



# SPN8632

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN8632 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 .

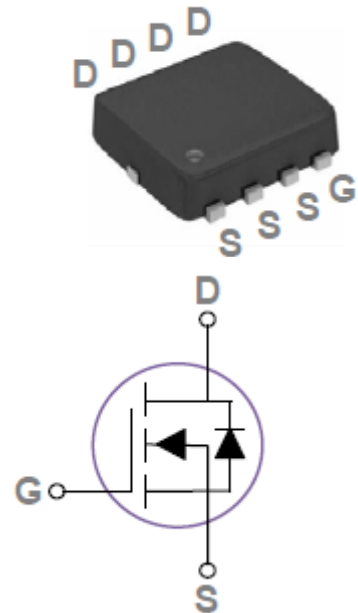
### FEATURES

- ◆ 30V/12A,  $R_{DS(ON)}=4.2m\Omega@V_{GS}=10V$
- ◆ 30V/6A,  $R_{DS(ON)}=6m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK3x3 package design

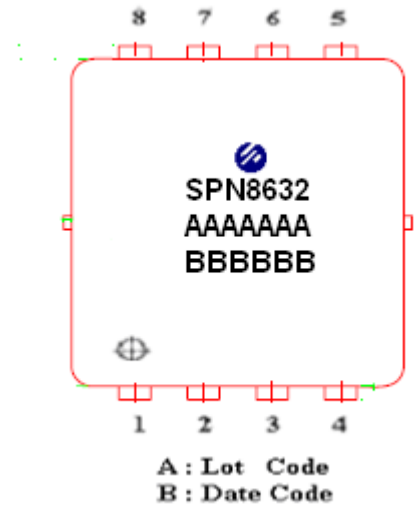
### APPLICATIONS

- MB/VGA/Vcore
- POL Applications
- SMPS 2<sup>nd</sup> SR

### PIN CONFIGURATION(PPAK3x3-8L)



### PART MARKING





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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
SPN8632DN8RGB	PPAK3x3-8L	SPN8632

※ SPN8632DN8RGB : 13" 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>	30	V	
Gate –Source Voltage	V <sub>GSS</sub>	±20	V	
Continuous Drain Current(T <sub>J</sub> =150°C)	I <sub>D</sub>	T <sub>A</sub> =25°C	12	A
		T <sub>A</sub> =100°C	8.5	
Pulsed Drain Current	I <sub>DM</sub>	120	A	
Continuous Source Current(Diode Conduction)	I <sub>S</sub>	30	A	
Power Dissipation	P <sub>D</sub>	7	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 Ambient	R <sub>θJA</sub>	62	°C/W	



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### ELECTRICAL CHARACTERISTICS

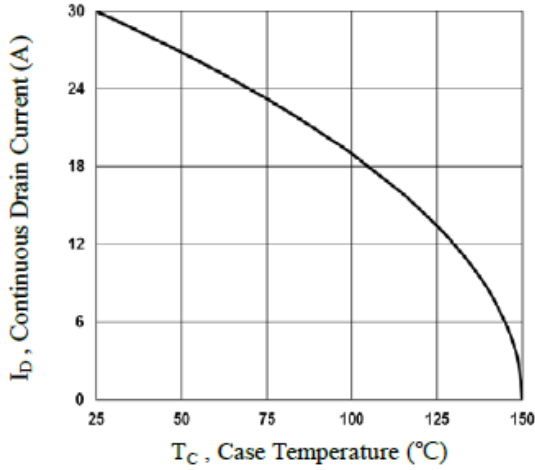
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250uA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> = 250uA	1.2	1.6	2.5	
Gate Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 30V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 25°C			1	uA
		V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 125°C			10	
Drain-Source On-Resistance	R <sub>DSON</sub>	V <sub>GS</sub> = 10V, I <sub>D</sub> = 12A		3.8	4.2	mΩ
		V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 6A		5.2	6	
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 6A		12		S
Diode Forward Voltage	V <sub>SD</sub>	I <sub>F</sub> = 1A, V <sub>GS</sub> = 0V			1	V
<b>Dynamic</b>						
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> = 15V, V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 12A		24	34	nC
Gate-Source Charge	Q <sub>gs</sub>			4.2	6	
Gate-Drain Charge	Q <sub>gd</sub>			13	18	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 25V, F = 1MHz		2200	3190	pF
Output Capacitance	C <sub>oss</sub>			280	405	
Reverse Transfer Capacitance	C <sub>rss</sub>			177	255	
Turn-On Time	t <sub>d(on)</sub>	(V <sub>DD</sub> = 15V, I <sub>D</sub> = 15A, V <sub>GEN</sub> = 10V, R <sub>G</sub> = 3.3Ω)		12.6	24	ns
	t <sub>r</sub>			19.5	37	
Turn-Off Time	t <sub>d(off)</sub>			42.8	81	
	t <sub>f</sub>			13.2	25	

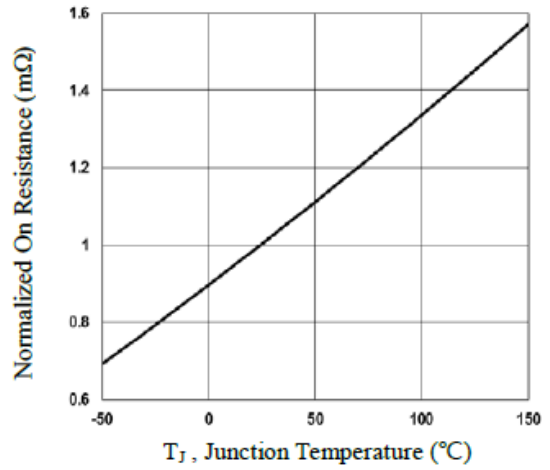


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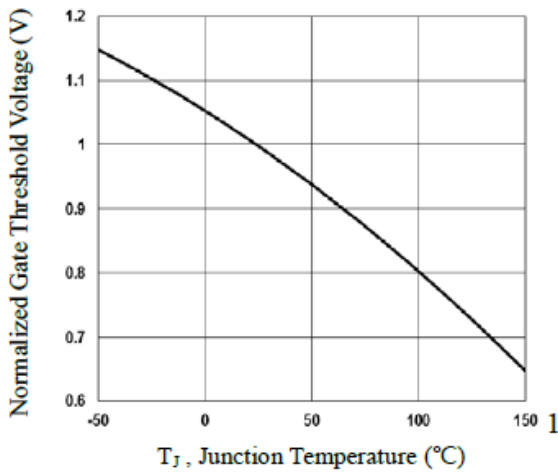
## TYPICAL CHARACTERISTICS



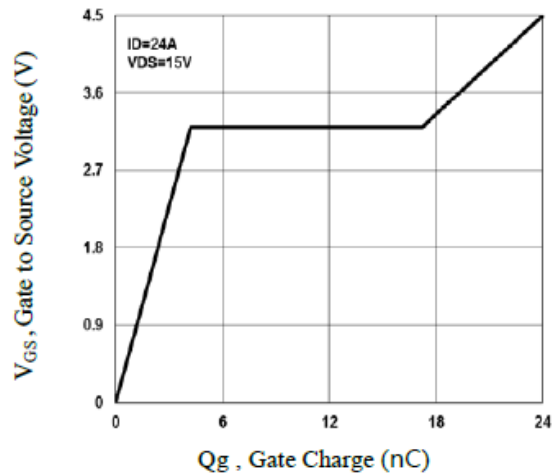
**Fig.1 Continuous Drain Current vs.  $T_C$**



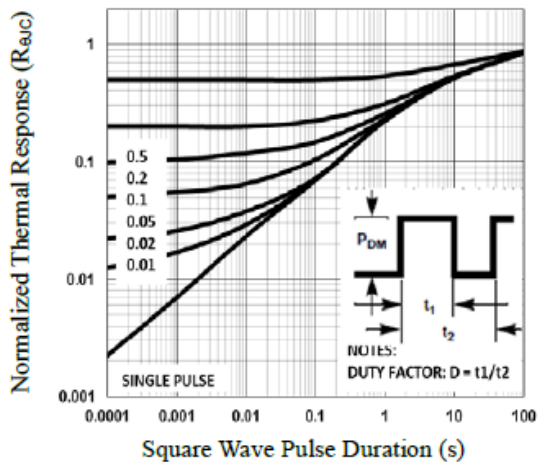
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



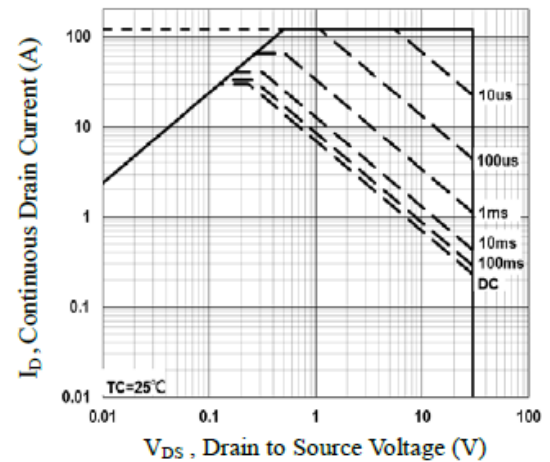
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**



**Fig.5 Normalized Transient Impedance**



**Fig.6 Maximum Safe Operation Area**



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## TYPICAL CHARACTERISTICS

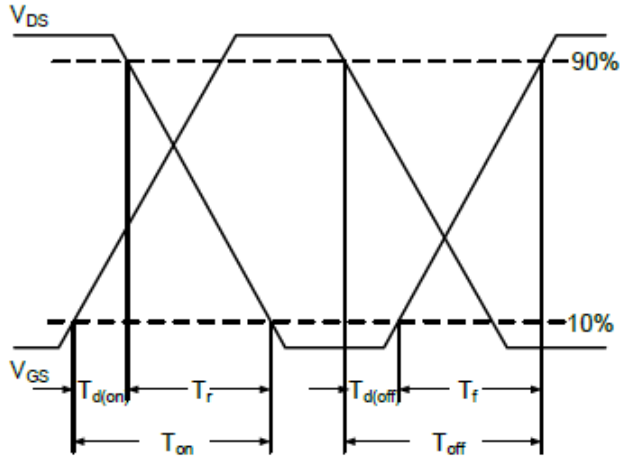


Fig.7 Switching Time Waveform

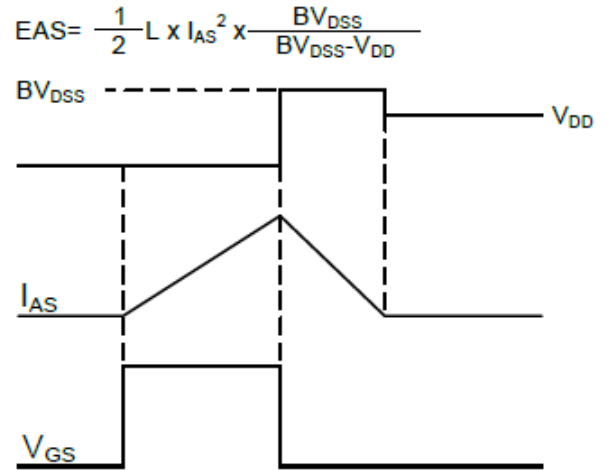


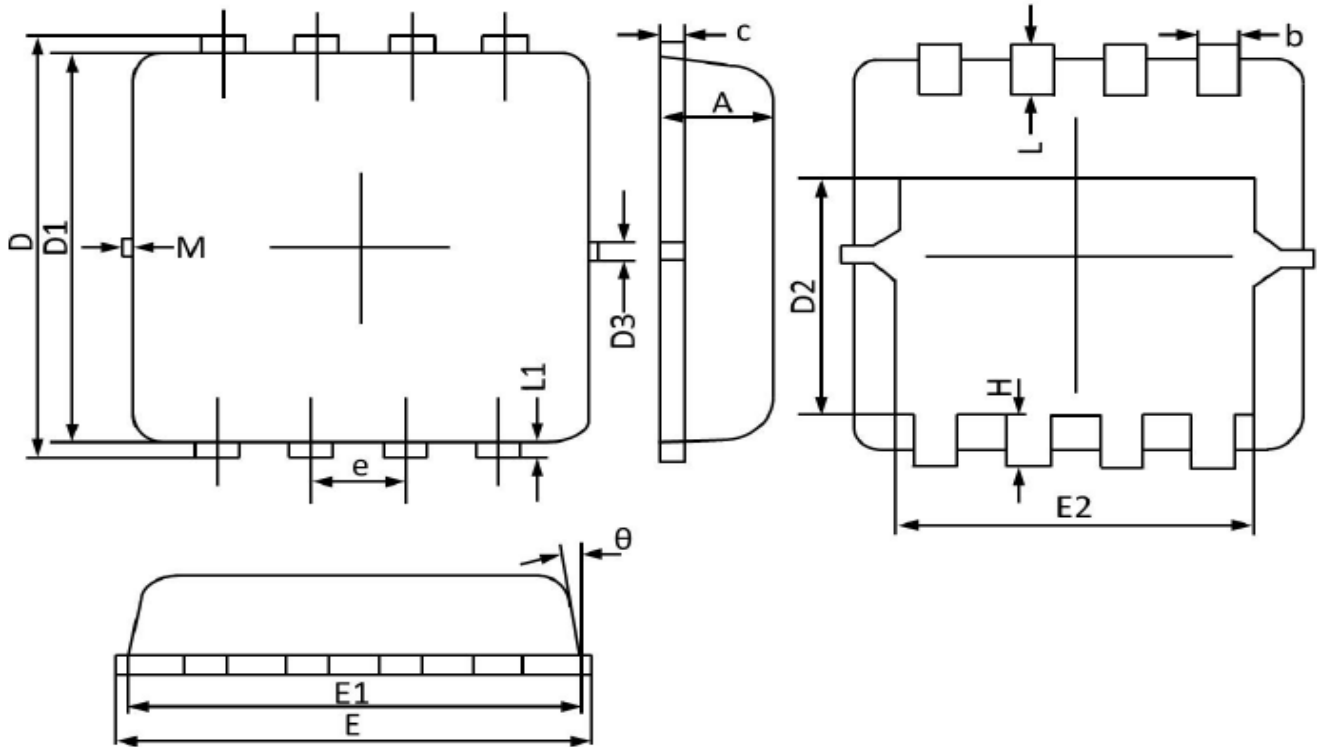
Fig.8 EAS Waveform



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### PPAK3x3-8L PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
theta	0°	12°	0°	12°
M	0.150 REF		0.006 REF	



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