



# SPP8637 P-Channel Enhancement Mode MOSFET

## DESCRIPTION

The SPP8637 is the P-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. The SPP8637 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.

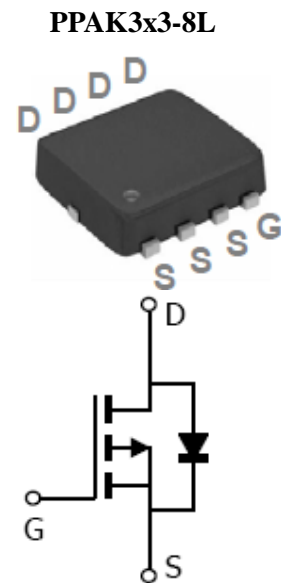
## FEATURES

- ◆ -30V/-30A,  $R_{DS(ON)}=8.5m\Omega@V_{GS}=-10V$
- ◆ -30V/-20A,  $R_{DS(ON)}=14.5m\Omega@V_{GS}=-4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ PPAK3x3-8L package design

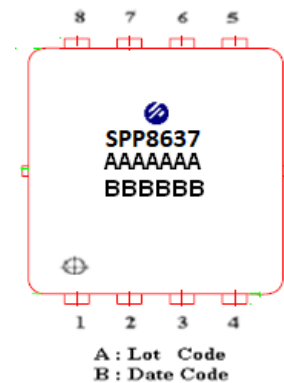
## APPLICATIONS

- MB/VGA/Vcore/PD Application
- DC/DC Power System
- Load Switch

## PIN CONFIGURATION



## PART MARKING





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## P-Channel Enhancement Mode MOSFET

### PPAK3x3-8L 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
SPP8637DN8RGB	PPAK3x3-8L	SPP8637

※ SPP8637DN8RGB : Tape Reel ; Pb – Free ; Halogen - Free

### ABSOLUTE MAXIMUM RATINGS

( $T_A=25^{\circ}\text{C}$  Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	$V_{DSS}$	-30	V
Gate –Source Voltage	$V_{GSS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_A=25^{\circ}\text{C}$	-50
		$T_A=100^{\circ}\text{C}$	-32
Pulsed Drain Current	$I_{DM}$	-200	A
Power Dissipation	$P_D$	$T_C=25^{\circ}\text{C}$ 59	W
Operating Junction Temperature	$T_J$	150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-55/150	$^{\circ}\text{C}$
Thermal Resistance-Junction to Ambient ( $t \leq 10\text{s}$ )	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$



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### ELECTRICAL CHARACTERISTICS

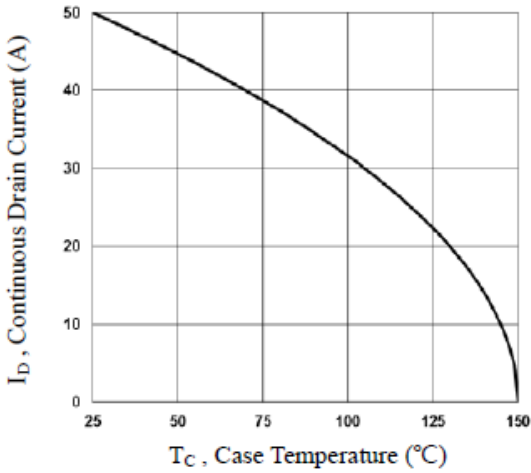
(TA=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0		-2.5	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V, T_J=100^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq -5V, V_{GS}=-10V$			-100	A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-30A$		7	8.5	mΩ
		$V_{GS}=-4.5V, I_D=-20A$		11.4	14.5	
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$		8.5	12	Ω
Forward Transconductance	$g_{fs}$	$V_{DS}=-10V, I_D=-3A$		14		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1A, V_{GS}=0V$			-1	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D=-10A$		35		nC
Gate-Source Charge	$Q_{gs}$			11		
Gate-Drain Charge	$Q_{gd}$			10.5		
Input Capacitance	$C_{iss}$	$V_{DS}=-15V, V_{GS}=0V$ $f=1MHz$		3300		pF
Output Capacitance	$C_{oss}$			410		
Reverse Transfer Capacitance	$C_{rss}$			280		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-15V,$ $I_D=-1A, V_{GS}=-10V, R_G=6\Omega$		24.5		nS
	$t_r$			10.5		
Turn-Off Time	$t_{d(off)}$			156		
	$t_f$			50		

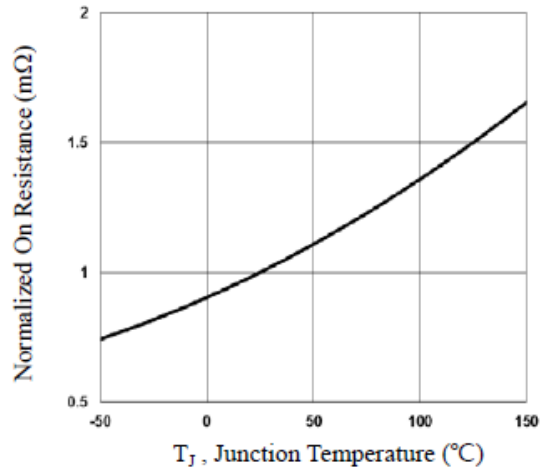


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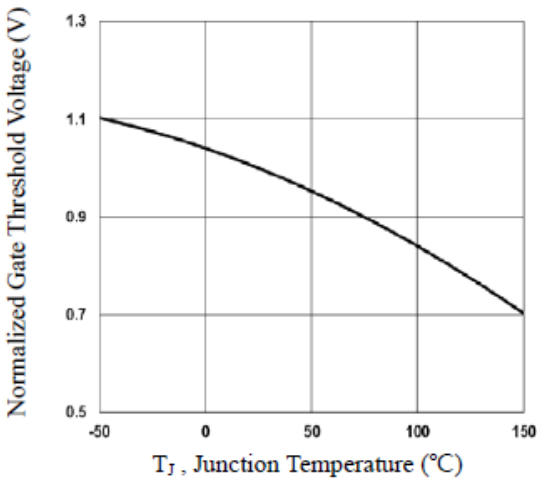
## TYPICAL CHARACTERISTICS



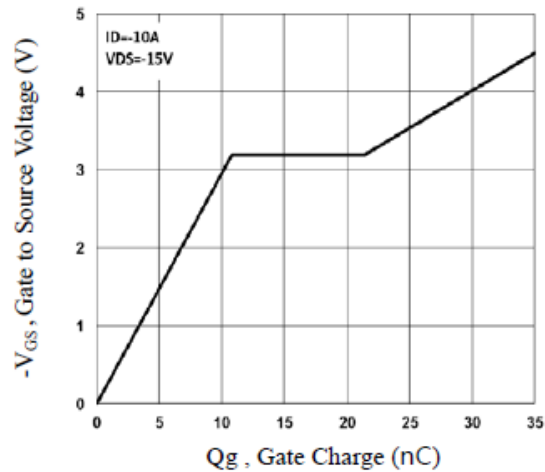
**Fig.1 Continuous Drain Current vs.  $T_C$**



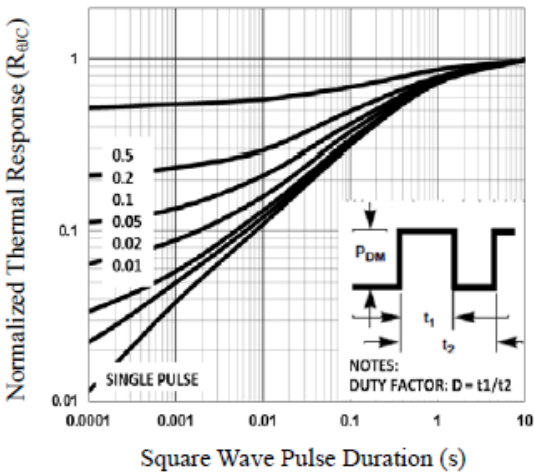
**Fig.2 Normalized  $R_{DS(on)}$  vs.  $T_J$**



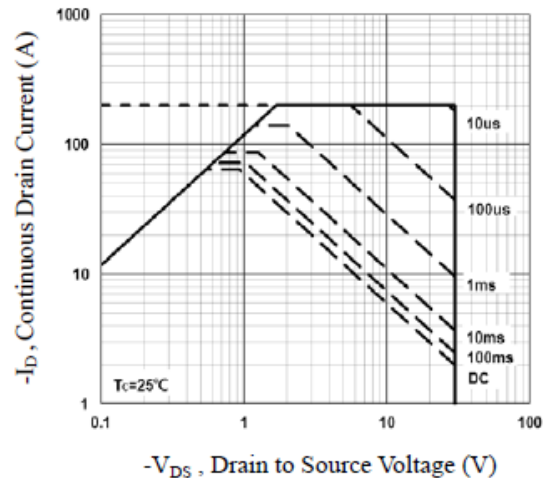
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**



**Fig.5 Normalized Transient Impedance**



**Fig.6 Maximum Safe Operation Area**



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