SPN4972
N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN4972 is the Dual 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 .

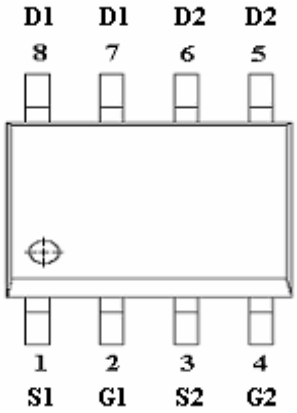
APPLICATIONS

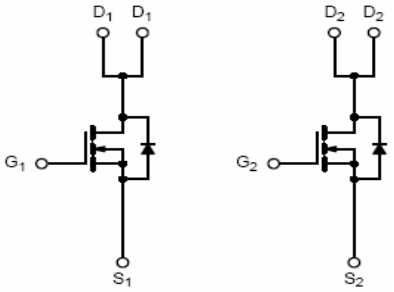
- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

FEATURES

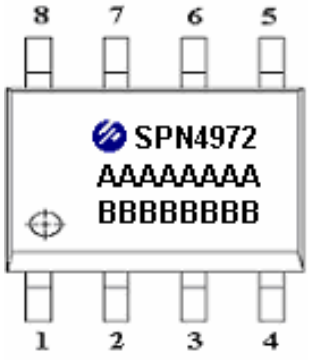
- 30V/8.5A,$R_{DS(ON)}$=14mΩ@V_{GS}=10V
- 30V/7.8A,$R_{DS(ON)}$=18mΩ@V_{GS}=4.5V
- Super high density cell design for extremely low $R_{DS\ (ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP–8 package design

PIN CONFIGURATION(SOP–8)





PART MARKING



A : Lot Code
B : Date Code

SPN4972
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PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN4972S8RGB	SOP-8	SPN4972
SPN4972S8TGB	SOP-8	SPN4972

※ SPN4972S8RGB : 13" Tape Reel ; Pb – Free; Halogen – Free
※ SPN4972S8TGB : Tube ; Pb – Free; Halogen – Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate –Source Voltage		V_{GSS}	±20	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	8.5	A
	T_A=70℃		7.5	
Pulsed Drain Current		I_{DM}	20	A
Continuous Source Current(Diode Conduction)		I_S	2.3	A
Power Dissipation	T_A=25℃	P_D	2.5	W
	T_A=70℃		1.6	
Operating Junction Temperature		T_J	-55/150	℃
Storage Temperature Range		T_{STG}	-55/150	℃
Thermal Resistance-Junction to Ambient		$R_{\theta JA}$	80	℃/W

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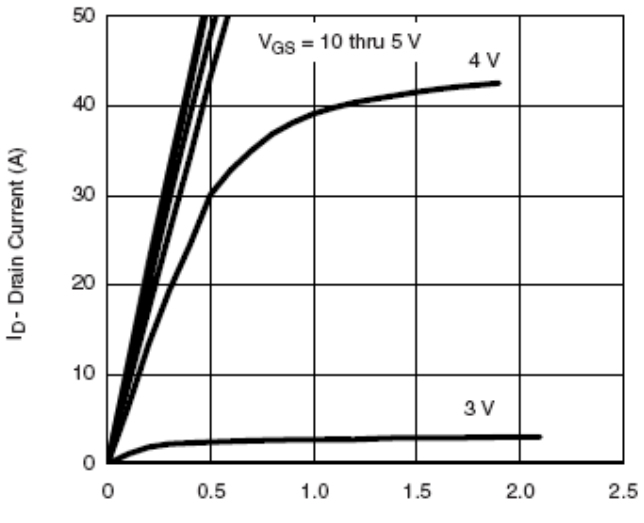
ELECTRICAL CHARACTERISTICS

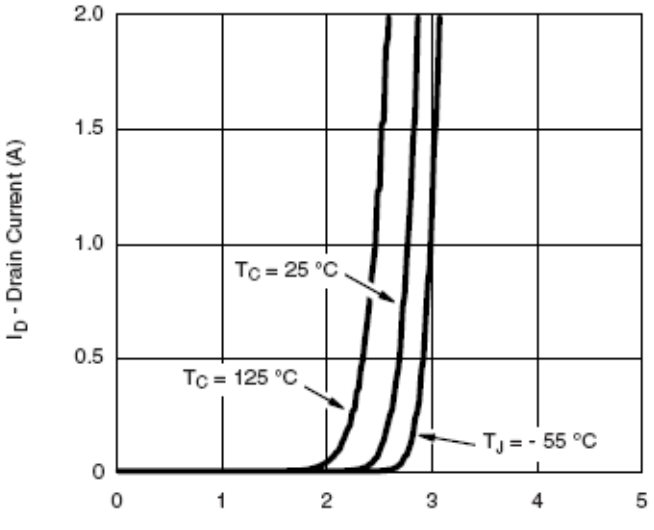
(T_A=25℃ Unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250uA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250uA	1.0		3.0	
Gate Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24V,V_{GS}=0V			1	uA
		V_{DS}=24V,V_{GS}=0V T_J=85℃			5	
On-State Drain Current	$I_{D(on)}$	V_{DS}≥5V,V_{GS} =10V	25			A
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=8.5A		0.012	0.014	Ω
		V_{GS}=4.5V,I_D=7.8A		0.015	0.018	
Forward Transconductance	gfs	V_{DS}=15V,I_D=6.2A		13		S
Diode Forward Voltage	V_{SD}	I_S=2.3A,V_{GS} =0V		0.8	1.2	V
Dynamic						
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=10V I_D=2A		16	24	nC
Gate-Source Charge	Q_{gs}			4.2		
Gate-Drain Charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	V_{DS}=15V_{GS}=0V f=1MHz		1350		pF
Output Capacitance	C_{oss}			258		
Reverse Transfer Capacitance	C_{rss}			150		
Turn-On Time	$t_{d(on)}$	V_{DD}=15V,R_L=15Ω I_D=5.0A,V_{GEN}=10V R_G=1Ω		15	20	nS
	t_r			6	16	
Turn-Off Time	$t_{d(off)}$			20	40	
	t_f			12	20	

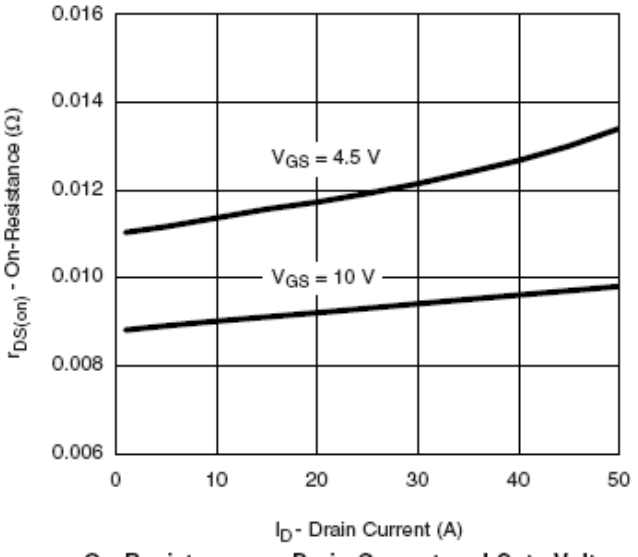
TYPICAL CHARACTERISTICS



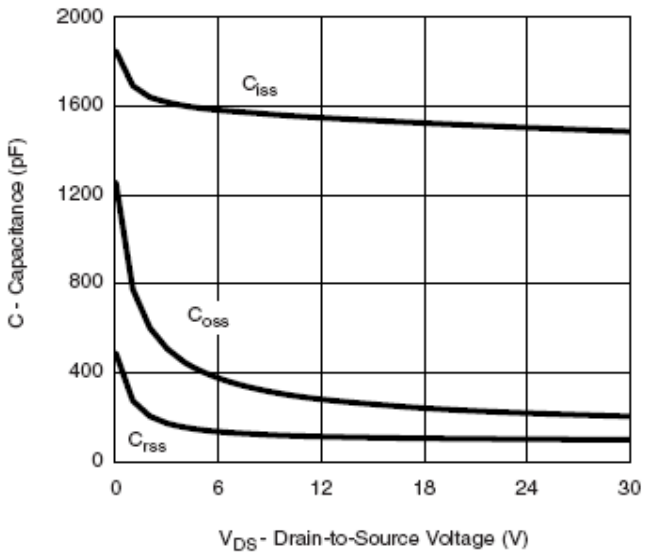
Output Characteristics



Transfer Characteristics

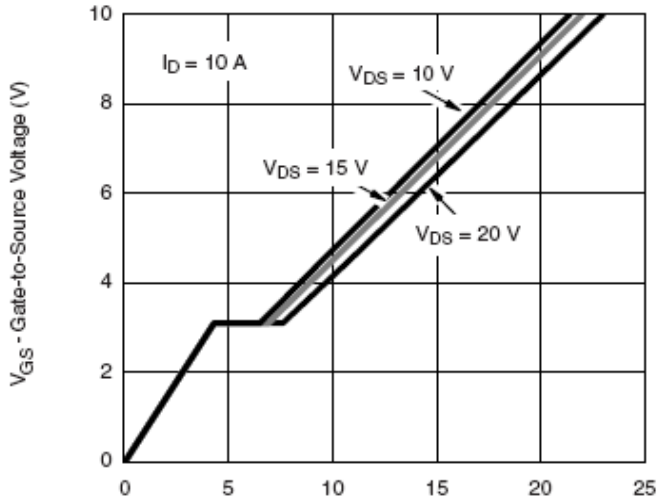


On-Resistance vs. Drain Current and Gate Voltage

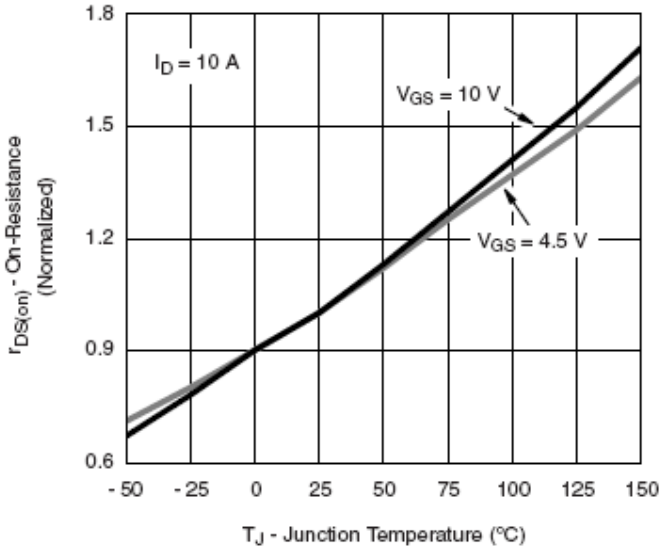


Capacitance

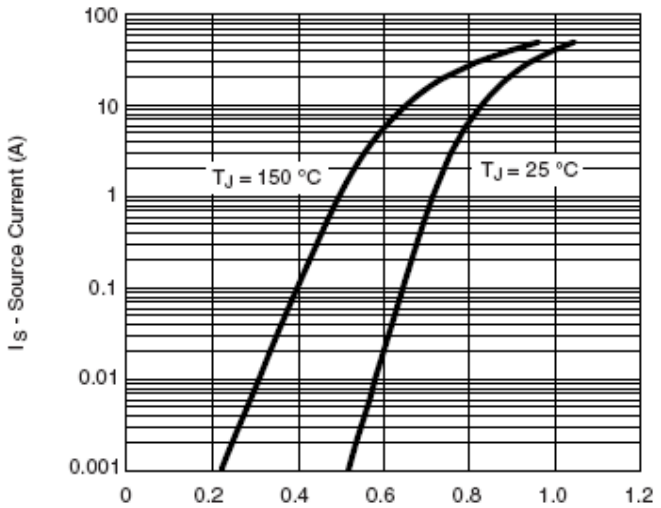
TYPICAL CHARACTERISTICS



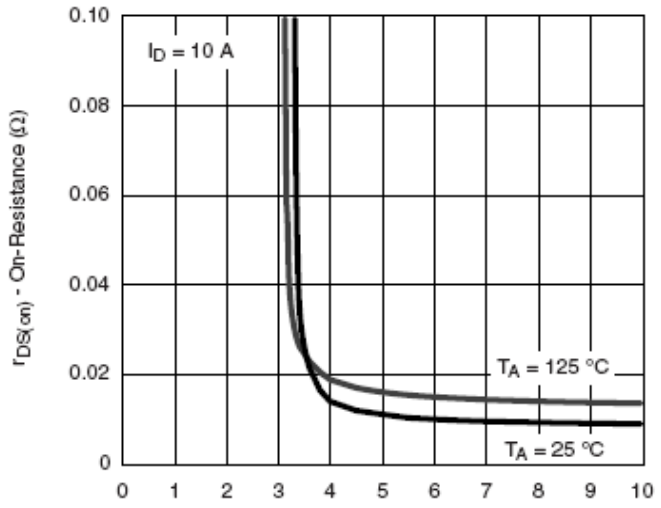
Gate Charge



On-Resistance vs. Junction Temperature

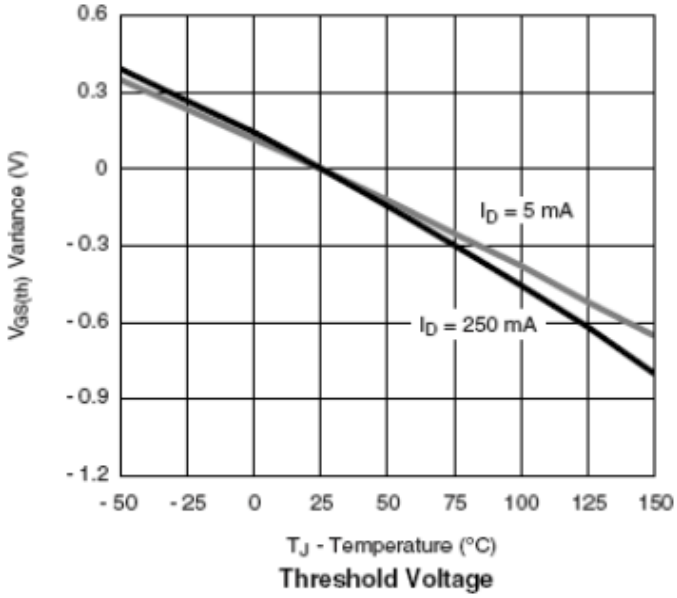


Source-Drain Diode Forward Voltage

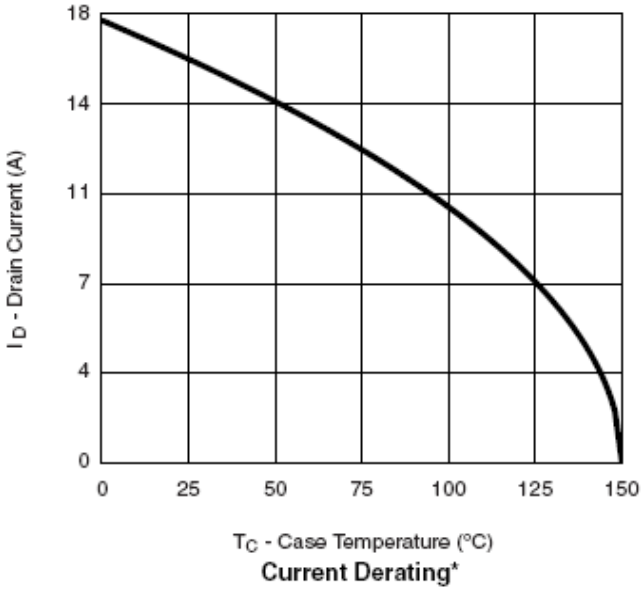


On-Resistance vs. Gate-to-Source Voltage

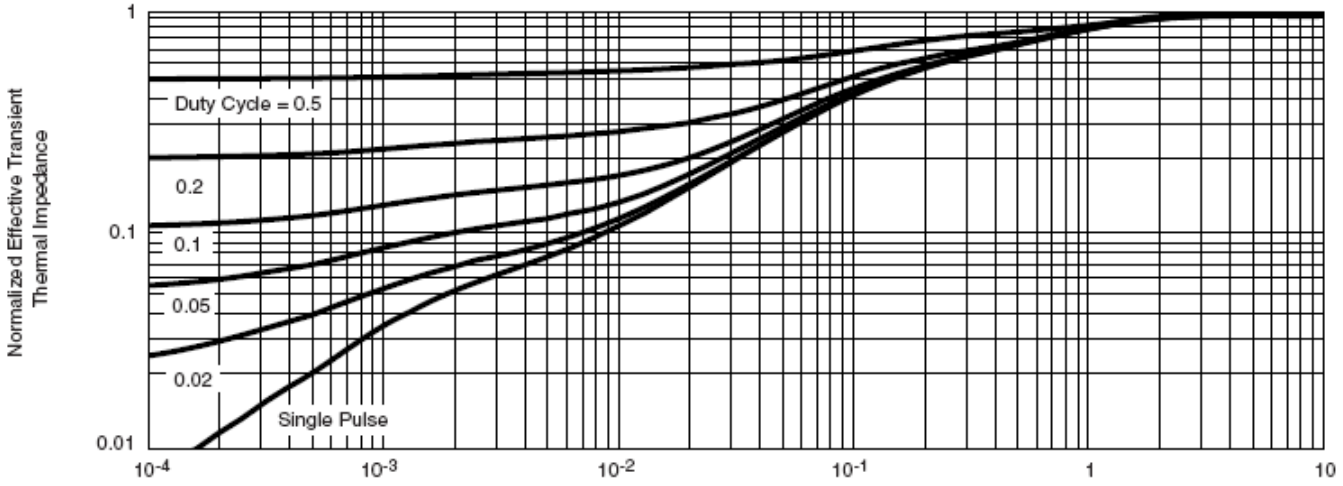
TYPICAL CHARACTERISTICS



Threshold Voltage



Current Derating*



Normalized Thermal Transient Impedance, Junction-to-Case

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