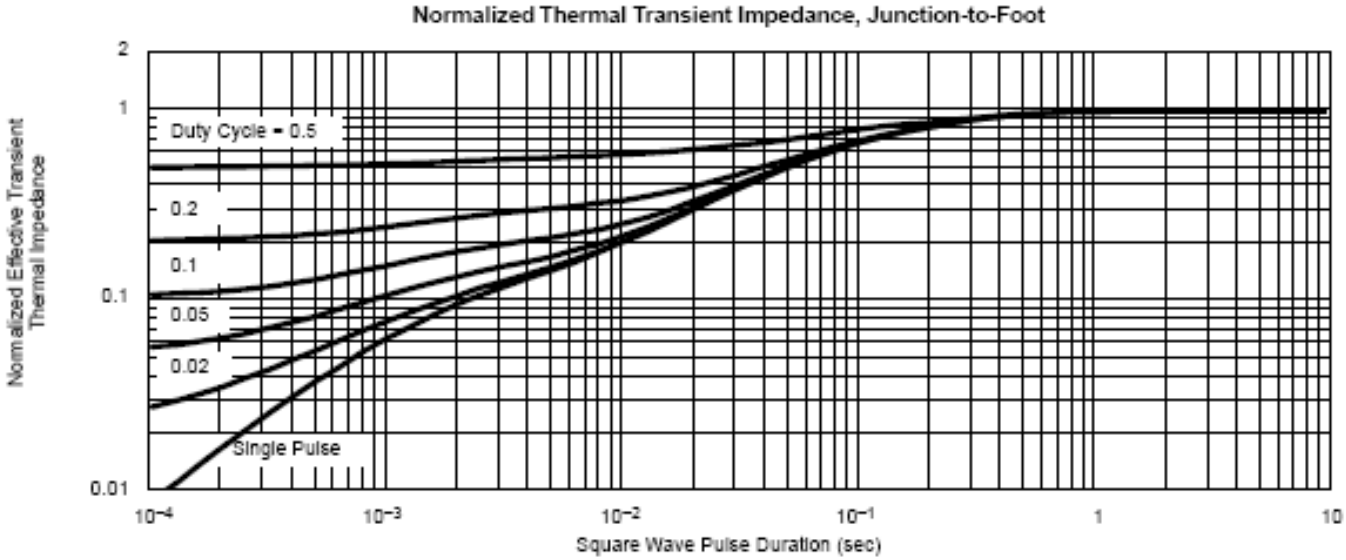
On-Resistance vs. Gate-to-Source Voltage



TYPICAL CHARACTERISTICS







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