SPN8205W

Common-Drain Dual N-Channel Enhancement Mode MOSFET

DESCRIPTION

The SPN8205W is the Common-Drain 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 .

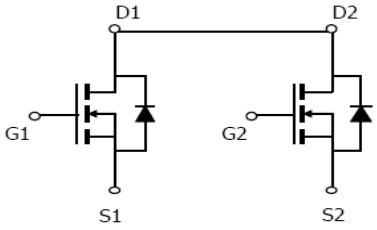
FEATURES

- 20V/5.0A,$R_{DS(ON)}$= 24mΩ@V_{GS}= 4.5V
- 20V/3.0A,$R_{DS(ON)}$= 34mΩ@V_{GS}= 2.5V
- Super high density cell design for extremely low RDS (ON)
- Exceptional on-resistance and maximum DC current capability
- TSSOP – 8P package design

APPLICATIONS

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

PIN CONFIGURATION(TSSOP – 8P)



PART MARKING

A : Lot Code
B : Date Code

SPN8205W

Common-Drain Dual N-Channel Enhancement Mode MOSFET

PIN DESCRIPTION

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

ORDERING INFORMATION

Part Number	Package	Part Marking
SPN8205WTS8RGB	TSSOP- 8P	8205W

※ SPN8205WTS8RGB : 13" Tape Reel ; Pb – Free ; Halogen - Free

ABSOULTE MAXIMUM RATINGS

(T_A=25℃ Unless otherwise noted)

Parameter		Symbol	Typical	Unit
Drain-Source Voltage		V_{DSS}	20	V
Gate –Source Voltage		V_{GSS}	±8	V
Continuous Drain Current(T_J=150℃)	T_A=25℃	I_D	5.0	A
	T_A=70℃		4.0	
Pulsed Drain Current		I_{DM}	20	A
Continuous Source Current(Diode Conduction)		I_S	2.3	A
Power Dissipation	T_A=25℃	P_D	1.5	W
	T_A=70℃		0.9	
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)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V, I_D=5A	-	-	24	mΩ
		V_{GS}=2.5V, I_D=3A	-	-	34	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.25	-	1	V
g_{fs}	Forward Transconductance	V_{DS}=5V, I_D=5A	-	18	-	S
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V	-	-	10	uA
I_{GSS}	Gate-Source Leakage	V_{GS}= ±8V, V_{DS}=0V	-	-	±100	nA
Q_g	Total Gate Charge[2]	I_D=5A	-	7.2	11.5	nC
Q_{gs}	Gate-Source Charge	V_{DS}=16V	-	0.6	-	nC
Q_{gd}	Gate-Drain ("Miller") Charge	V_{GS}=4.5V	-	3.4	-	nC
$t_{d(on)}$	Turn-on Delay Time[2]	V_{DS}=10V	-	6.2	-	ns
t_r	Rise Time	I_D=1A	-	10	-	ns
$t_{d(off)}$	Turn-off Delay Time	R_G=3.3Ω,V_{GS}=5V	-	15	-	ns
t_f	Fall Time	R_D=10Ω	-	5	-	ns
C_{iss}	Input Capacitance	V_{GS}=0V	-	275	440	pF
C_{oss}	Output Capacitance	V_{DS}=20V	-	95	-	pF
C_{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	85	-	pF
R_g	Gate Resistance	f=1.0MHz	-	2.2	-	Ω

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{SD}	Forward On Voltage[2]	I_S=0.7A, V_{GS}=0V	-	-	1.2	V
t_{rr}	Reverse Recovery Time[2]	I_S=2A, V_{GS}=0V,	-	18.5	-	ns
Q_{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	9	-	nC

TYPICAL CHARACTERISTICS

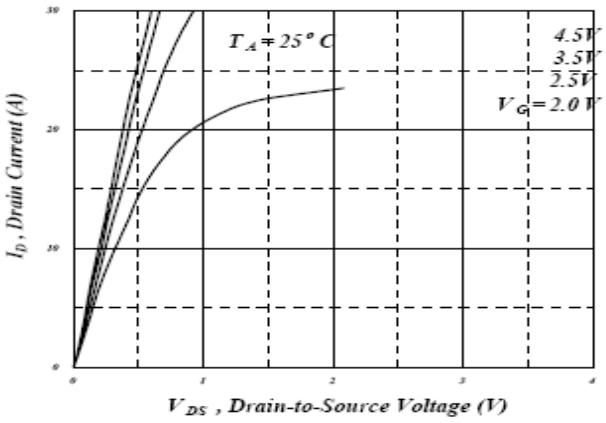


Fig 1. Typical Output Characteristics

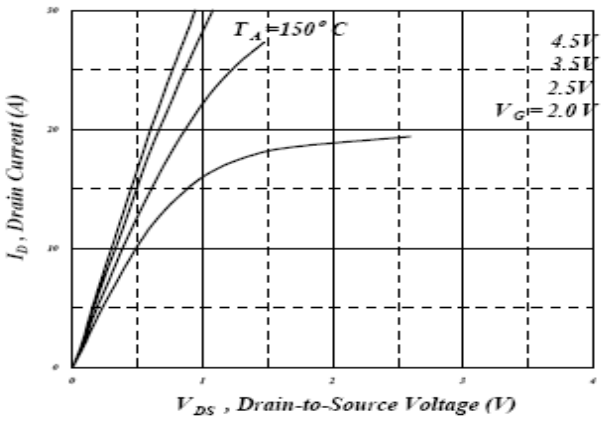


Fig 2. Typical Output Characteristics

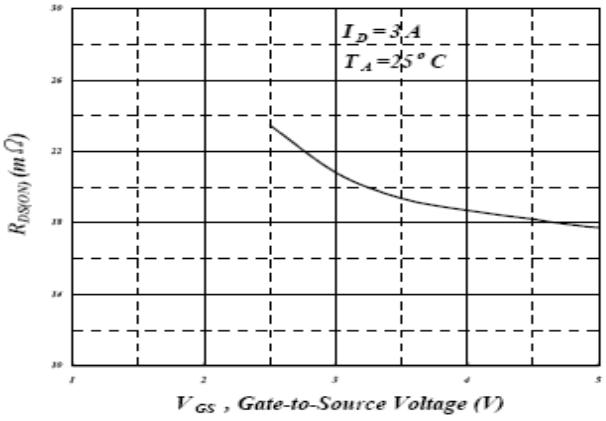


Fig 3. On-Resistance v.s. Gate Voltage

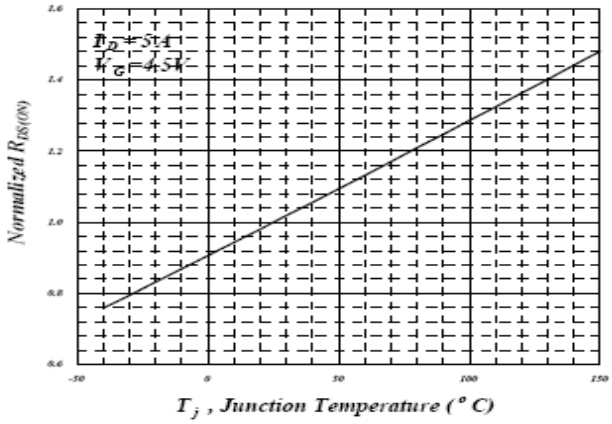


Fig 4. Normalized On-Resistance v.s. Junction Temperature

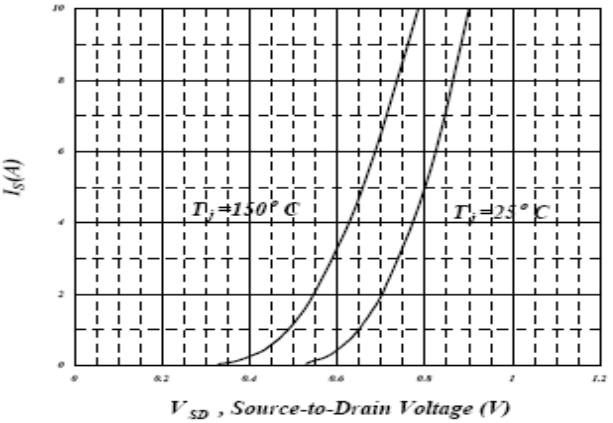


Fig 5. Forward Characteristic of Reverse Diode

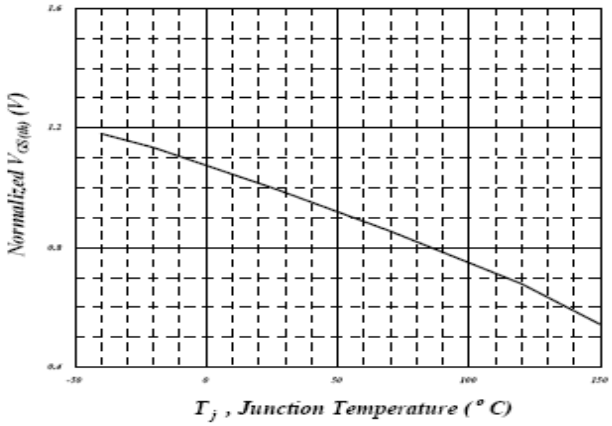


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

TYPICAL CHARACTERISTICS

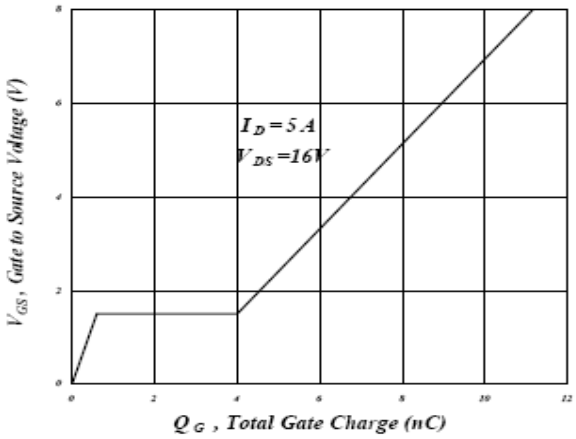


Fig 7. Gate Charge Characteristics

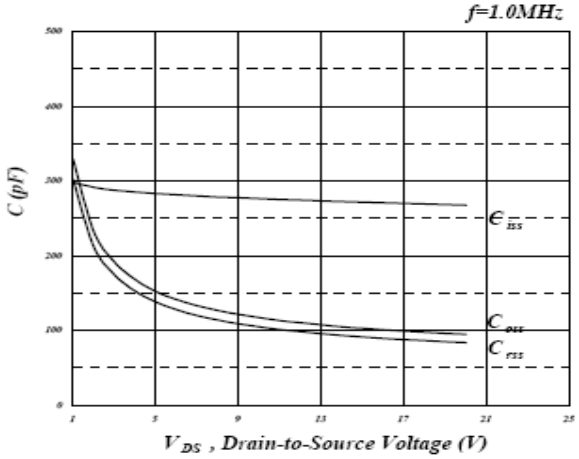


Fig 8. Typical Capacitance Characteristics

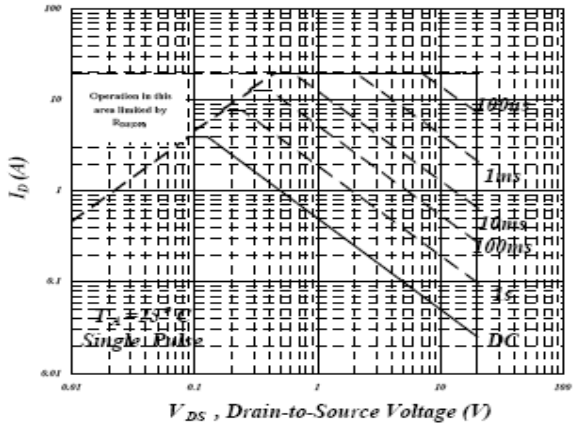


Fig 9. Maximum Safe Operating Area

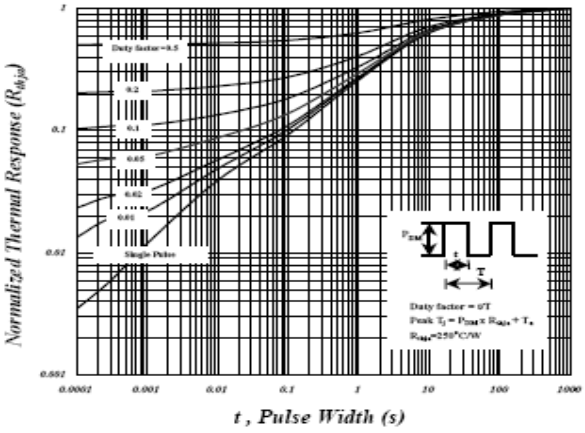


Fig 10. Effective Transient Thermal Impedance

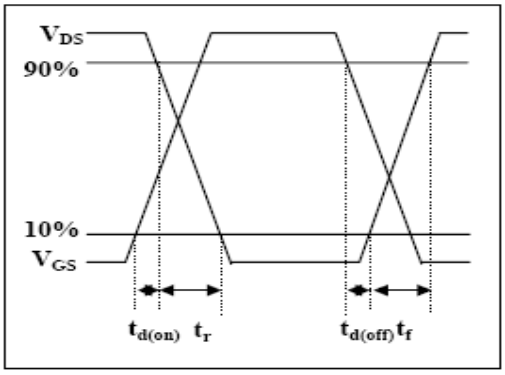


Fig 11. Switching Time Waveform

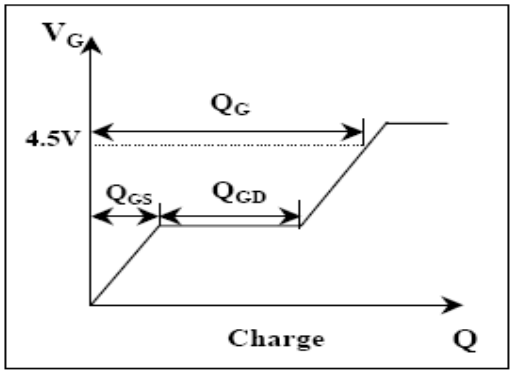
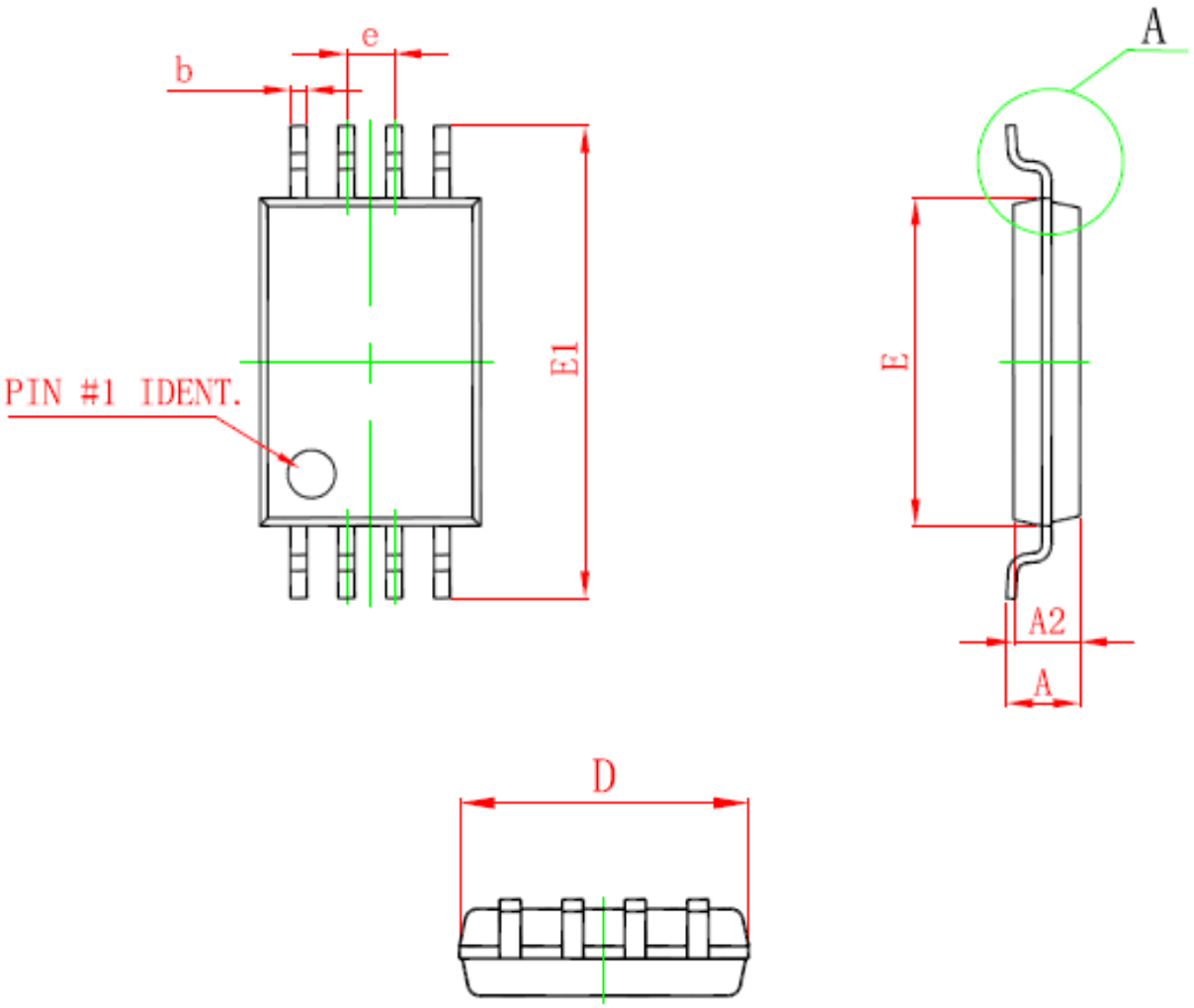


Fig 12. Gate Charge Waveform

TSSOP- 8P PACKAGE OUTLINE



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.100		0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25 (TYP)		0.01 (TYP)	
θ	1°	7°	1°	7°

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