



# SPN4920A

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN4920A is the Dual 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 , notebook computer power management and other battery powered circuits where high-side switching .

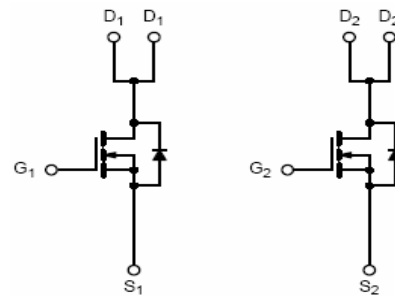
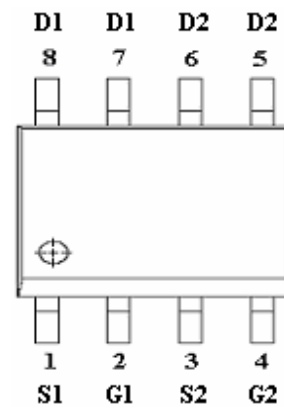
### FEATURES

- ◆ 30V/6.8A,  $R_{DS(ON)} = 35m\Omega @ V_{GS} = 10V$
- ◆ 30V/5.8A,  $R_{DS(ON)} = 45m\Omega @ V_{GS} = 4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP – 8P package design

### APPLICATIONS

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

### PIN CONFIGURATION(SOP – 8P)



### PART MARKING



A : Lot Code  
B : Date Code



# SPN4920A

## N-Channel Enhancement Mode MOSFET

### PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN4920AS8RG	SOP- 8P	SPN4920A
SPN4920AS8TG	SOP- 8P	SPN4920A

※ SPN4920AS8RG : 13" Tape Reel ; Pb – Free

※ SPN4920AS8TG : Tube ; Pb – Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V <sub>DSS</sub>	30	V	
Gate –Source Voltage	V <sub>GSS</sub>	±20	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	TA=25°C	6.8	A
		TA=70°C	5.8	
Pulsed Drain Current	I <sub>DM</sub>	35	A	
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	1.7	A	
Power Dissipation	P <sub>D</sub>	TA=25°C	2.8	W
		TA=70°C	1.8	
Operating Junction Temperature	T <sub>J</sub>	-55/150	°C	
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C	
Thermal Resistance-Junction to Ambient	R <sub>θJA</sub>	65	°C/W	



# SPN4920A

## N-Channel Enhancement Mode MOSFET

### ELECTRICAL CHARACTERISTICS

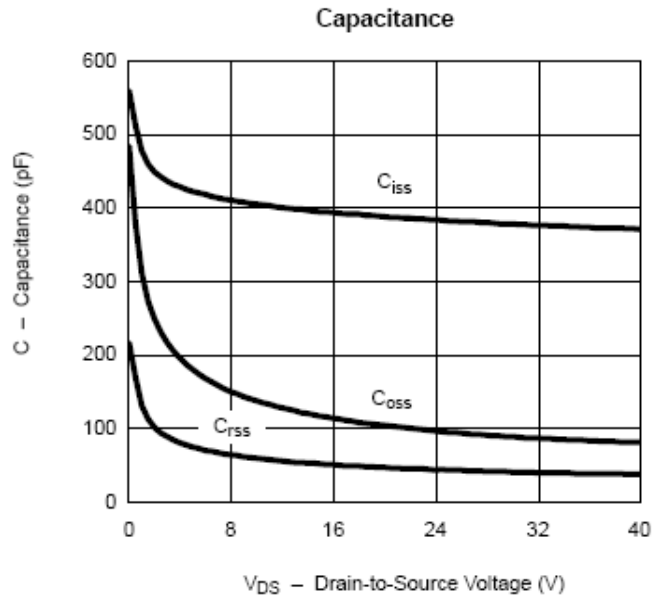
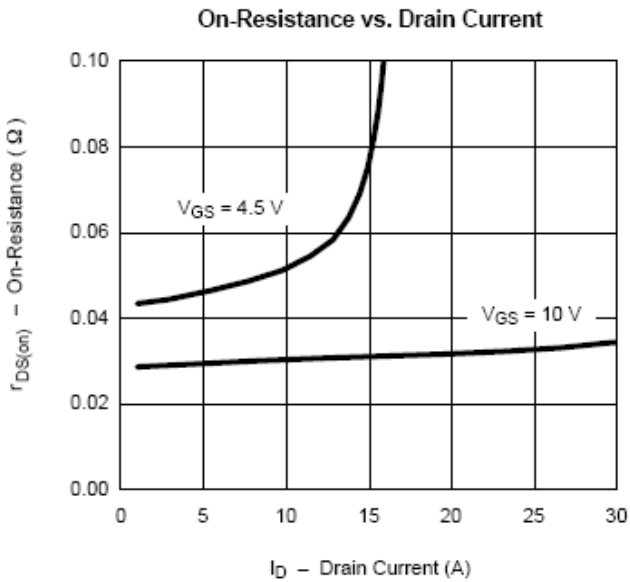
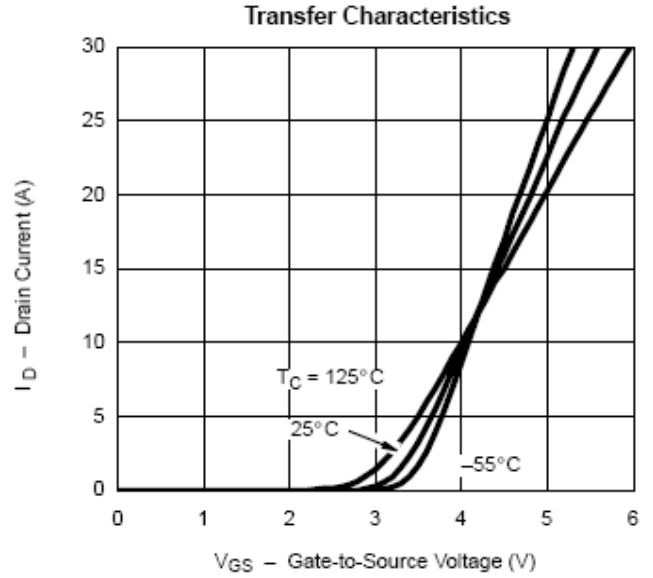
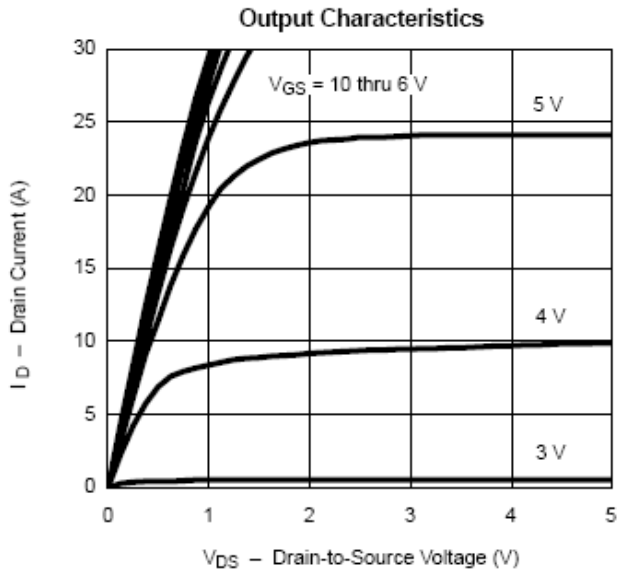
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		3.0	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	uA
		$V_{DS}=30V, V_{GS}=0V$ $T_J=85^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	20			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D=6.8A$		0.026	0.035	$\Omega$
		$V_{GS}=4.5V, I_D=5.8A$		0.036	0.045	
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=6.2A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.0A, V_{GS} = 0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=20V, V_{GS}=10V$ $I_D= 7.2A$		10	15	nC
Gate-Source Charge	$Q_{gs}$			1.8		
Gate-Drain Charge	$Q_{gd}$			2.3		
Turn-On Time	$t_{d(on)}$	$V_{DD}=20V, R_L=20\Omega$ $I_D=1.0A, V_{GEN}=10V$ $R_G=6\Omega$		8	15	nS
	$t_r$			12	25	
Turn-Off Time	$t_{d(off)}$			15	35	
	$t_f$			10	20	



# SPN4920A N-Channel Enhancement Mode MOSFET

## TYPICAL CHARACTERISTICS

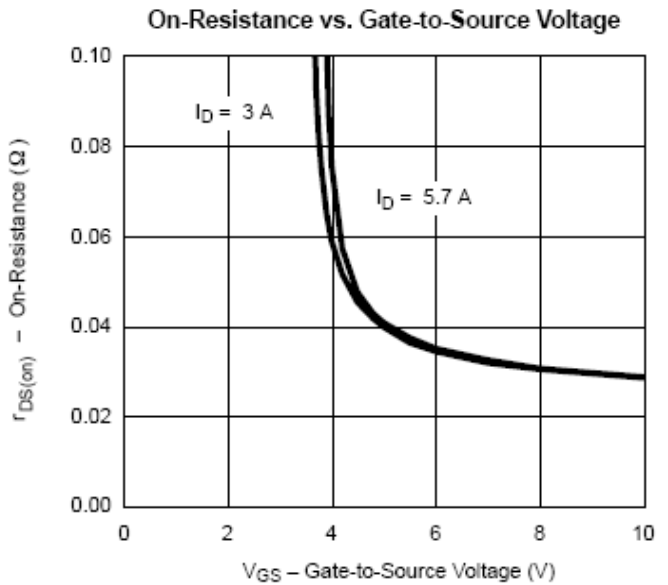
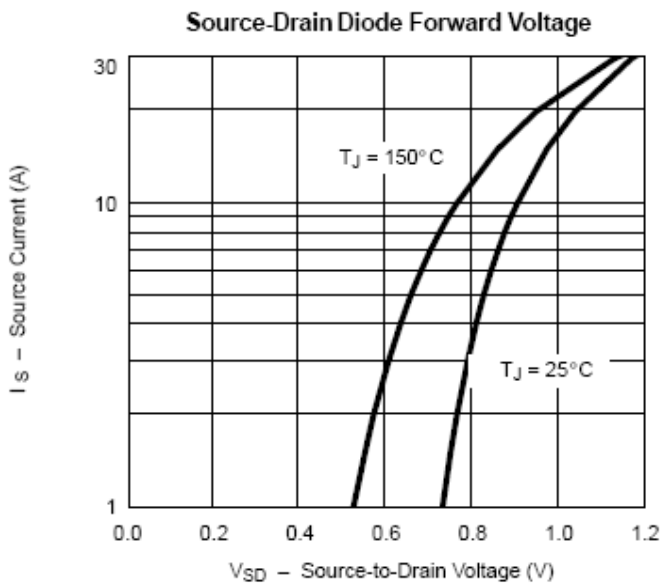
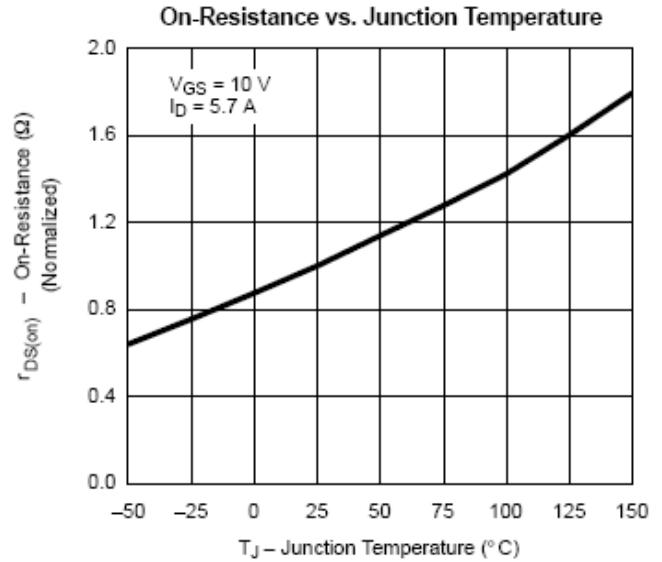
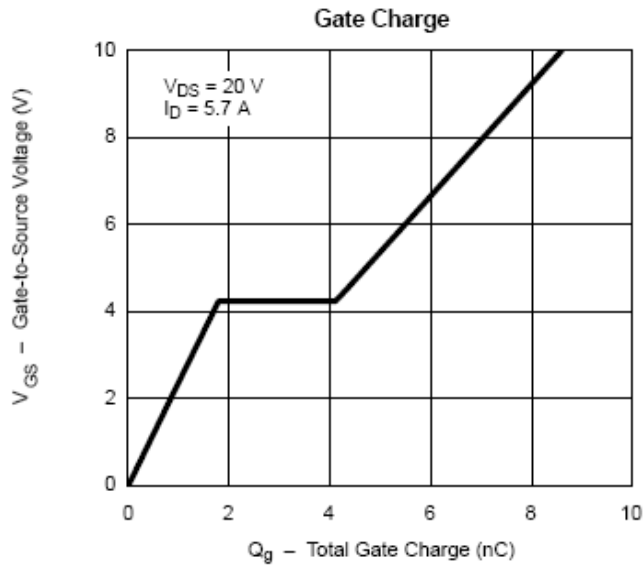




# SPN4920A

## N-Channel Enhancement Mode MOSFET

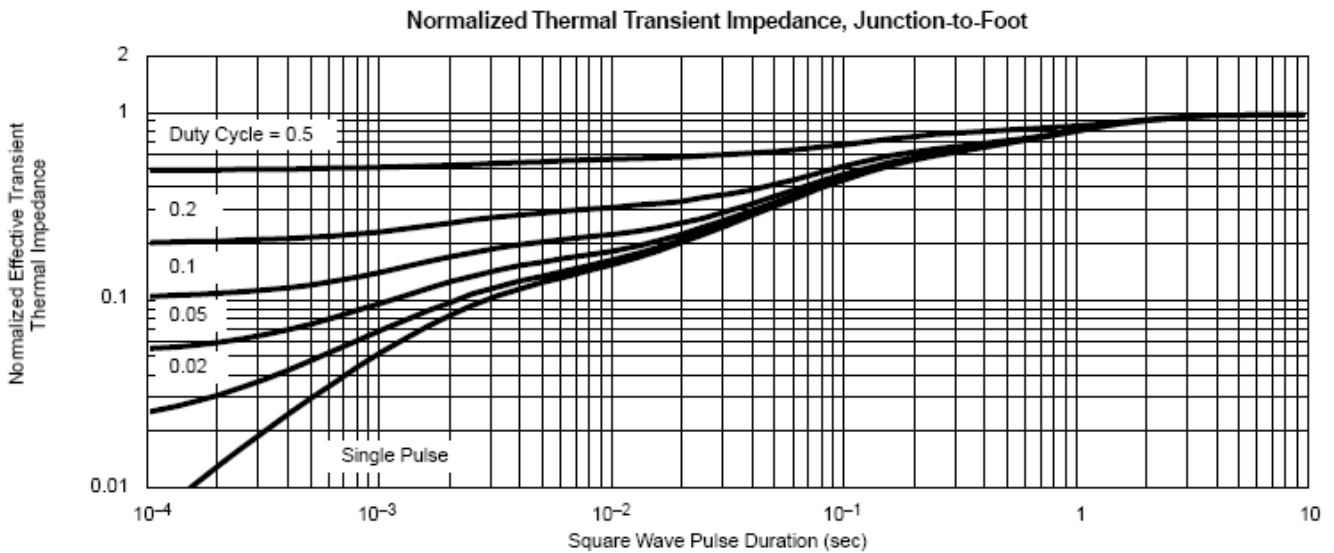
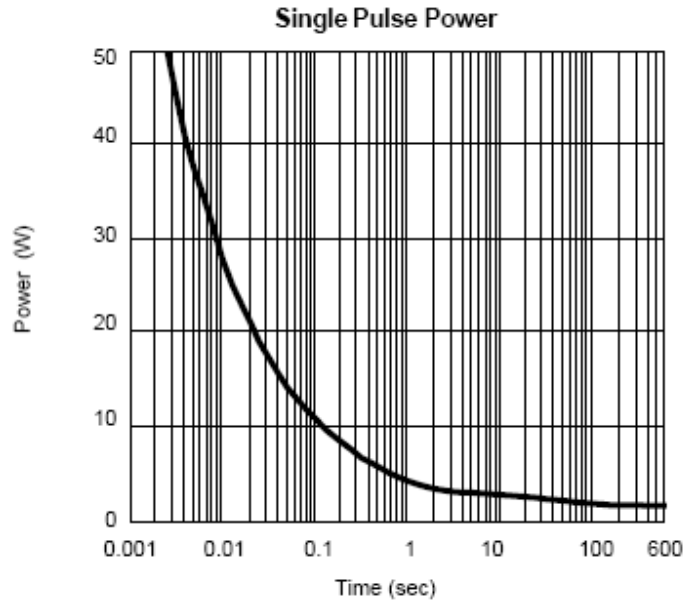
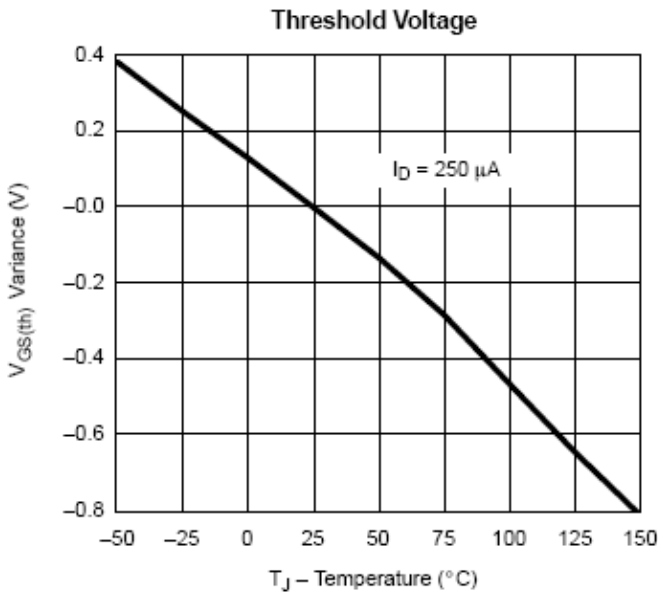
### TYPICAL CHARACTERISTICS





# SPN4920A N-Channel Enhancement Mode MOSFET

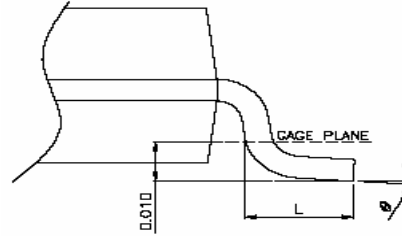
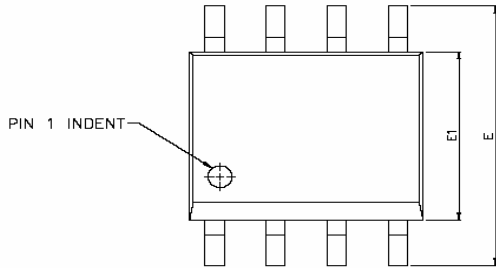
## TYPICAL CHARACTERISTICS



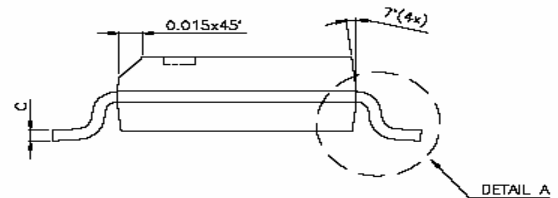
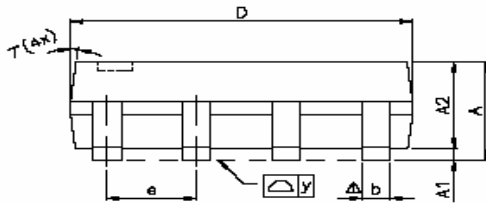


# SPN4920A N-Channel Enhancement Mode MOSFET

## SOP- 8 PACKAGE OUTLINE



DETAIL A



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.47	1.60	1.73	0.058	0.063	0.068
A1	0.10	—	0.25	0.004	—	0.010
A2	—	1.45	—	—	0.057	—
b	0.33	0.41	0.51	0.013	0.016	0.020
C	0.19	0.20	0.25	0.0075	0.008	0.0098
D	4.80	4.85	4.95	0.189	0.191	0.195
E	5.80	6.00	6.20	0.228	0.236	0.244
E1	3.80	3.90	4.00	0.150	0.154	0.157
e	—	1.27	—	—	0.050	—
L	0.38	0.71	1.27	0.015	0.028	0.050
$\Delta$ y	—	—	0.076	—	—	0.003
$\theta$	0°	—	8°	0°	—	8°