Eternal Semiconductor Inc.

EM8205A

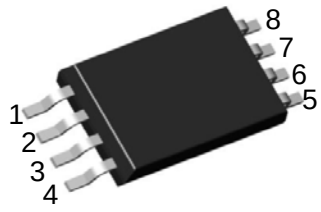
Dual N-Channel High Density Trench MOSFET (20V, 6A)

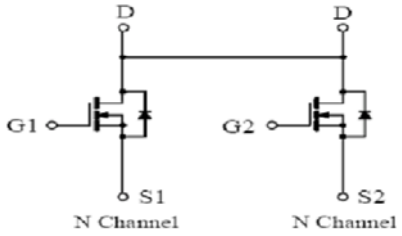
PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (mΩ) Typ.
20V	6.0A	20 @ VGS = 4.5V, ID=6A
		23 @ VGS = 4.0V, ID=6A
		26 @ VGS = 2.5V, ID=5.2A

Features

- Advanced Trench Process Technology
- High Density Cell Design for Ultra Low On-Resistance
- Surface mount Package
- Lead（Pb）-free and halogen-free





Pin 1/ 8: Drain
Pin 2/ 3: Source 1
Pin 4: Gate 1
Pin 5: Gate 2
Pin 6/ 7: Source 2
PKG:TSSOP-8

Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current (Continuous)	6	A
I_{DM}	Drain Current (Pulsed) [a]	20	A
P_D	Total Power Dissipation @T_A=25°C	2	W
I_S	Maximum Diode Forward Current	1.7	A
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted)[b]	62	°C/W

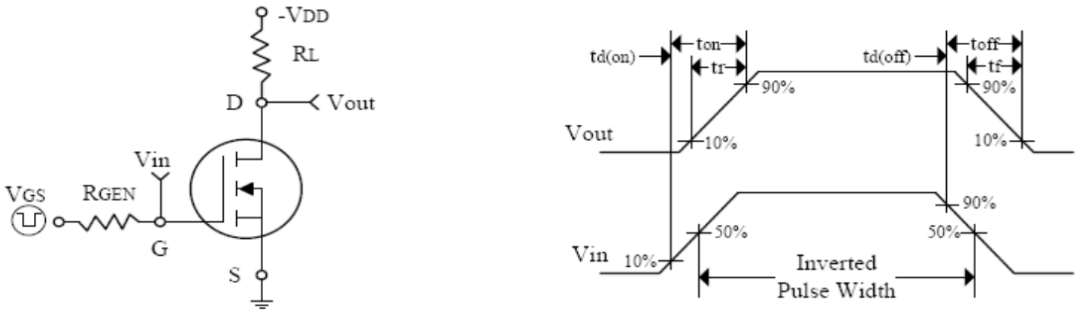
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in^2 2oz Cu PCB board

Electrical Characteristics (T_A=25°C, unless otherwise noted)

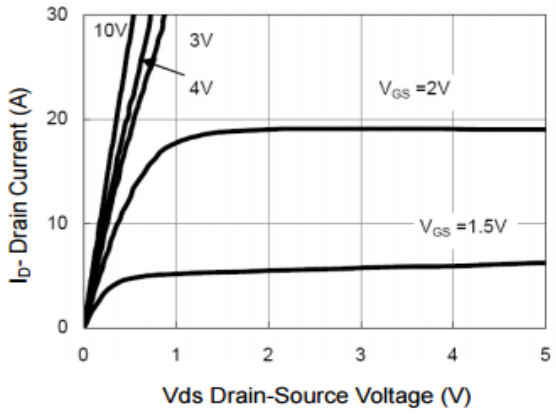
Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±10	μA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.6	0.65	1.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=6A	-	20	24	mΩ
		V_{GS}=3V, I_D=5.2A		23	27	
		V_{GS}=2.5V, I_D=5.2A	-	26	28	
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=6V, V_{GS}=0V, f=1MHz	-	559	-	PF
C_{oss}	Output Capacitance		-	148	-	
C_{rss}	Reverse Transfer Capacitance		-	127	-	
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=10V, I_D=6A, V_{GS}=4.5V	-	5	-	nC
Q_{gs}	Gate-Source Charge		-	0.9	-	
Q_{gd}	Gate-Drain Charge		-	1.4	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=10V, R_L=1.2Ω, I_D=1A, VGEN=10V, RG=6Ω	-	10.2	-	nS
t_r	Turn-on Rise Time		-	7	-	
$t_{d(off)}$	Turn-off Delay Time		-	33	-	
t_f	Turn-off Fall Time		-	6.8	-	
• Drain-Source Diode Characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V, I_S=1.7A	-	-	1.2	V

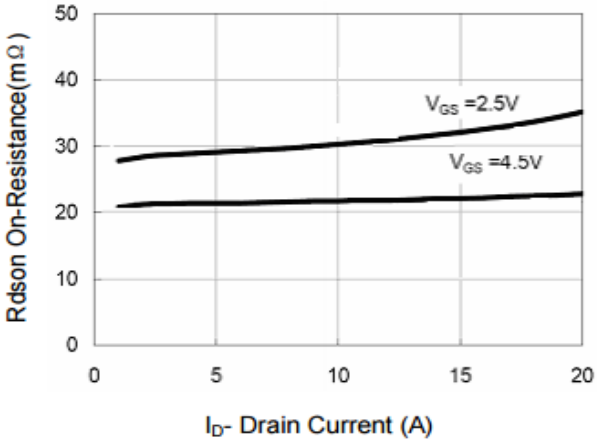
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

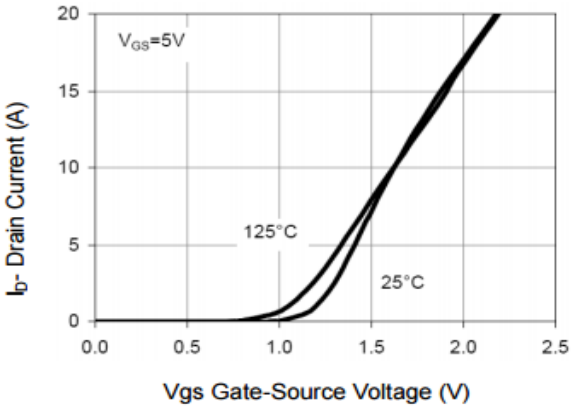


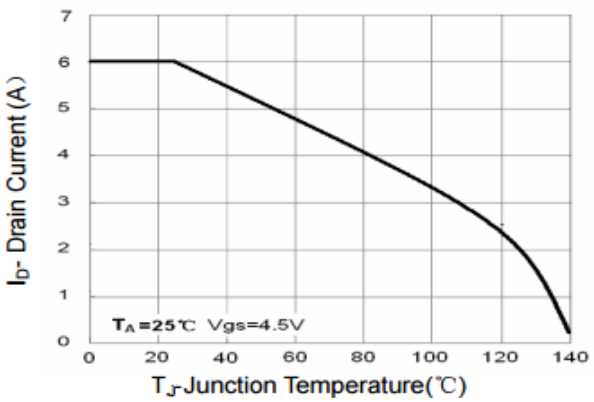
Switching Test Circuit and Switching Waveforms

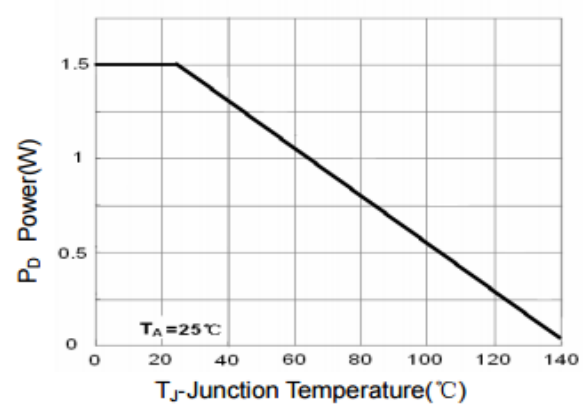
Typical Characteristics Curves (Ta=25°C, unless otherwise note)

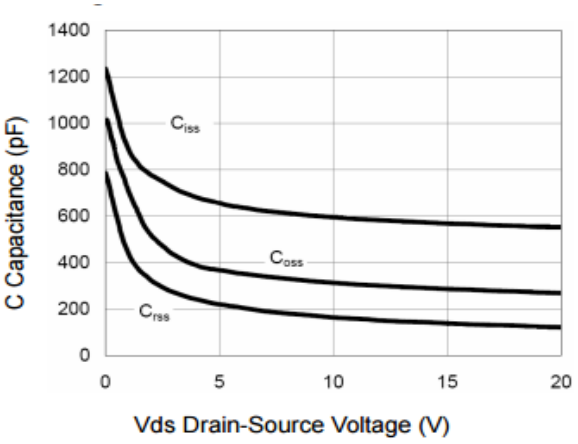


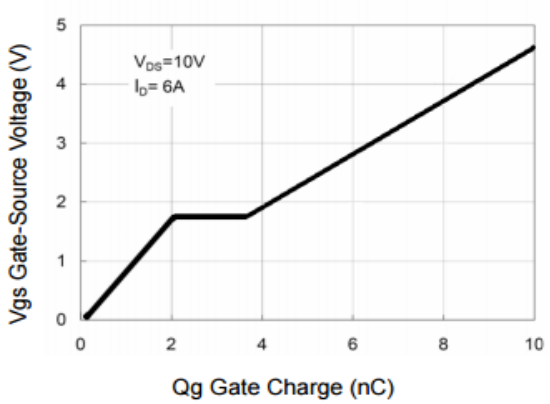


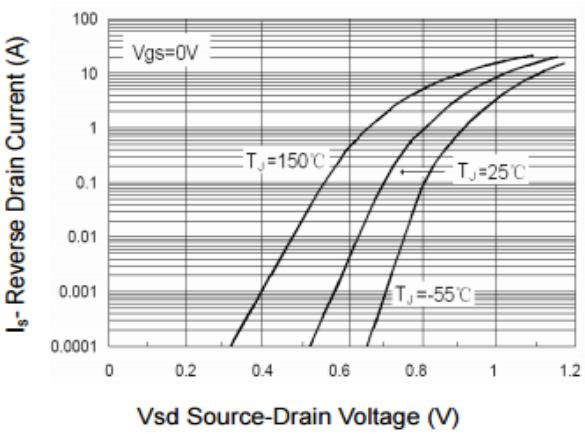


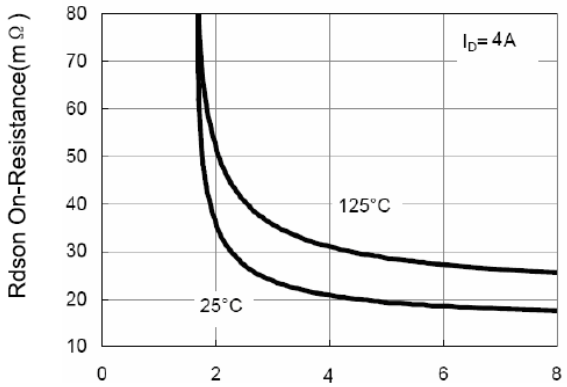




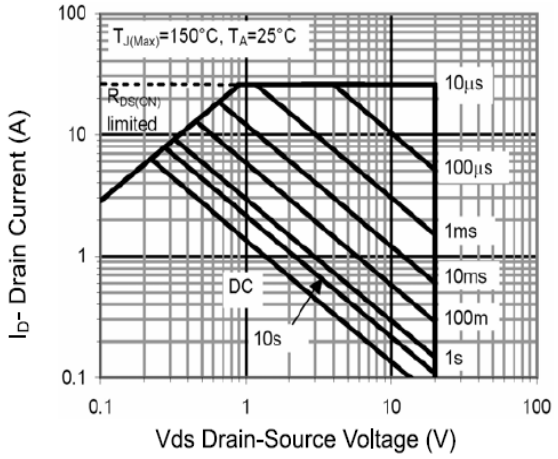




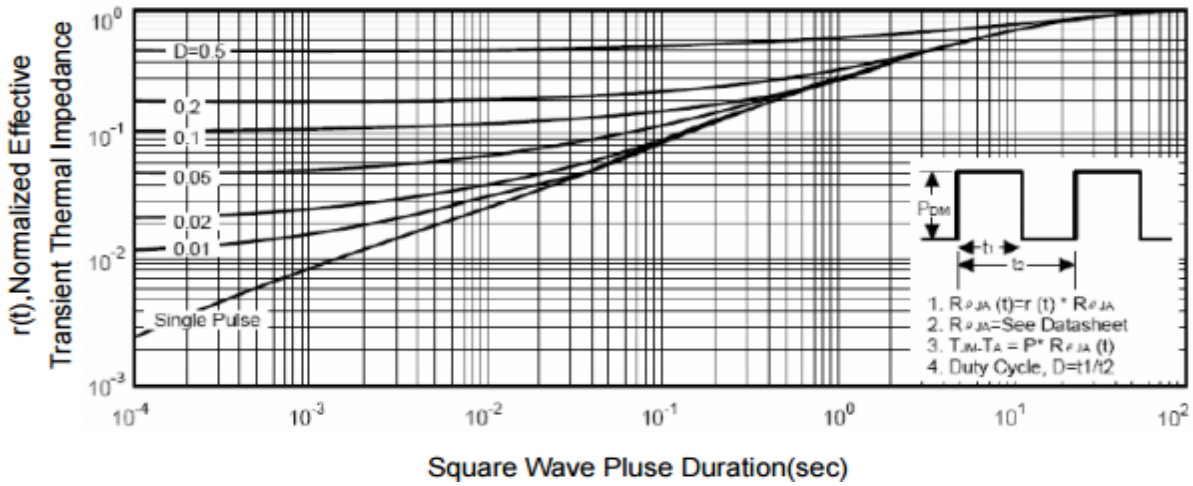




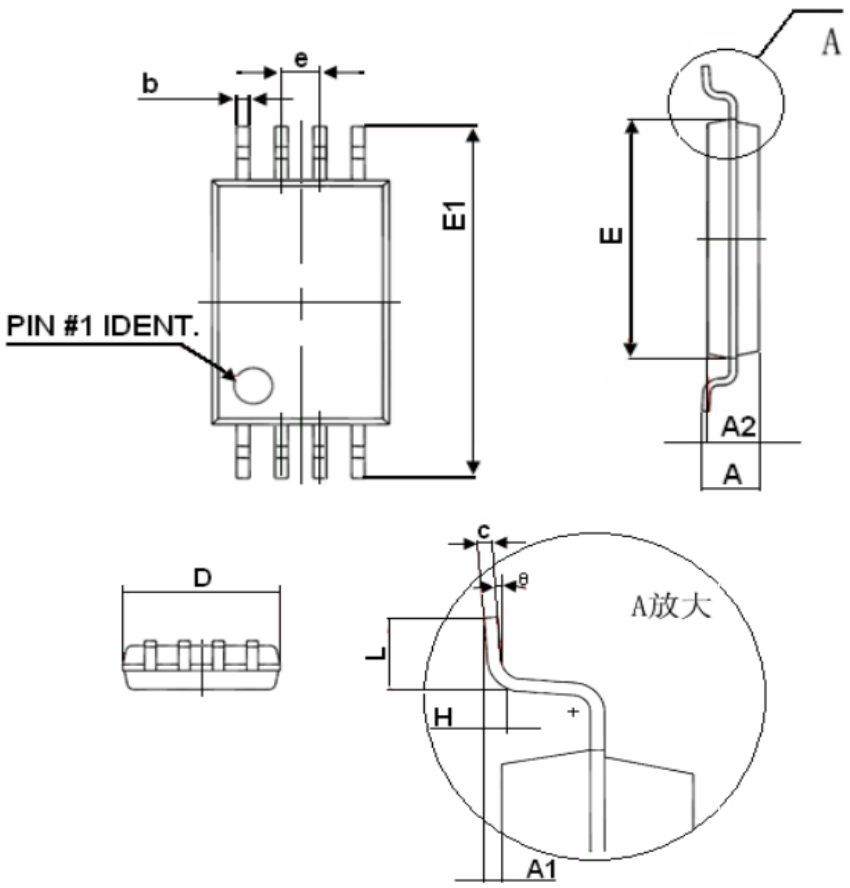
Rdson vs Vgs



Safe Operation Area



TSSOP8 PACKAGE OUTLINE DIMENSIONS



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°