Eternal Semiconductor Inc.

ET8205B

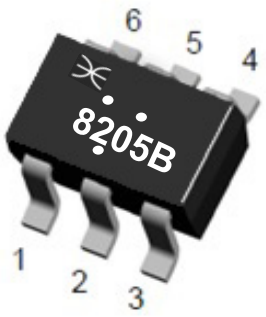
Dual N-Channel High Density Trench MOSFET (20V, 7A)

PRODUCT SUMMARY

V_{DSS}	I_D	$R_{DS(on)}$ (mΩ) Typ.
20V	7A	16 @ VGS = 4.5V, ID=7A
		19 @ VGS = 2.5V, ID=5.5A

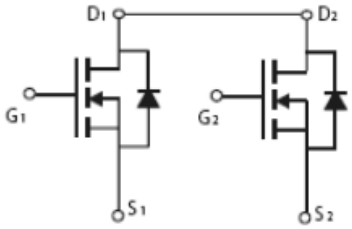
Features

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



ET8205B Pin Assignmetty & Symbol

6-Lead Plastic **SOT-23-6L**
Pin 1: S1 2: D1/D2 3: S2
4: G2 5: D1/D2 6: G1



Notes :Dots are product batch information

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)	7	A
I_{DM}	Drain Current (Pulsed) [a]	28	A
P_D	Total Power Dissipation @T_A=25°C	1.25	W
I_S	Maximum Diode Forward Current	4	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]	100	°C/W

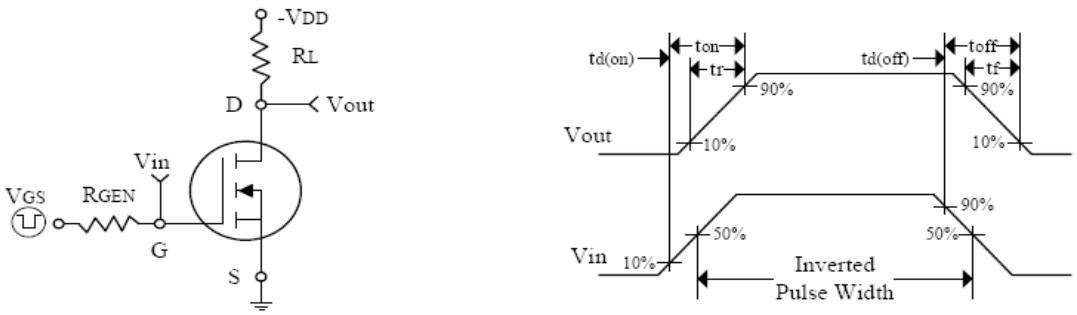
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

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

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

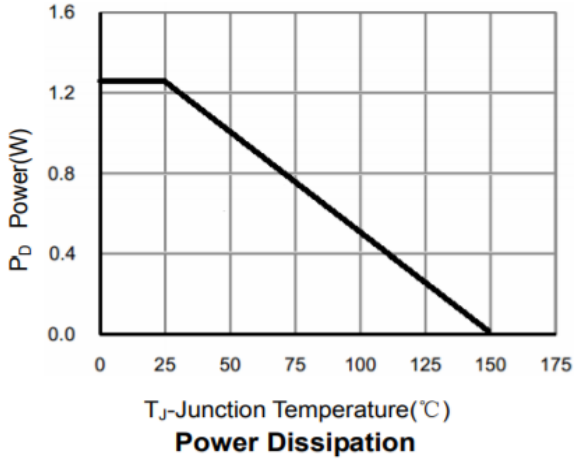
Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±12V, V_{DS}=0V	-	-	±100	nA
• On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.5	0.65	1	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=7A	13	16	19	mΩ
		V_{GS}=2.5V, I_D=5.5A	14	19	25	
• Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	-	550	-	PF
C_{oss}	Output Capacitance		-	120	-	
C_{rss}	Reverse Transfer Capacitance		-	64	-	
• Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=10V, I_D=7A, V_{GS}=4.5V	-	8.5	-	nC
Q_{gs}	Gate-Source Charge		-	2	-	
Q_{gd}	Gate-Drain Charge		-	1.2	-	
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=10V, R_L=1.2Ω, I_D=1A, VGEN=10V, RG=6Ω	-	9	-	nS
t_r	Turn-on Rise Time		-	8	-	
$t_{d(off)}$	Turn-off Delay Time		-	26	-	
t_f	Turn-off Fall Time		-	21	-	
• 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%

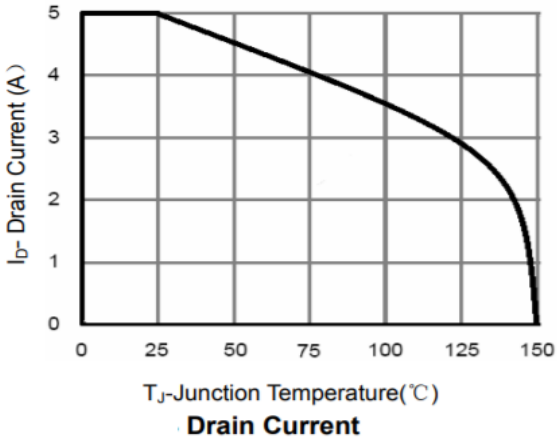


Switching Test Circuit and Switching Waveforms

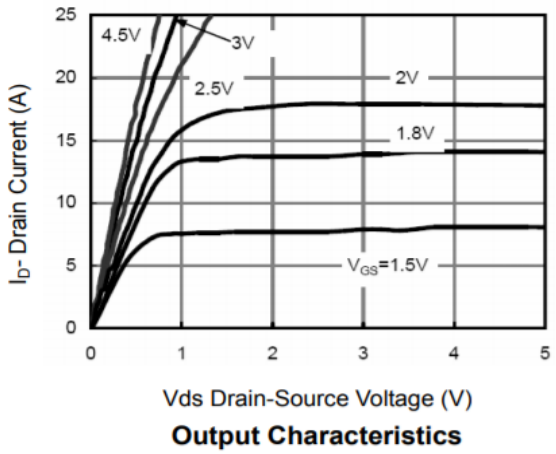
Typical Characteristics Curves (Ta=25°C, unless otherwise note)



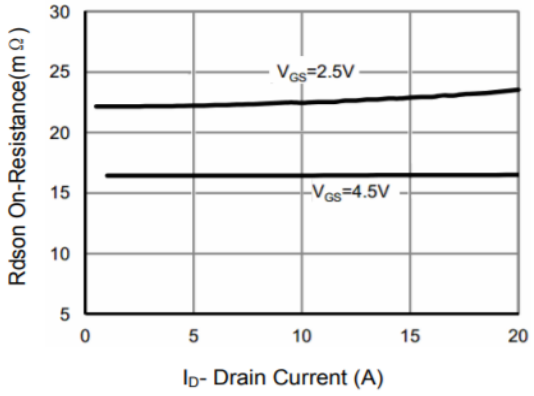
Power Dissipation



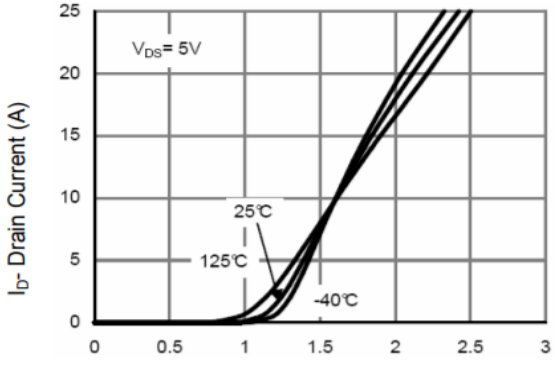
Drain Current



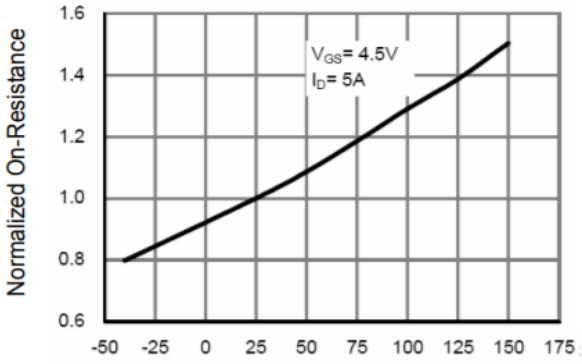
Output Characteristics



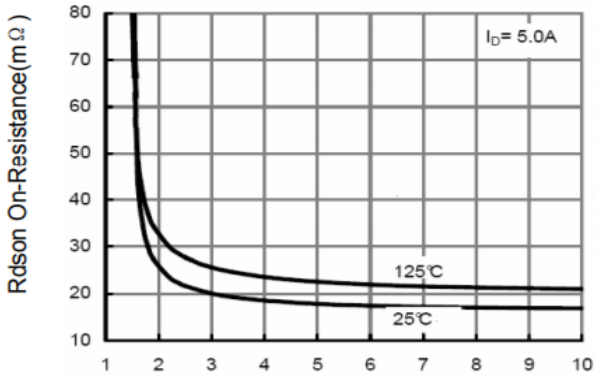
Drain-Source On-Resistance



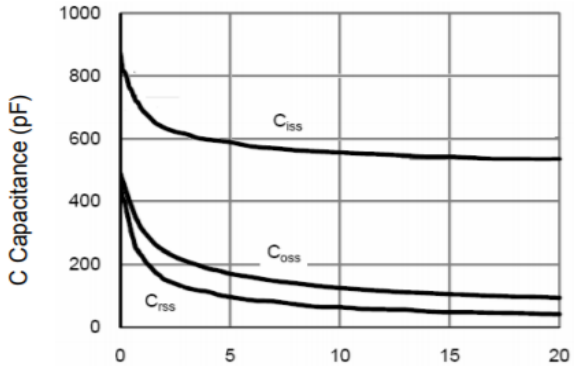
Transfer Characteristics



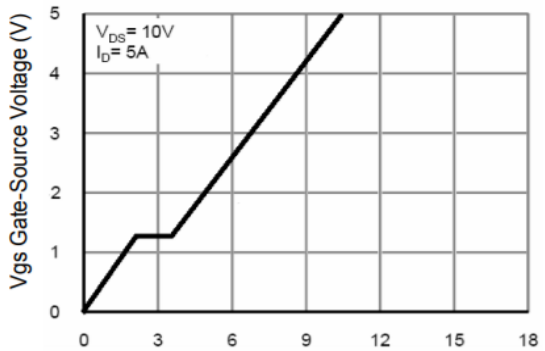
Drain-Source On-Resistance



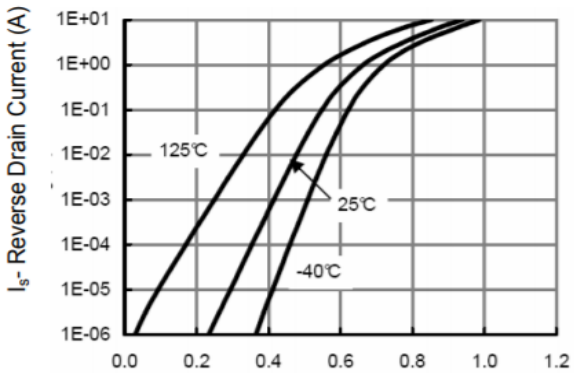
Rdson vs Vgs



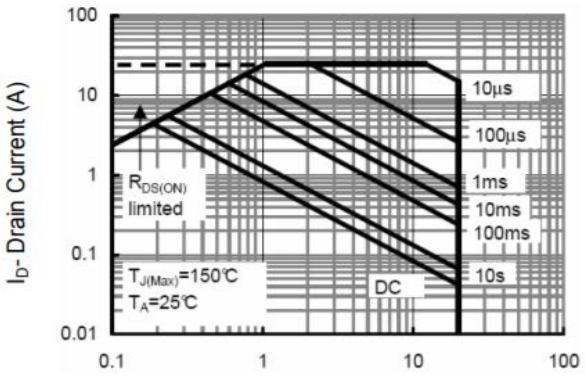
Capacitance vs Vds



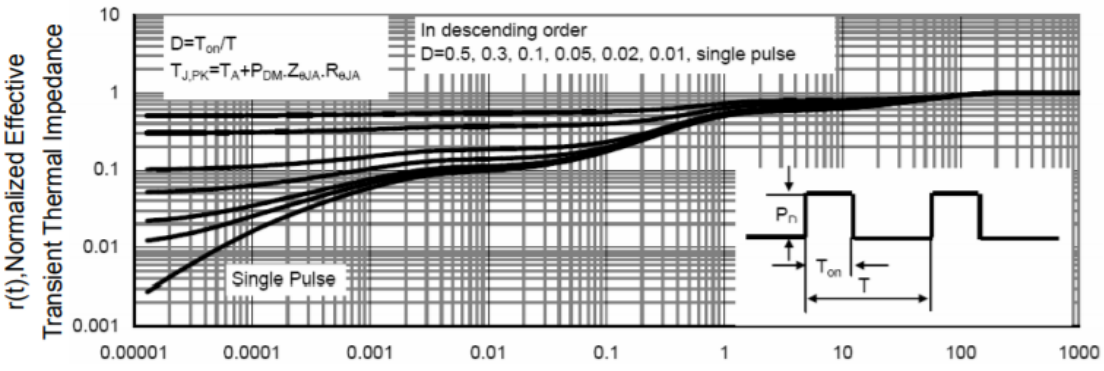
Gate Charge



Source- Drain Diode Forward

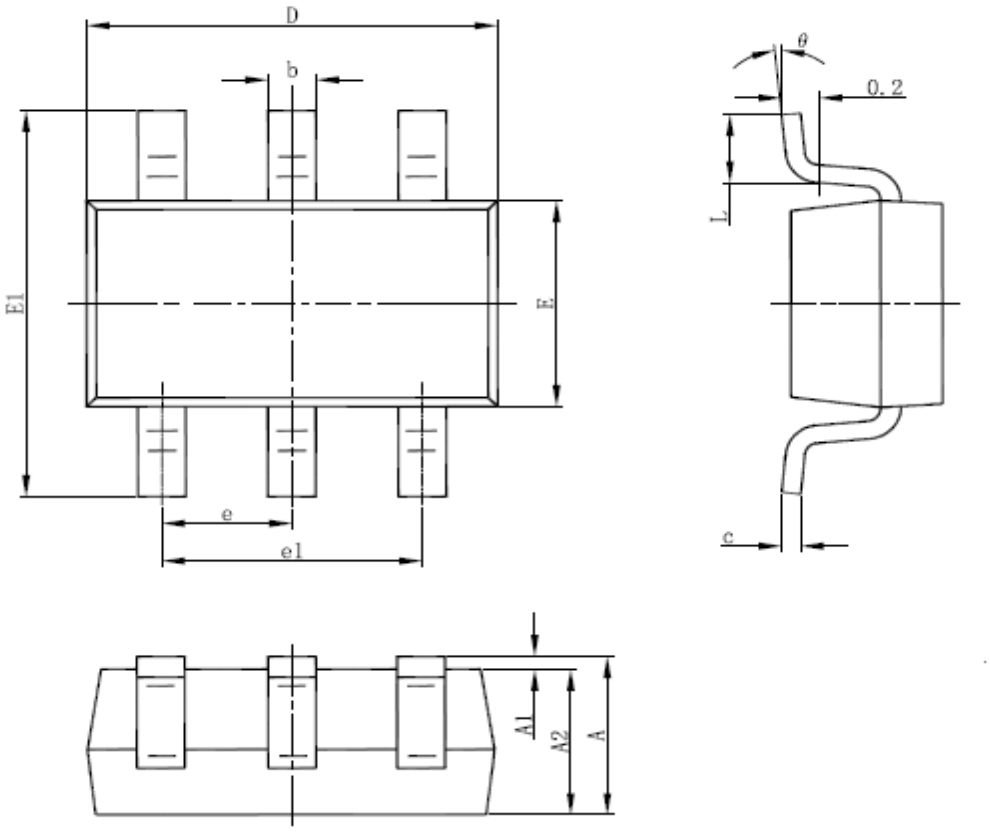


Safe Operation Area



Normalized Maximum Transient Thermal Impedance

SOT23-6L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°