



SPP3421

P-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPP3421 is the P-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 such as cellular phone and notebook computer power management and other battery powered circuits, and low in-line power loss are needed in a very small outline surface mount package.

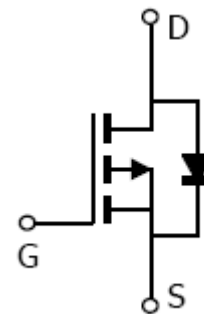
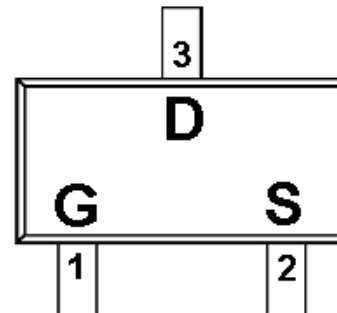
FEATURES

- ◆ $-60V/-5A, R_{DS(ON)} = 160m\Omega @ V_{GS} = -10V$
- ◆ $-60V/-2.5A, R_{DS(ON)} = 200m\Omega @ V_{GS} = -4.5V$
- ◆ Super high density cell design for extremely low $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23 package design

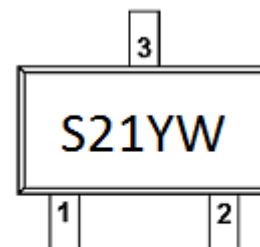
APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

PIN CONFIGURATION(SOT-23)



PART MARKING



Y : Year Code
W : Week Code



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PIN DESCRIPTION

Pin	Symbol	Description
1	G	Gate
2	S	Source
3	D	Drain

ORDERING INFORMATION

Part Number	Package	Part Marking
SPP3421S23RGB	SOT-23	S21YW

※ Week Code : A ~ Z(1 ~ 26) ; a ~ z(27 ~ 52)

※ SPP3421S23RGB : Tape Reel ; Pb – Free; Halogen – Free

ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	V _{DSS}	-60	V
Gate –Source Voltage	V _{GSS}	±20	V
Continuous Drain Current(T _J =150°C)	I _D	TA=25°C	-5
		TA=70°C	-3.5
Pulsed Drain Current	I _{DM}	-12	A
Continuous Source Current(Diode Conduction)	I _S	-1.25	A
Power Dissipation	P _D	TA=25°C	1.25
		TA=70°C	0.8
Operating Junction Temperature	T _J	150	°C
Storage Temperature Range	T _{STG}	-55/150	°C
Thermal Resistance-Junction to Ambient	R _{θJA}	100	°C/W



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ELECTRICAL CHARACTERISTICS

(TA=25°C 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		-3		
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 =55°C			-10		
On-State Drain Current	I _{D(on)}	V _{DS} ≤ -5V, V _{GS} =-10V			-5	A	
		V _{DS} ≤ -5V, V _{GS} =-4.5V			-2.5		
Drain-Source On-Resistance	R _{DSS(on)}	V _{GS} =-10V, I _D =-5A		150	160	mΩ	
		V _{GS} =-4.5V, I _D =-2.5A		185	200		
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _D =-1.7A		2.4		S	
Diode Forward Voltage	V _{SD}	I _S =-1.25A, V _{GS} =0V		-0.8	-1.2	V	
Dynamic							
Total Gate Charge	Q _g	V _{DS} =-30V, V _{GS} =-10V I _D =-2A		16		nC	
Gate-Source Charge	Q _{gs}			8			
Gate-Drain Charge	Q _{gd}			3.0			
Input Capacitance	C _{iss}	V _{DS} =-30V, V _{GS} =0V f=1MHz			1200	pF	
Output Capacitance	C _{oss}			115			
Reverse Transfer Capacitance	C _{rss}			7			
Turn-On Time	t _{d(on)}	V _{DD} =-10V, R _L =15Ω I _D =-1.0A, V _{GEN} =-3V R _G =2.5Ω		9		ns	
	t _r			109			
Turn-Off Time	t _{d(off)}				25		
	t _f				11		



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TYPICAL CHARACTERISTICS

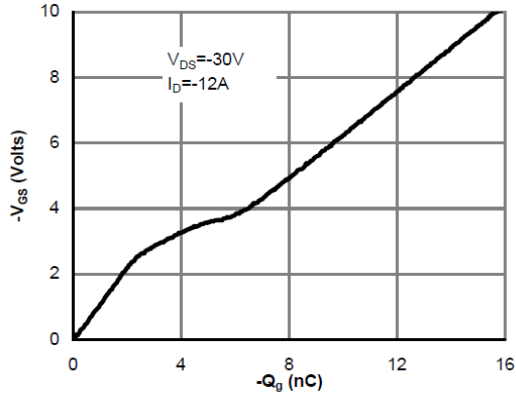


Figure 7: Gate-Charge Characteristics

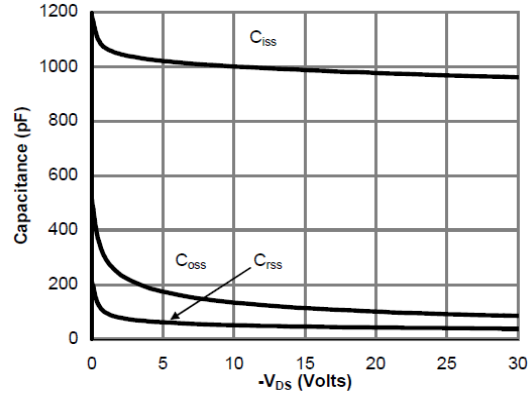


Figure 8: Capacitance Characteristics

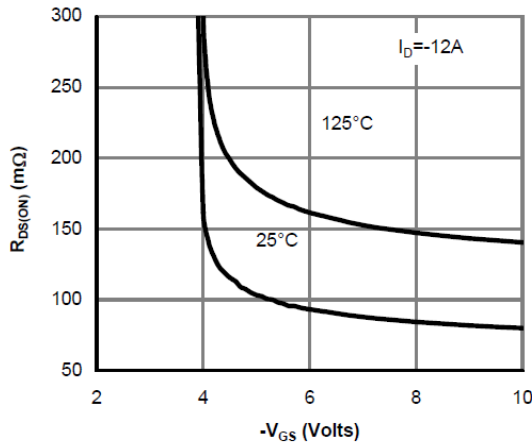


Figure 5: On-Resistance vs. Gate-Source Voltage

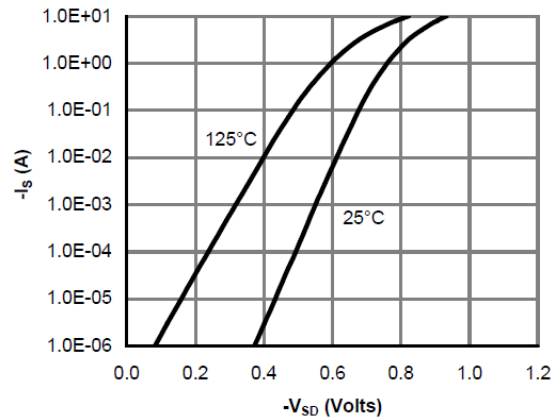


Figure 6: Body-Diode Characteristics

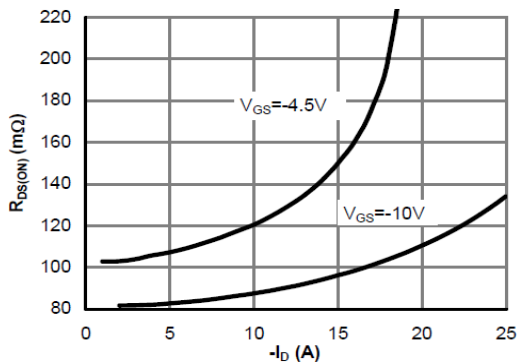


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

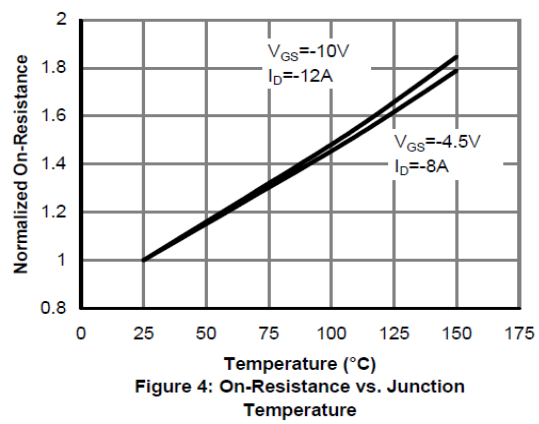


Figure 4: On-Resistance vs. Junction Temperature



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TYPICAL CHARACTERISTICS

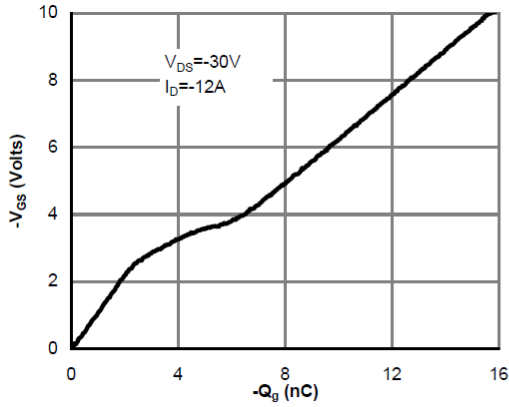


Figure 7: Gate-Charge Characteristics

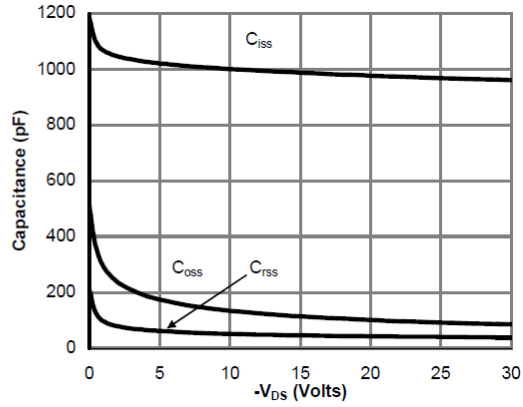


Figure 8: Capacitance Characteristics

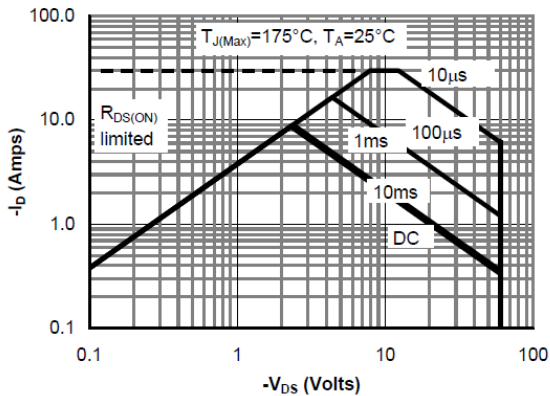


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

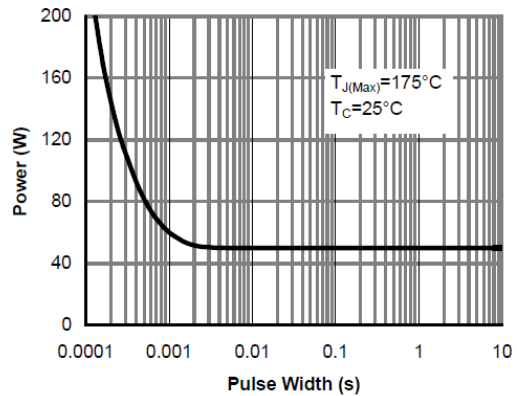


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

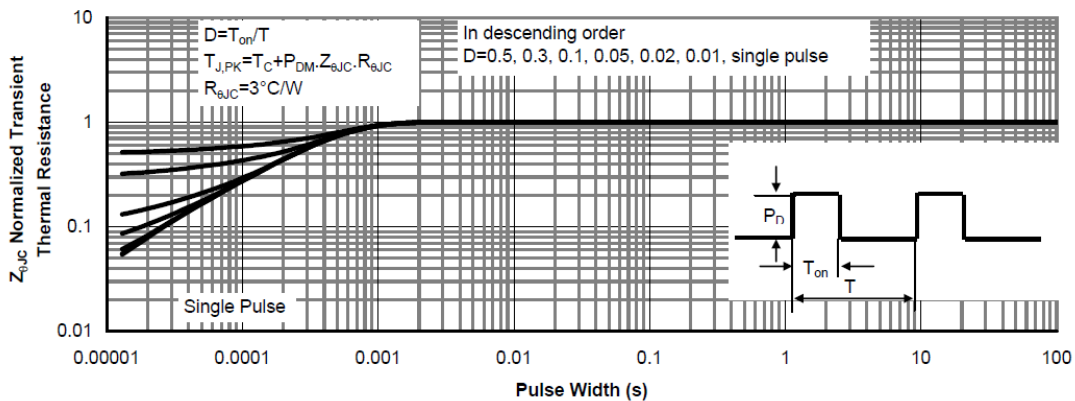


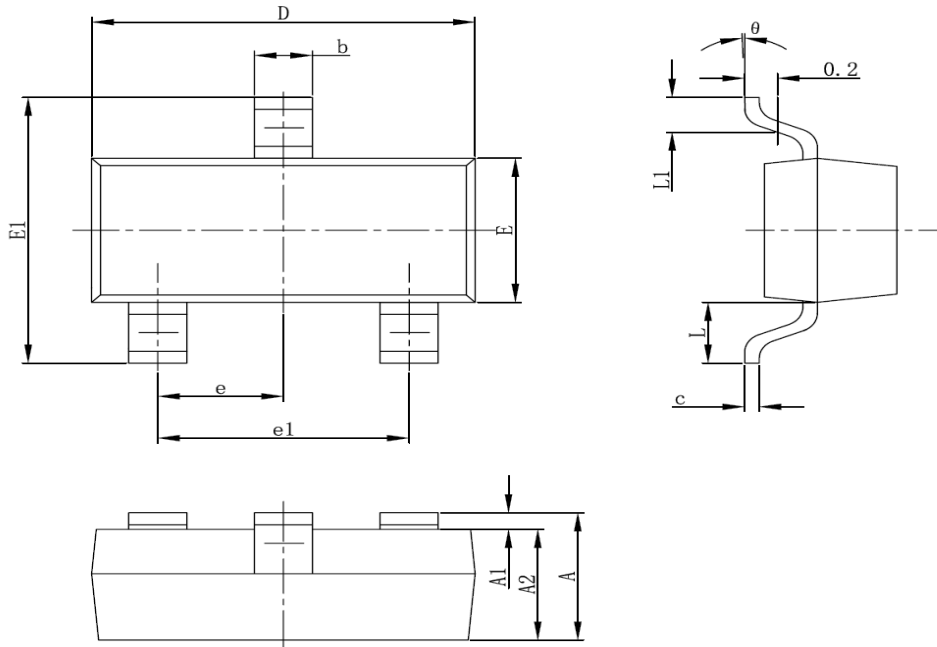
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)



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SOT-23 PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°



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