

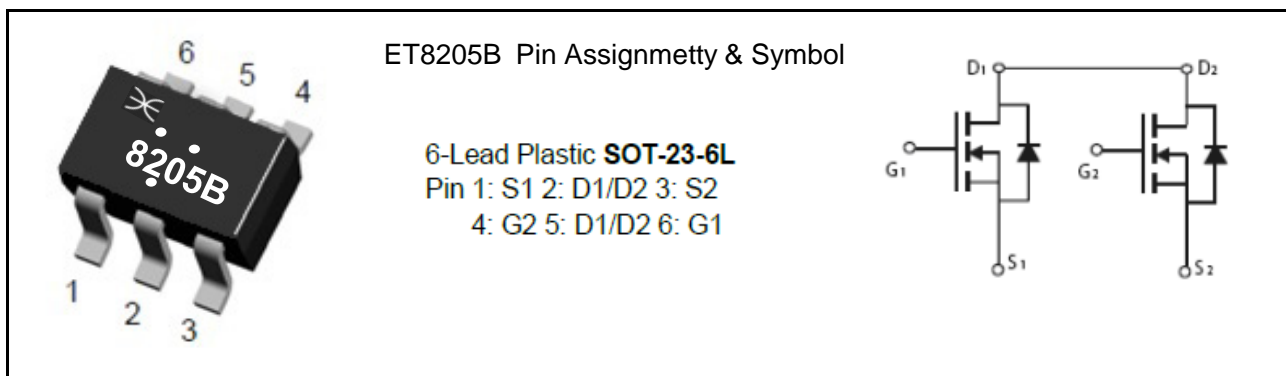
### Dual N-Channel High Density Trench MOSFET (20V, 7A)

#### PRODUCT SUMMARY

$V_{DS}$	$I_D$	$R_{DS(on)}$ (m $\Omega$ ) Typ.
20V	7A	16 @ $V_{GS} = 4.5V, I_D=7A$
		19 @ $V_{GS} = 2.5V, I_D=5.5A$

#### Features

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



Notes :Dots are product batch information

#### Absolute Maximum Ratings ( $T_A=25^\circ C$ , unless otherwise noted)

Symbol	Parameter	Ratings	Units
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current (Continuous)	7	A
$I_{DM}$	Drain Current (Pulsed) <sup>a</sup>	28	A
$P_D$	Total Power Dissipation @ $T_A=25^\circ C$	1.25	W
$I_S$	Maximum Diode Forward Current	4	A
$T_j, T_{stg}$	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ C$
$R_{QJA}$	Thermal Resistance Junction to Ambient (PCB mounted) <sup>b</sup>	100	$^\circ C/W$

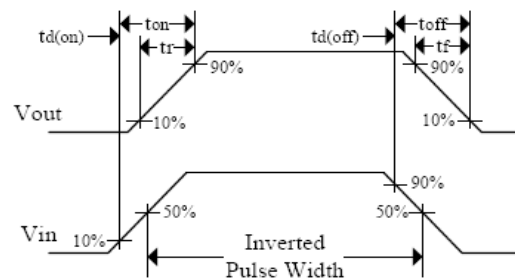
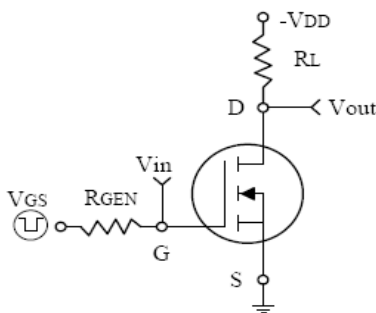
a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in<sup>2</sup> 2oz Cu PCB board

### Electrical Characteristics ( $T_A=25^\circ\text{C}$ , unless otherwise noted)

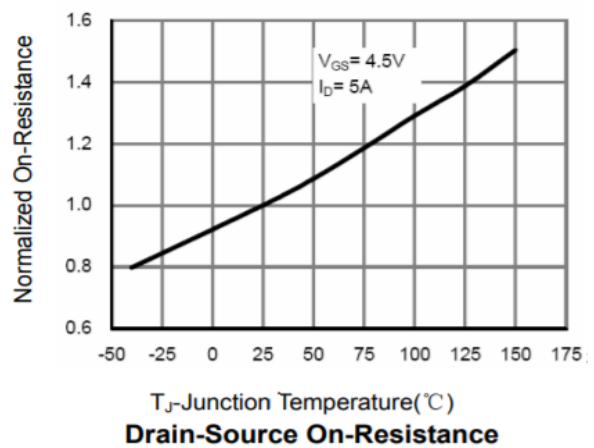
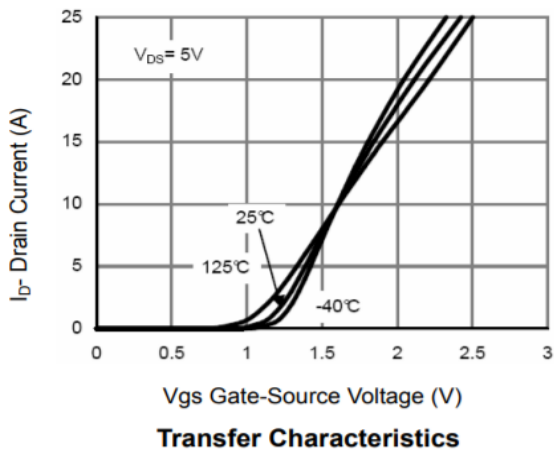
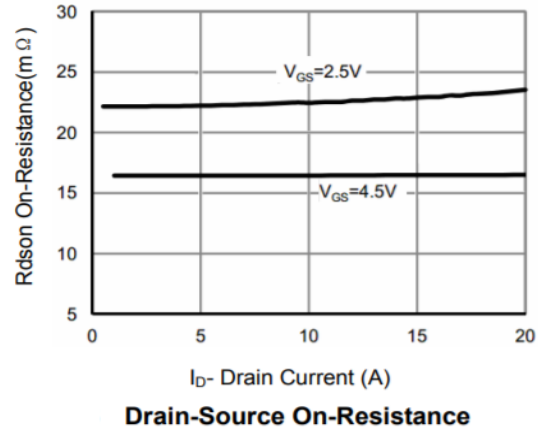
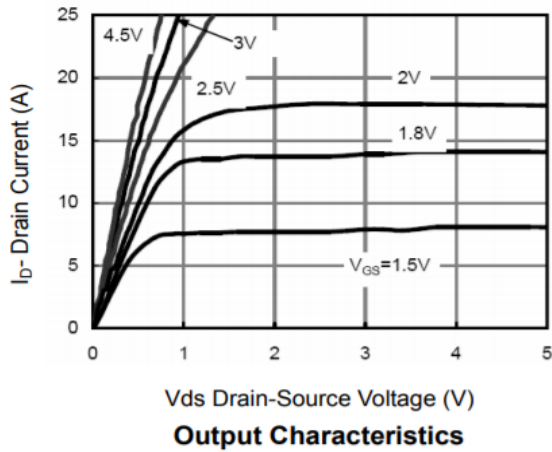
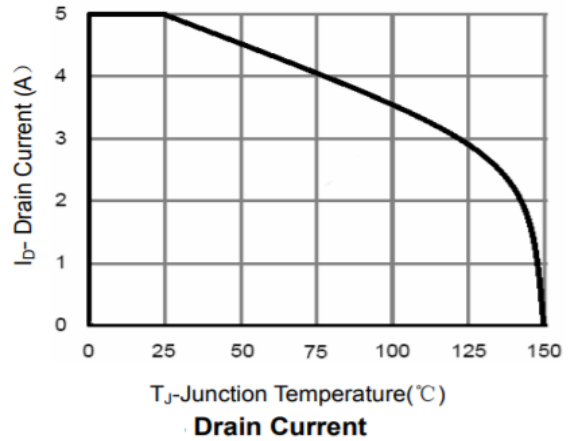
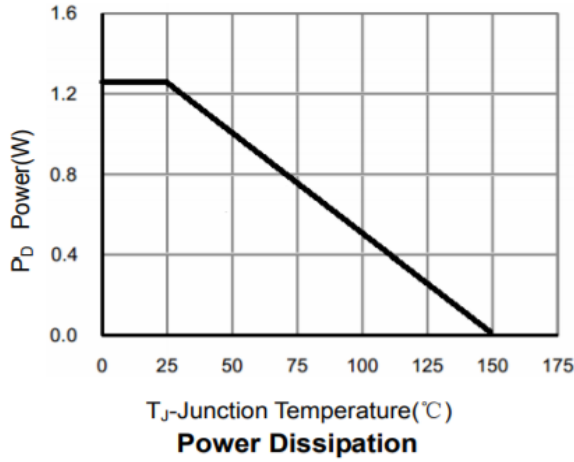
Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
<b>• Off Characteristics</b>						
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	-	-	1	$\mu A$
$I_{GSS}$	Gate-Body Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>• On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.65	1	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=4.5V, I_D=7A$	13	16	19	m $\Omega$
		$V_{GS}=2.5V, I_D=5.5A$	14	19	25	
<b>• Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=10V, V_{GS}=0V, f=1\text{MHz}$	-	550	-	PF
$C_{oss}$	Output Capacitance		-	120	-	
$C_{rss}$	Reverse Transfer Capacitance		-	64	-	
<b>• Switching Characteristics</b>						
$Q_g$	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	$V_{DD}=10V, R_L=1.2\Omega, I_D=1A, V_{GEN}=10V, R_G=6\Omega$	-	9	-	nS
$t_r$	Turn-on Rise Time		-	8	-	
$t_{d(off)}$	Turn-off Delay Time		-	26	-	
$t_f$	Turn-off Fall Time		-	21	-	
<b>• Drain-Source Diode Characteristics</b>						
$V_{SD}$	Drain-Source Diode Forward Voltage	$V_{GS}=0V, I_S=1.7A$	-	-	1.2	V

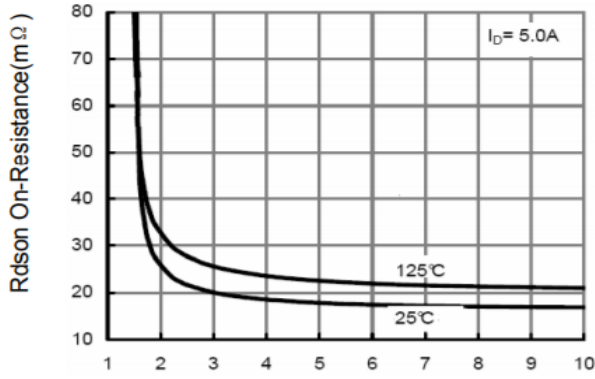
Note: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$



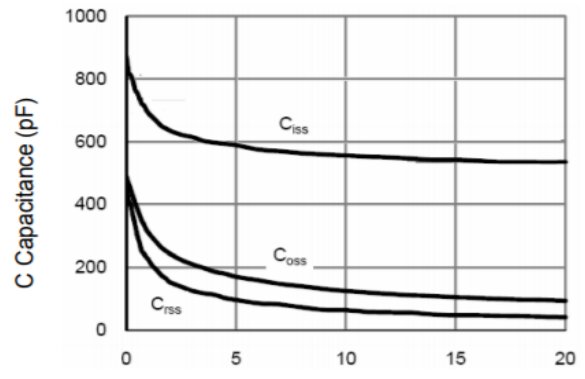
Switching Test Circuit and Switching Waveforms

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

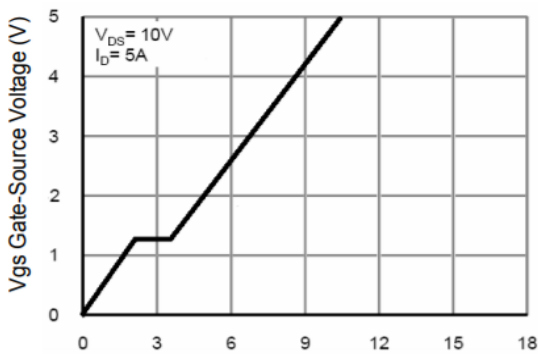




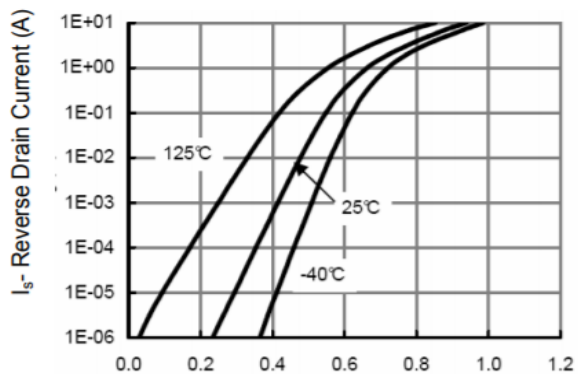
Vgs Gate-Source Voltage (V)  
**Rdson vs Vgs**



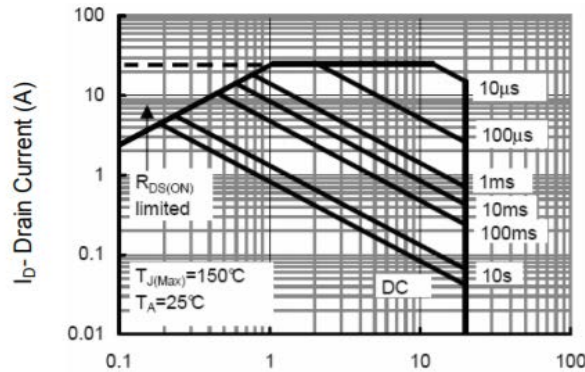
Vds Drain-Source Voltage (V)  
**Capacitance vs Vds**



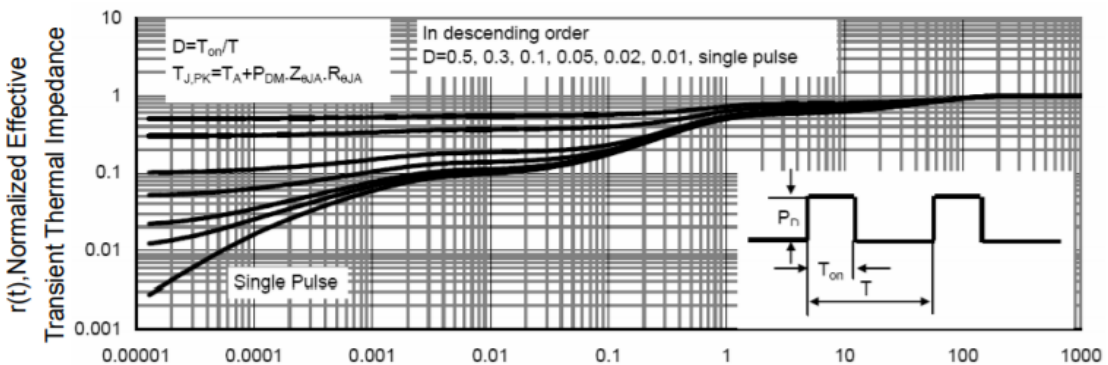
Qg Gate Charge (nC)  
**Gate Charge**



Vsd Source-Drain Voltage (V)  
**Source- Drain Diode Forward**

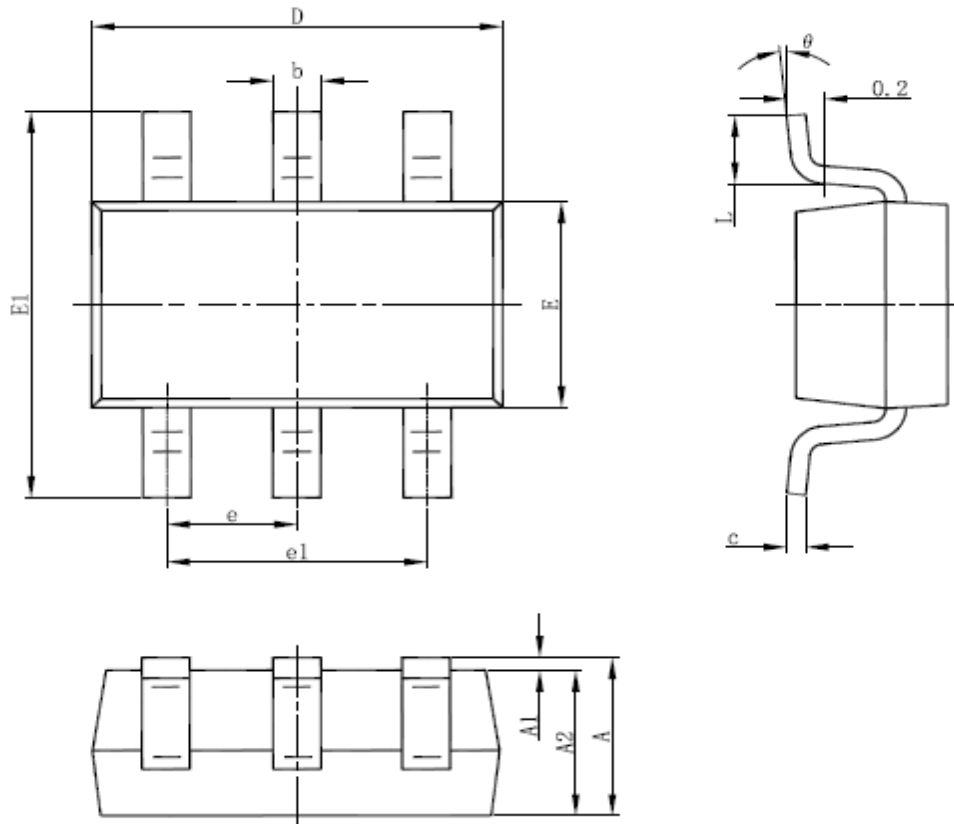


Vds Drain-Source Voltage (V)  
**Safe Operation Area**



**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
theta	0°	8°	0°	8°