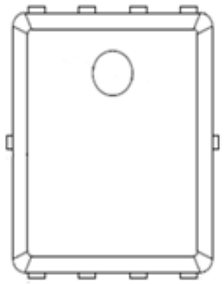
SPN8834
N-Channel Enhancement Mode MOSFET

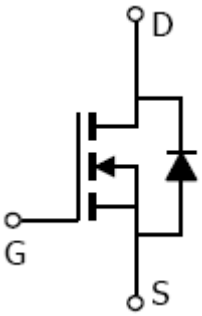
DESCRIPTION
The SPN8834 is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPN8834 has been designed specifically to improve the overall efficiency of DC/DC converters using either synchronous or conventional switching PWM controllers. It has been optimized for low gate charge, low $R_{DS(ON)}$ and fast switching speed.

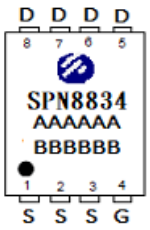
APPLICATIONS
- High Frequency Synchronous Buck Converter
- DC/DC Power System
- Load Switch
- POL Applications

FEATURES
- 30V/96A,$R_{DS(ON)}$=4.2mΩ@V_{GS}=10V
- 30V/96A,$R_{DS(ON)}$=6.0mΩ@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)

SPN8834
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PPAK5x6-8L 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
SPN8834DN8RGB	PPAK5x6-8L	SPN8834

※ SPN8834DN8RGB : Tape Reel ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(Silicon Limited)	T_C=25℃	I_D	96	A
	T_C=100℃		68	
Pulsed Drain Current		I_{DM}	192	A
Avalanche Current		I_{AS}	53.8	A
Single Pulse Avalanche Energy		EAS	317	mJ
Power Dissipation	T_C=25℃	P_D	83	W
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Case		$R_{\theta JC}$	1.5	℃/W

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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	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.2	1.6	2.5	V
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V, T_J=25℃			1	uA
		V_{DS}=24V,V_{GS}=0V, T_J=125℃			10	
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=30A		3.8	4.2	mΩ
		V_{GS}=4.5V,I_D=15A		5.2	6	
Forward Transconductance	gfs	V_{DS}=10V, I_D=6A		12		S
Diode Forward Voltage	V_{SD}	I_F=1A,V_{GS}=0V			1	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=4.5V, I_D =12A		24	34	nC
Gate-Source Charge	Q_{gs}			4.2	6	
Gate-Drain Charge	Q_{gd}			13	18	
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V, F=1MHz		2200	3190	pF
Output Capacitance	C_{oss}			280	405	
Reverse Transfer Capacitance	C_{rss}			177	255	
Turn-On Time	$t_{d(on)}$	(V_{DD}=15V,I_D=15A, V_{GEN}=10V,R_G=3.3Ω)		12.6	24	ns
	t_r			19.5	37	
Turn-Off Time	$t_{d(off)}$			42.8	81	
	t_f			13.2	25	

TYPICAL CHARACTERISTICS

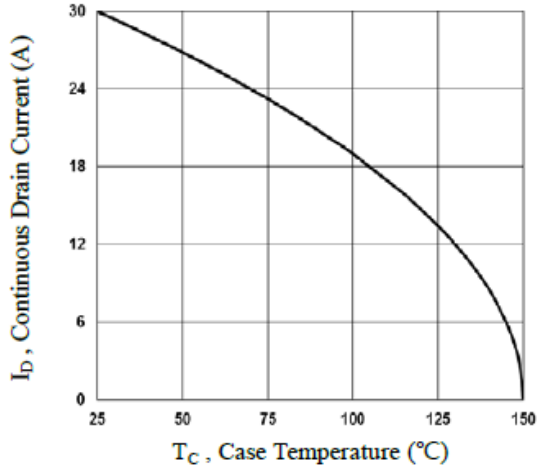


Fig.1 Continuous Drain Current vs. T_c

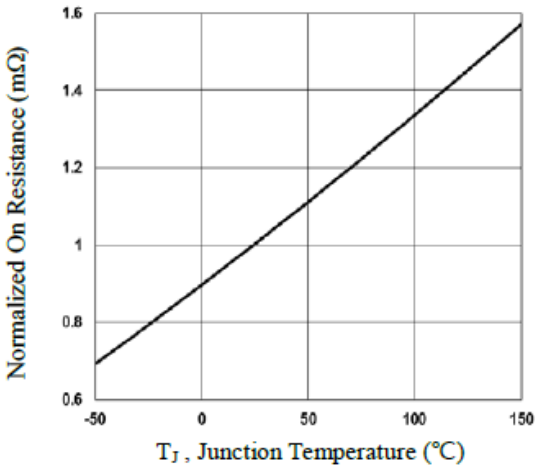


Fig.2 Normalized RDSON vs. T_J

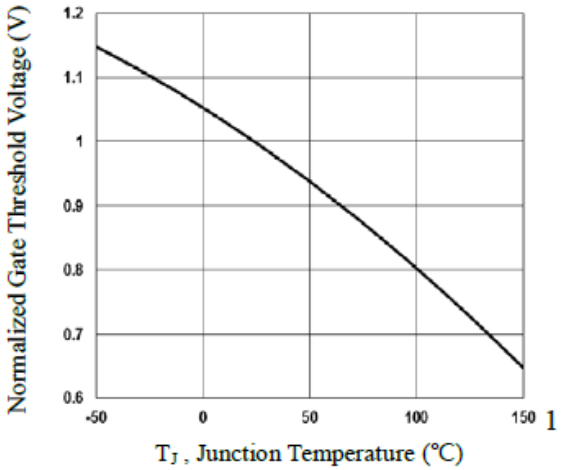


Fig.3 Normalized V_{th} vs. T_J

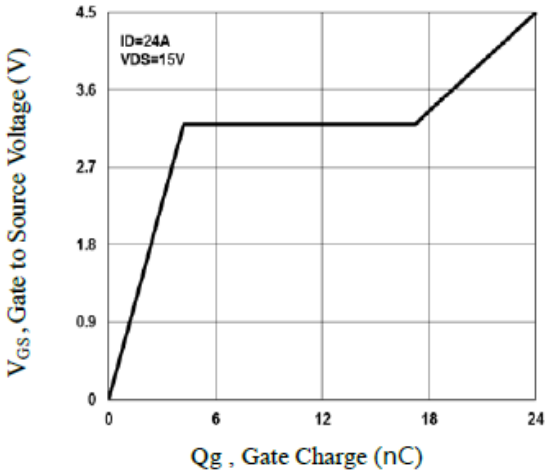


Fig.4 Gate Charge Waveform

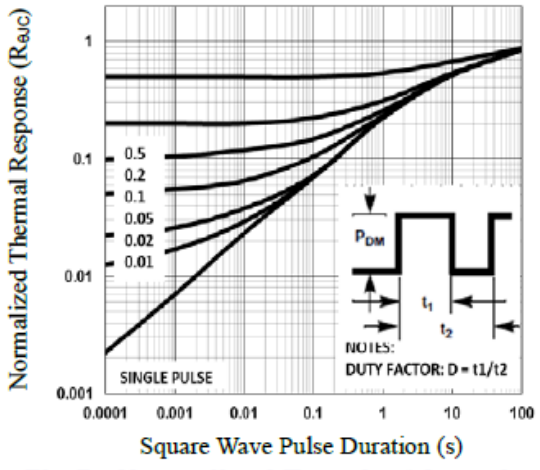


Fig.5 Normalized Transient Impedance

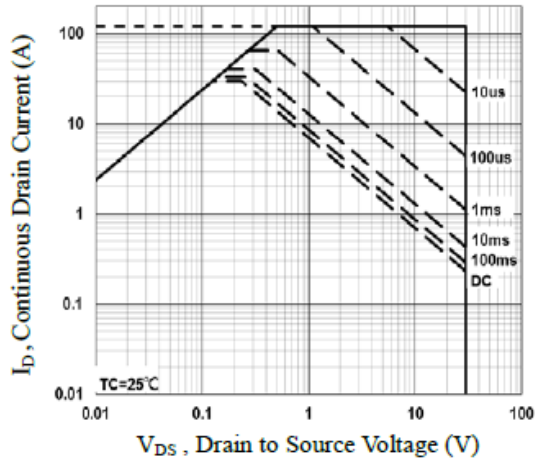


Fig.6 Maximum Safe Operation Area

TYPICAL CHARACTERISTICS

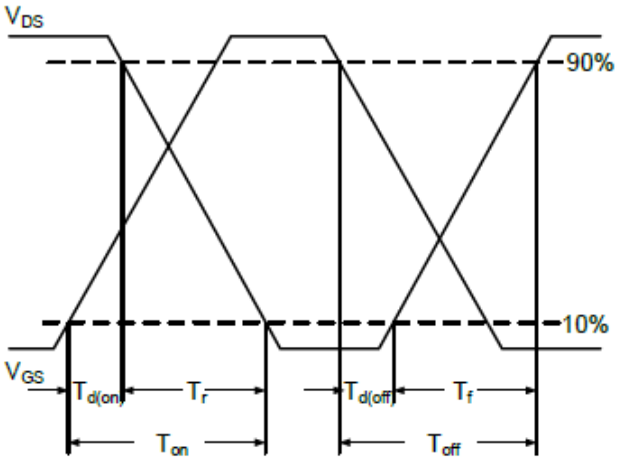


Fig.7 Switching Time Waveform

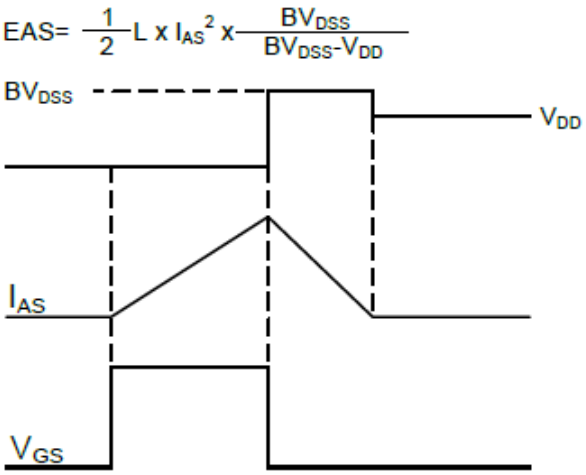
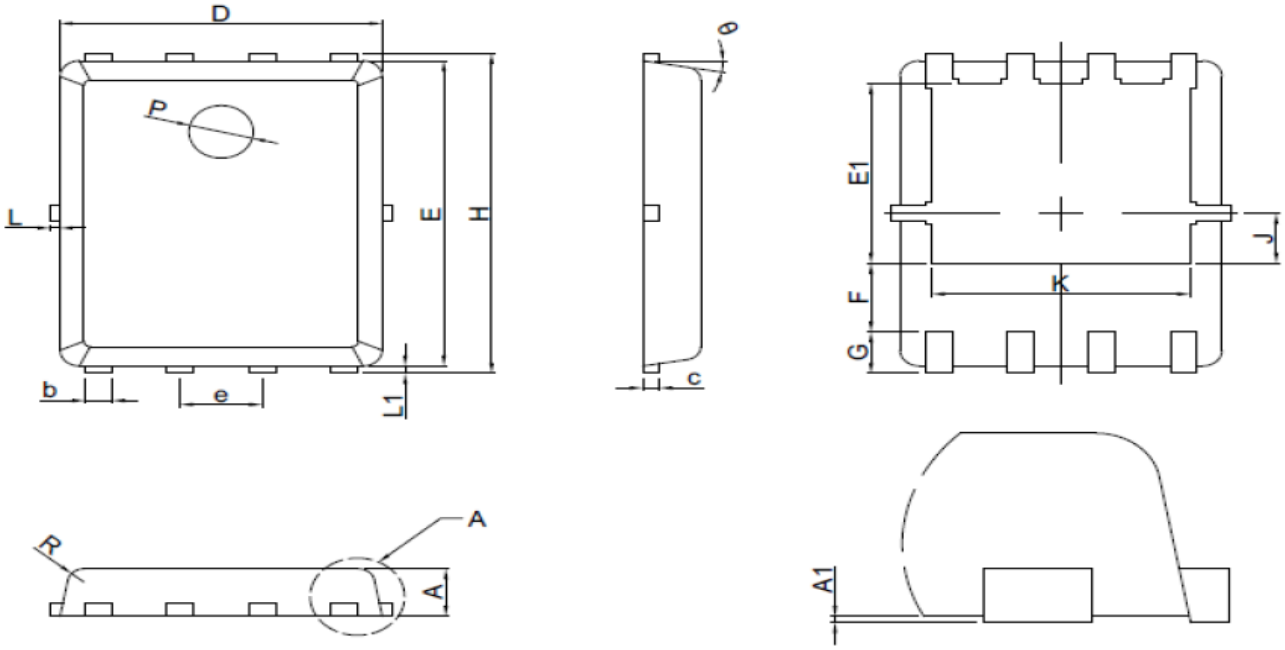


Fig.8 EAS Waveform

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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