



SPN7400

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN7400 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.

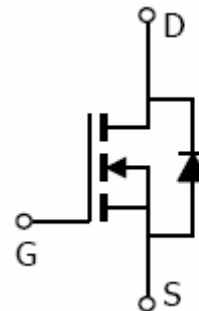
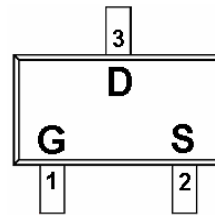
APPLICATIONS

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

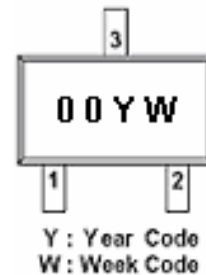
FEATURES

- ◆ 30V/2.8A, $R_{DS(ON)} = 77m\Omega @ V_{GS} = 10V$
- ◆ 30V/2.3A, $R_{DS(ON)} = 85m\Omega @ V_{GS} = 4.5V$
- ◆ 30V/1.5A, $R_{DS(ON)} = 110m\Omega @ V_{GS} = 2.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-323 (SC-70) package design

PIN CONFIGURATION (SOT-323 ; SC-70)



PART MARKING





SPN7400

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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
SPN7400S32RG	SOT-323	00YW

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

※ SPN7400S32RG : Tape Reel ; Pb – Free

ABSOLUTE MAXIMUM RATINGS

($T_A=25^{\circ}\text{C}$ Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V_{DS}	30	V	
Gate –Source Voltage	V_{GS}	± 12	V	
Continuous Drain Current($T_J=150^{\circ}\text{C}$)	I_D	$T_A=25^{\circ}\text{C}$	2.8	A
		$T_A=70^{\circ}\text{C}$	2.3	
Pulsed Drain Current	I_{DM}	10	A	
Continuous Source Current(Diode Conduction)	I_S	1.25	A	
Power Dissipation	P_D	$T_A=25^{\circ}\text{C}$	0.33	W
		$T_A=70^{\circ}\text{C}$	0.21	
Operating Junction Temperature	T_J	150	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-55/150	$^{\circ}\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	100	$^{\circ}\text{C}/\text{W}$	



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ELECTRICAL CHARACTERISTICS

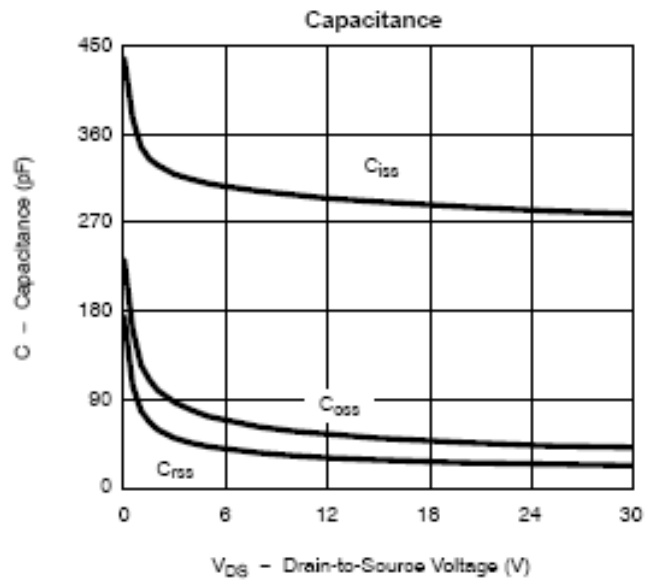
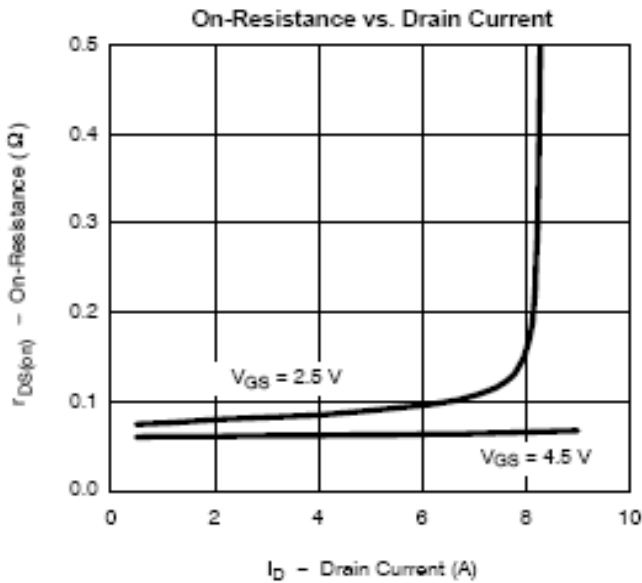
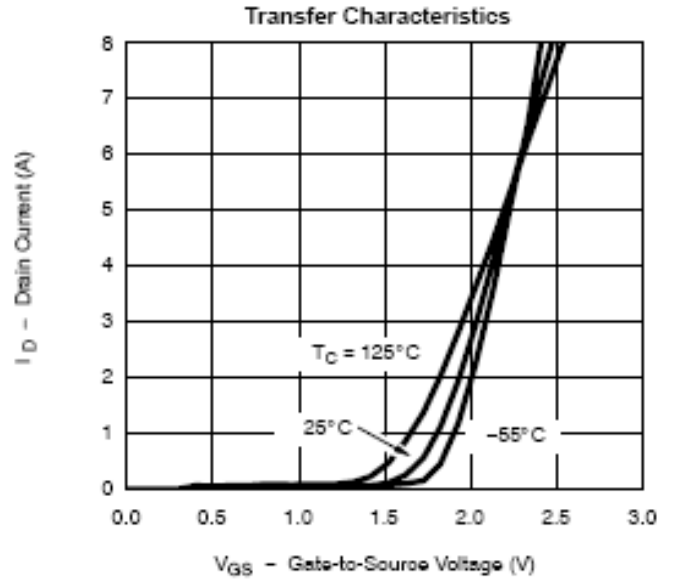
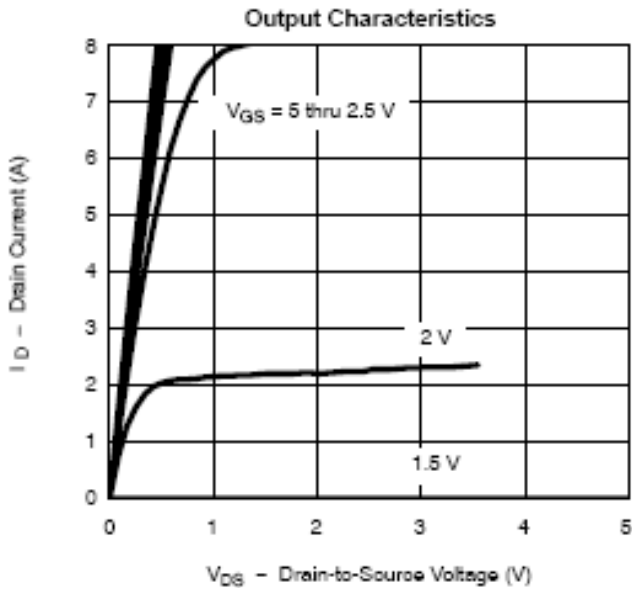
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =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} =0.0V			1	uA	
		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 =2.8A		0.062	0.077	Ω	
		V _{GS} = 4.5V, I _D =2.3A		0.070	0.085		
		V _{GS} = 2.5V, I _D =1.5A		0.095	0.110		
Forward Transconductance	g _{fs}	V _{DS} =4.5V, I _D =2.8A		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} =15, V _{GS} =4.5V I _D =2.0A		4.2	6	nC	
Gate-Source Charge	Q _{gs}			0.6			
Gate-Drain Charge	Q _{gd}			1.5			
Input Capacitance	C _{iss}	V _{DS} =15, V _{GS} =0V f=1MHz		350		pF	
Output Capacitance	C _{oss}			55			
Reverse Transfer Capacitance	C _{rss}			41			
Turn-On Time	t _{d(on)}	V _{DD} =15, R _L =10Ω V _{GEN} =10V, R _G =3Ω		2.5		ns	
	t _r			2.5			
Turn-Off Time	t _{d(off)}				20		
	t _f				4		



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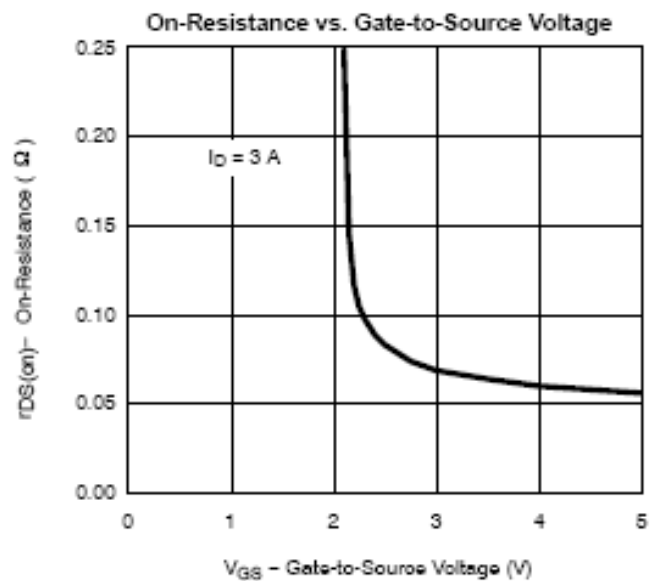
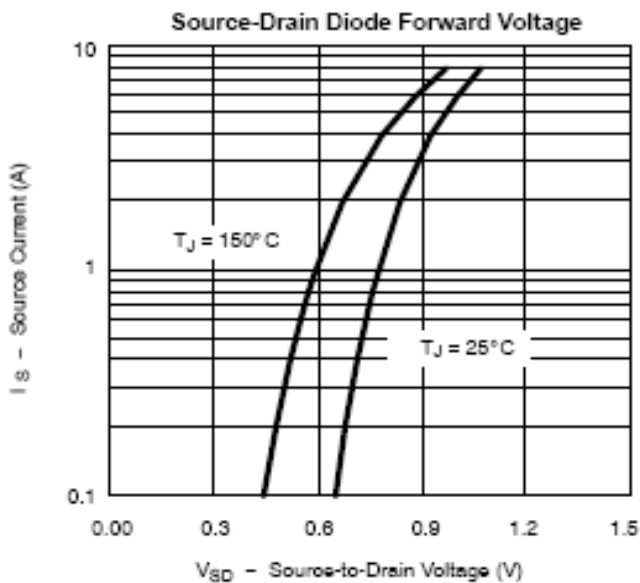
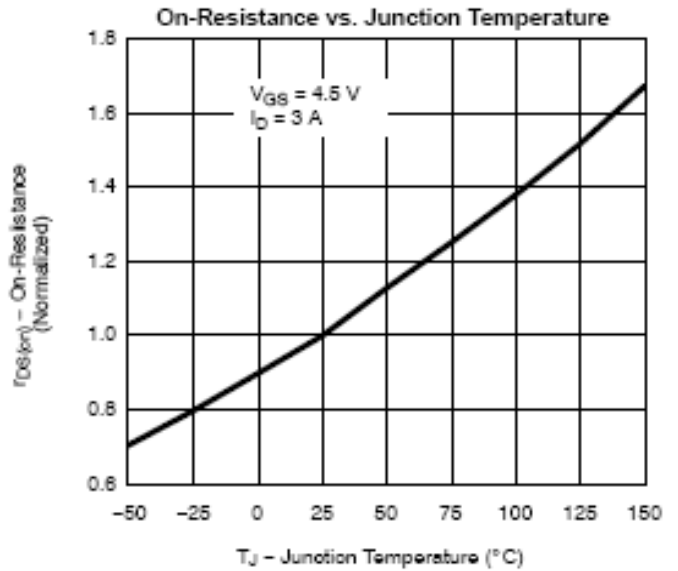
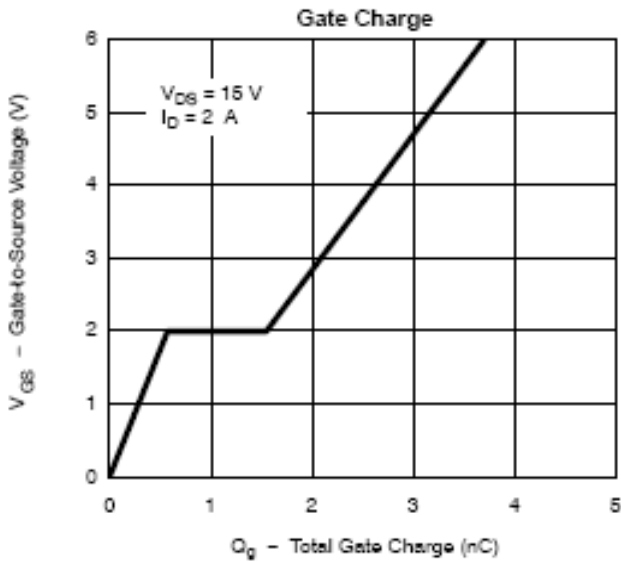
TYPICAL CHARACTERISTICS





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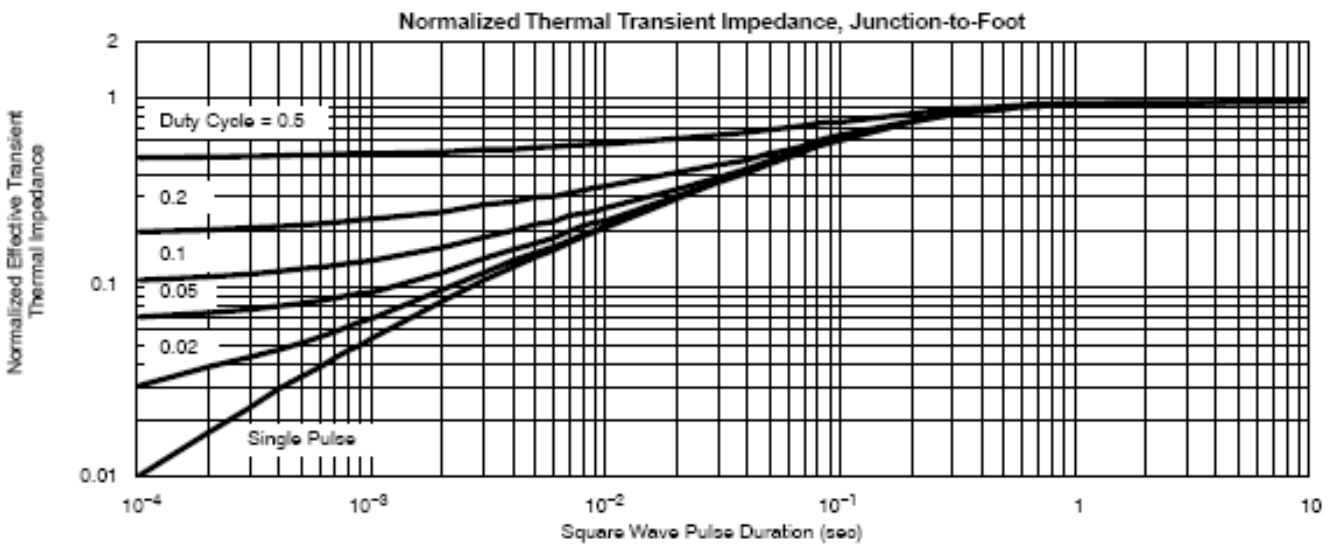
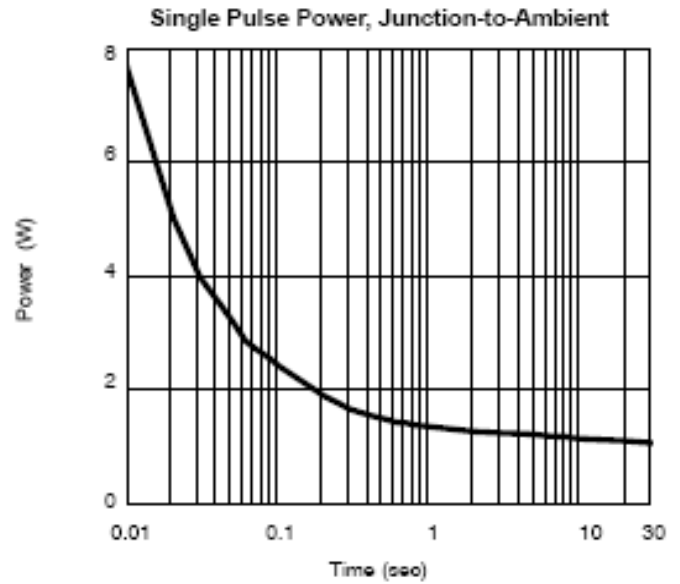
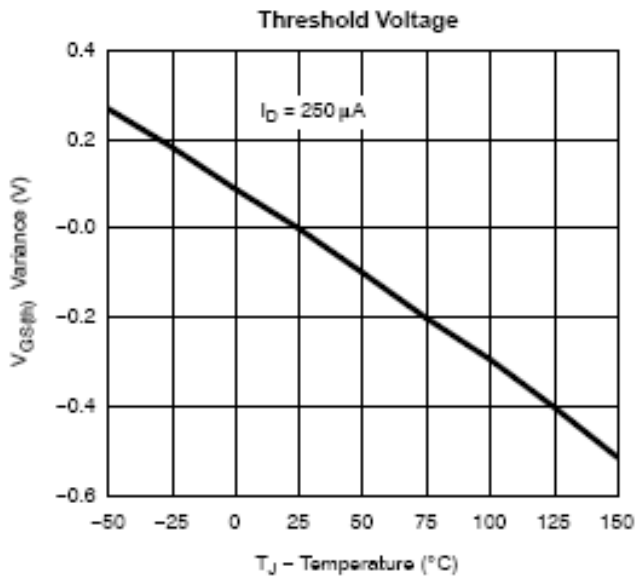
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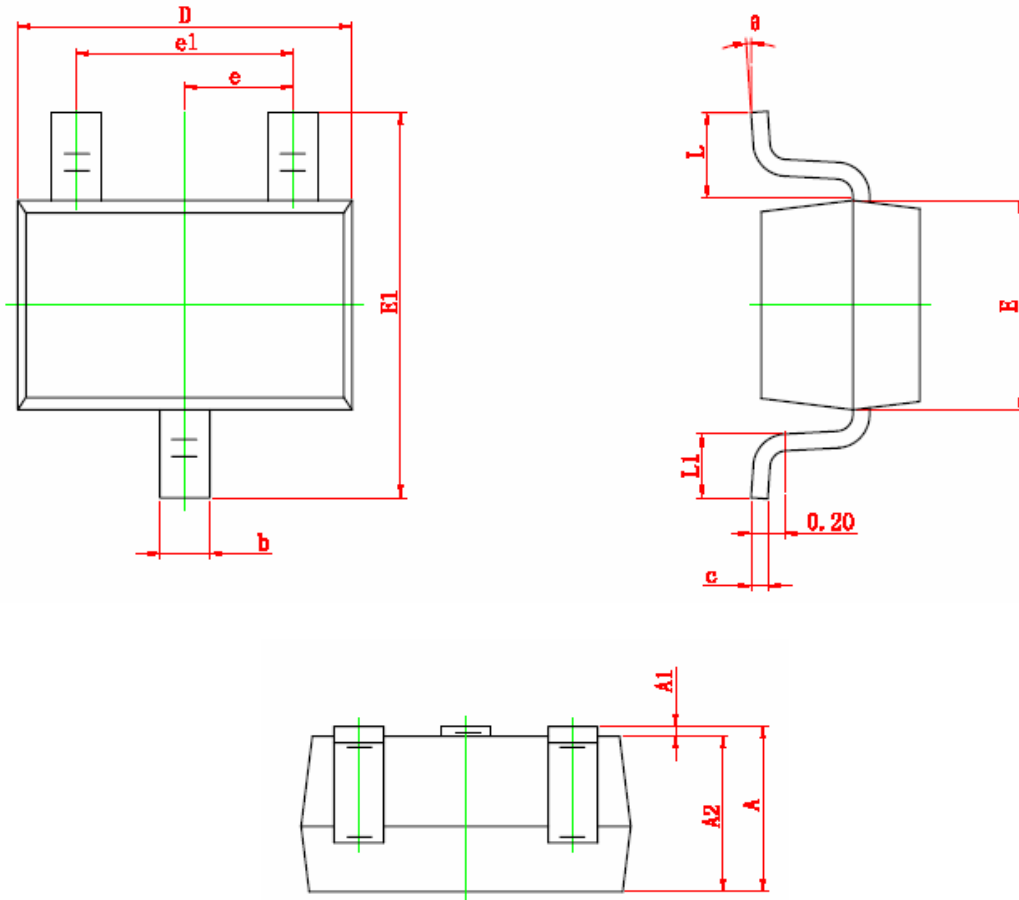




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SOT-323 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°



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