SPN5001
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN5001 is the N-Channel enhancement mode power field effect transistor which is produced with high voltage MOS technology. This device is particularly suited for reducing the no load consumption in PC power, TV power and Adapter.

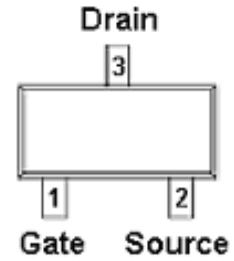
APPLICATIONS

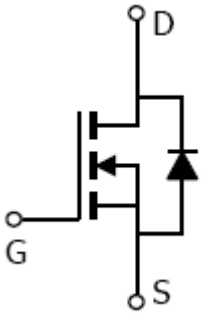
- Desk PC Power Supply
- AC adapter
- LCD TC Power Supply

FEATURES

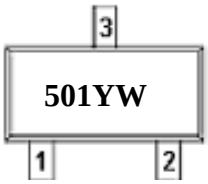
- 600V/27mA , $R_{DS(ON)}$=300Ω@V_{GS}=10V
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOT-23 package design

PIN CONFIGURATION(SOT-23)





PART MARKING



YW: Date Code

SPN5001
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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
SPN5001S23RGB	SOT-23	501

※ SPN5001S23RGB : Tape Reel ; Pb – Free ; Halogen – Free

ABSOULTE MAXIMUM RATINGS (T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	600	V
Gate –Source Voltage - Continuous		V_{GSS}	±20	V
Continuous Drain Current	T_A=25℃	I_D	27	mA
Power Dissipation	T_A=25℃	P_D	0.5	W
Operating Junction Temperature		T_J	-55 ~ 150	℃
Storage Temperature Range		T_{STG}	-55 ~ 150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	250	℃/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	600			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	3.0		4.5	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=480V,V_{GS}=0V T_J=25℃			25	uA
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=16mA			300	Ω
Forward Transconductance	Gfs	V_{DS} = 10 V, I_D =16mA		28		mS
Diode Forward Voltage	V_{SD}	I_S = 50mA, V_{GS} = 0V		0.8	1.5	V
Dynamic						
Total Gate Charge	Q_g	V_{DD} = 200 V, I_D = 0.1 A, V_{GS} = 10 V	1.8	2.5	3.2	nC
Gate-Source Charge	Q_{gs}			1.3		
Gate-Drain Charge	Q_{gd}			0.8		
Input Capacitance	C_{iss}	V_{DS} = 25 V, f = 1 MHz, V_{GS} = 0	8.8	12.5	16.2	pF
Output Capacitance	C_{oss}		7	10	13	
Reverse Transfer Capacitance	C_{rss}		5	7	9	
Turn-On Time	$t_{d(on)}$	V_{DS} = 300 V, I_D = 10m A R_G = 3.3Ω V_{GS} = 10.0 V R_D = 30kΩ		11.5		nS
	t_r			14.5		
Turn-Off Time	$t_{d(off)}$			14		
	t_f			120		

TYPICAL CHARACTERISTICS

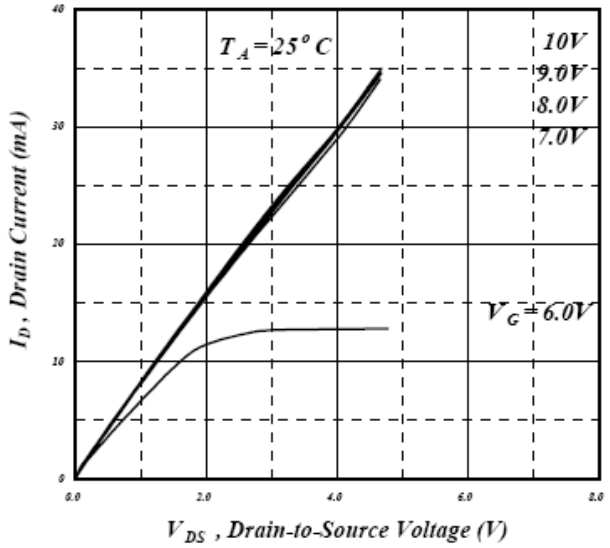

Fig 1. Typical Output Characteristics

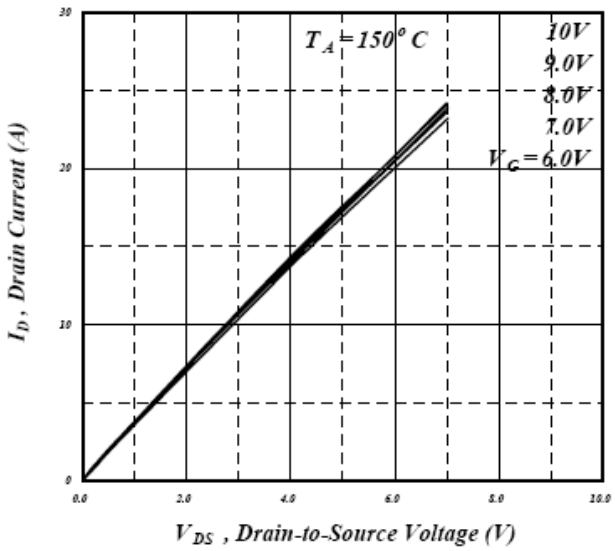

Fig 2. Typical Output Characteristics

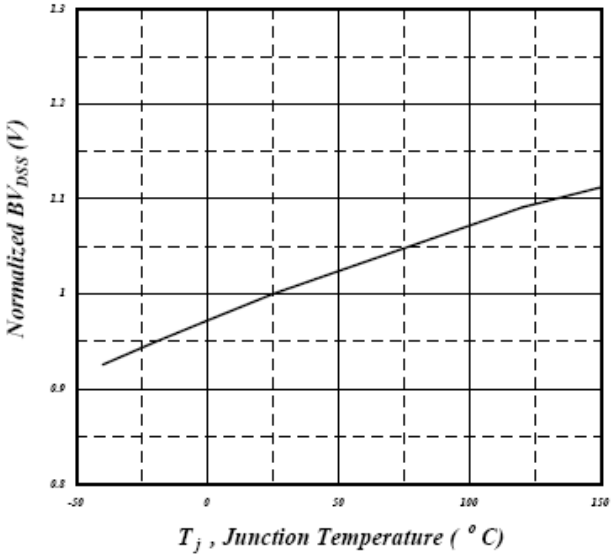

Fig 3. Normalized BV_{DSS} v.s. Junction Temperature

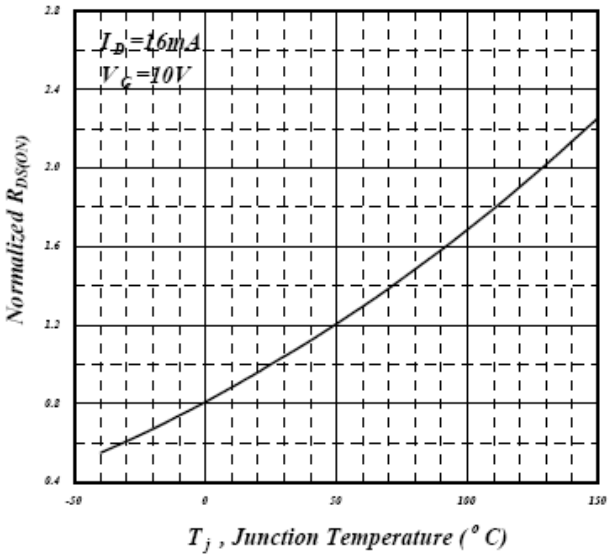

Fig 4. Normalized On-Resistance v.s. Junction Temperature

TYPICAL CHARACTERISTICS

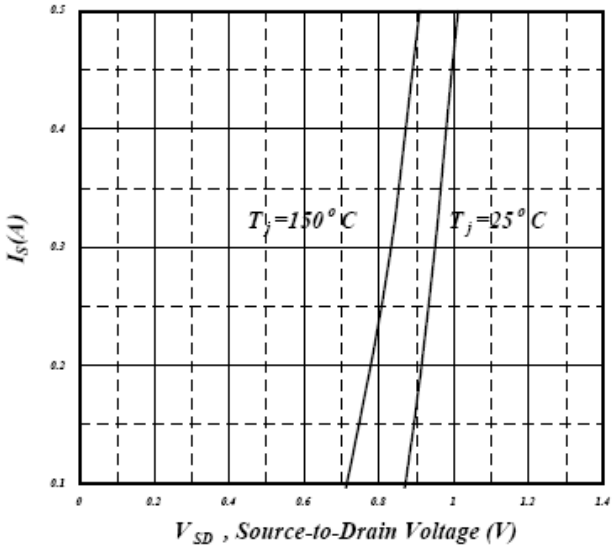

Fig 5. Forward Characteristic of Reverse Diode

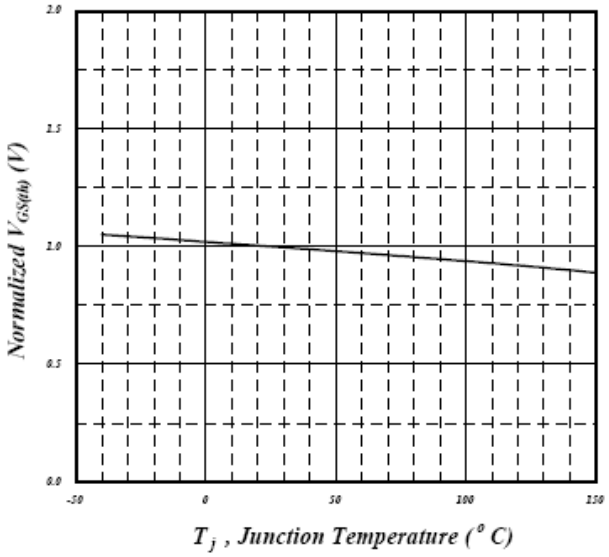

Fig 6. Gate Threshold Voltage v.s. Junction Temperature

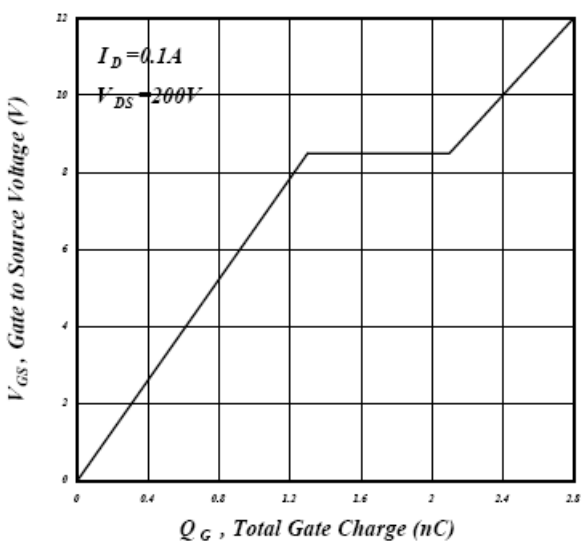

Fig 7. Gate Charge Characteristics

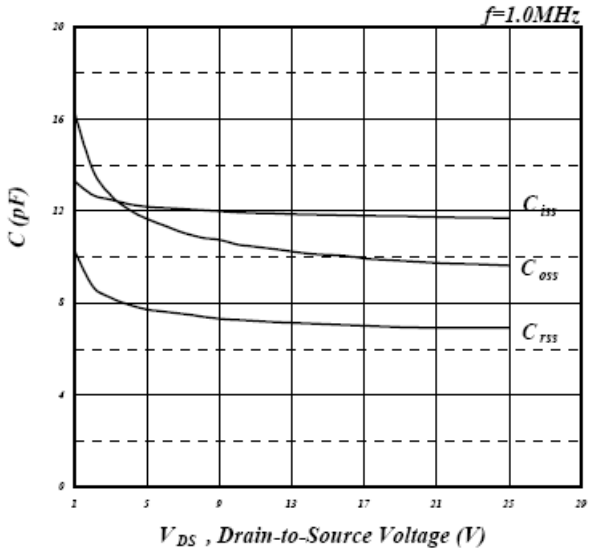

Fig 8. Typical Capacitance Characteristics

TYPICAL CHARACTERISTICS

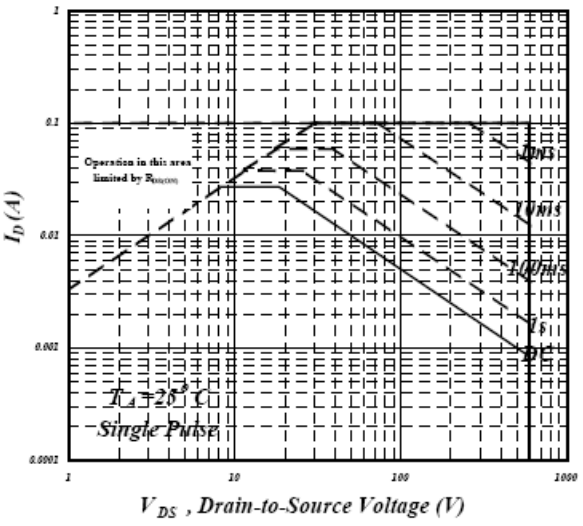

Fig 9. Maximum Safe Operating Area

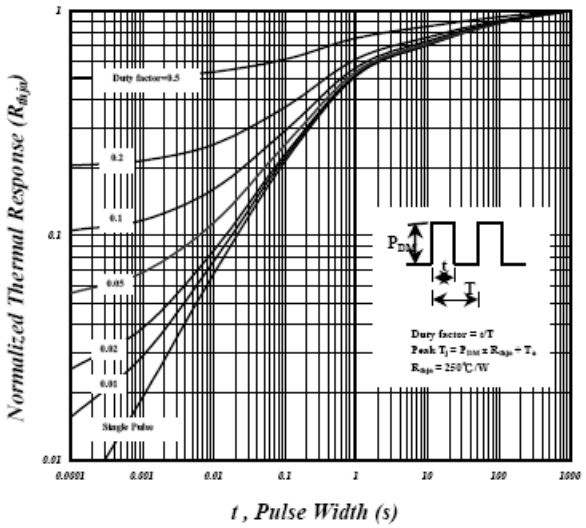

Fig 10. Effective Transient Thermal Impedance

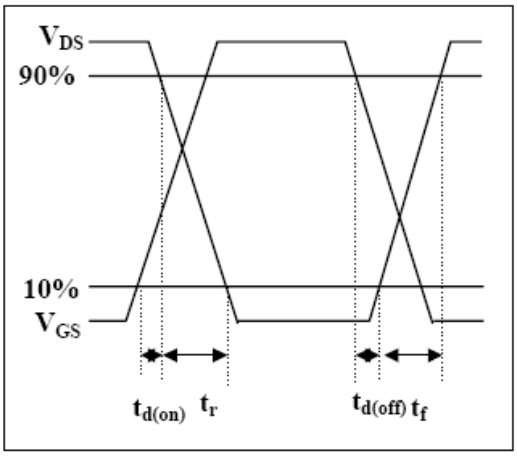

Fig 11. Switching Time Waveform

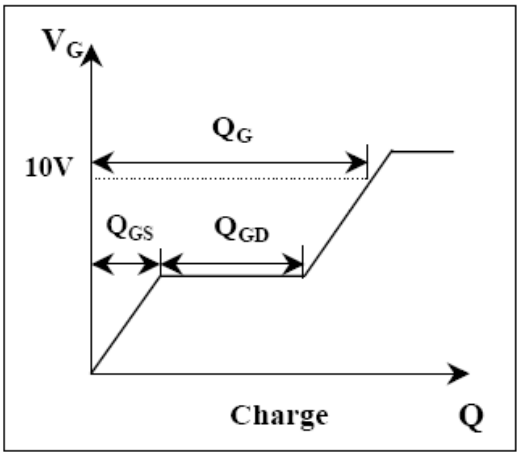

Fig 12. Gate Charge Circuit

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