SPN8864
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8864 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPN8864 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.

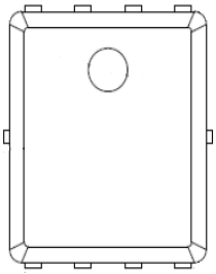
APPLICATIONS

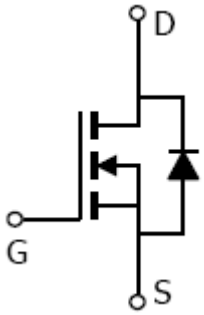
- DC/DC Converter
- Load Switch
- SMPS Secondary Side Synchronous Rectifier
- Motor Control
- Power Tool

FEATURES

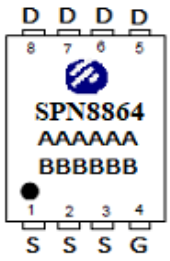
- 60V/20A,$R_{DS(ON)}$=6.0mΩ@V_{GS}=10V
- 60V/20A,$R_{DS(ON)}$=8.0mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- PPAK5x6-8L package design

PIN CONFIGURATION(PPAK5x6-8L)





PART MARKING



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

SPN8864
N-Channel Enhancement Mode MOSFET

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
SPN8864DN8RGB	PPAK5x6-8L	SPN8864

※ SPN8864DN8RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	60	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current (Silicon Limited)	T_C=25℃	I_D	85	A
	T_C=100℃		54	
Pulsed Drain Current		I_{DM}	340	A
Single Pulse Avalanche Energy (T_C=25℃, L=0.1mH.)		E_{AS}	181	mJ
Power Dissipation	T_C=25℃	P_D	135	W
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Case		$R_{\theta JC}$	0.92	℃/W

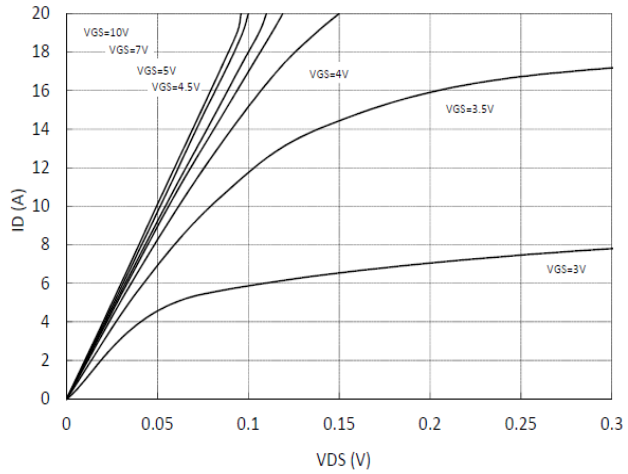
ELECTRICAL CHARACTERISTICS

(T_A=25℃ Unless otherwise noted)

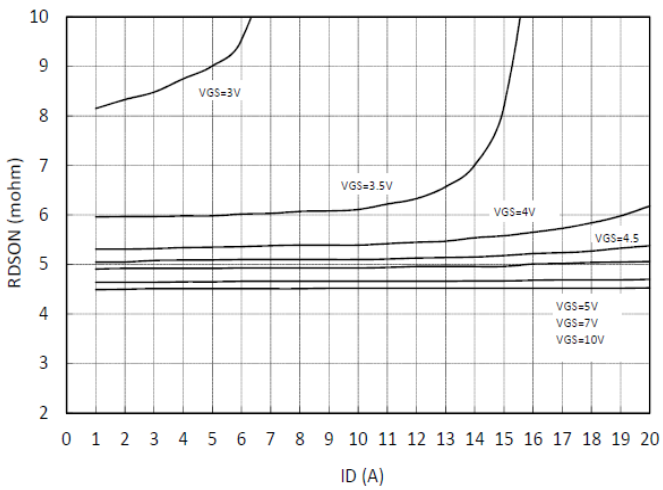
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.4	1.8	2.4	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=48V,V_{GS}=0V			1	uA
		V_{DS}=48V,V_{GS}=0V, T_J=125℃			10	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=20A			6.0	mΩ
		V_{GS}=4.5V,I_D=20A			8.0	
Forward Transconductance	gfs	V_{DS}=10V,I_D=3A		15		S
Gate resistance	Rg	V_{DS}=0V,V_{GS}=0V f=1MHz		1.6		Ω
Diode Forward Voltage	V_{SD}	I_S=1A,V_{GS}=0V			1.0	V
Dynamic						
Total Gate Charge	Qg	V_{DS}=30V,V_{GS}=4.5V I_D=10A		32.8	65	nC
Gate-Source Charge	Q_{gs}			10.8	20	
Gate-Drain Charge	Q_{gd}			11.6	22	
Input Capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V f=1MHz		10606		pF
Output Capacitance	C_{oss}			545		
Reverse Transfer Capacitance	C_{rss}			436		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V, I_D=1A,V_{GS}=10V R_G=3.3Ω		20	40	nS
	t_r			14.2	28	
Turn-Off Time	$t_{d(off)}$			61.2	122	
	t_f			16.8	34	

TYPICAL CHARACTERISTICS

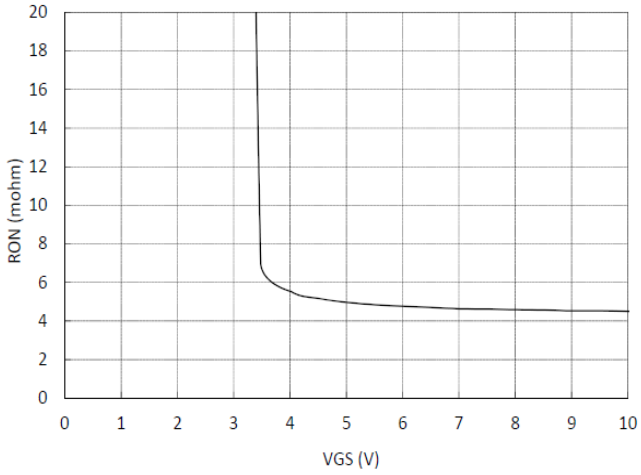
TYPICAL OUTPUT CHARACTERISTICS



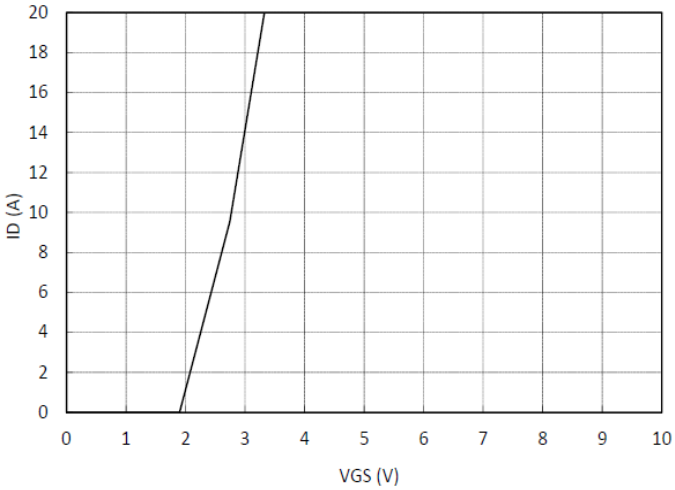
ON-RESISTANCE VS. DRAIN CURRENT AND GATE VOLTAGE



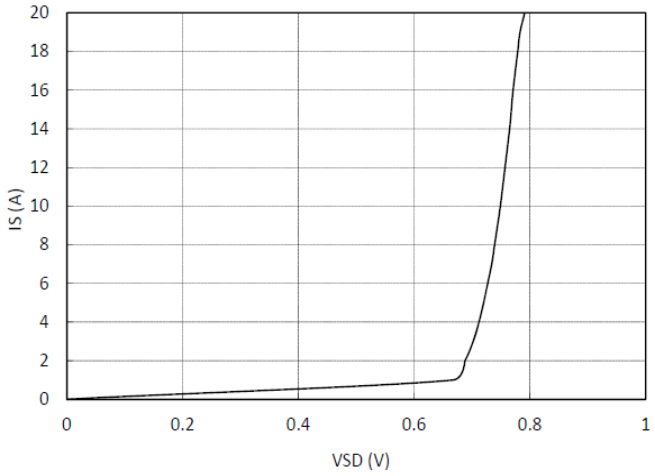
ON-RESISTANCE VS. GATE-SOURCE VOLTAGE



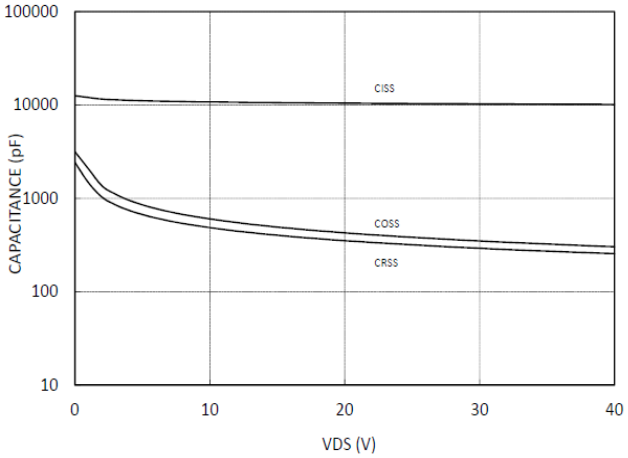
TYPICAL TRANSFER CHARACTERISTICS



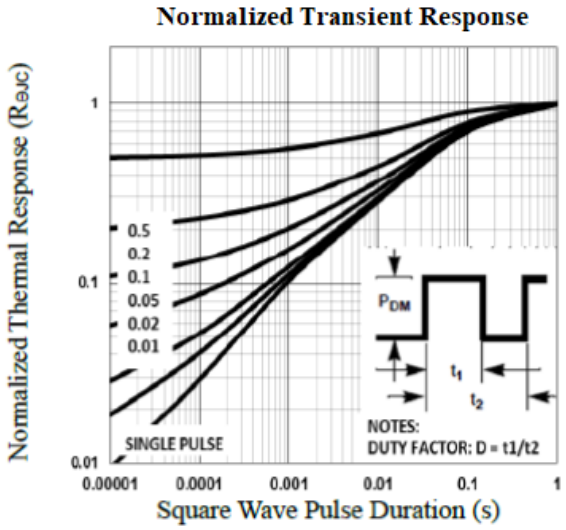
TYPICAL SOURCE-DRAIN DIODE FORWARD VOLTAGE

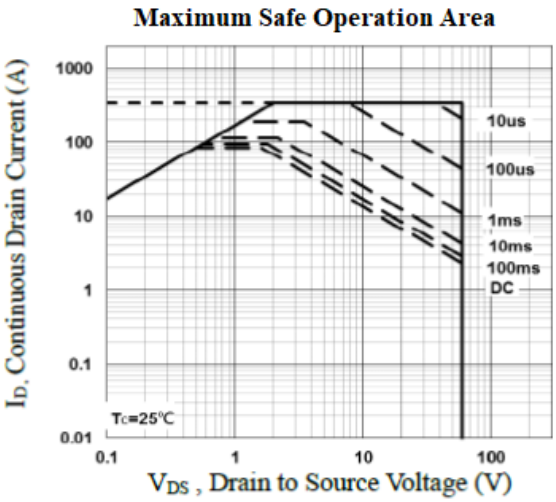


TYPICAL CAPACITANCE VS. DRAIN-SOURCE VOLTAGE



TYPICAL CHARACTERISTICS





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