



# SPP8813 N-Channel Enhancement Mode MOSFET

## DESCRIPTION

The SPP8813 is the P-Channel logic enhancement mode power field effect transistor which is produced using super high cell density DMOS trench technology. The SPP8813 has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low  $R_{DS(ON)}$  and fast switching speed.

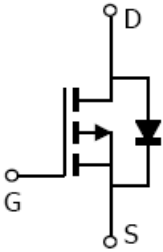
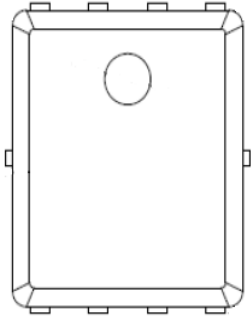
## FEATURES

- ◆ -80V/-4A,  $R_{DS(ON)}=85m\Omega@V_{GS}=-10V$
- ◆ -80V/-3A,  $R_{DS(ON)}=100m\Omega@V_{GS}=-4.5V$
- ◆ High density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK5x6-8L package design

## APPLICATIONS

- Powered System
- DC/DC Converter
- Load Switch

## PIN CONFIGURATION (PPAK5x6-8L)



## PART MARKING



A : Lot Code  
B : Date Code  
(YY/MM/DD)



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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
SPP8813DN8RGB	PPAK5x6-8L	SPP8813

※ SPP8813DN8RGB : Tape Reel ; Pb – Free ; Halogen - Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V <sub>DSS</sub>	-80	V
Gate –Source Voltage	V <sub>GSS</sub>	±20	V
Continuous Drain Current	I <sub>D</sub>	-13	A
Continuous Drain Current		-11	
Pulsed Drain Current	I <sub>DM</sub>	-20	A
Avalanche Energy, Single Pulse (L=0.1mH , Tc=25°C)	E <sub>AS</sub>	11.25	mJ
Power Dissipation @ Tc=25°C	P <sub>D</sub>	52	W
Operating Junction Temperature	T <sub>J</sub>	-55/150	°C
Storage Temperature Range	T <sub>STG</sub>	-55/150	°C
Thermal Resistance-Junction to Case	R <sub>θJC</sub>	1.9	°C/W



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### ELECTRICAL CHARACTERISTICS

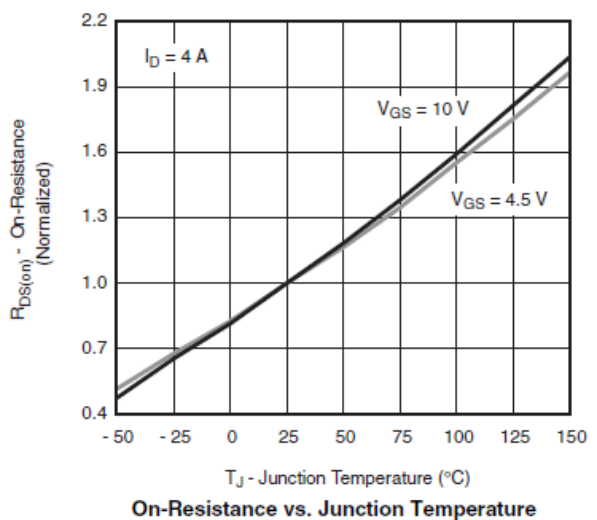
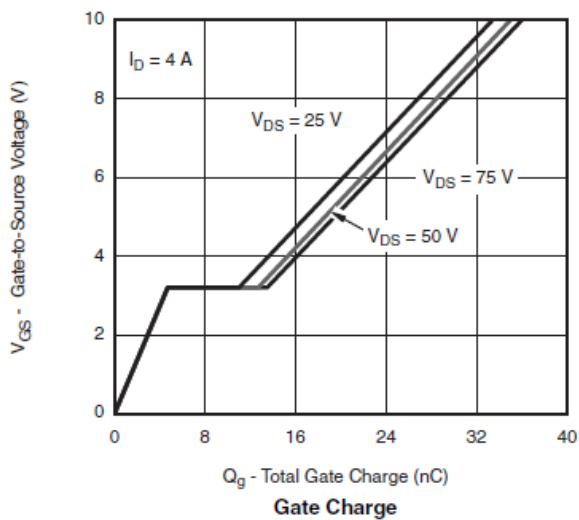
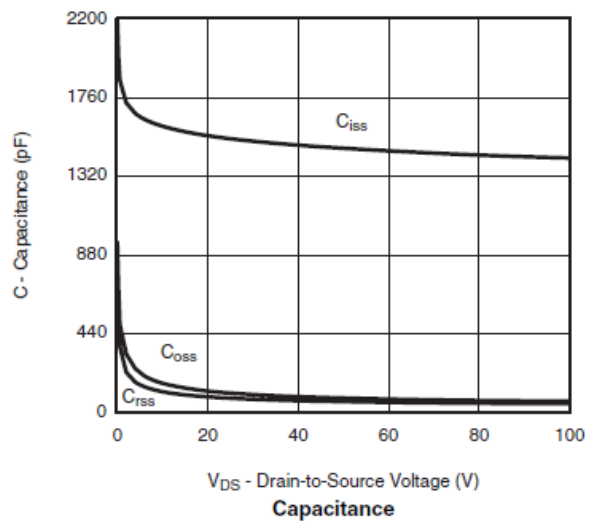
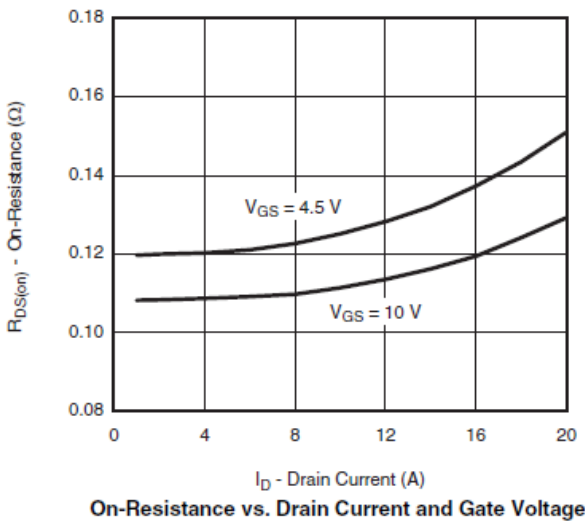
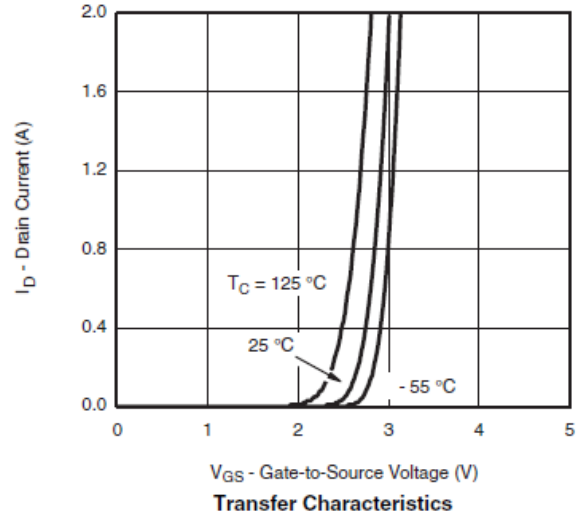
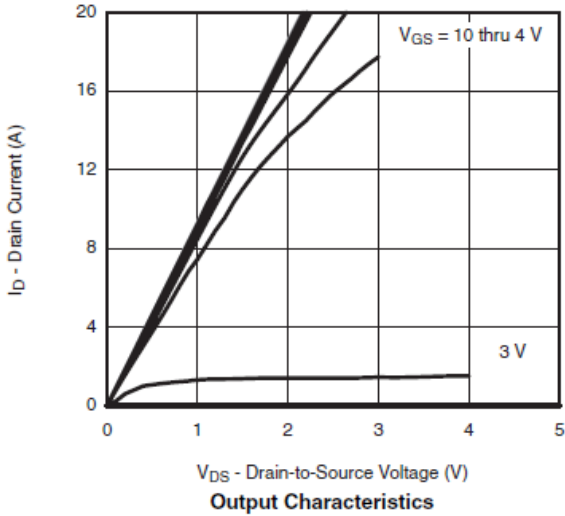
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-80			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1		-3	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-64V, V_{GS}=0V$			-1	uA
		$V_{DS}=-64V, V_{GS}=0V$ $T_J=55^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq -5V, V_{GS}=-10V$	-10			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-4.0A$		75	85	mΩ
		$V_{GS}=-4.5V, I_D=-3.0A$		85	100	
Forward Transconductance	$g_{fs}$	$V_{DS}=-15V, I_D=-4A$		25		S
Diode Forward Voltage	$V_{SD}$	$I_S=-3A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g(10V)$	$V_{DS}=-50V, V_{GS}=-10V$ $I_D=-4A$		35	55	nC
Total Gate Charge	$Q_g(4.5V)$	$V_{DS}=-50V, V_{GS}=-4.5V$ $I_D=-4A$		16.5	25	
Gate-Source Charge	$Q_{gs}$			4.7		
Gate-Drain Charge	$Q_{gd}$			8		
Input Capacitance	$C_{iss}$	$V_{DS}=-50V, V_{GS}=0V$ $f=1MHz$		1480		pF
Output Capacitance	$C_{oss}$			80		
Reverse Transfer Capacitance	$C_{rss}$			60		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-50V, I_D=-4A,$ $V_{GEN}=-10V, R_G=1\Omega$		11	18	nS
	$t_r$			13	20	
Turn-Off Time	$t_{d(off)}$			42	65	
	$t_f$			10	15	



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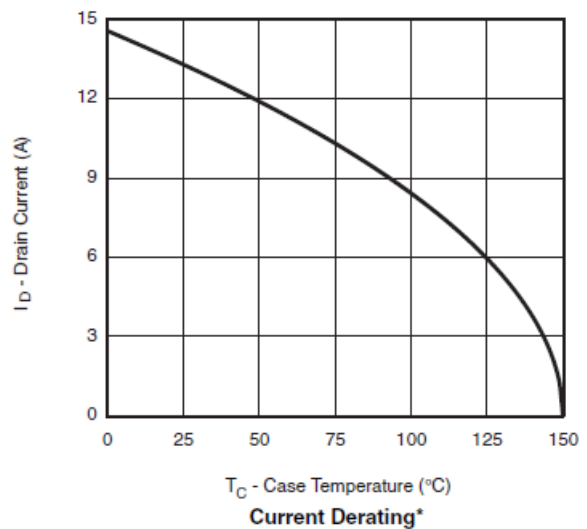
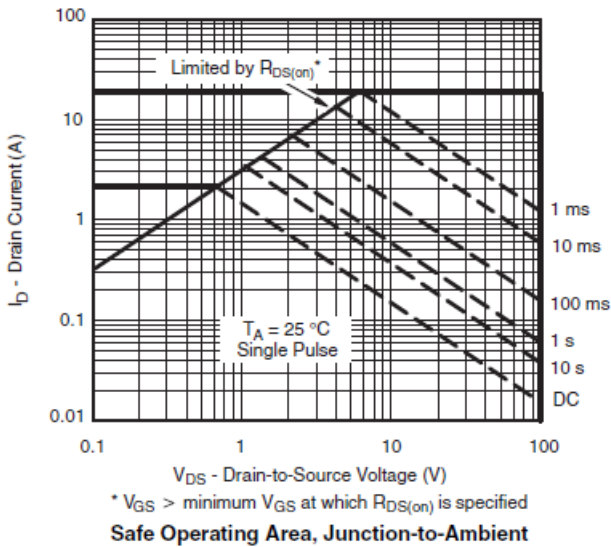
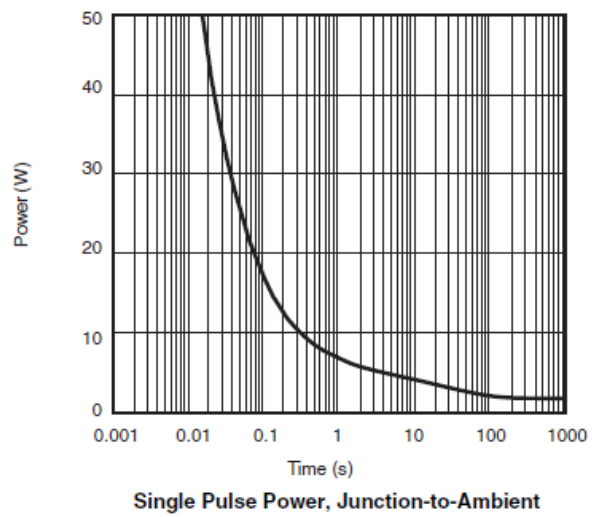
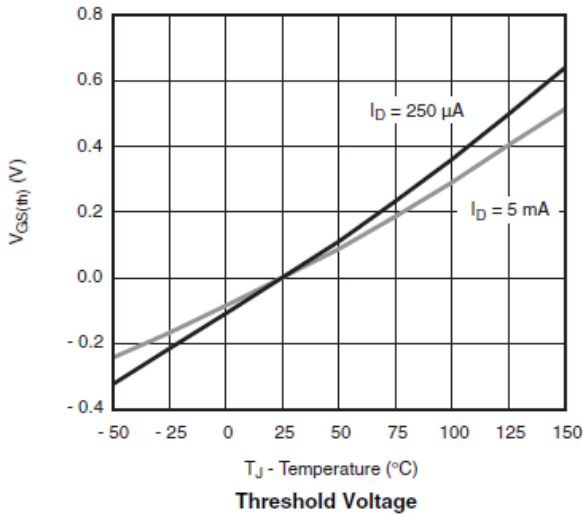
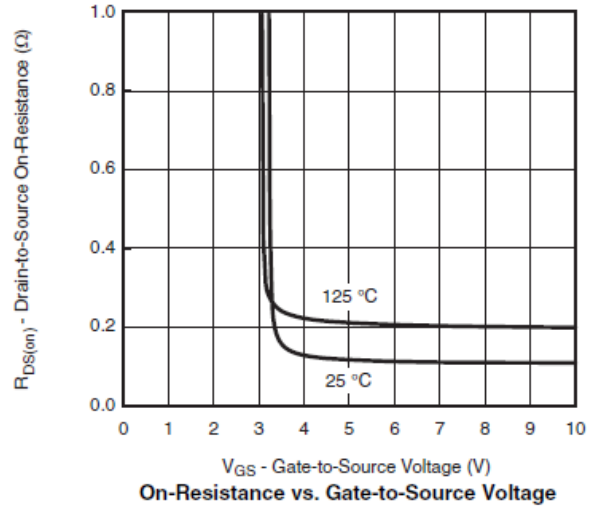
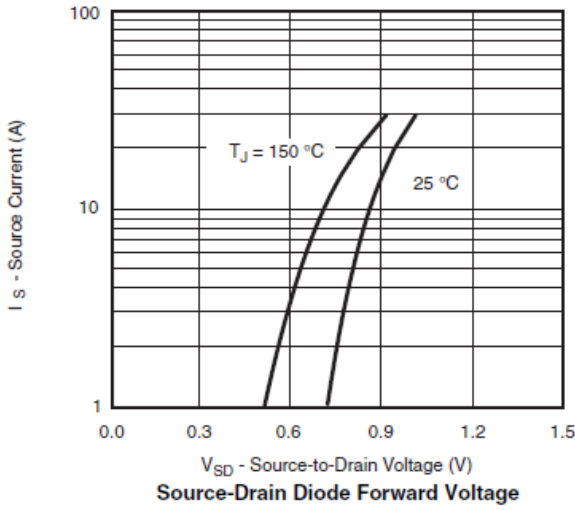
## TYPICAL CHARACTERISTICS





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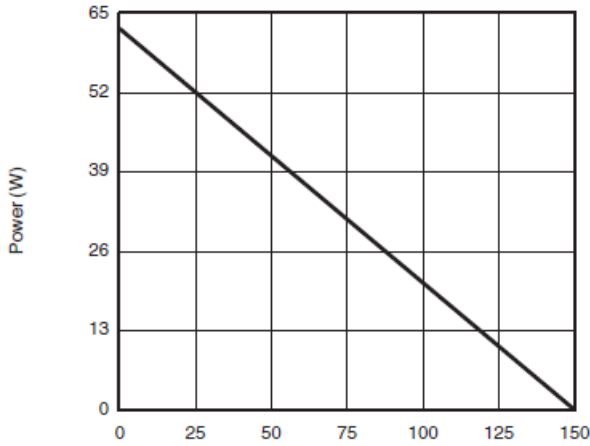




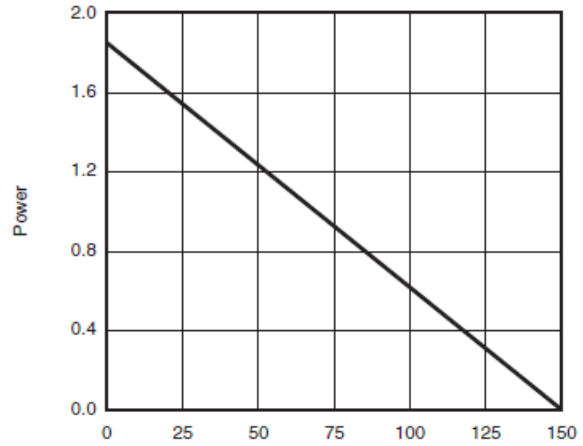
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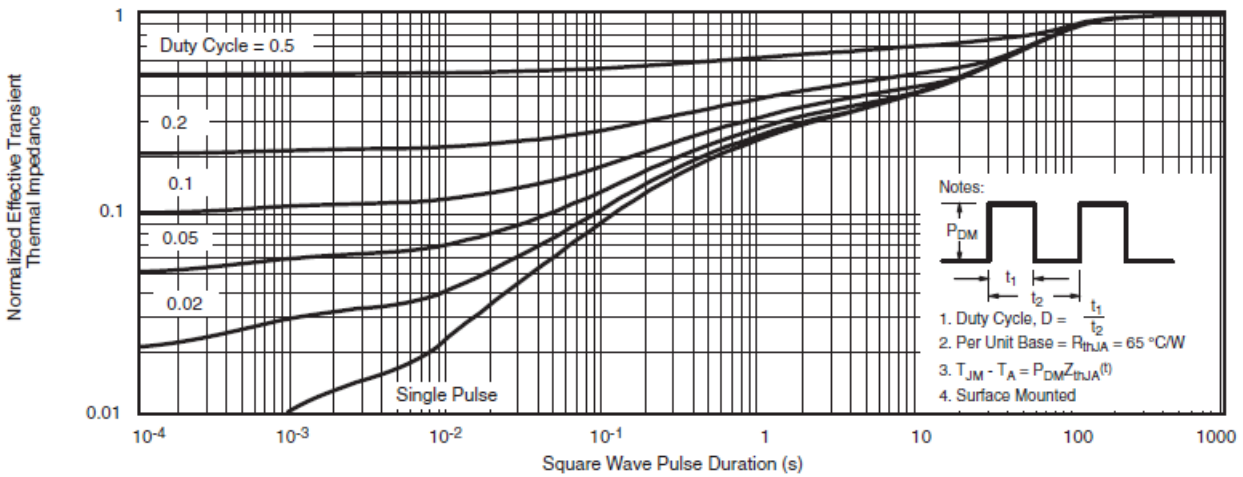
### TYPICAL CHARACTERISTICS



$T_C$  - Case Temperature (°C)  
Power, Junction-to-Case



$T_C$  - Case Temperature (°C)  
Power, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient



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