

**S8205A Dual N-Channel MOSFET**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$ Max
20V	0.022 $\Omega$ @ 4.5V	6.0A
	0.030 $\Omega$ @ 2.5V	

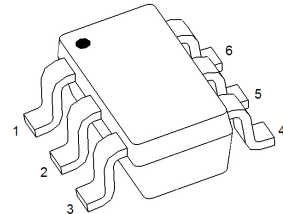
**FEATURE**

- TrenchFET Power MOSFET
- Excellent  $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package

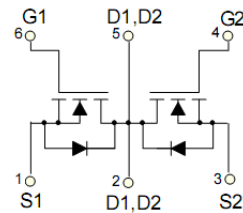
**APPLICATION**

- Battery Protection
- Load Switch
- Power Management

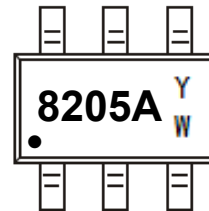
**SOT-23-6**



**Equivalent Circuit**



**MARKING**



Y :year code W :week code

**ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}C$  unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current	$I_D$	6	A
Pulsed Drain Current (note 1)	$I_{DM}$	20	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	100	$^{\circ}C/W$
Junction Temperature	$T_J$	150	$^{\circ}C$
Storage Temperature	$T_{STG}$	-55~+150	$^{\circ}C$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^{\circ}C$



**MOSFET ELECTRICAL CHARACTERISTICS**

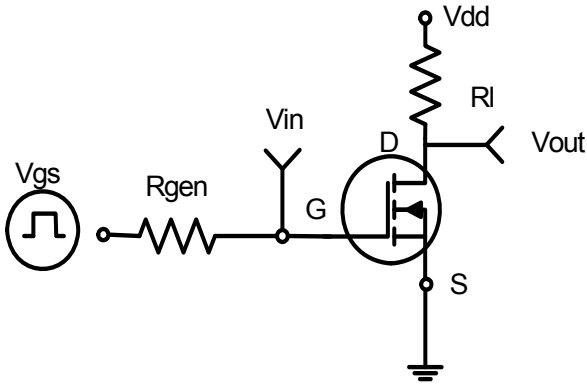
**T<sub>a</sub> =25 °C unless otherwise specified**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =18V, V <sub>GS</sub> = 0V			500	nA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V, V <sub>DS</sub> = 0V			±100	nA
Gate threshold voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.7	1.0	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A		19	22	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4A		24	30	mΩ
Forward transconductance (note 3)	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =5A		10		S
Diode forward voltage (note 3)	V <sub>SD</sub>	I <sub>S</sub> =1.25A, V <sub>GS</sub> = 0V			1.2	V
<b>DYNAMIC CHARACTERISTICS (note4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =8V, V <sub>GS</sub> =0V, f =1MHz		800		pF
Output Capacitance	C <sub>oss</sub>			155		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			125		pF
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>DD</sub> =10V, V <sub>GS</sub> =4V, I <sub>D</sub> =1A, R <sub>GEN</sub> =10Ω		18		ns
Turn-on rise time	t <sub>r</sub>			4.8		ns
Turn-off delay time	t <sub>d(off)</sub>			43.5		ns
Turn-off fall time	t <sub>f</sub>			20		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =4A		11		nC
Gate-Source Charge	Q <sub>gs</sub>			2.2		nC
Gate-Drain Charge	Q <sub>gd</sub>			2.5		nC

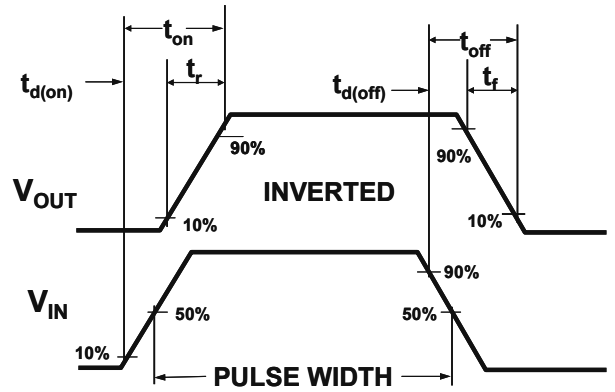
**Notes :**

- 1.Repetitive rating: Pluse 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.

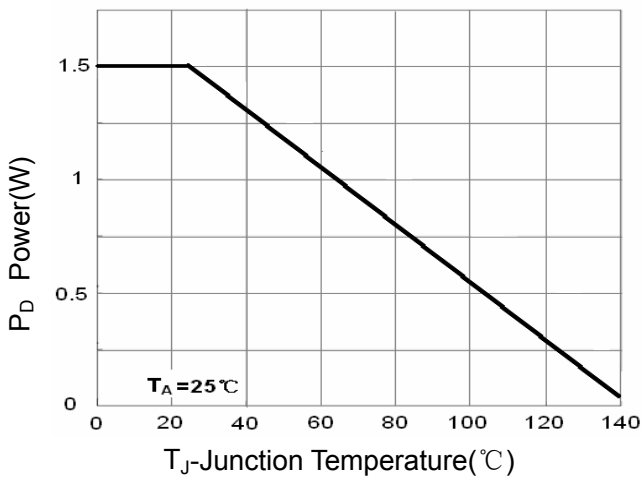
**Typical Electrical and Thermal Characteristics**



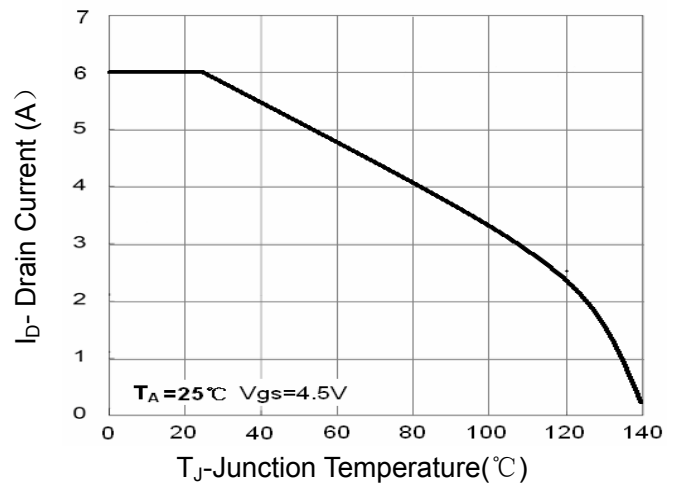
**Figure 1: Switching Test Circuit**



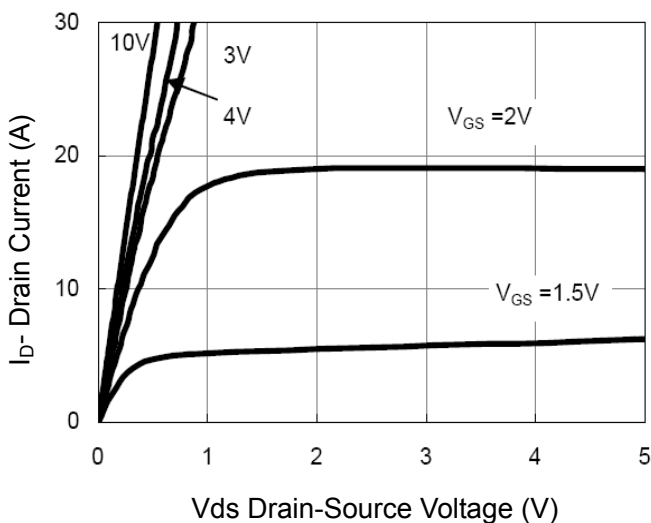
**Figure 2: Switching Waveforms**



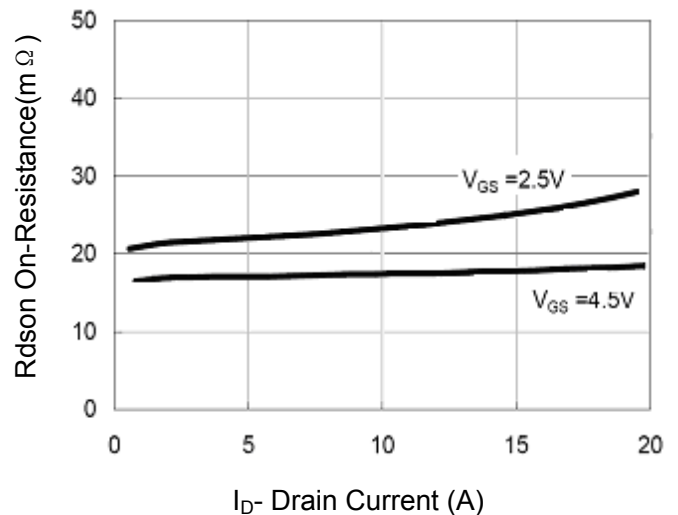
**Figure 3 Power Dissipation**



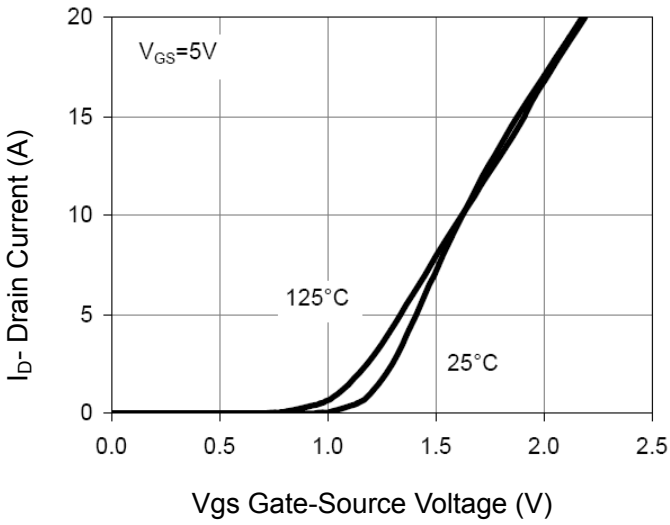
**Figure 4 Drain Current**



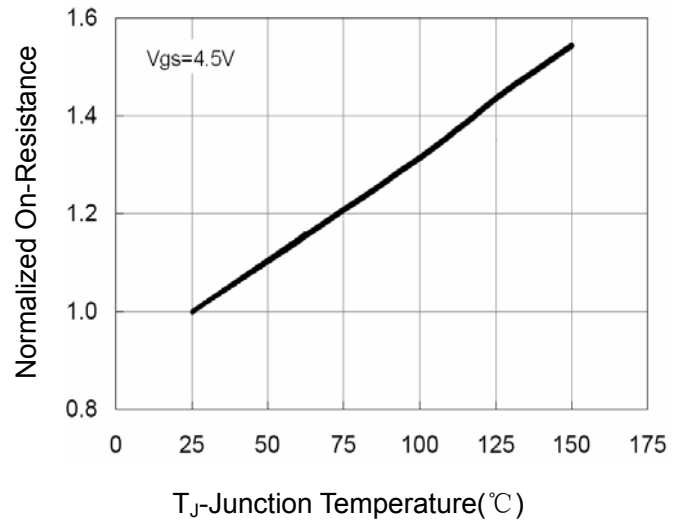
**Figure 5 Output Characteristics**



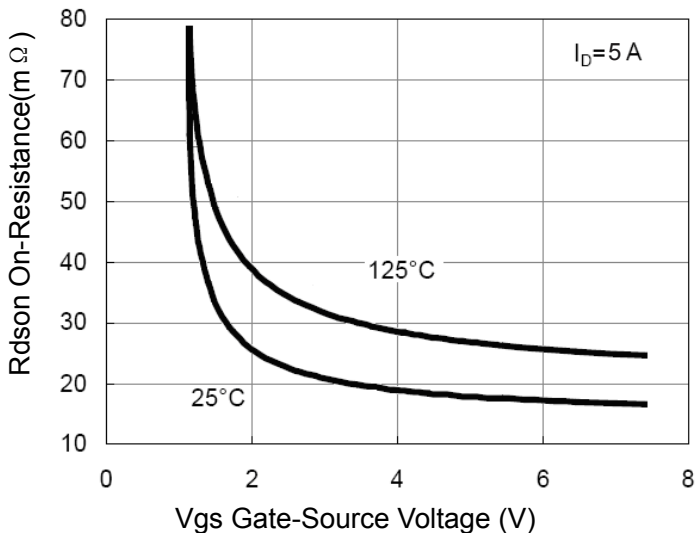
**Figure 6 Drain-Source On-Resistance**



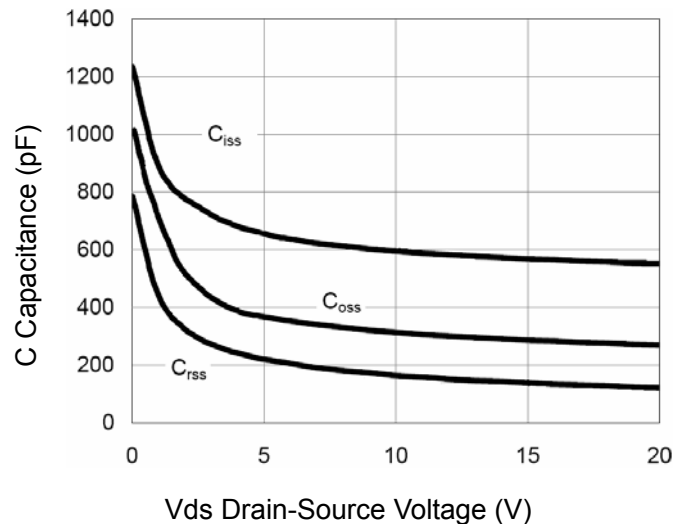
**Figure 7 Transfer Characteristics**



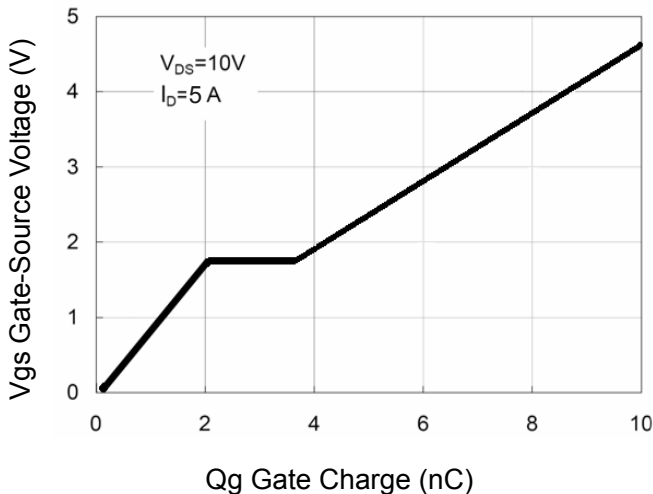
**Figure 8 Drain-Source On-Resistance**



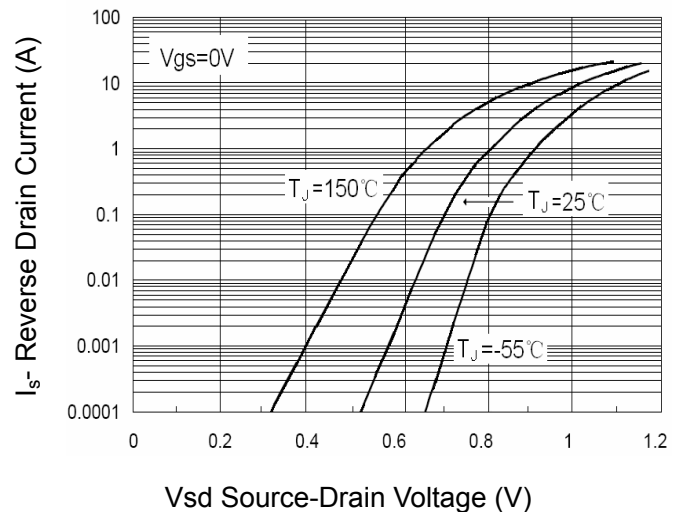
**Figure 9 Rdson vs Vgs**



**Figure 10 Capacitance vs Vds**



**Figure 11 Gate Charge**



**Figure 12 Source- Drain Diode Forward**

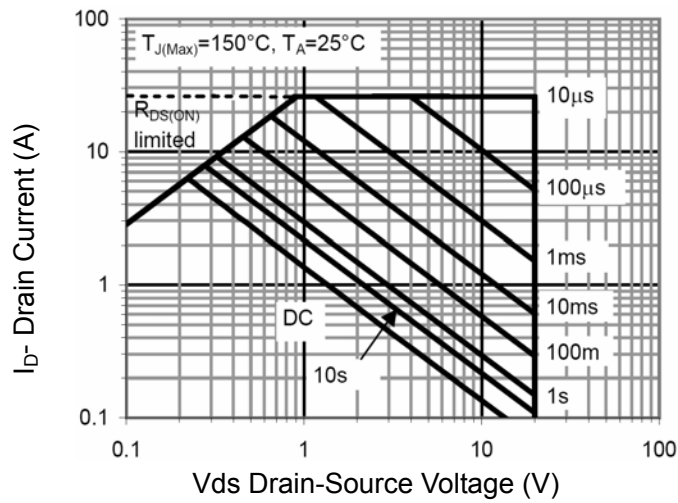


Figure 13 Safe Operation Area

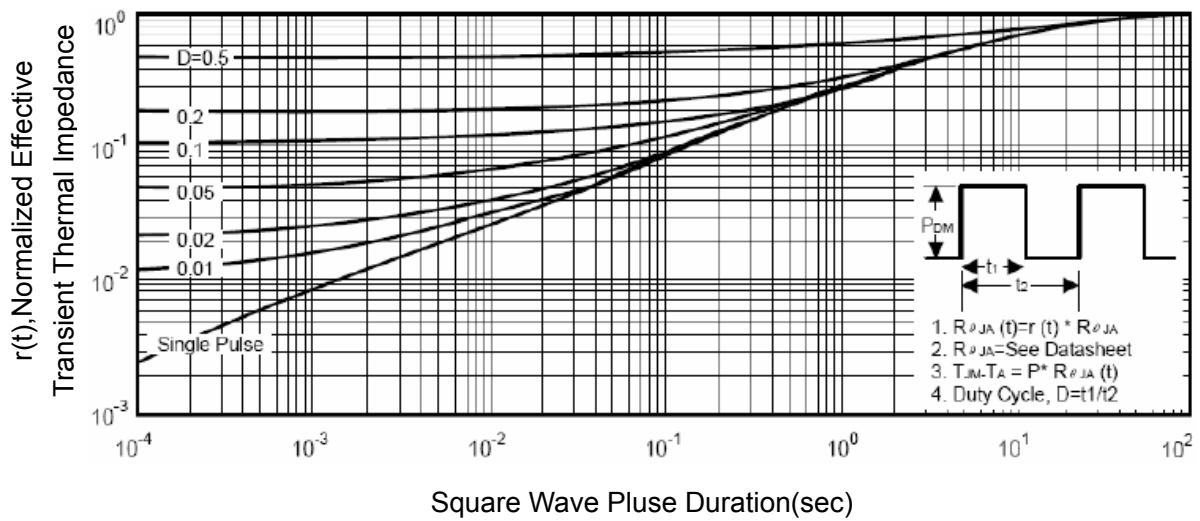
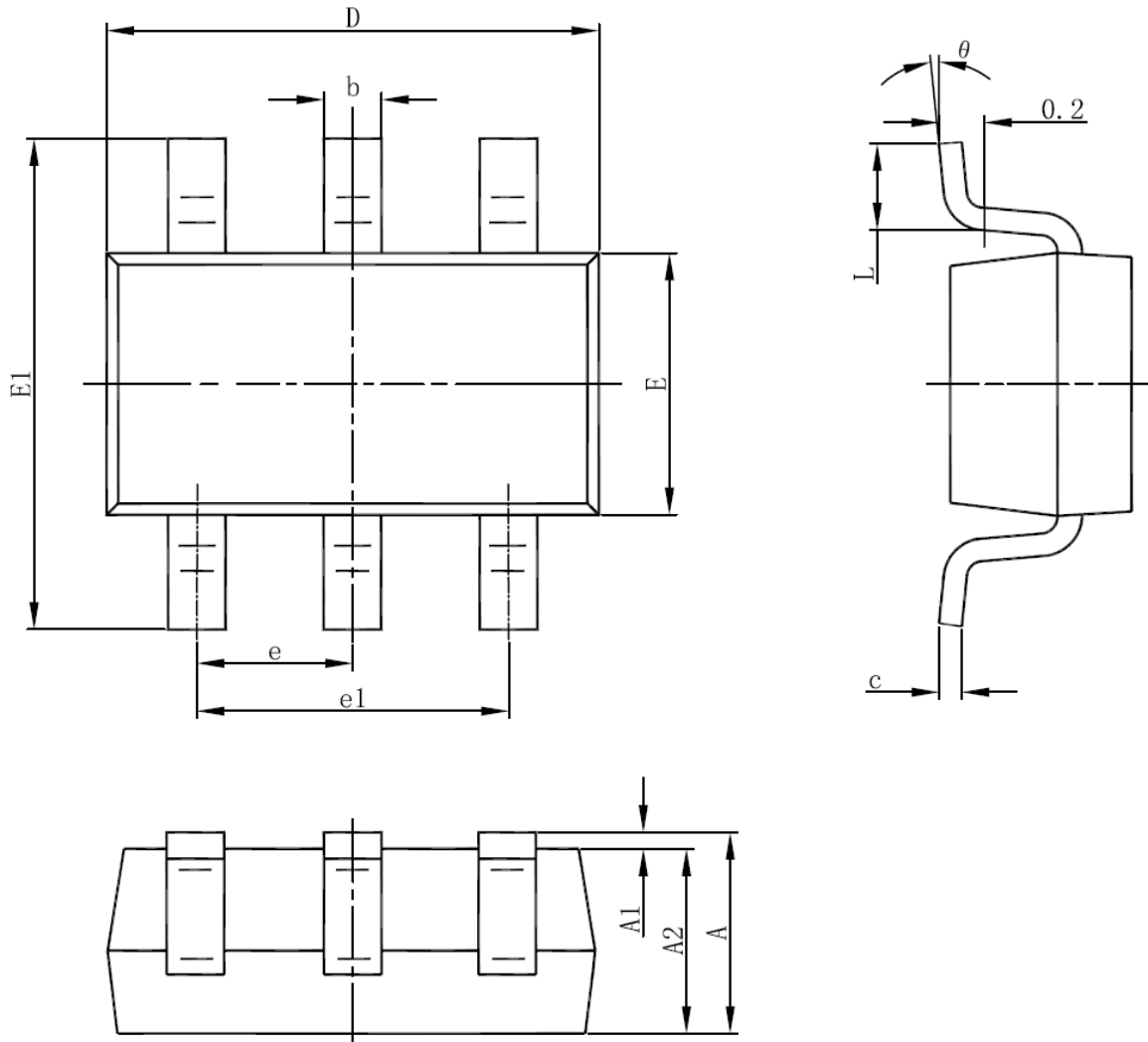


Figure 14 Normalized Maximum Transient Thermal Impedance

# SOT-23-6 Plastic-Encapsulate MOSFETS

**S8205A**

## SOT23-6 Package Information



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°