



SPN8866

N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8866 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 is required.

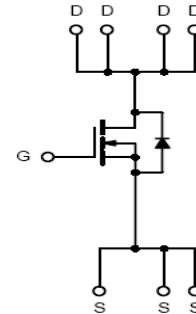
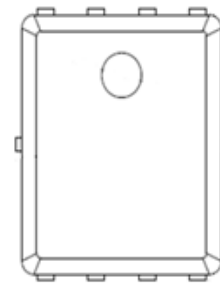
FEATURES

- ◆ 80V/15A, $R_{DS(ON)}=6.0m\Omega@V_{GS}=10V$
- ◆ 80V/10A, $R_{DS(ON)}=8.5m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK5x6-8L package design

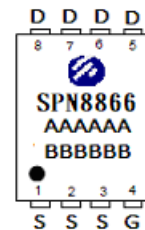
APPLICATIONS

- DC/DC Converter
- Load Switch
- Synchronous Buck Converter

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
SPN8866DN8RGB	PPAK5x6-8L	SPN8866

※ SPN8866DN8RGB : 13" Tape Reel ; Pb – Free ; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	V _{DSS}	80	V	
Gate –Source Voltage	V _{GSS}	+20/-14	V	
Continuous Drain Current(T _J =150°C)	I _D	T _C =25°C	80	A
		T _C =70°C	58	
Pulsed Drain Current	I _{DM}	230	A	
Avalanche Current	I _{AS}	58	A	
Power Dissipation	P _D	T _C =25°C	83	W
		T _A =70°C	1.6	
Operating Junction Temperature	T _J	-55/150	°C	
Storage Temperature Range	T _{STG}	-55/150	°C	
Thermal Resistance-Junction to Case	R _{θJC}	1.5	°C/W	



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ELECTRICAL CHARACTERISTICS

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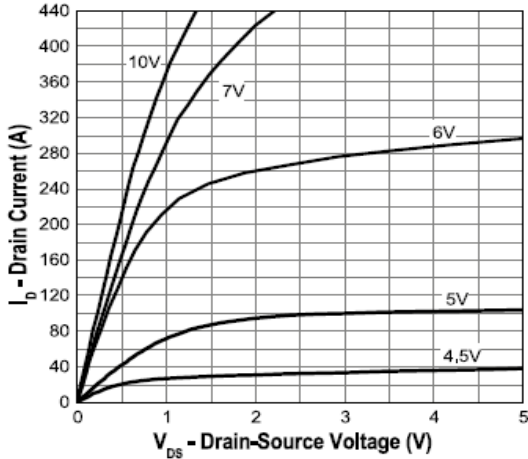
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	80			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2		2.3	
Gate Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=+20V/-14V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=64V, V_{GS}=0V$			1	uA
		$V_{DS}=64V, V_{GS}=0V$ $T_J=85^\circ C$			10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \geq 5V, V_{GS} = 10V$	80			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=15A$			6	mΩ
		$V_{GS}=4.5V, I_D=10A$			8.5	
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=5A$		10		S
Diode Forward Voltage	V_{SD}	$I_S=1A, V_{GS} = 0V$			1	V
Dynamic						
Total Gate Charge	Q_g	$V_{DS}=64V, V_{GS}=10V$ $I_D=10A$		44		nC
Gate-Source Charge	Q_{gs}			7.5		
Gate-Drain Charge	Q_{gd}			12		
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V$ $f=1MHz$		2600		pF
Output Capacitance	C_{oss}			350		
Reverse Transfer Capacitance	C_{rss}			20		
Turn-On Time	$t_{d(on)}$	$V_{DD}=40V, I_D=1A, V_{GS}=10V$ $R_G=6\Omega$		10		nS
	t_r			7		
Turn-Off Time	$t_{d(off)}$			36		
	t_f			9		



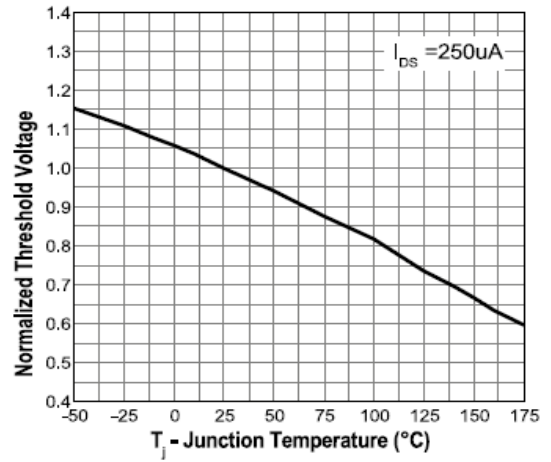
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TYPICAL CHARACTERISTICS

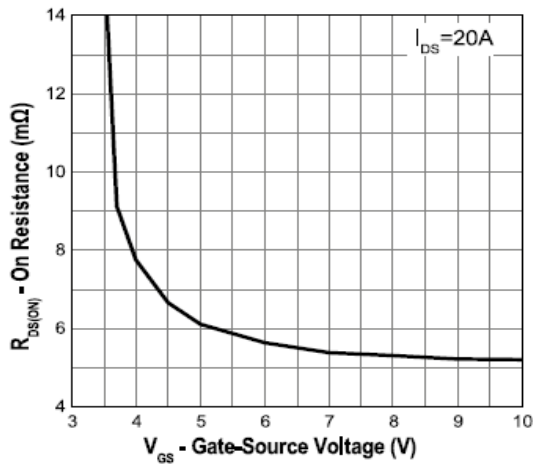
Output Characteristics



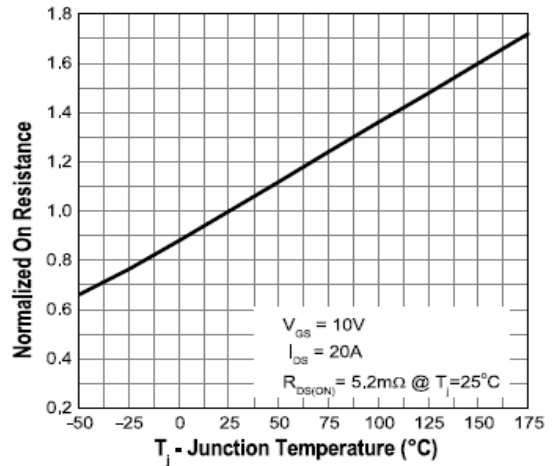
Gate Threshold Voltage



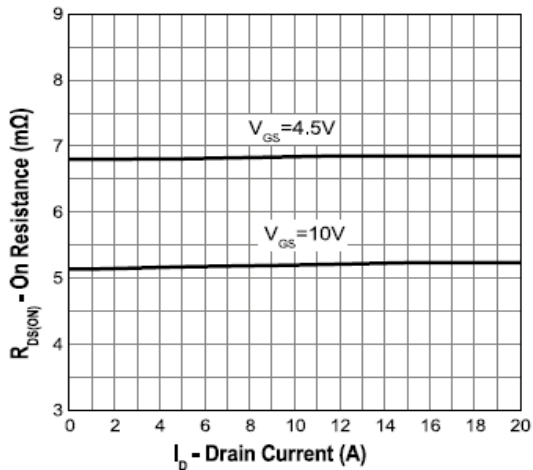
Gate-Source On Resistance



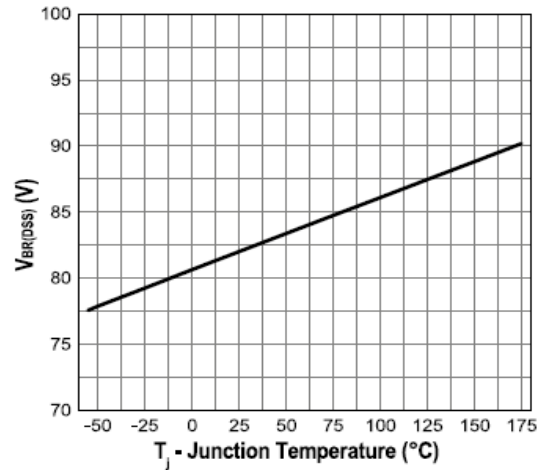
Drain-Source On Resistance



Drain-Source On Resistance



Drain-source Breakdown Voltage

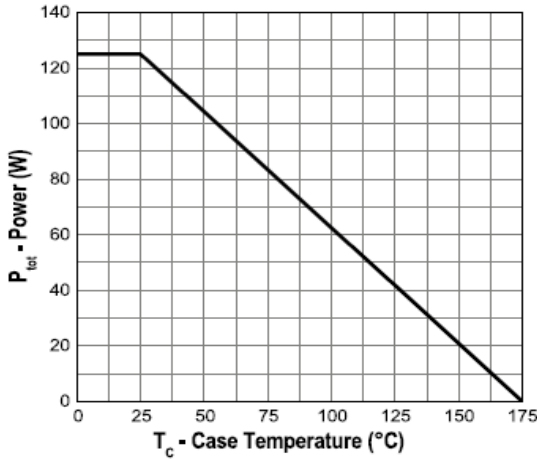




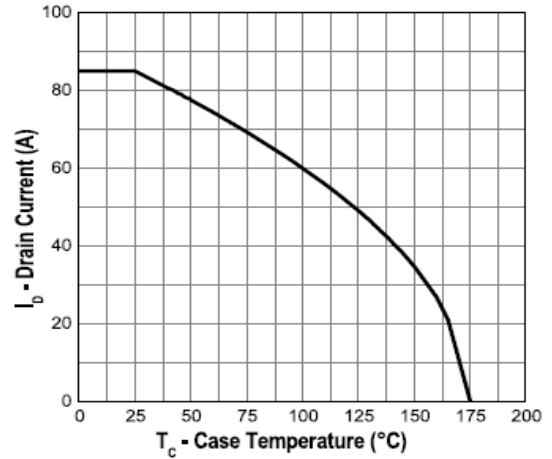
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TYPICAL CHARACTERISTICS

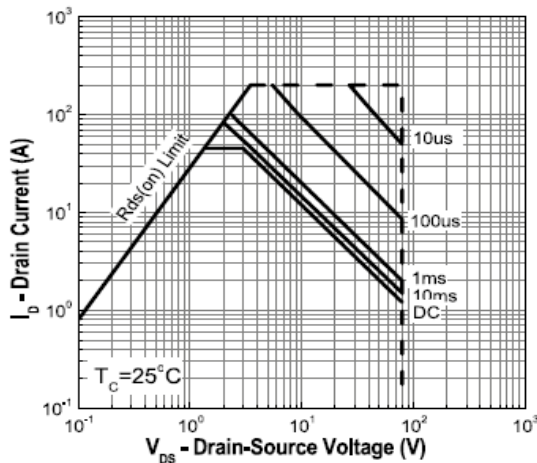
Power Dissipation



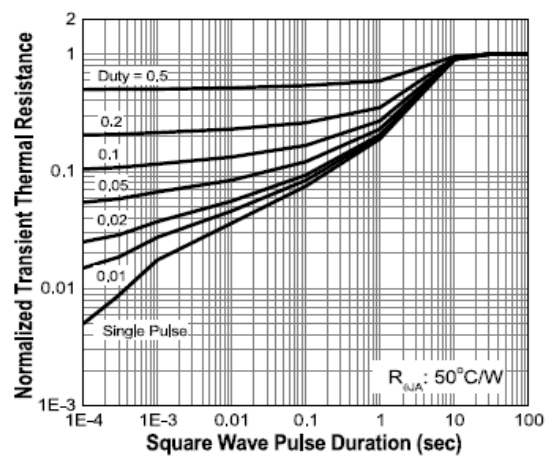
Drain Current



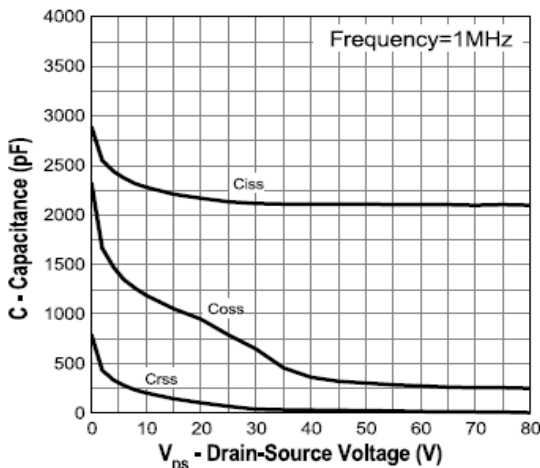
Safe Operation Area



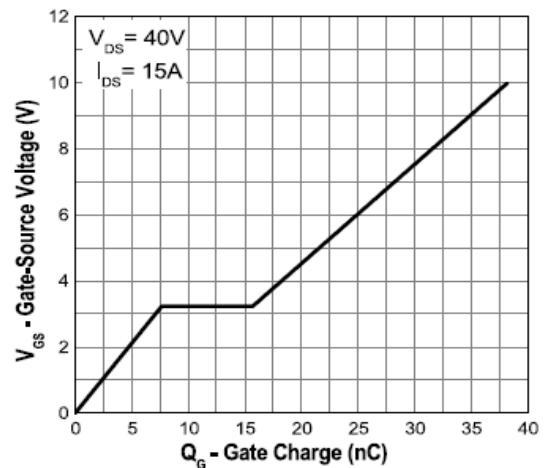
Transient Thermal Impedance



Capacitance



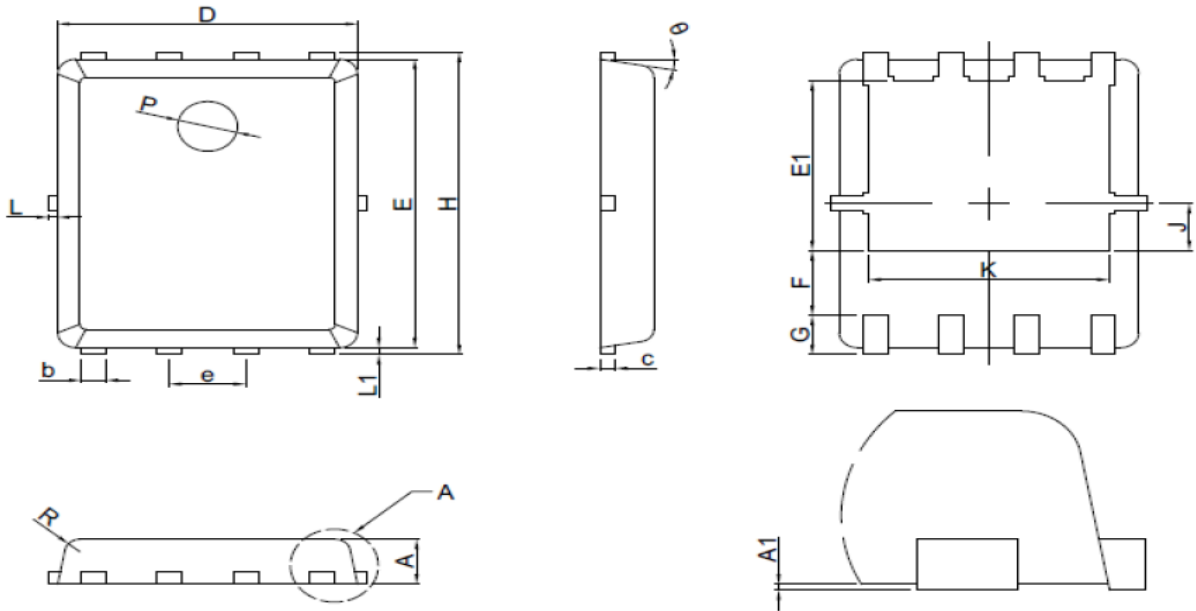
Gate Charge





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PPAK5x6- 8L PACKAGE OUTLINE



SYMBOL	MILLIMETERS		
	MIN	NOM	MAX
A	0.8	0.95	1.1
A1	0.00	0.03	0.05
b	0.33	0.41	0.51
c	0.254 REF		
D	4.80	4.95	5.10
F	1.40 REF		
E	5.70	5.80	5.90
e	1.27 BSC		
H	5.90	6.05	6.20
L1	0.06	0.13	0.20
G	0.60 REF		
J	0.95 BSC		
K	4.00 REF		
L	---	----	0.20
P	1.00 REF		
E1	3.40REF		
E2	0.95 REF		
θ	6°	10°	14°
R	0.25REF		



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