WSP8205A

Dual N-Channel MOSFET

General Description

The WSP8205A is the highest performance trench N-ch MOSFET with extreme high cell density , which provide excellent R_{DSON} and gate charge for most of the small power switching and load switch applications.

The WSP8205A meet the RoHS and Green Product requirement with full function reliability approved.

Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent Cdv/dt effect decline
- Green Device Available

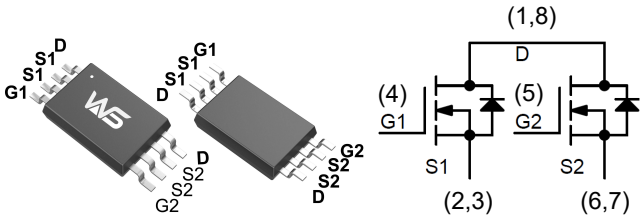
Product Summery

BV_{DSS}	R_{DSON}	I_D
20V	20mΩ	5.5A

Applications

- High Frequency Point-of-Load Synchronous Small power switching for MB/NB/UMPC/VGA
- Networking DC-DC Power System

TSSOP-8L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_c=25℃	Continuous Drain Current, V_{GS} @ 4.5V[1]	5.5	A
I_D@T_c=70℃	Continuous Drain Current, V_{GS} @ 4.5V[1]	5.2	A
I_{DM}	Pulsed Drain Current[2]	20	A
P_D@T_A=25℃	Total Power Dissipation[3]	1.25	W
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-ambient [1]	---	100	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	---	70	℃/W

Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
$\triangle BV_{DSS}/\triangle T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA	---	0.022	---	V/℃
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=10V , I_D=6A	18	20	27	mΩ
		V_{GS}=4.5V , I_D=4A	26	28	30	
		V_{GS}=3.1V , I_D=4A	28	32	35	
		V_{GS}=2.5V , I_D=4A	34	36	39	
		V_{GS}=1.8V , I_D=2A	38	42	55	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.4	0.7	1.0	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-2.33	---	mV/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±12V , V_{DS}=0V	---	---	±100	nA
gfs	Forward Transconductance	V_{DS}=5V , I_D=5A	---	25	---	S
R_g	Gate Resistance	V_{DS}=0V , V_{GS}=0V , f=1MHz	---	4	---	Ω
Q_g	Total Gate Charge (4.5V)	V_{DS}=10V , V_{GS}=4.5V , I_D=6A	---	8.8	11.9	nC
Q_{gs}	Gate-Source Charge		---	0.8	2.0	
Q_{gd}	Gate-Drain Charge		---	3.3	3.2	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=10V , V_{GEN}=4.5V , R_G=6Ω, I_D=1A ,R_L=10Ω.	---	5	10	ns
T_r	Rise Time		---	15	26	
$T_{d(off)}$	Turn-Off Delay Time		---	5	10	
T_f	Fall Time		---	30	55	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	550	---	pF
C_{oss}	Output Capacitance		---	100	---	
C_{rss}	Reverse Transfer Capacitance		---	85	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1,4]	V_G=V_D=0V , Force Current	---	---	1.5	A
I_{SM}	Pulsed Source Current[2,4]		---	---	20	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=1.5A , T_J=25℃	---	---	1.3	V
t_{rr}	Reverse Recovery Time	IF=6A , dI/dt=100A/μs , T_J=25℃	---	15	---	nS
Q_{rr}	Reverse Recovery Charge		---	7	---	nC

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper,t≦10sec.
2.The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3.The power dissipation is limited by 150℃ junction temperature
4.The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

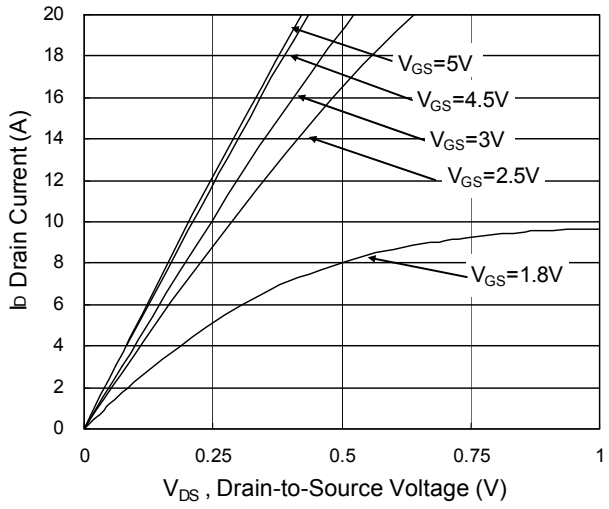


Fig.1 Typical Output Characteristics

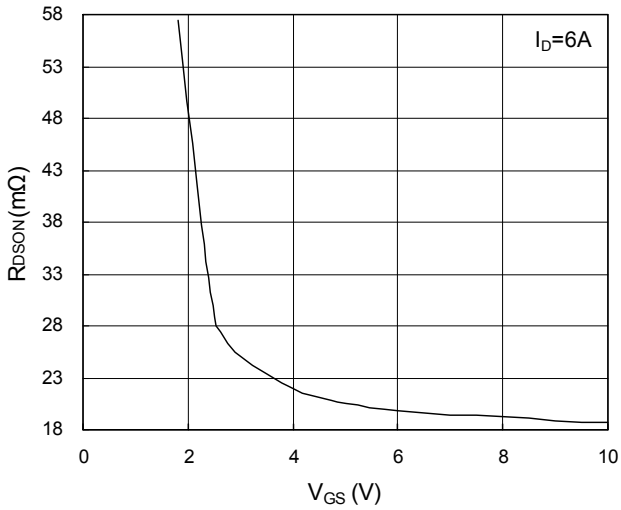


Fig.2 On-Resistance vs. Gate-Source

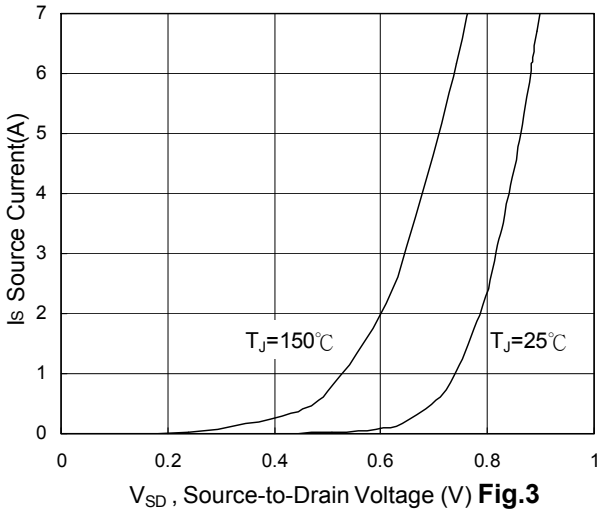


Fig.3 Forward Characteristics Of Reverse

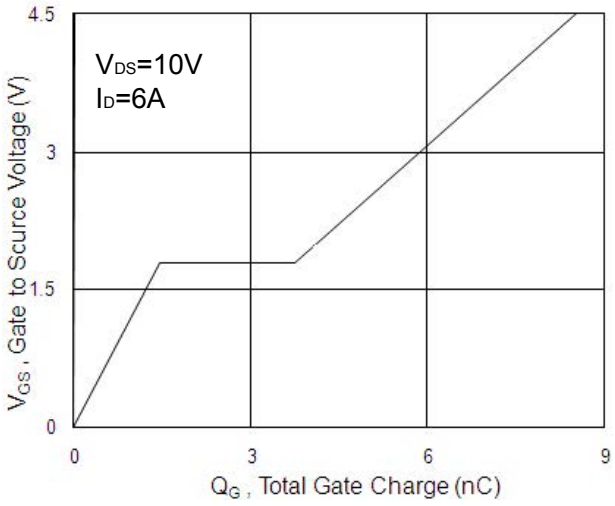


Fig.4 Gate-Charge Characteristics

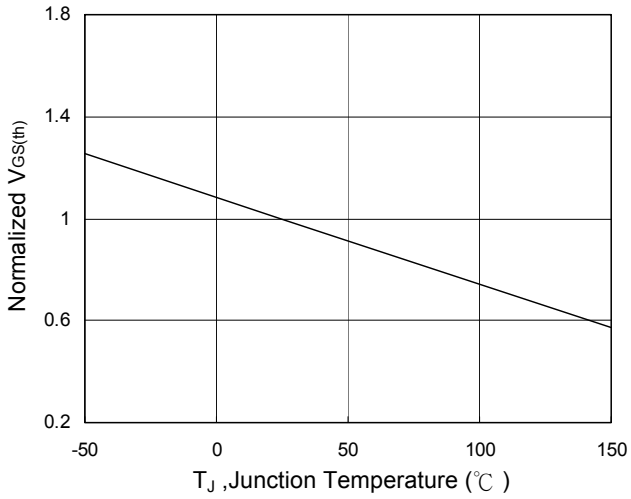


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

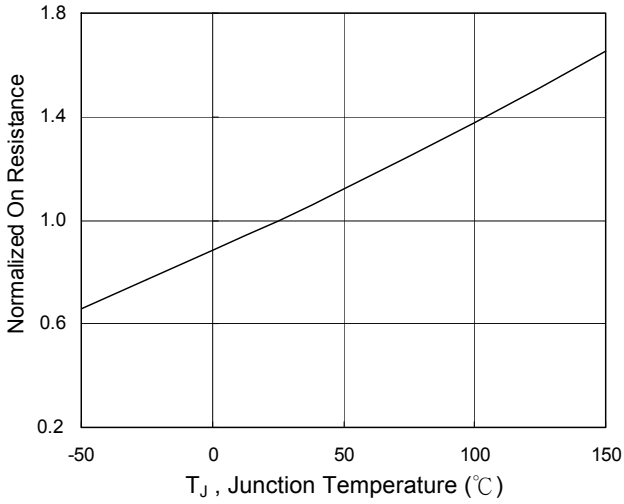


Fig.6 Normalized R_{DSON} vs. T_J

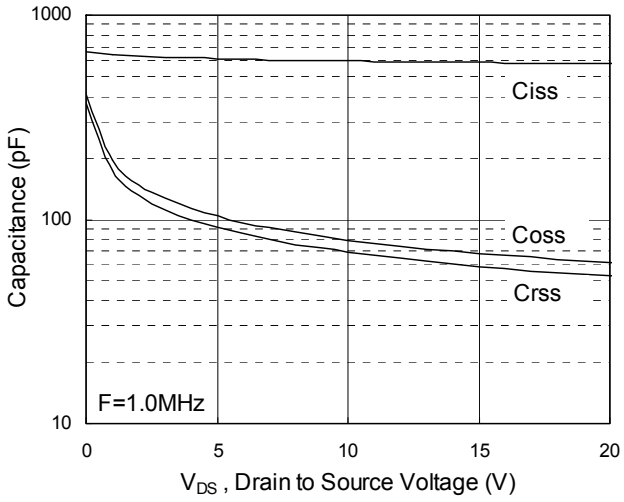


Fig.7 Capacitance

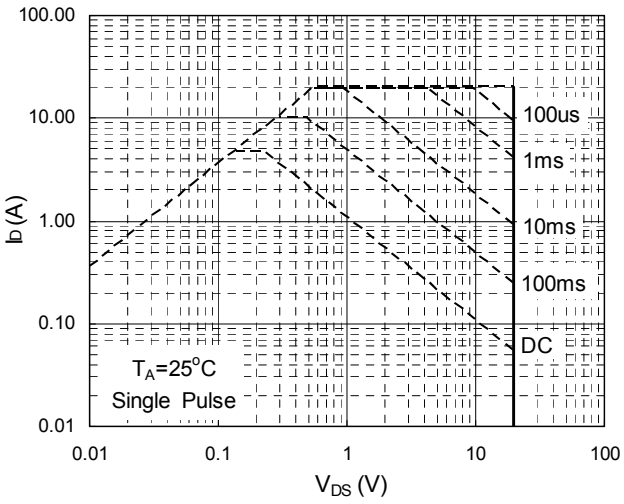


Fig.8 Safe Operating Area

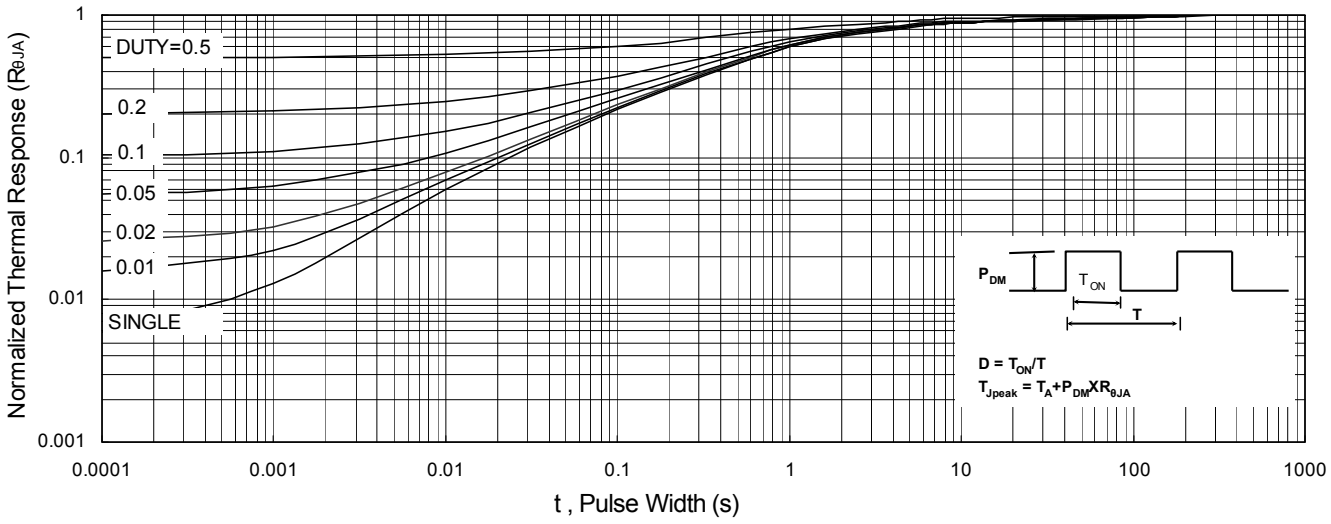


Fig.9 Normalized Maximum Transient Thermal Impedance

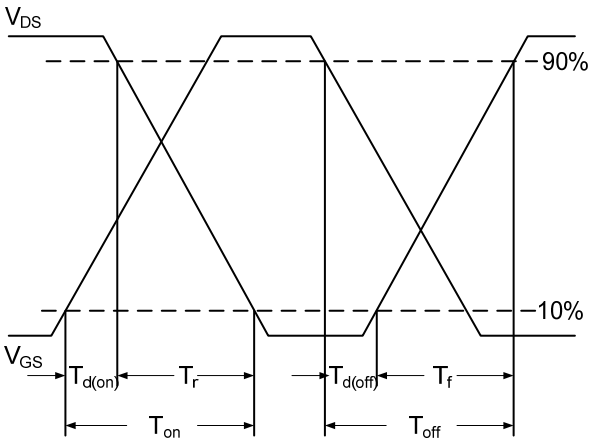


Fig.10 Switching Time Waveform

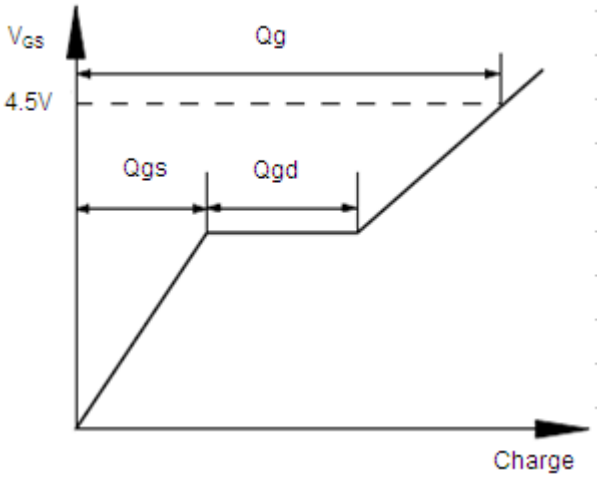
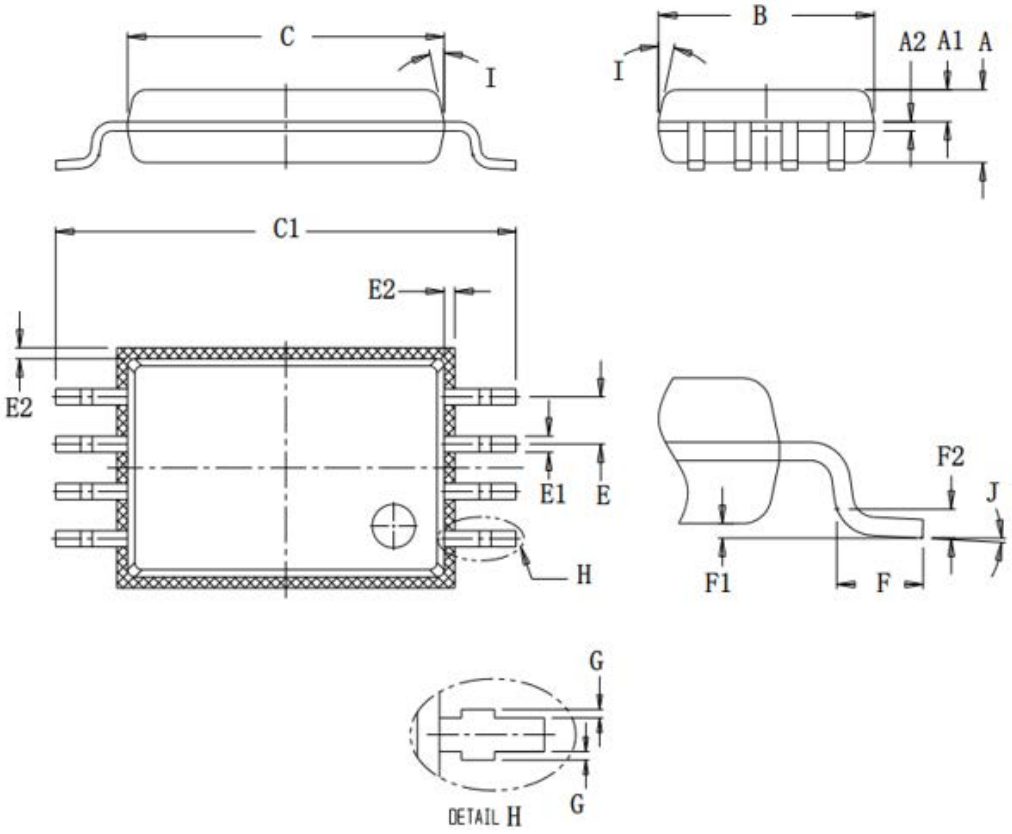


Fig.11 Gate Charge Waveform

Packaging information



COMMON DIMENSIONS CUNITS MEASURE=MILLIMETER			
SYMBOL	MIN	MID	MAX
A	0.95	1.00	1.05
A1	0.39	0.44	0.49
A2	-	0.127	-
B	2.95	3.00	3.05
C	4.35	4.40	4.45
C1	6.30	6.40	6.50
E	-	0.65TYP	-
E1	0.195	0.22	0.245
E2	-	0.12	-
F	0.5	0.60	0.7
F1	0	0.05	0.1
F2	-	0.2	-
G	-	0.075	-
I	10°	12°	14°
J	0°	3°	6°

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