



N-Channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The 8205A8 is the highest performance trench N-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications. The meet the RoHS and Product requirement with full function reliability approved.

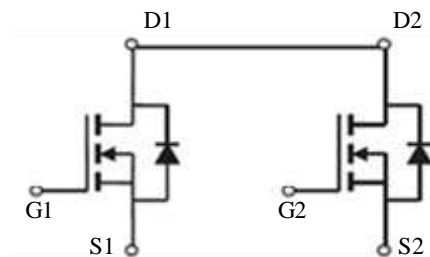
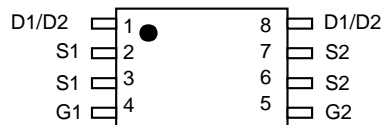
FEATURES

$V_{DS} = 20V, I_D = 6A$

$R_{DS(ON)} < 27\text{ m}\Omega @ V_{GS}=4.5V$

$R_{DS(ON)} < 37\text{ m}\Omega @ V_{GS}=2.5V$

Available in a 8-Pin TSSOP8 Package



Ordering Number	Package type
8205A8TSS	TSSOP-8L

Absolute Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	6	A
Drain Current Pulsed <small>(Note1)</small>	I_{DM}	25	A
Maximum Power Dissipation	P_D	1.5	W
Storage Temperature Range	T_{STG}	-55 To 150	$^{\circ}\text{C}$
Operating Junction Temperature Range	T_J	-55 To 150	$^{\circ}\text{C}$
Thermal Resistance, Junction-to-Ambient <small>(Note2)</small>	$R_{\theta JA}$	83	$^{\circ}\text{C}/\text{W}$



ELECTRICAL CHARACTERISTICS

(TA = 25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	20	21	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =19.5V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =4.5V, I _D =4.5A	-	21	27	mΩ
		V _{GS} =2.5V, I _D =3.5A	-	27	37	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =4.5A	-	10	-	S
Input Capacitance	C _{iss}	V _{DS} =8V, V _{GS} =0V, F=1.0MHz	-	600	-	PF
Output Capacitance	C _{oss}		-	330	-	PF
Reverse Transfer Capacitance	C _{rss}		-	140	-	PF
Turn-on Delay Time	t _{d(on)}	V _{DD} =10V, I _D =1A V _{GS} =4.5V, R _{GEN} =6Ω	-	10	20	nS
Turn-on Rise Time	t _r		-	11	25	nS
Turn-Off Delay Time	t _{d(off)}		-	35	70	nS
Turn-Off Fall Time	t _f		-	30	60	nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =6A, V _{GS} =4.5V	-	10	15	nC
Gate-Source Charge	Q _{gs}		-	2.3	-	nC
Gate-Drain Charge	Q _{gd}		-	1.5	-	nC
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =1.7A	-	0.75	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	1.7	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Characteristics

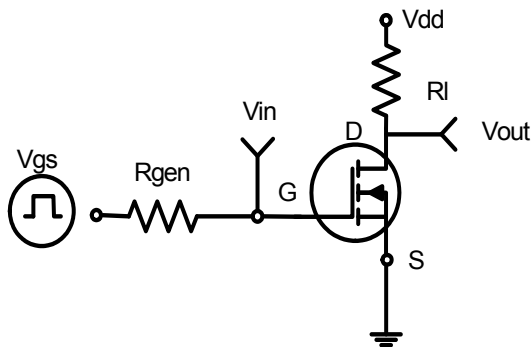


Fig.1 Switching Test Circuit

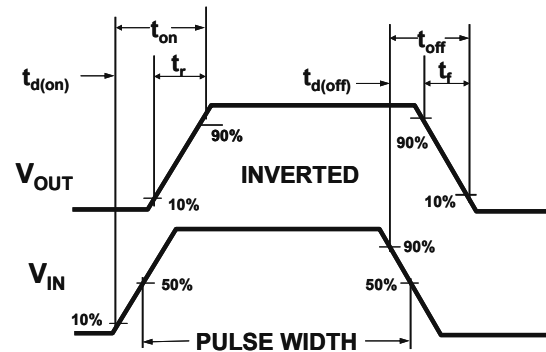


Fig.2 Switching Waveforms

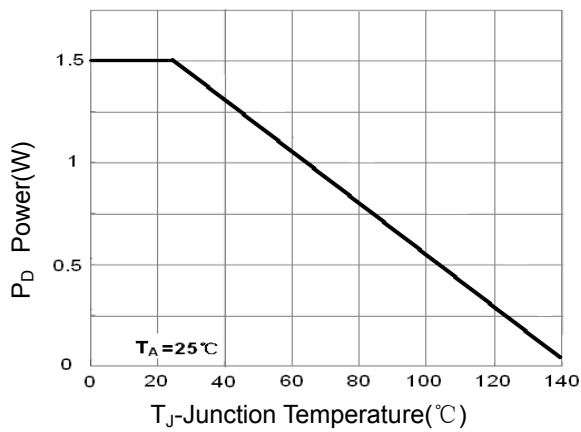


Fig.3 Power Dissipation

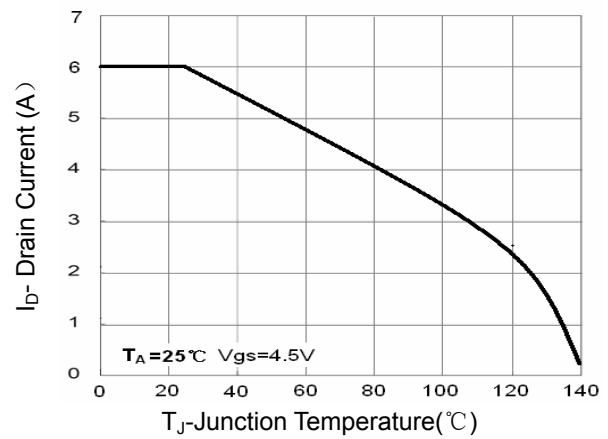


Fig.4 Drain Current

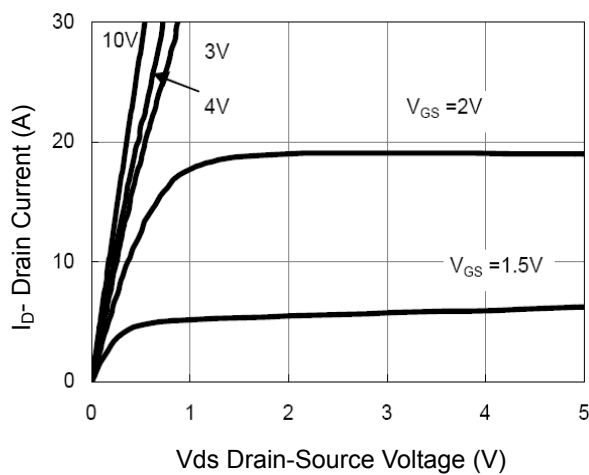


Fig.5 Output Characteristics

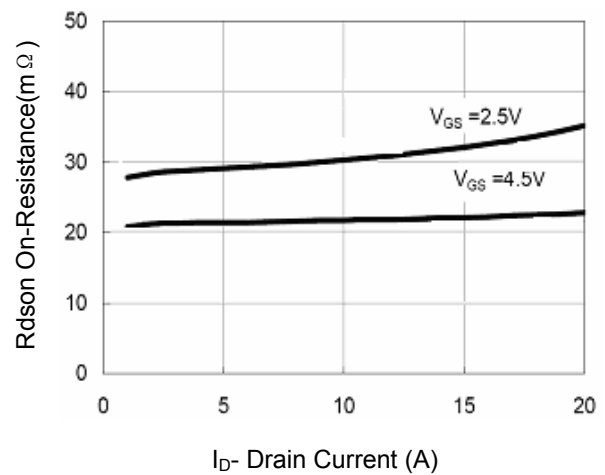


Fig.6 Drain-Source On-Resistance

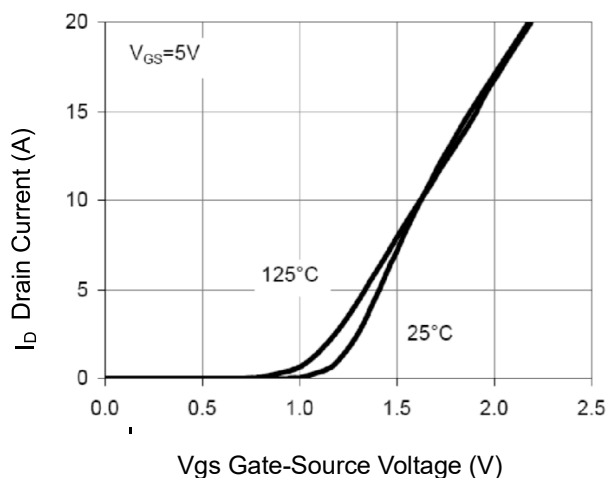


Fig.7 Transfer Characteristics

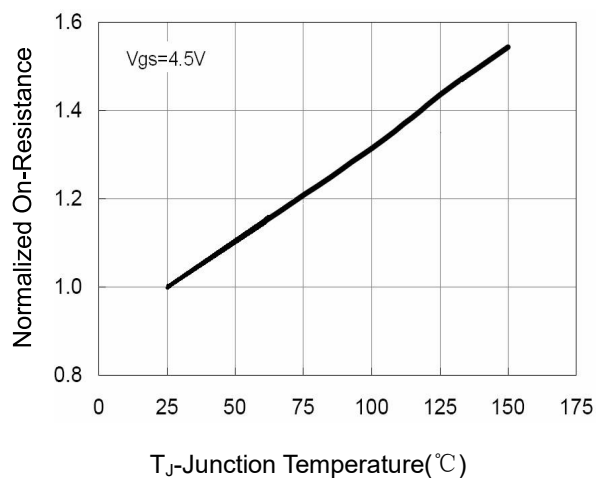


Fig.8 Drain-Source On-Resistance

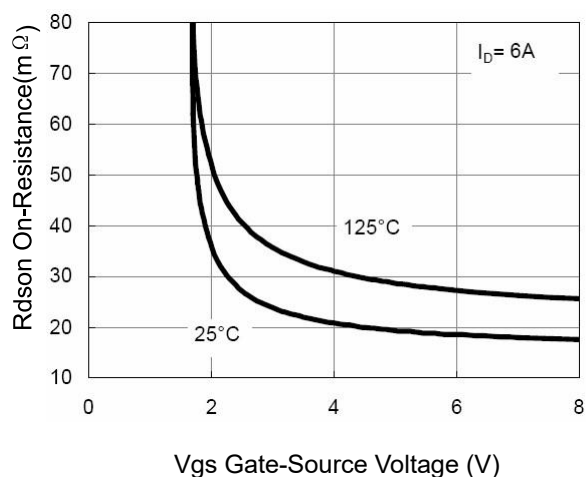


Figure 9 Rdson vs Vgs

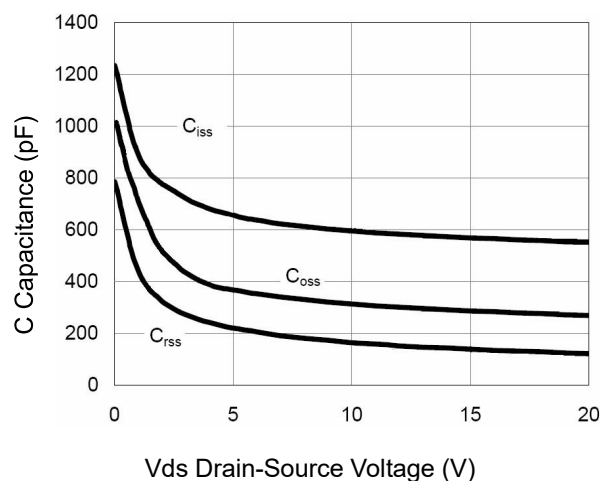


Figure 10 Capacitance vs Vds

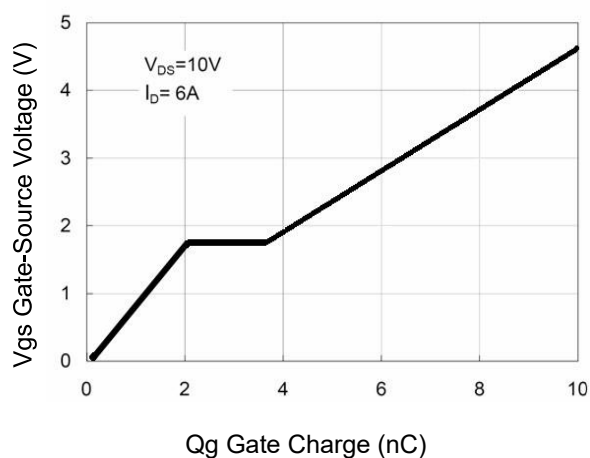


Fig 11. Gate Charge

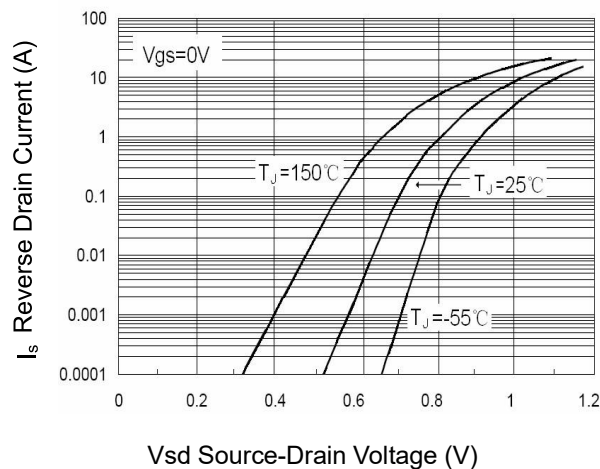


Fig 12. Source- Drain Diode Forward

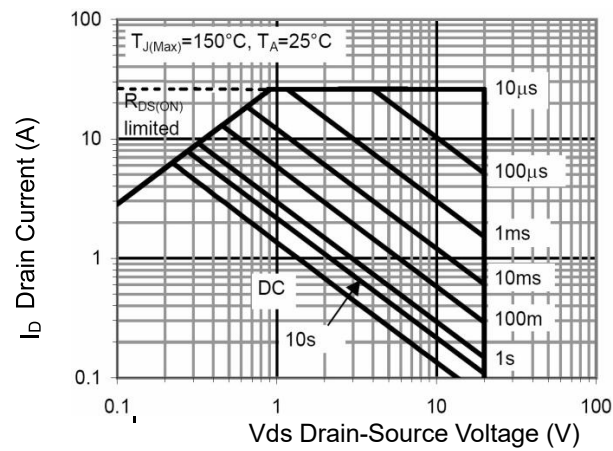


Figure 13 Safe Operation Area

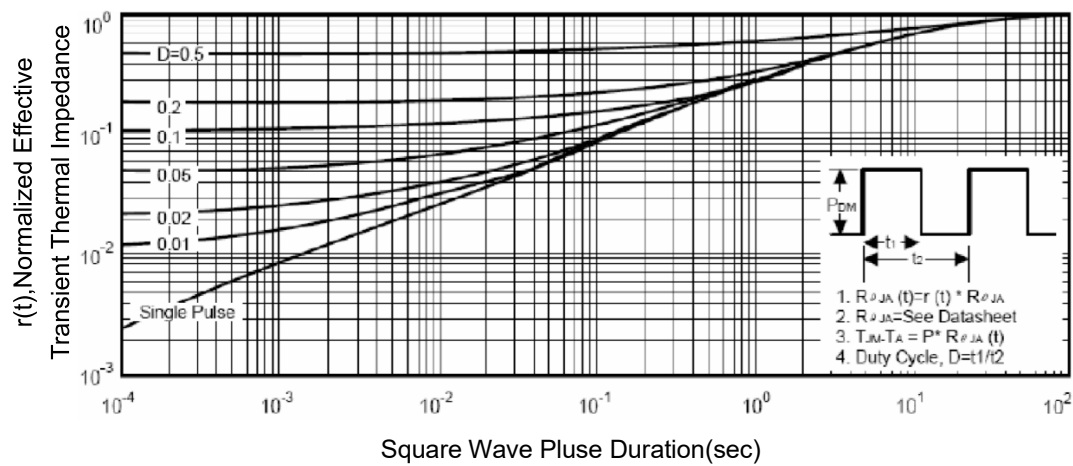
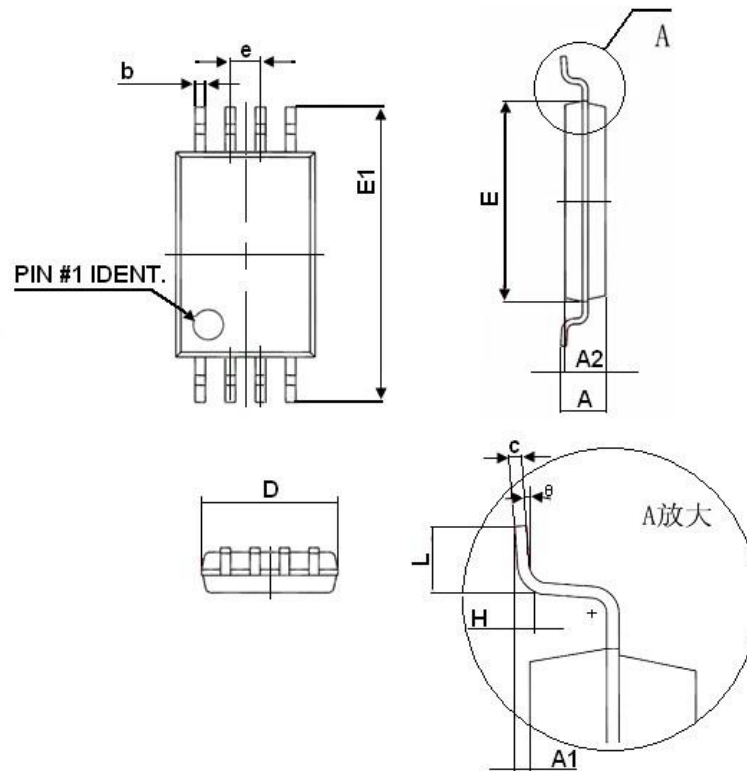


Figure 14 Normalized Maximum Transient Thermal Impedance

PACKAGE DESCRIPTION

TSSOP8



Symbol	Dimensions In Millimeters	
	Min	Max
D	2.900	3.100
E	4.300	4.500
b	0.190	0.300
c	0.090	0.200
E1	6.250	6.550
A		1.100
A2	0.800	1.000
A1	0.020	0.150
e	0.65(BSC)	
L	0.500	0.700
H	0.25(TYP)	
Θ	1°	7°



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