



SPN3414

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN3414 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 where high-side switching , and low in-line power loss are needed in a very small outline surface mount package.

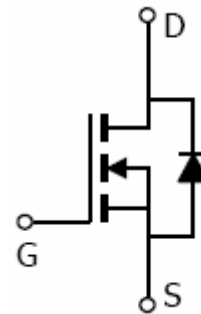
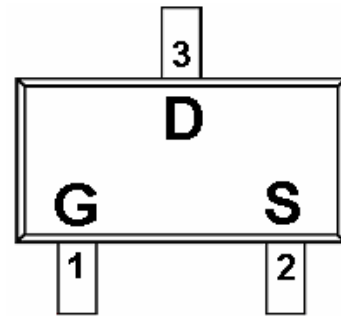
FEATURES

- ◆ 20V/4.0A, $R_{DS(ON)}=55m\Omega@V_{GS}=4.5V$
- ◆ 20V/3.4A, $R_{DS(ON)}=70m\Omega@V_{GS}=2.5V$
- ◆ 20V/2.8A, $R_{DS(ON)}=90m\Omega@V_{GS}=1.8V$
- ◆ Super high density cell design for extremely low RDS (ON)
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23-3L package design

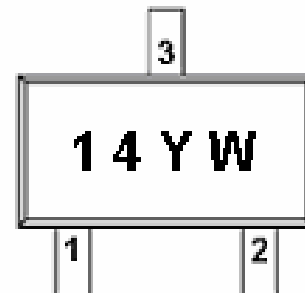
APPLICATIONS

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

PIN CONFIGURATION(SOT-23-3L)



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
SPN3414S23RG	SOT-23-3L	14YW

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

※ SPN3414S23RG : Tape Reel ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V _{DSS}	20	V	
Gate –Source Voltage	V _{GSS}	±12	V	
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	4.0	A
		TA=70°C	3.4	
Pulsed Drain Current	I _{DM}	10	A	
Continuous Source Current(Diode Conduction)	I _S	1.6	A	
Power Dissipation	P _D	TA=25°C	1.25	W
		TA=70°C	0.8	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Ambient	R _{θJA}	105	°C/W	



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ELECTRICAL CHARACTERISTICS

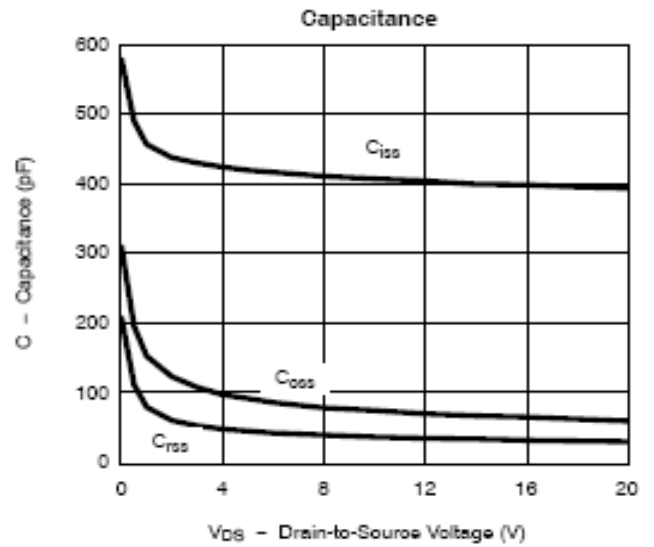
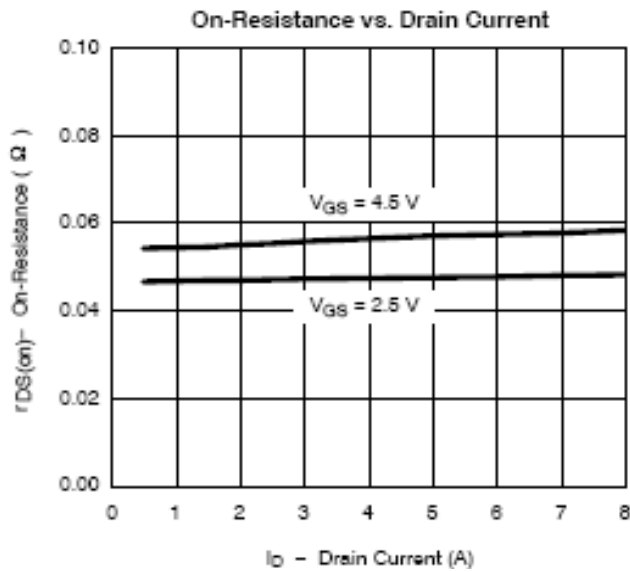
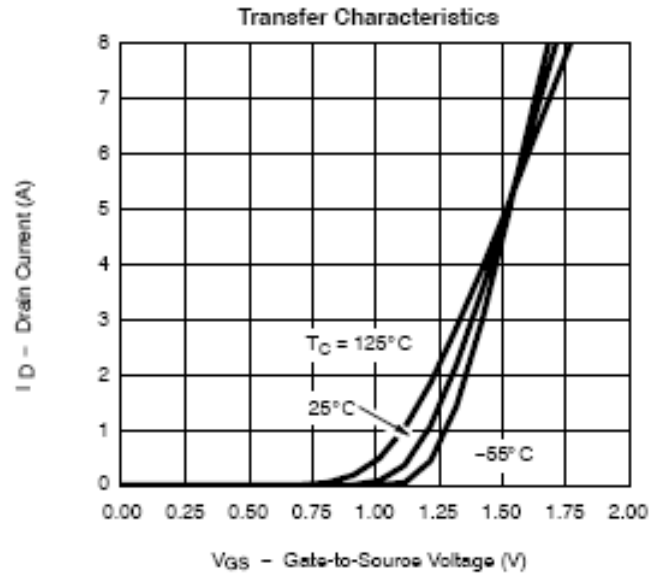
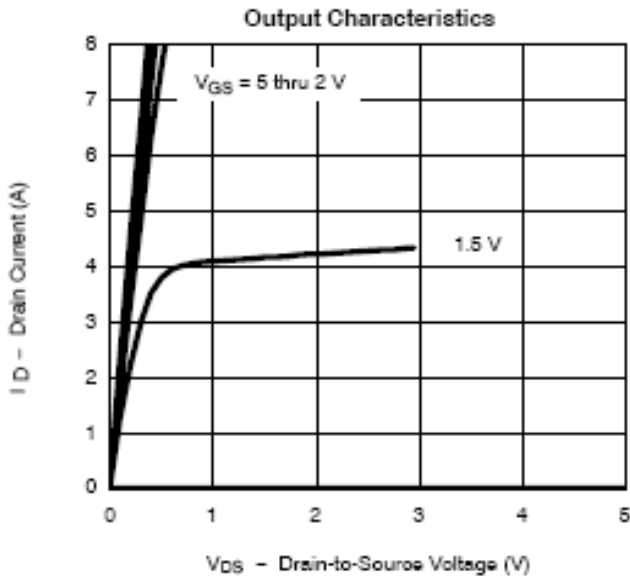
(T_A=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	20			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.4		1.0	
Gate Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V			1	μA
		V _{DS} =20V, V _{GS} =0V T _J =55°C			5	
On-State Drain Current	I _{D(on)}	V _{DS} ≤ 5V, V _{GS} =4.5V	6			A
Drain-Source On-Resistance	R _{DSS(on)}	V _{GS} =4.5V, I _D =4.0A		0.040	0.055	Ω
		V _{GS} =2.5V, I _D =3.4A		0.055	0.070	
		V _{GS} =1.8V, I _D =2.8A		0.075	0.090	
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =-3.6A		10		S
Diode Forward Voltage	V _{SD}	I _S =1.6A, V _{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q _g	V _{DS} =6V, V _{GS} =4.5V I _D =2.8A		4.8	8	nC
Gate-Source Charge	Q _{gs}			1.0		
Gate-Drain Charge	Q _{gd}			1.0		
Input Capacitance	C _{iss}	V _{DS} =6V, V _{GS} =0V f=1MHz		485		pF
Output Capacitance	C _{oss}			85		
Reverse Transfer Capacitance	C _{rss}			40		
Turn-On Time	t _{d(on)}	V _{DD} =6V, R _L =6Ω I _D =1.0A, V _{GEN} =4.5V R _G =6Ω		8	14	ns
	t _r			12	18	
Turn-Off Time	t _{d(off)}			30	35	
	t _f			12	16	



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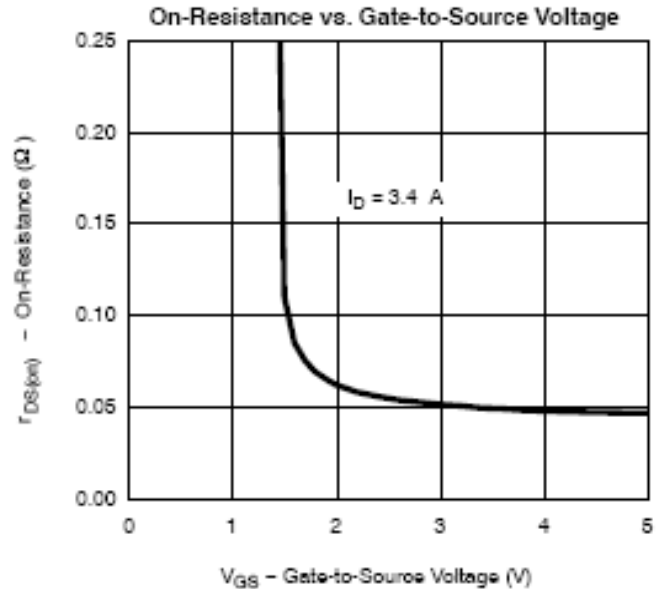
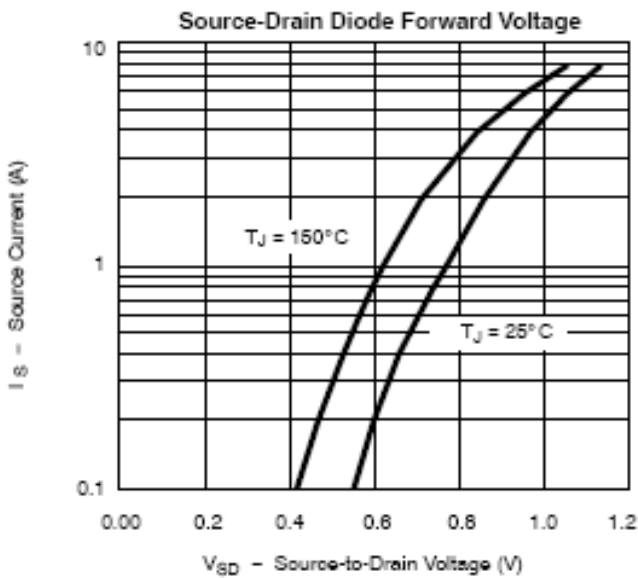
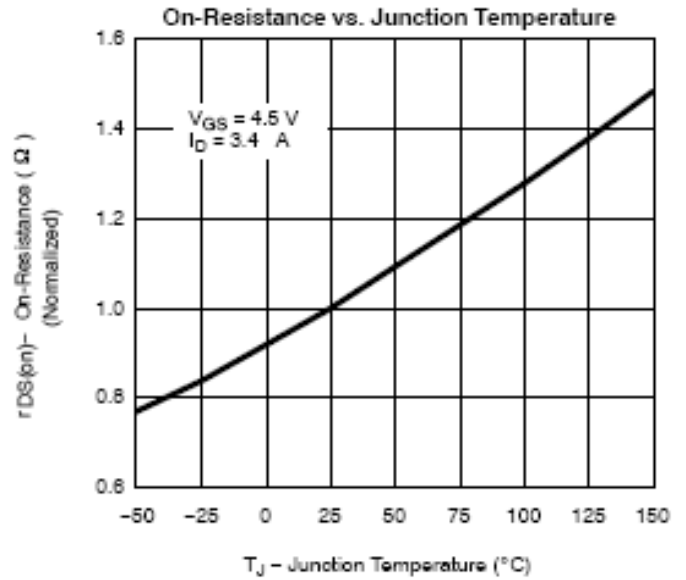
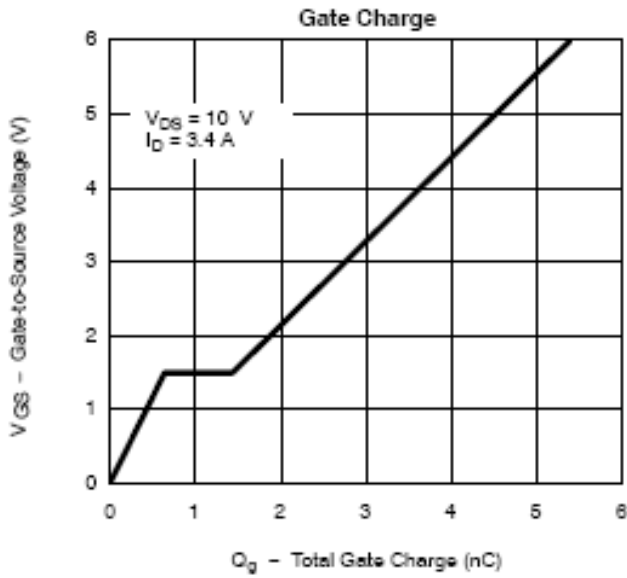
TYPICAL CHARACTERISTICS





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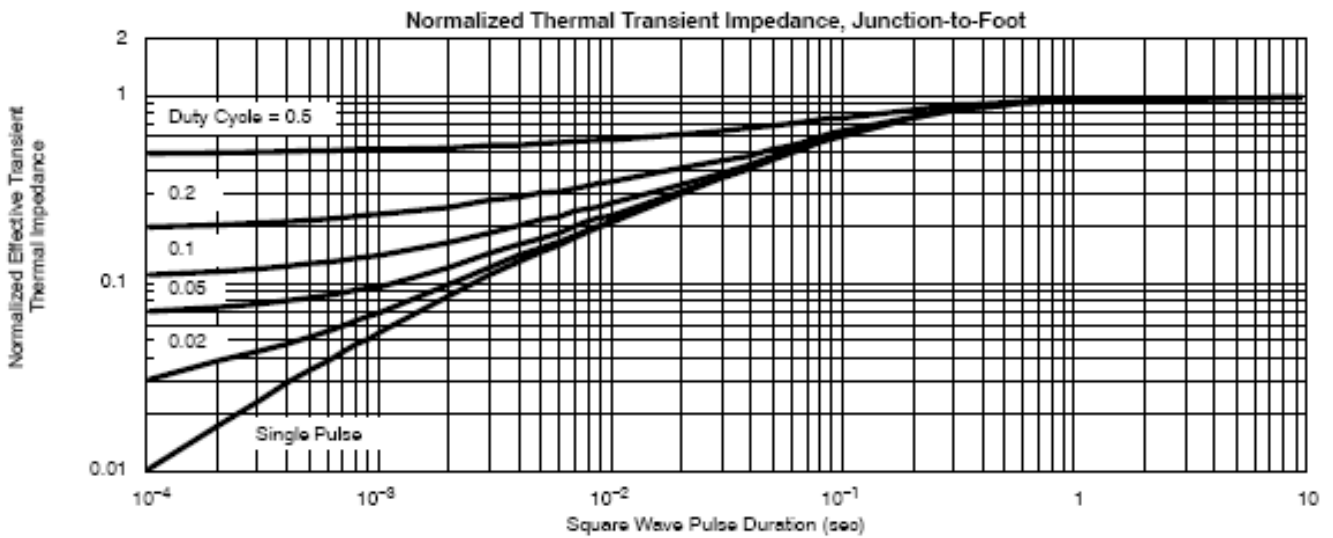
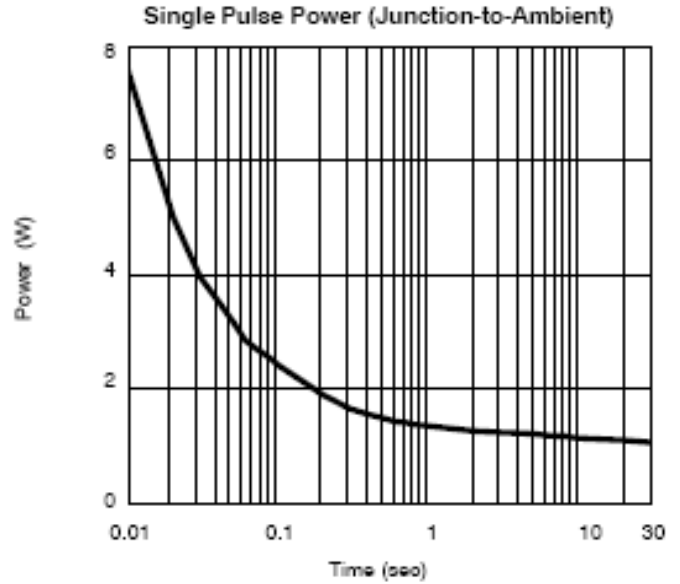
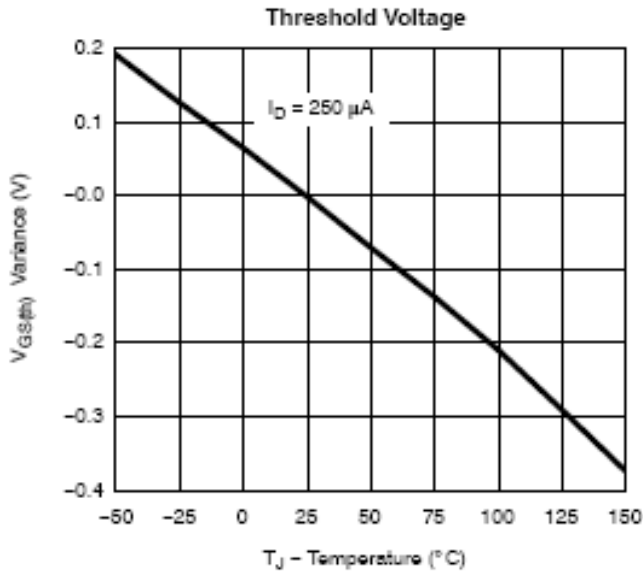
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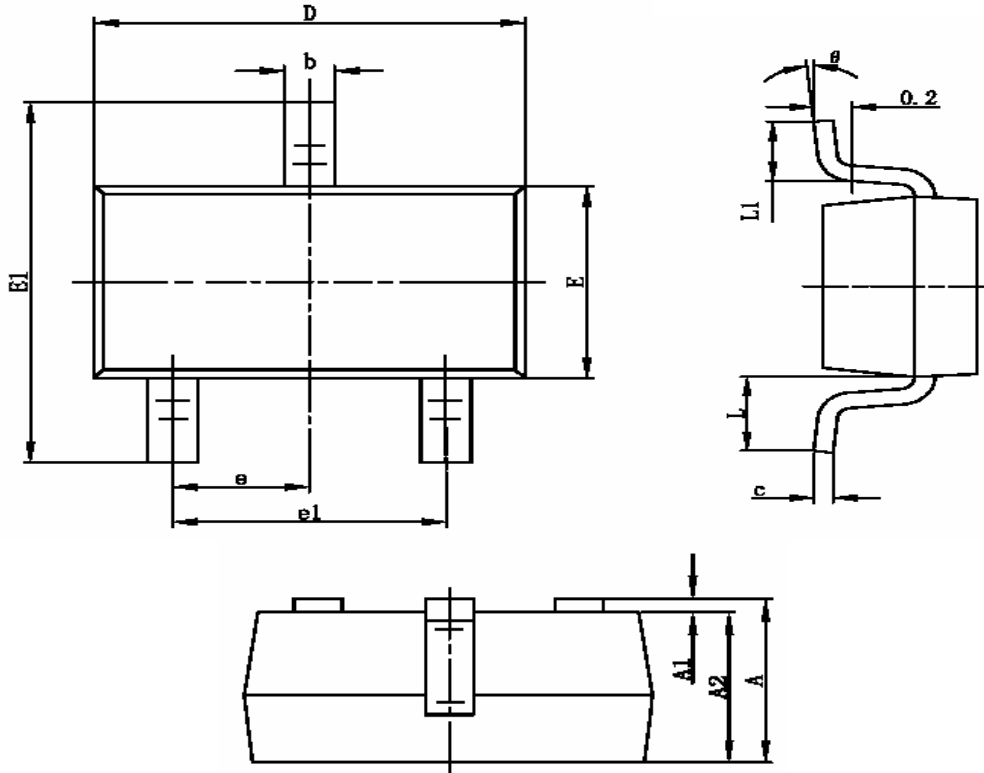




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SOT-23-3L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°



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