

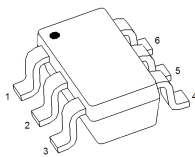
**FEATURE**

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

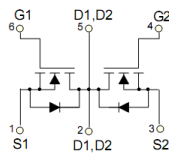
**APPLICATION**

- Battery Protection
- Load Switch
- Power Management

**SOT-23-6**

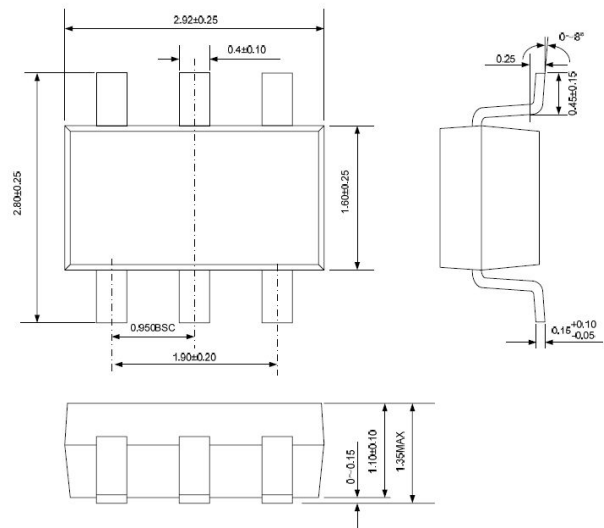


**Equivalent Circuit**



$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$ Max
20V	25 mΩ @ 4.5V	5.0A
	34 mΩ @ 2.5V	

**SOT-23-6**



Dimensions in millimeters

**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	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	5	A
Pulsed Drain Current (note 1)	$I_{DM}$	15	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	$^{\circ}C$

# S8205A

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			300	nA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, 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	0.4	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> =4A		20	25	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A		26	34	mΩ
Forward tranconductance (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> =10V, 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.

RATING AND CHARACTERISTIC CURVES (8205A)

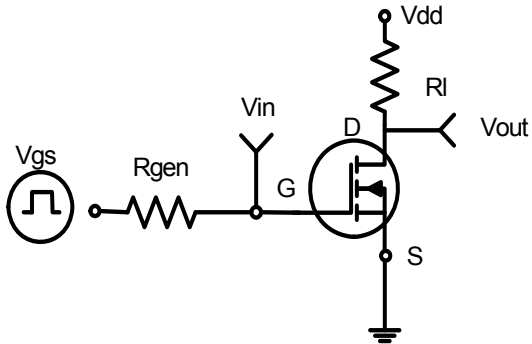


Figure 1: Switching Test Circuit

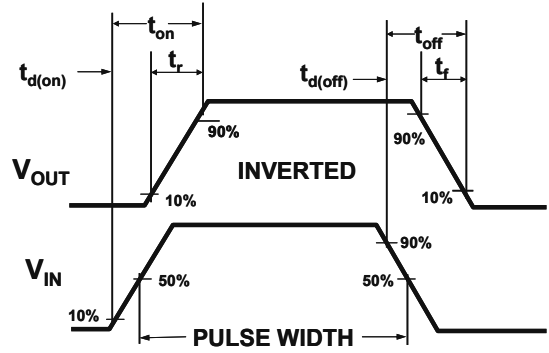


Figure 2: Switching Waveforms

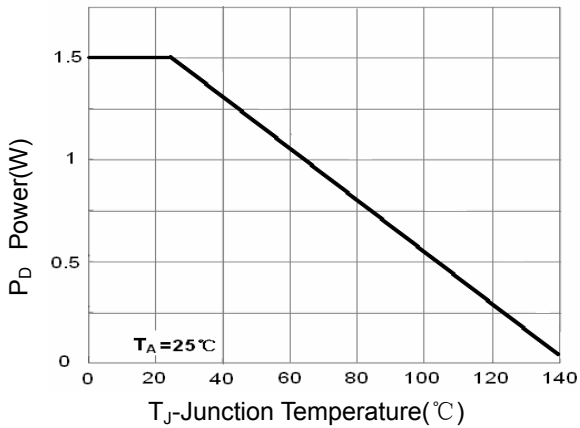


Figure 3 Power Dissipation

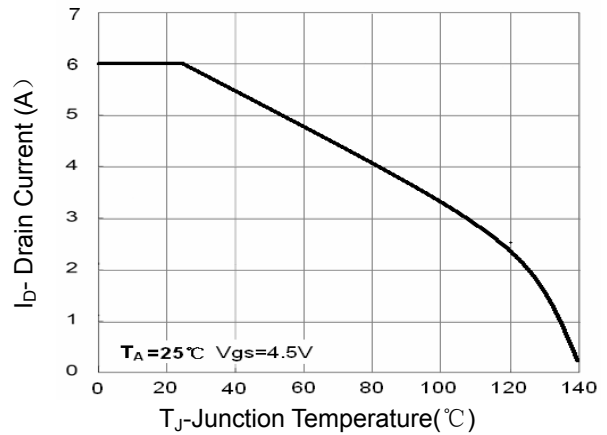


Figure 4 Drain Current

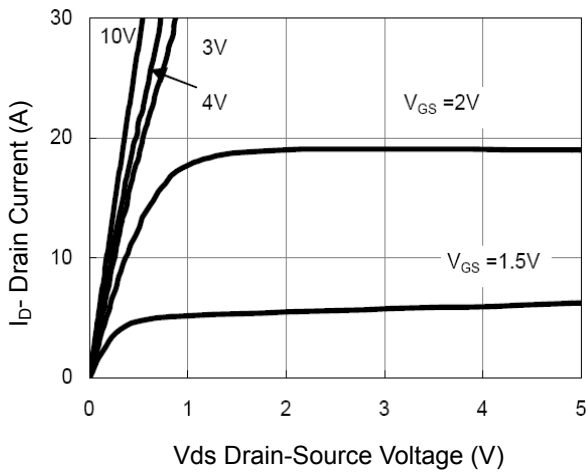


Figure 5 Output Characteristics

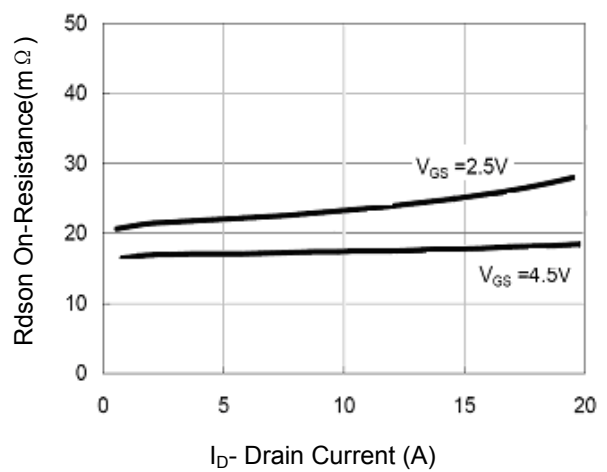
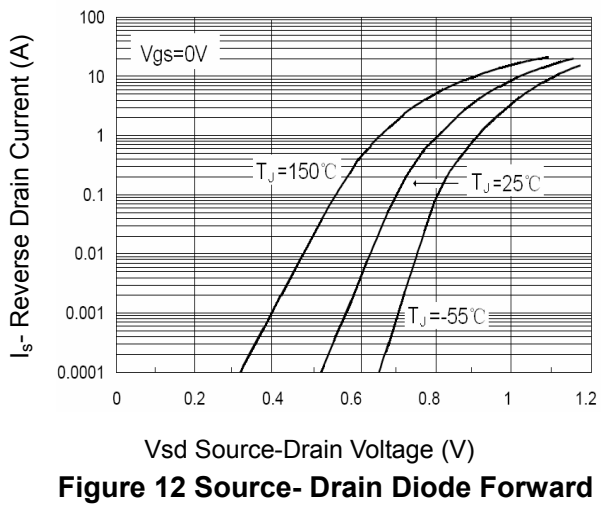
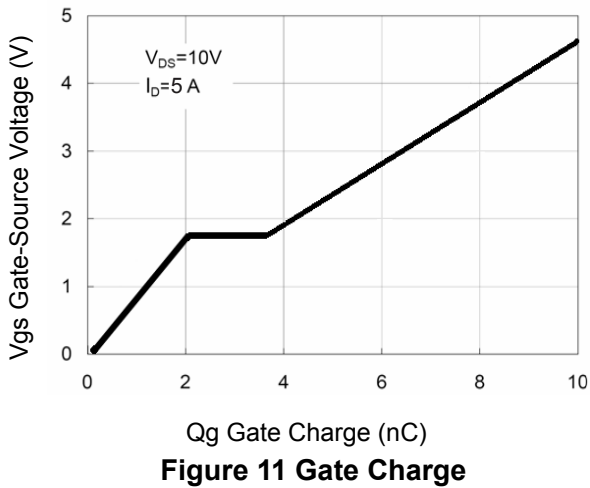
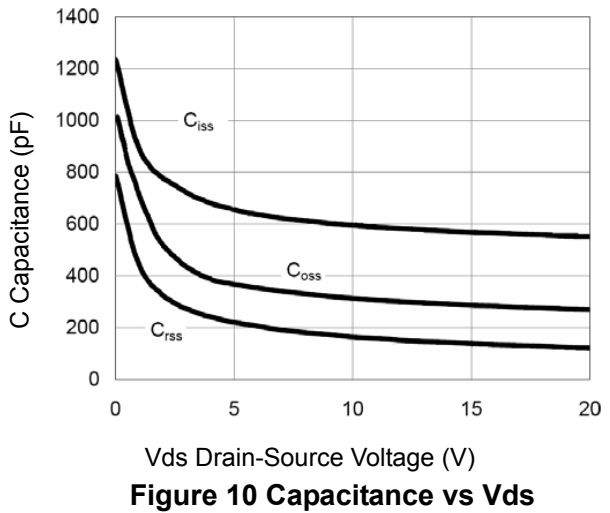
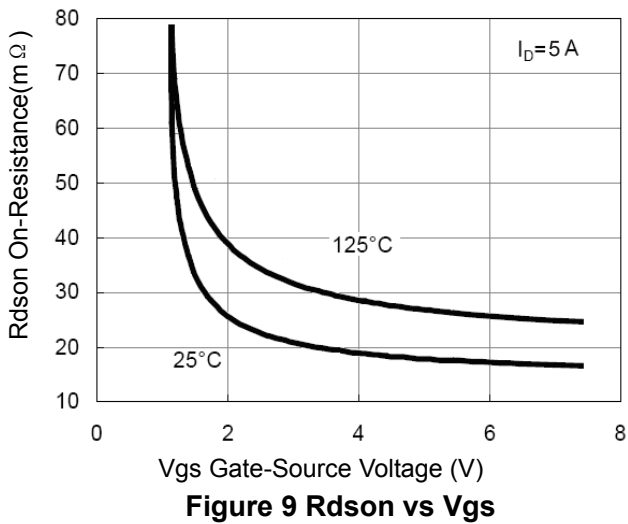
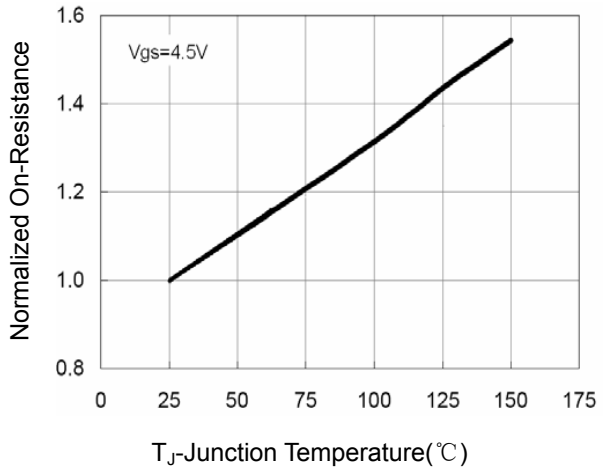
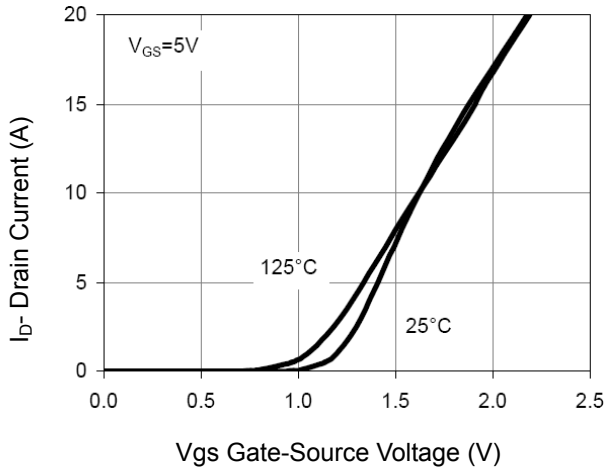


Figure 6 Drain-Source On-Resistance

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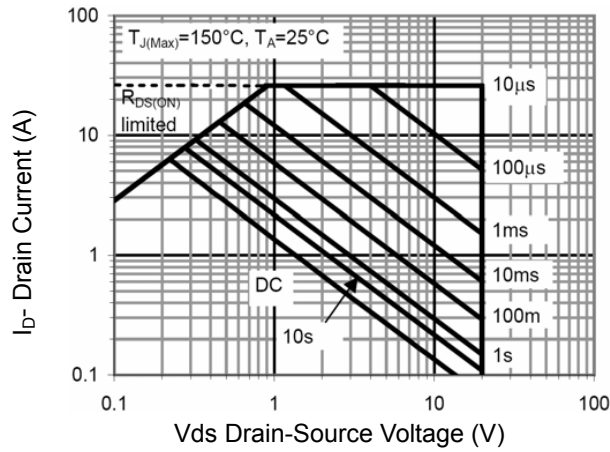


Figure 13 Safe Operation Area

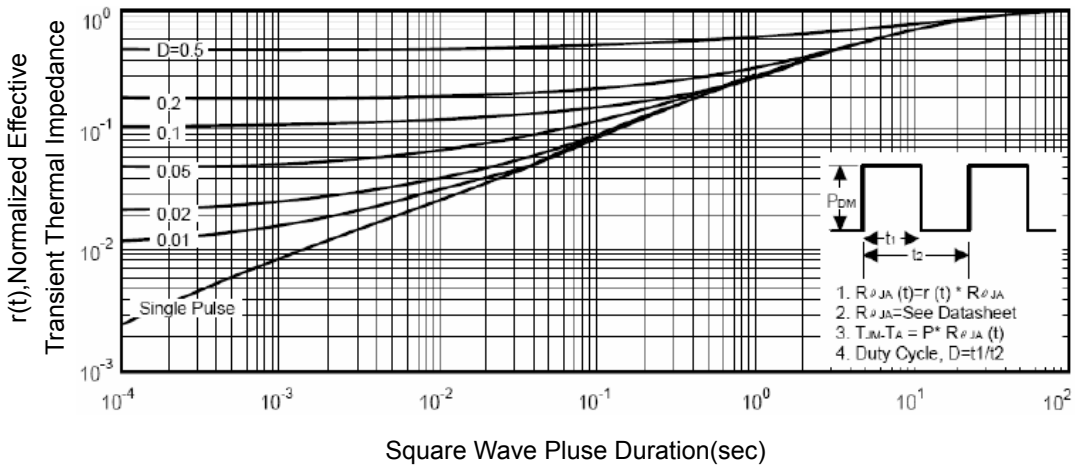


Figure 14 Normalized Maximum Transient Thermal Impedance