



# SPN4346

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN4346 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 , notebook computer power management and other battery powered circuits where high-side switching .

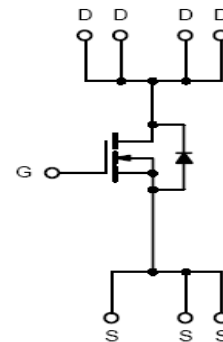
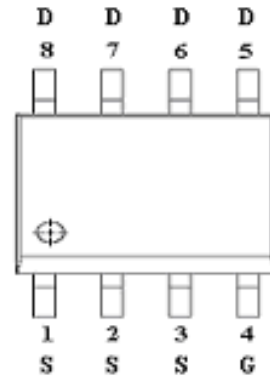
### FEATURES

- ◆ 30V/6.8A, $R_{DS(ON)}=26m\Omega@V_{GS}=10V$
- ◆ 30V/6.0A, $R_{DS(ON)}=34m\Omega@V_{GS}=4.5V$
- ◆ 30V/5.6A, $R_{DS(ON)}=40m\Omega@V_{GS}=2.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP-8 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-8)



### PART MARKING



A : Lot Code  
B : Date Code



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### PIN DESCRIPTION

Pin	Symbol	Description
1	S	Source
2	S	Source
3	S	Source
4	G	Gate
5	D	Drain
6	D	Drain
7	D	Drain
8	D	Drain

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN4346S8RGB	SOP-8	SPN4346
SPN4346S8TGB	SOP-8	SPN4346

※ SPN4346S8RGB : 13" Tape Reel ; Pb – Free ; Halogen – Free

※ SPN4346S8TGB : Tube ; Pb – Free ; Halogen – Free

### ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	$V_{DSS}$	30	V
Gate –Source Voltage	$V_{GSS}$	$\pm 12$	V
Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$I_D$	$T_A=25^{\circ}\text{C}$ 6.8	A
		$T_A=70^{\circ}\text{C}$ 5.6	
Pulsed Drain Current	$I_{DM}$	30	A
Continuous Source Current(Diode Conduction)	$I_S$	2.3	A
Power Dissipation	$P_D$	$T_A=25^{\circ}\text{C}$ 2.5	W
		$T_A=70^{\circ}\text{C}$ 1.6	
Operating Junction Temperature	$T_J$	-55/150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	80	$^{\circ}\text{C}/\text{W}$



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### ELECTRICAL CHARACTERISTICS

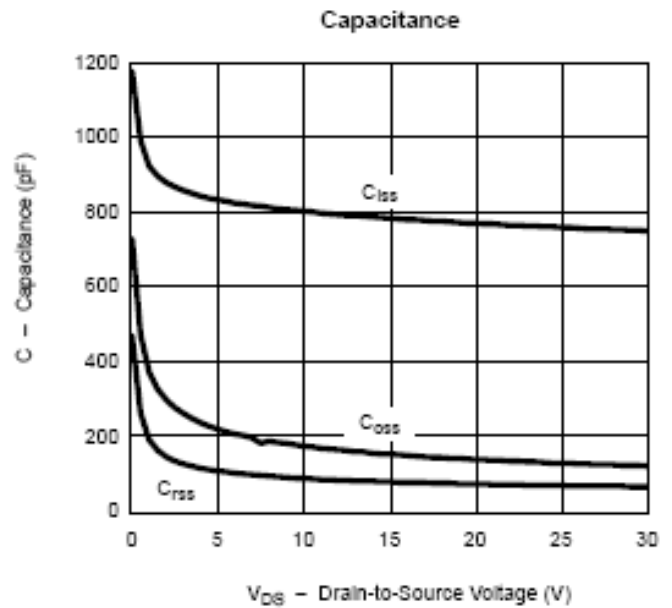
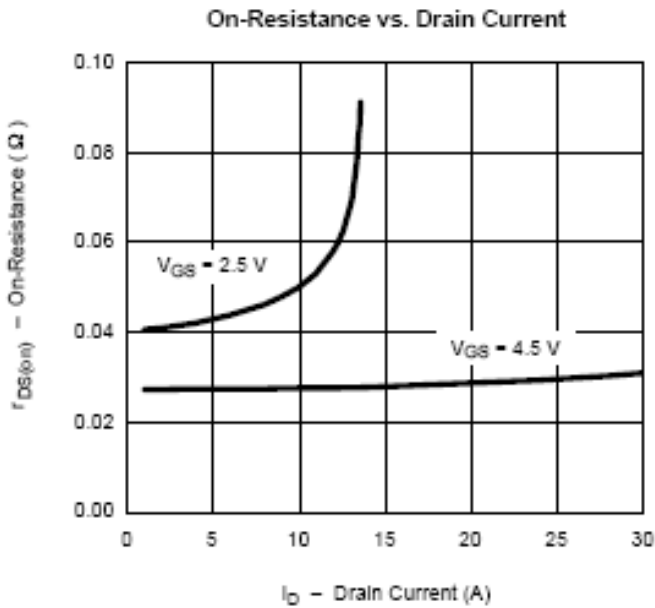
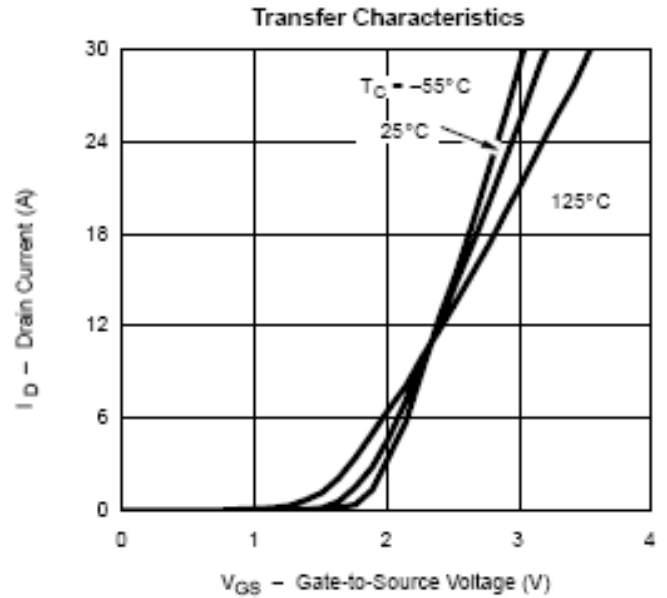
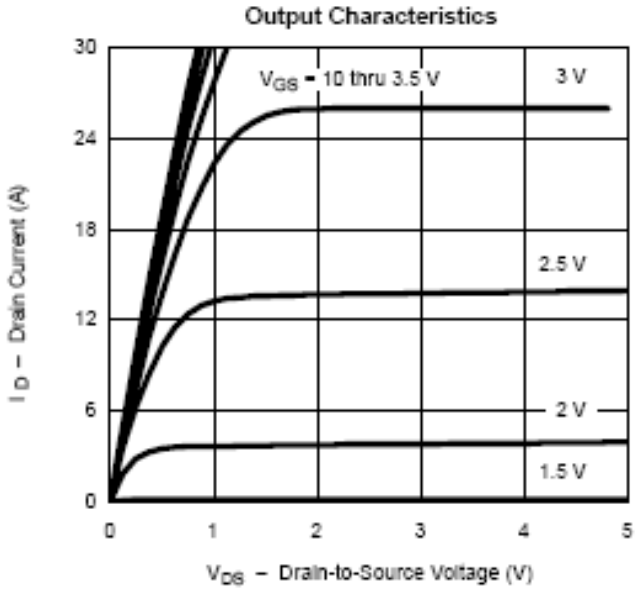
(TA=25°C Unless otherwise noted)

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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8		1.6	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	uA
		$V_{DS}=24V, V_{GS}=0V$ $T_J=85^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	25			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.8A$		0.018	0.026	$\Omega$
		$V_{GS}=4.5V, I_D=6.0A$		0.024	0.034	
		$V_{GS}=2.5V, I_D=5.6A$		0.036	0.040	
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=6.2A$		13		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.3A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=15V, V_{GS}=10V$ $I_D=2A$		16	24	nC
Gate-Source Charge	$Q_{gs}$			3		
Gate-Drain Charge	$Q_{gd}$			2.5		
Turn-On Time	$t_{d(on)}$	$V_{DD}=15V, R_L=15\Omega$ $I_D=1.0A, V_{GEN}=10V$ $R_G=6\Omega$		15	20	nS
	$t_r$			6	12	
Turn-Off Time	$t_{d(off)}$			10	20	
	$t_f$			40	80	



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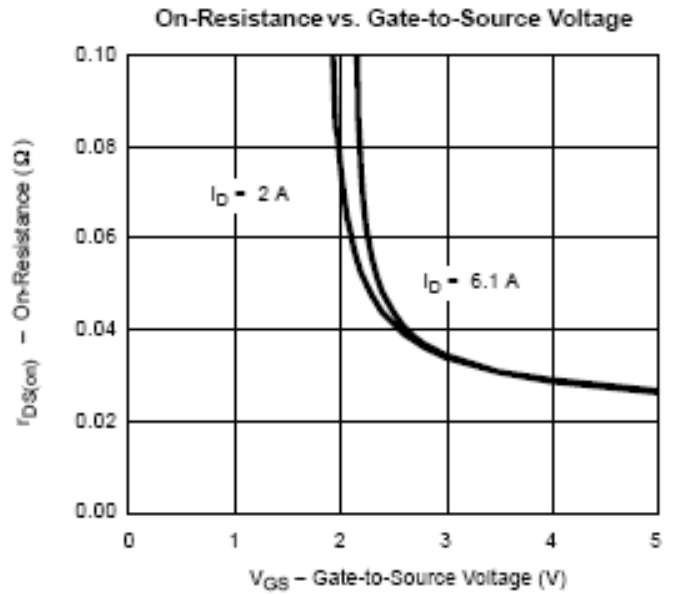
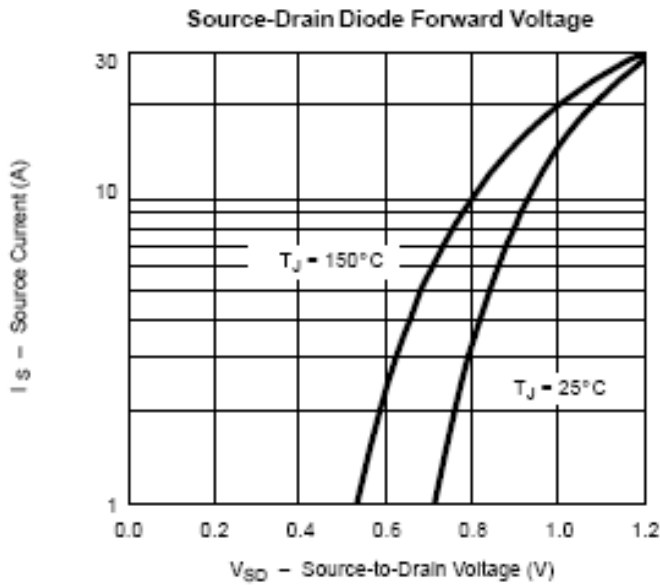
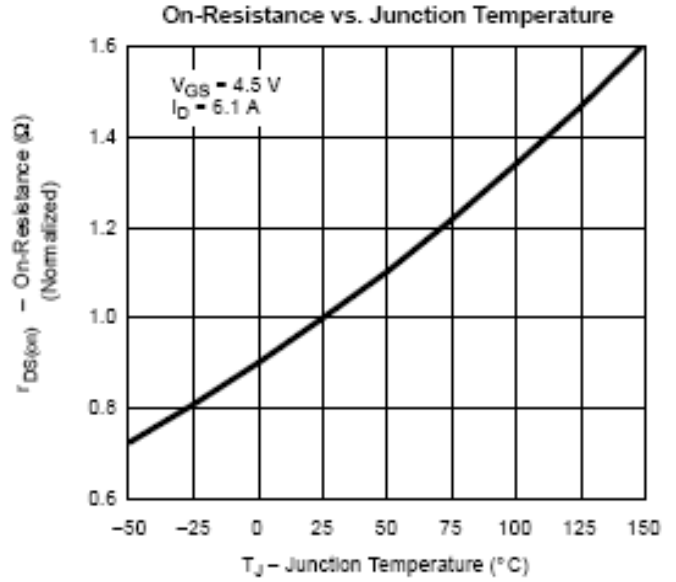
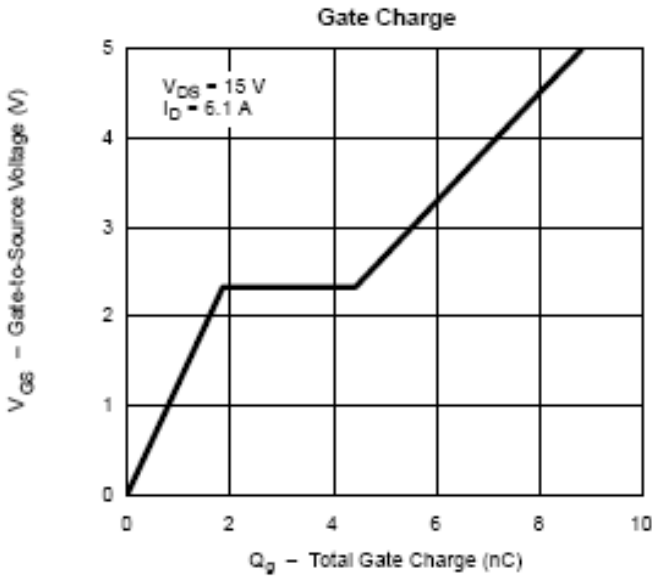
## TYPICAL CHARACTERISTICS





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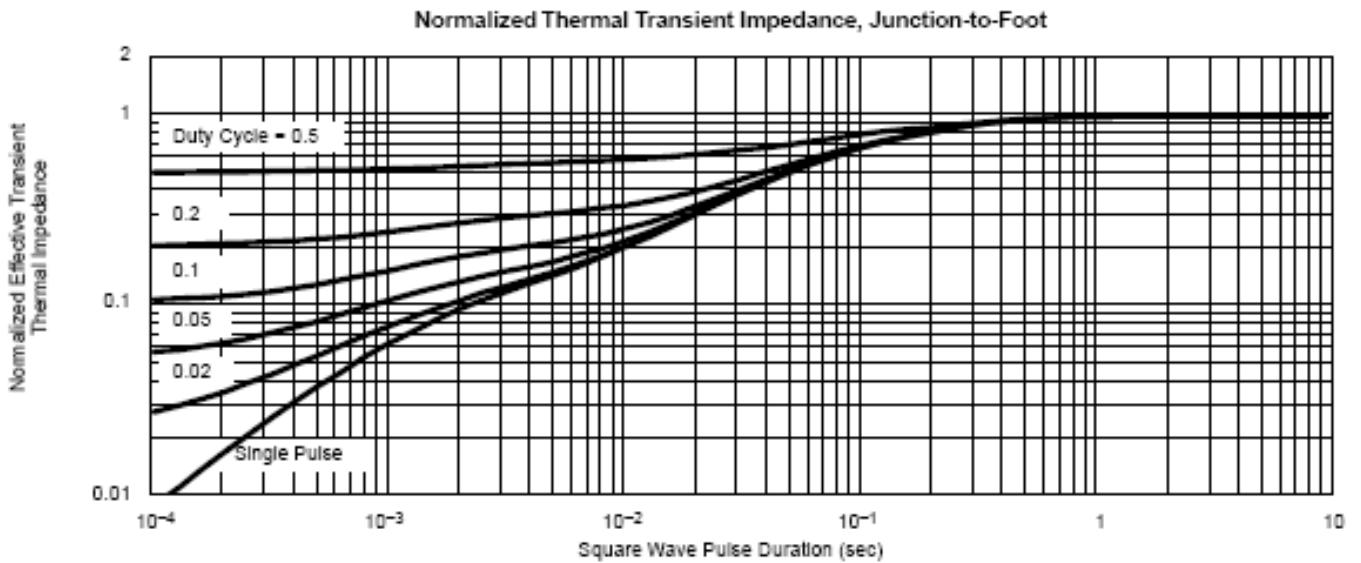
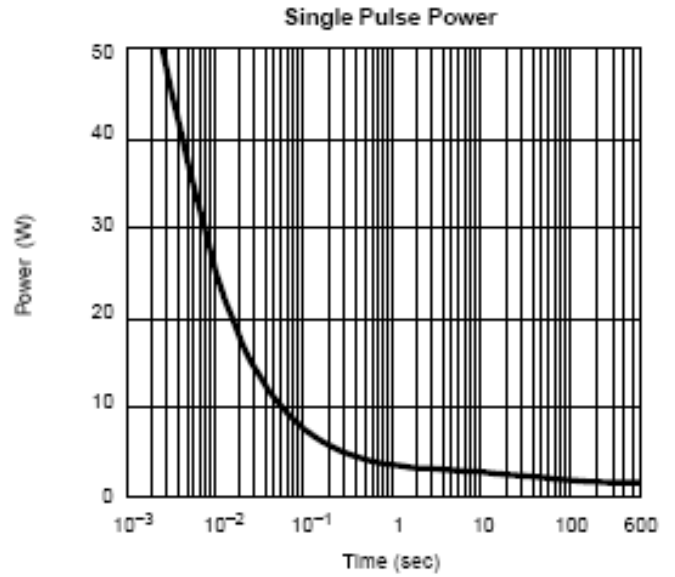
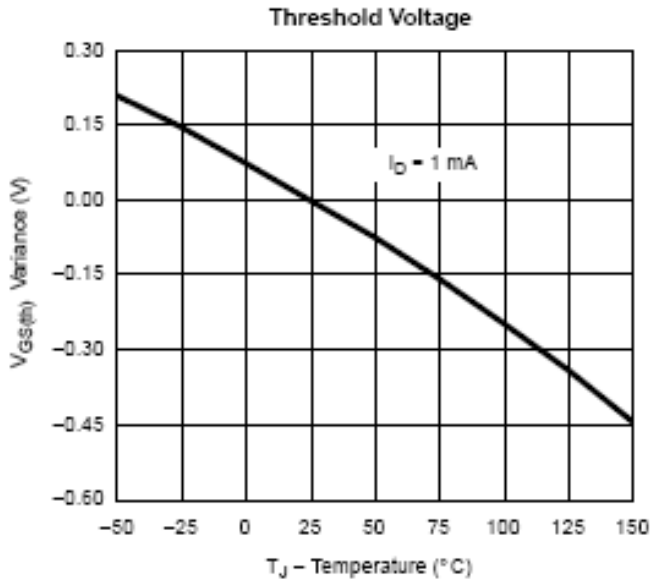
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## TYPICAL CHARACTERISTICS





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