SPN4402 N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN4402 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.

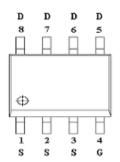
FEATURES

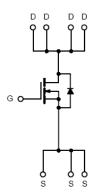
- 30V/12A,RDS(ON)= $13m\Omega@V$ GS=10V
- 30V/10A,RDS(ON)= $18m\Omega$ @VGS=4.5V
- ◆ Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- ♦ SOP-8 package design

APPLICATIONS

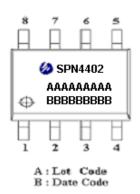
- Power Management in Note book
- Battery Powered System
- DC/DC Converter
- Load Switch
- LCD Display inverter

PIN CONFIGURATION(SOP-8)





PART MARKING



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
SPN4402S8RGB	SOP-8	SPN4402

[※] SPN4402S8RGB: 13" Tape Reel; Pb − Free; Halogen − Free

ABSOULTE MAXIMUM RATINGS

(TA=25°C Unless otherwise noted)

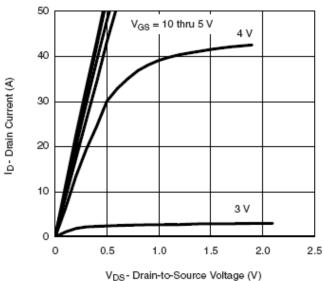
Parameter		Symbol	Typical	Unit
Drain-Source Voltage		Vdss	30	V
Gate –Source Voltage		VGSS	±20	V
Continuous Dusin Cumant/Tr-1509C	Ta=25°C	In	12	Λ
Continuous Drain Current(T _J =150°C)	Ta=70°C	- Id	10	A
Pulsed Drain Current	Ірм	30	A	
Continuous Source Current(Diode Conduction)		Is	2.3	A
D D' :	Ta=25°C	PD	2.5	***
Power Dissipation	Ta=70°C		1.6	W
Operating Junction Temperature		TJ	-55/150	°C
Storage Temperature Range		Tstg	-55/150	°C
Thermal Resistance-Junction to Ambient		RθJA	80	°C/W

ELECTRICAL CHARACTERISTICS

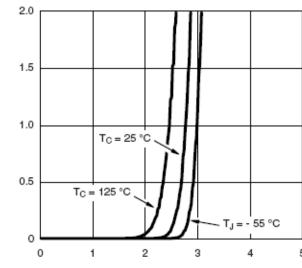
(Ta=25°C Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Тур	Max.	Unit
Static			<u>'</u>			
Drain-Source Breakdown Voltage	V(BR)DSS	VGS=0V,ID=250uA	30			1.7
Gate Threshold Voltage	VGS(th)	Vds=Vgs,Id=250uA	1.0		3.0	V
Gate Leakage Current	Igss	VDS=0V,VGS=±20V			±100	nA
		VDS=24V,VGS=0V			1	uA
Zero Gate Voltage Drain Current	Idss	V _{DS} =24V,V _{GS} =0V T _J =55°C			5	
On-State Drain Current	ID(on)	VDS≥5V,VGS =10V	25			A
	D	V _G s= 10V,I _D =12A		0.010	0.013	Ω
Drain-Source On-Resistance	RDS(on)	Vgs=4.5V,Id=10A		0.013	0.018	
Forward Transconductance	gfs	VDS=15V,ID=6.2A		13		S
Diode Forward Voltage	Vsd	Is=2.3A,VGS =0V		0.5	1.0	V
Dynamic						
Total Gate Charge	Qg	VDS=15V,VGS=10V ID= 2A		10	18	nC
Gate-Source Charge	Qgs			2.8		
Gate-Drain Charge	Qgd	ID- ZA		2.0		
Input Capacitance	Ciss			850		
Output Capacitance	Coss	V _{DS} =15V _{GS} =0V f=1MHz		158		pF
Reverse Transfer Capacitance	Crss			120		
Turn-On Time	td(on)			10	15	
	tr	$V_{DD}=15V,RL=15\Omega$		4	12	
Turn-Off Time	td(off)	$I_D\equiv 5.0A, V_{GEN}=10V$ $R_G=1\Omega$		15	30	nS
	tf			10	15	

TYPICAL CHARACTERISTICS

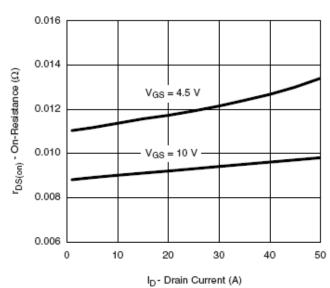


I_D - Drain Current (A)

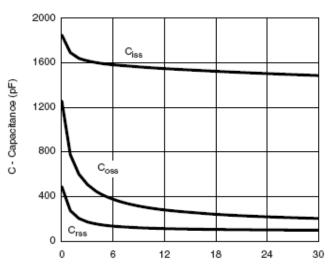


'DS- Drain-to-Source Voltage (V)
Output Characteristics

V_{GS}- Gate-to-Source Voltage (V) Transfer Characteristics



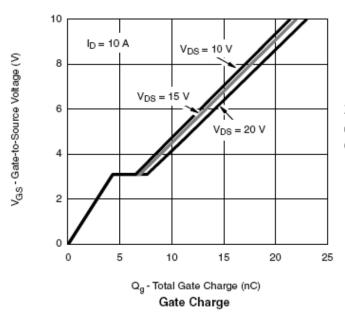
On-Resistance vs. Drain Current and Gate Voltage

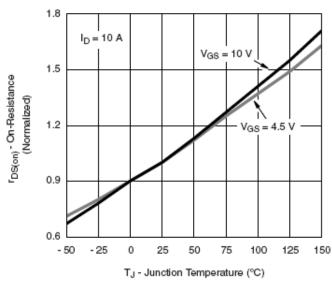


V_{DS}- Drain-to-Source Voltage (V)

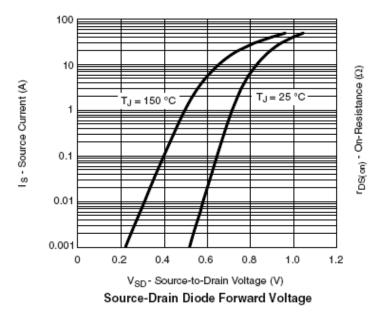
Capacitance

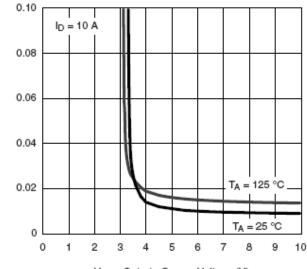
TYPICAL CHARACTERISTICS





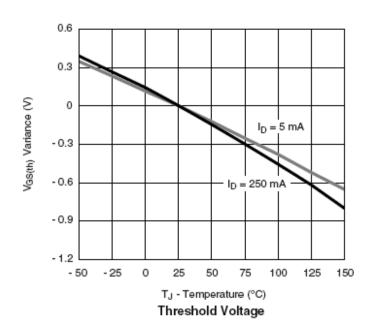


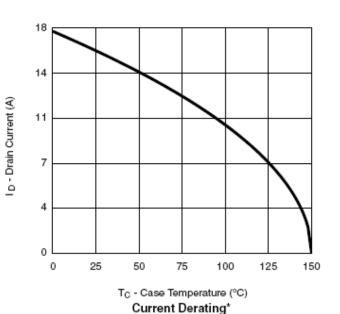


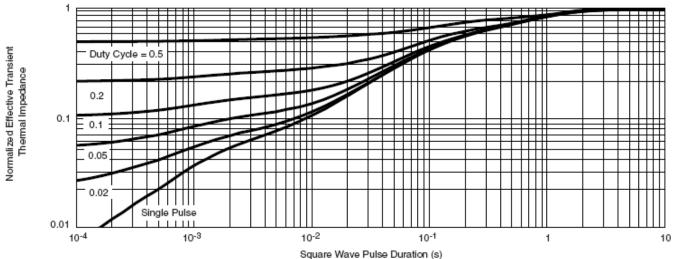


V_{GS} - Gate-to-Source Voltage (V)
On-Resistance vs. Gate-to-Source Voltage

TYPICAL CHARACTERISTICS







Normalized Thermal Transient Impedance, Junction-to-Case

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