



# SPP2301D

## P-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPP2301D 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.

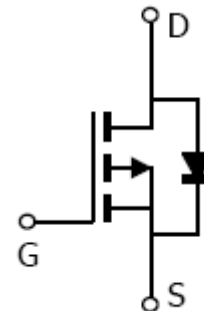
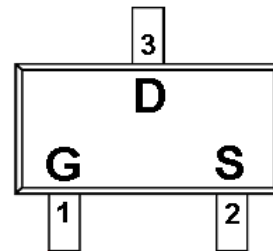
### FEATURES

- ◆ -20V/-2.4A,  $R_{DS(ON)}=128m\Omega@V_{GS}=-4.5V$
- ◆ -20V/-2.0A,  $R_{DS(ON)}=188m\Omega@V_{GS}=-2.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23 package design

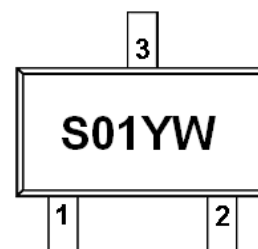
### APPLICATIONS

- 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
SPP2301DS23RG	SOT-23	S01YW
SPP2301DS23RGB	SOT-23	S01YW

- ※ Week Code : A ~ Z ( 1 ~ 26 ) ; a ~ z ( 27 ~ 52 )
- ※ SPP2301DS23RG : Tape Reel ; Pb- Free ;
- ※ SPP2301DS23RGB : Tape Reel ; Pb- Free ; Halogen -Free

### ABSOLUTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

Parameter	Symbol	Typical	Unit
Drain-Source Voltage	VDSS	-20	V
Gate -Source Voltage	VGSS	±12	V
Continuous Drain Current(TJ=150°C)	ID	TA=25°C	-2.4
		TA=70°C	-1.8
Pulsed Drain Current	IDM	-10	A
Continuous Source Current(Diode Conduction)	IS	-1.6	A
Power Dissipation	PD	TA=25°C	1.25
		TA=70°C	0.8
Operating Junction Temperature	TJ	-55/150	°C
Storage Temperature Range	TSTG	-55/150	°C
Thermal Resistance-Junction to Ambient	RθJA	120	°C/W



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### ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

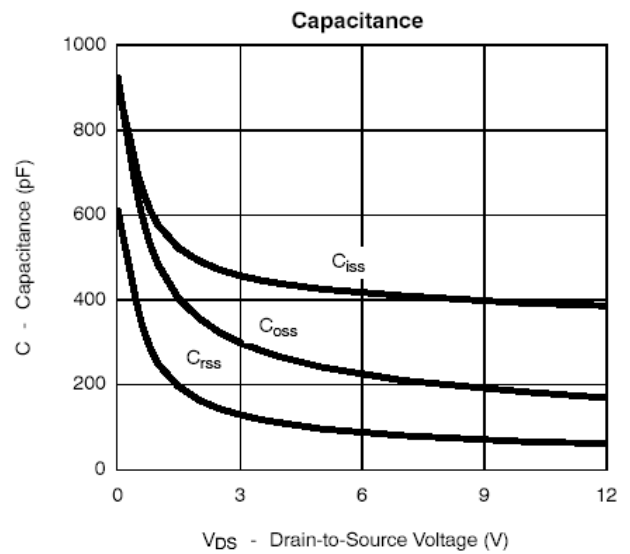
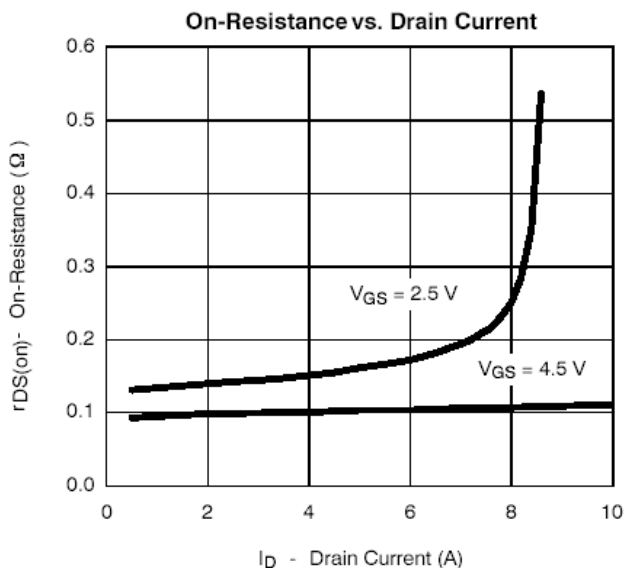
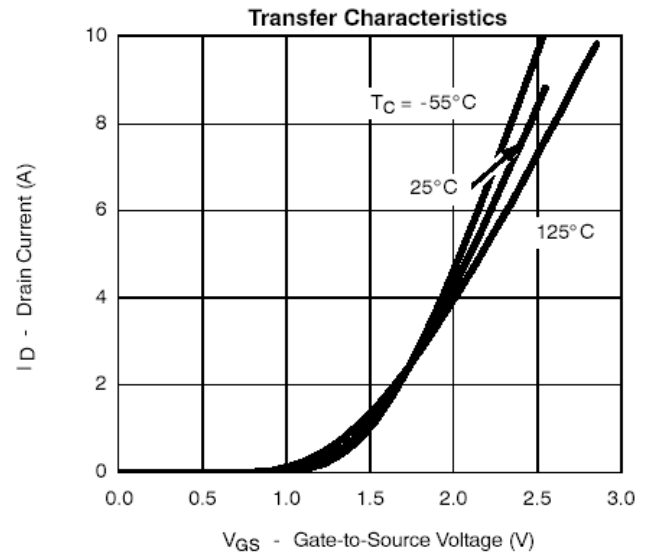
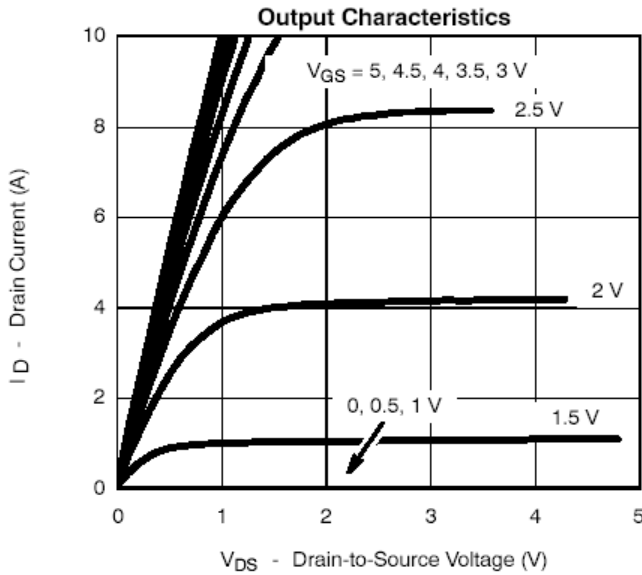
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.45		-1.5	
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-20V, V_{GS}=0V$			-1	uA
		$V_{DS}=-20V, V_{GS}=0V$ $T_J=55^\circ C$			-10	
On-State Drain Current	$I_{D(on)}$	$V_{DS} \leq -5V, V_{GS}=-4.5V$	-6			A
		$V_{DS} \leq -5V, V_{GS}=-2.5V$	-3			
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-2.4A$		0.115	0.128	$\Omega$
		$V_{GS}=-2.5V, I_D=-2.0A$		0.165	0.188	
Forward Transconductance	$g_{fs}$	$V_{DS}=-5V, I_D=-2.8A$		6.5		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.6A, V_{GS}=0V$		-0.8	-1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-6V, V_{GS}=-4.5V$ $I_D=-2.4A$		4.8	8	nC
Gate-Source Charge	$Q_{gs}$			0.75		
Gate-Drain Charge	$Q_{gd}$			1.3		
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, V_{GS}=0V$ $f=1MHz$		35		pF
Output Capacitance	$C_{oss}$			150		
Reverse Transfer Capacitance	$C_{rss}$			60		
Turn-On Time	$t_{d(on)}$	$V_{DD}=-6V, R_L=6\Omega$ $I_D=-1.0A, V_{GEN}=-4.5V$ $R_G=6\Omega$		10	20	ns
	$t_r$			32	45	
Turn-Off Time	$t_{d(off)}$			38	55	
	$t_f$			30	50	



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### TYPICAL CHARACTERISTICS

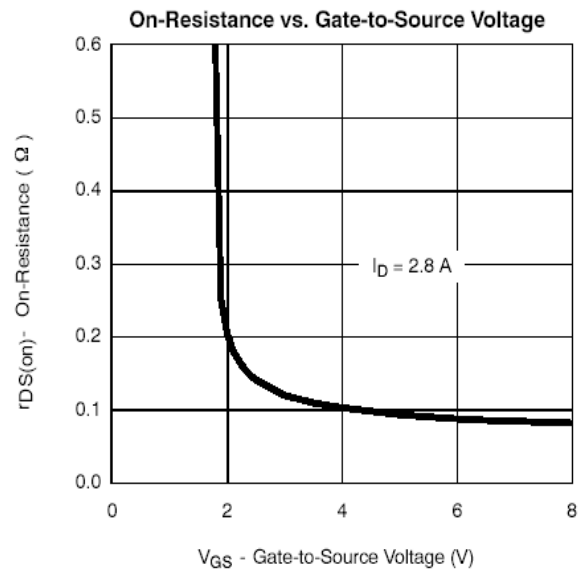
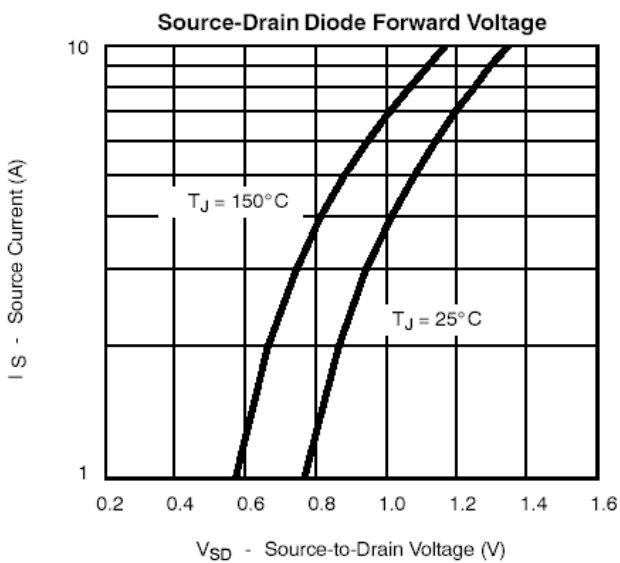
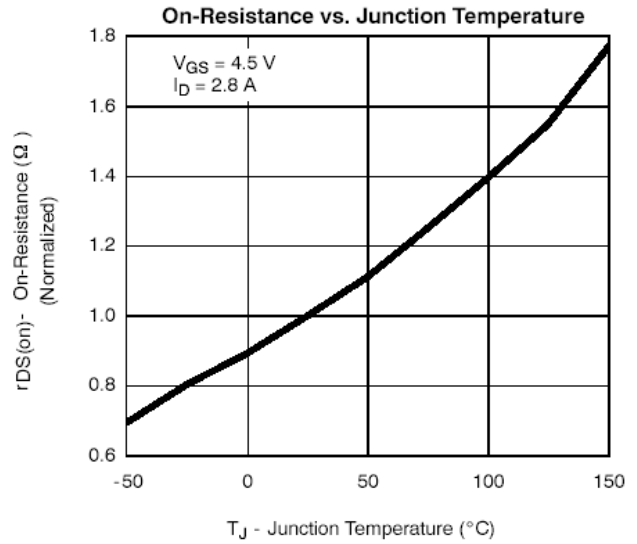
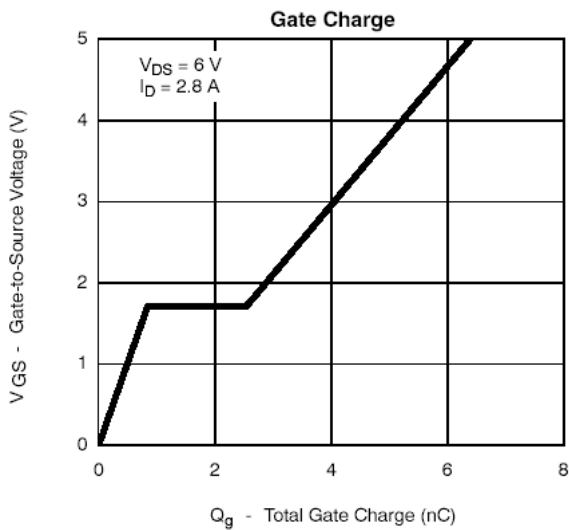




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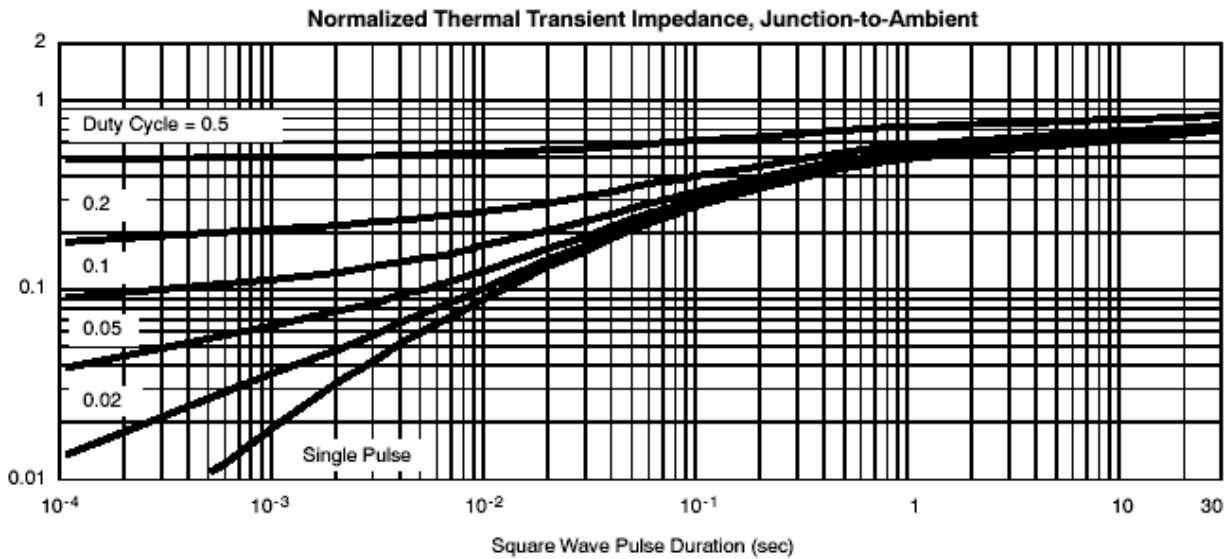
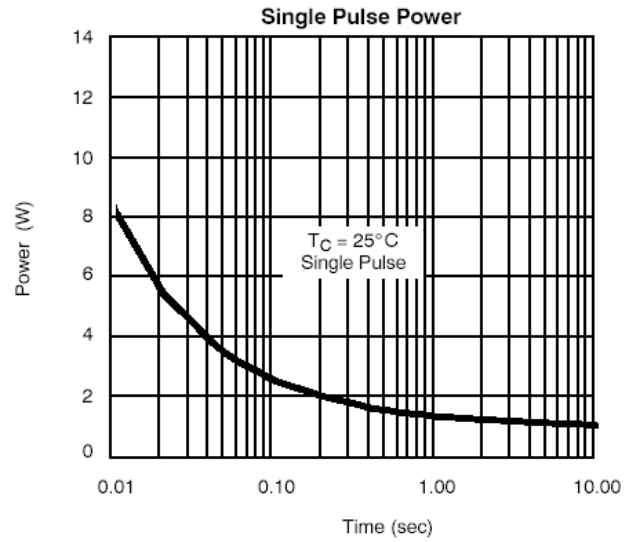
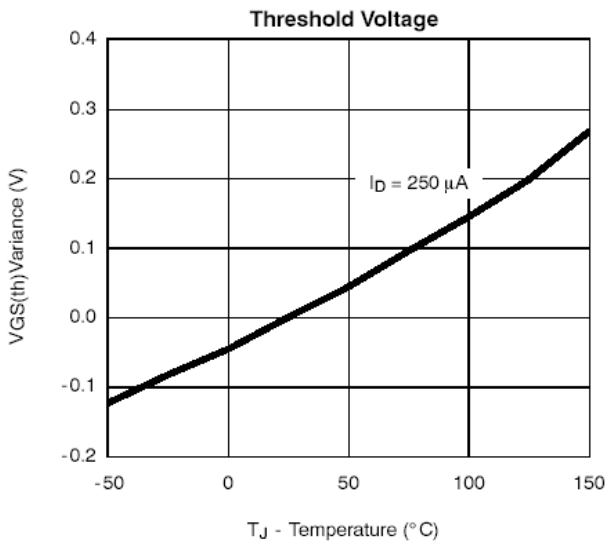
### TYPICAL CHARACTERISTICS





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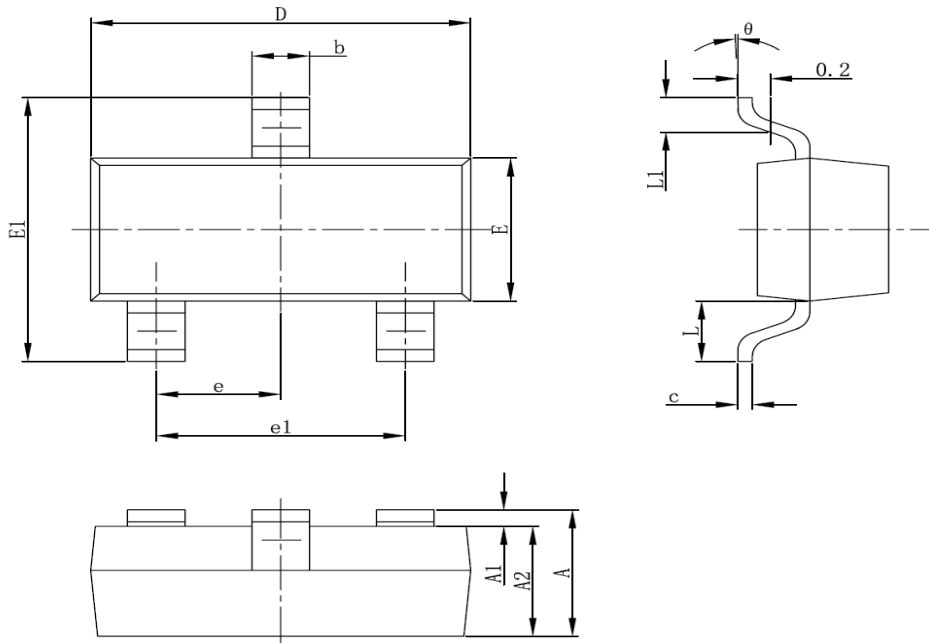




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### SOT-23 PACKAGE OUTLINE



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
$\theta$	0°	8°	0°	8°



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SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan, 115, R.O.C

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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