



SPN2304W

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN2304W 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.

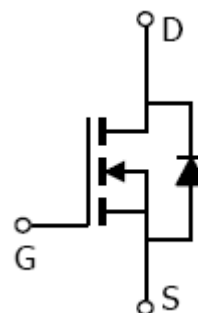
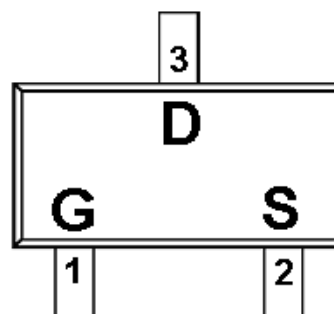
FEATURES

- ◆ 30V/3.2A, $R_{DS(ON)}=65m\Omega@V_{GS}=10V$
- ◆ 30V/2.0A, $R_{DS(ON)}=90m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23 package design

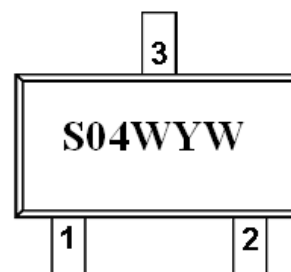
APPLICATIONS

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

PIN CONFIGURATION(SOT-23)



PART MARKING



Y : Year Code
W : Week Code



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PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN2304WS23RGB	SOT-23	S04W

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)

※ SPN2304WS23RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V _{DSS}	30	V
Gate –Source Voltage		V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	T _A =25°C	I _D	3.2	A
	T _A =70°C		2.6	
Pulsed Drain Current		I _{DM}	10	A
Continuous Source Current(Diode Conduction)		I _S	1.25	A
Power Dissipation	T _A =25°C	P _D	1.25	W
	T _A =70°C		0.8	
Operating Junction Temperature		T _J	150	°C
Storage Temperature Range		T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient		R _{θJA}	100	°C/W



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ELECTRICAL CHARACTERISTICS

(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0		3.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =24V, V _{GS} =0.0V			1	μA
		V _{DS} =24V, V _{GS} =0.0V T _J =55°C			10	
On-State Drain Current	I _{D(on)}	V _{DS} ≥4.5V, V _{GS} =10V	6			A
		V _{DS} ≥4.5V, V _{GS} =4.5V	4			
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =3.2A		0.050	0.065	Ω
		V _{GS} =4.5V, I _D =2.0A		0.065	0.090	
Forward Transconductance	g _{fs}	V _{DS} =4.5V, I _D =2.5A		4.6		S
Diode Forward Voltage	V _{SD}	I _S =1.25A, V _{GS} =0V		0.82	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =15V, V _{GS} =10V I _D =2.5		4.5	10	nC
Gate-Source Charge	Q _{gs}			0.8		
Gate-Drain Charge	Q _{gd}			1.0		
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V f=1MHz		240		pF
Output Capacitance	C _{oss}			110		
Reverse Transfer Capacitance	C _{rss}			17		
Turn-On Time	t _{d(on)}	V _{DD} =15V, R _L =15 I _D =1.0A, V _{GEN} =10 R _G =6Ω		8	20	nS
	t _r			12	30	
Turn-Off Time	t _{d(off)}			17	35	
	t _f			8	20	

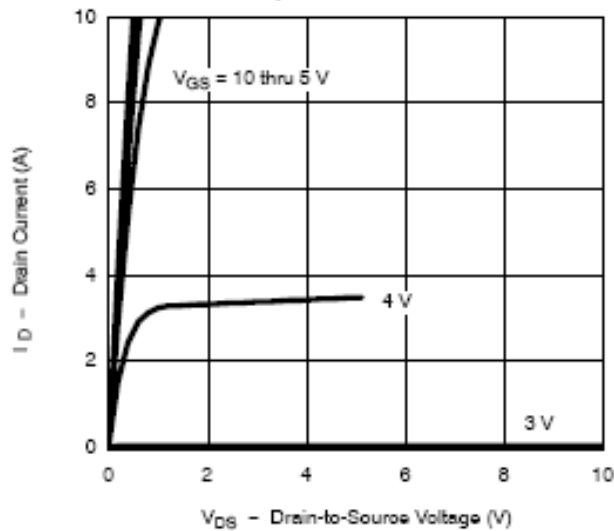


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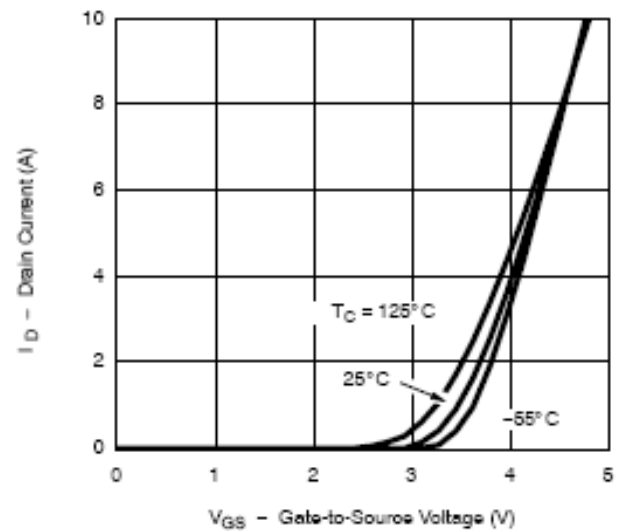
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TYPICAL CHARACTERISTICS

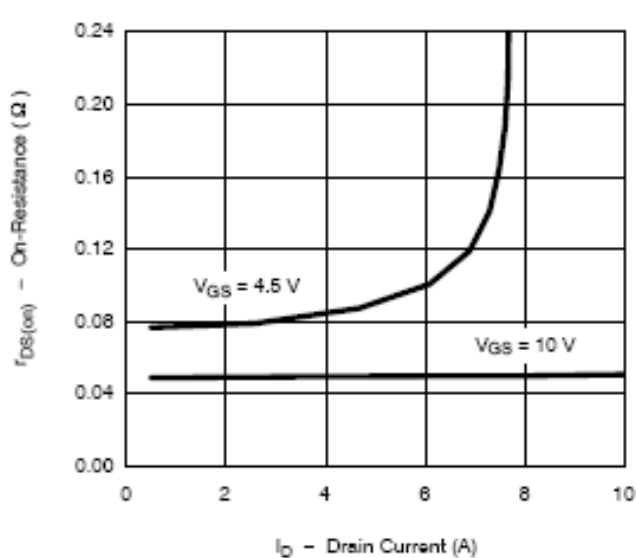
Output Characteristics



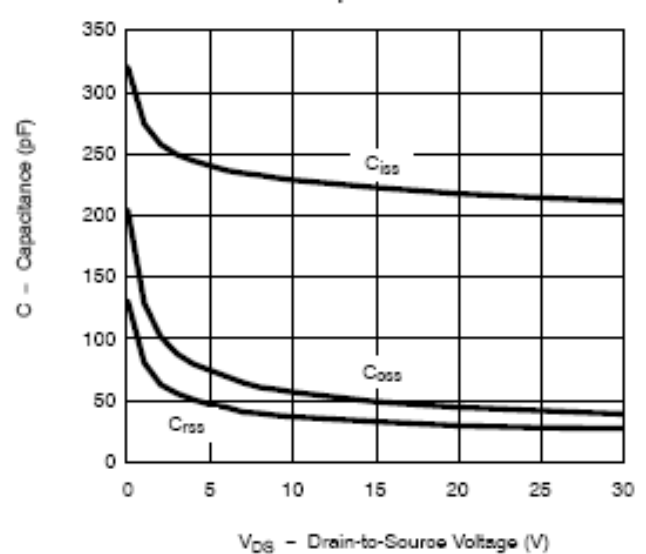
Transfer Characteristics



On-Resistance vs. Drain Current



Capacitance



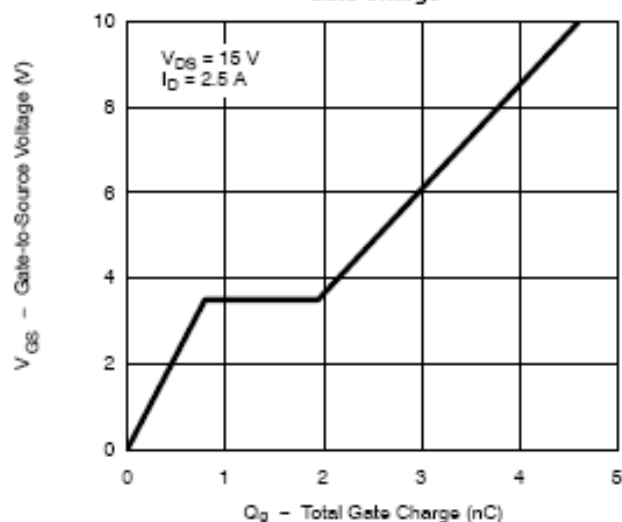


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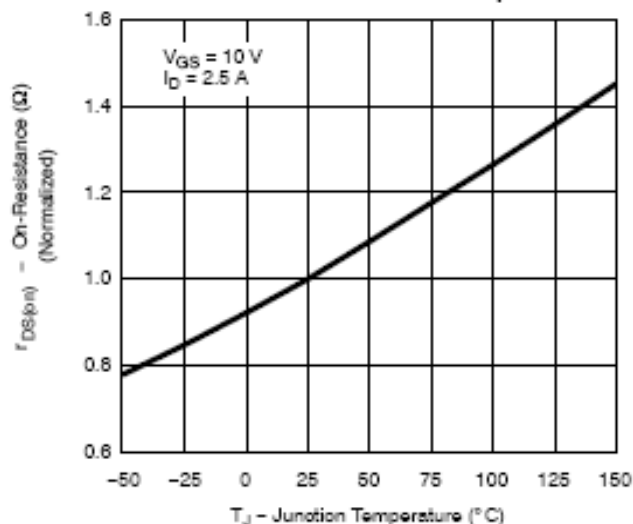
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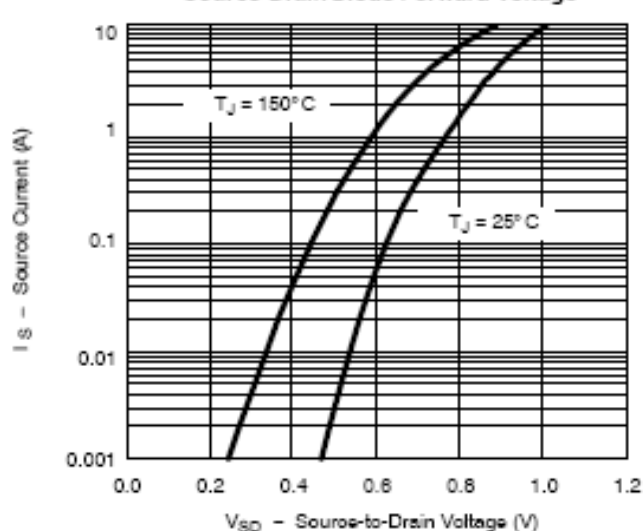
Gate Charge



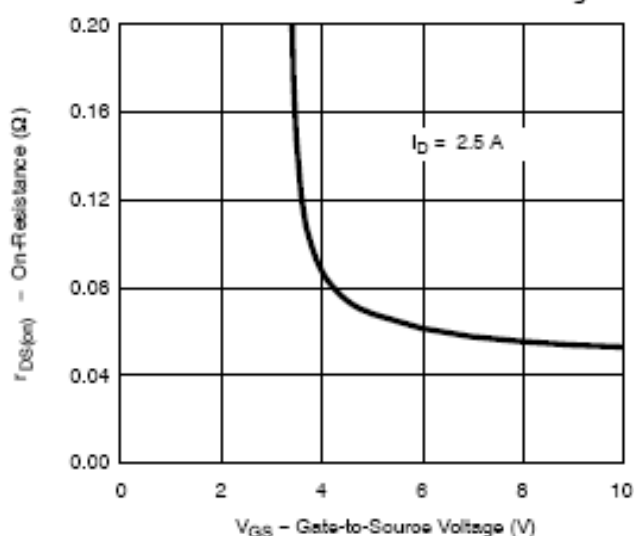
On-Resistance vs. Junction Temperature



Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

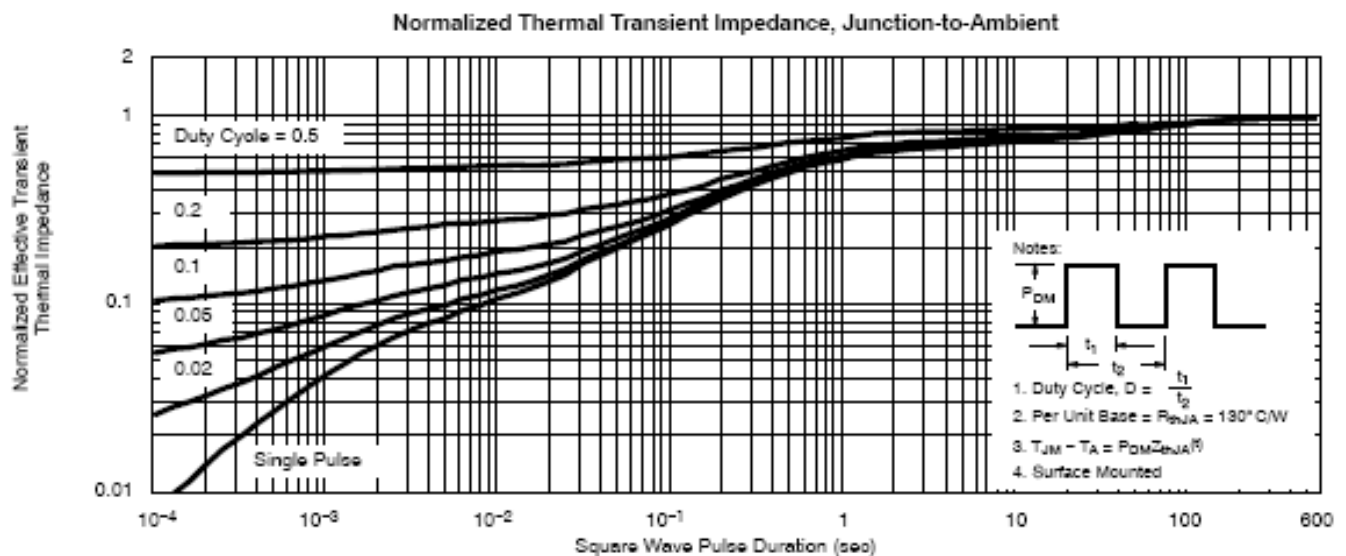
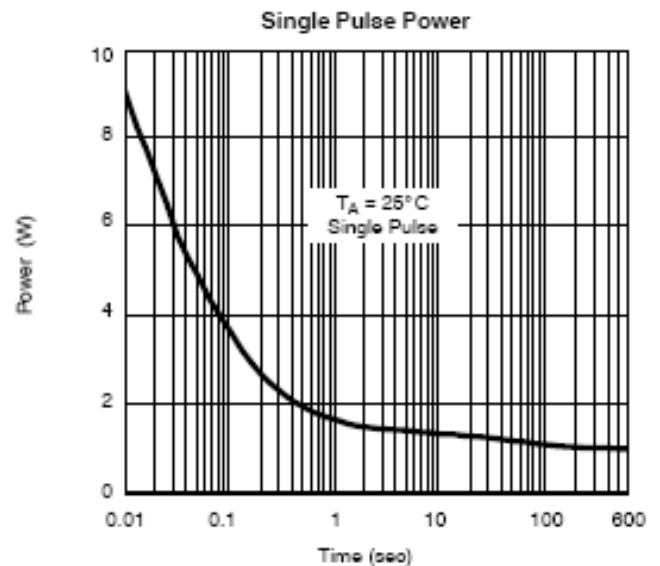
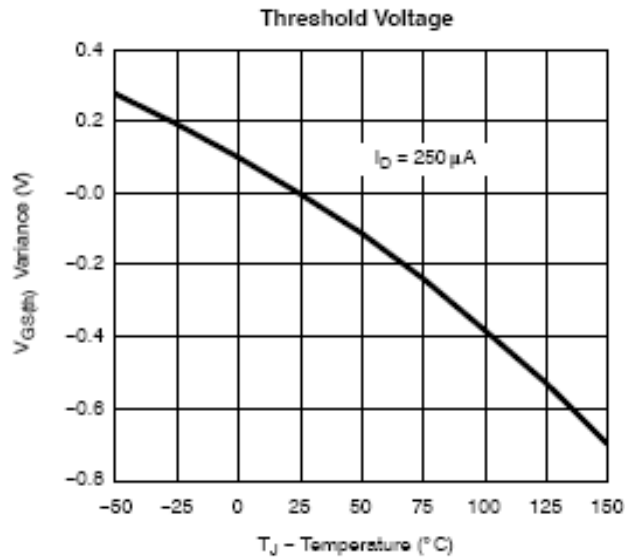




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TYPICAL CHARACTERISTICS





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