General Description

The 8205A uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a wide variety of applications.

Features

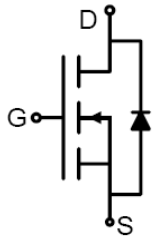
- Improved dv/dt capability
- Fast switching
- Green Device Available

Application

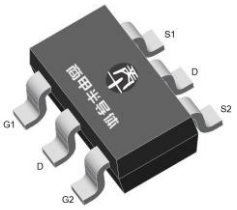
- MB/VGA/Vcore
- Portable Equipment
- Battery Powered System
- Load Switch
- LCD Display inverter

Key Performance Parametes

Parameter	Value	Unit
BV_{DSS_TYP}	20	V
$R_{DS(ON)\_TYP}$	20	mΩ
I_D	6	A
Q_G	8.2	nC



Schematic Diagram



SOT23-6L top view

RoHS

Package Marking and Ordering Information

Device/Ordering Code	Marking	Package	Packing	Reel Size	Tape width	Quantity
8205A	8205A	SOT23-6L	Tape	\	\	3000 Pcs

Table 1. Absolute Maximum Ratings (T_A=25℃ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage (V_{GS}=0V)	20	V
V_{GS}	Gate-Source Voltage (V_{DS}=0V)	±12	V
I_D	Drain Current-Continuous(T_A=25℃)	6	A
	Drain Current-Continuous(T_A=70℃)	4.8	A
$I_{DM\ (pluse)}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	20	A
P_D	Maximum Power Dissipation(T_A=25℃)	1.07	W
	Maximum Power Dissipation(T_A=70℃)	0.68	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

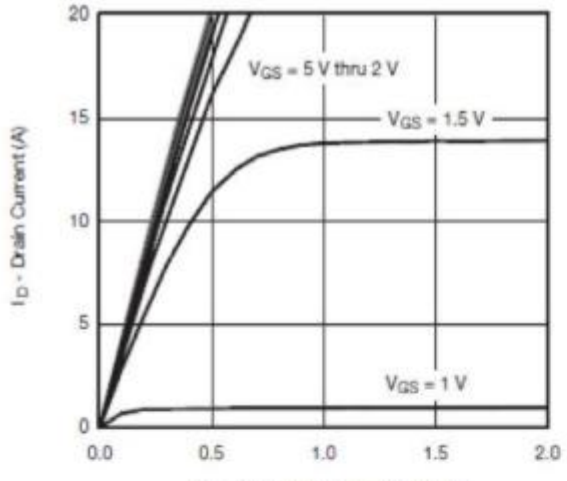
Symbol	Parameter	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient		117	℃/W

Table 3. Electrical Characteristics (T_J=25℃ unless otherwise noted)

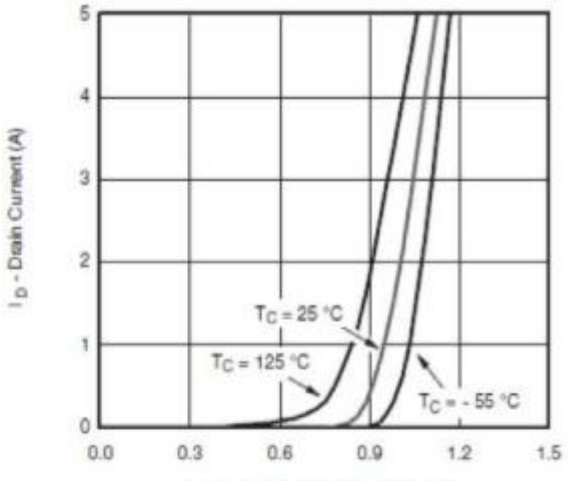
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V I_D=250μA	20			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V T_J=25℃			1	μA
		V_{DS}=20V, V_{GS}=0V T_J=125℃			100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±10V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.4		1	V
g_{FS}	Forward Transconductance	V_{DS}=5V, I_D=3.6A		10		S
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=3A T_J=25℃		20	25	mΩ
$R_{DS(ON)}$	Drain-Source On-State Resistance	V_{GS}=2.5V, I_D=2A T_J=25℃		26	37	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V,V_{GS}=0V, f=1.0MHz		850		pF
C_{oss}	Output Capacitance			120		pF
C_{rss}	Reverse Transfer Capacitance			60		pF
Switching Parameters						
$t_{d(on)}$	Turn-on Delay Time	V_{GS}=4.5V, V_{DS}=10V, R_L=2Ω, R_{GEN}=1Ω		10		nS
t_r	Turn-on Rise Time			16		nS
$t_{d(off)}$	Turn-Off Delay Time			31		nS
t_f	Turn-Off Fall Time			10		nS
Q_g	Total Gate Charge	V_{GS}=4.5V, V_{DS}=10V, I_D=1A		8.2		nC
Q_{gs}	Gate-Source Charge			1.2		nC
Q_{gd}	Gate-Drain Charge			1		nC
Source-Drain Diode Characteristics						
I_{SD}	Source-Drain Current (Body Diode)				6	A
V_{SD}	Forward on Voltage (Note 2)	V_{GS}=0V, I_S=1.6A		0.85	1.2	V

Notes 1.Repetitive Rating: Pulse width limited by maximum junction temperature.
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature.

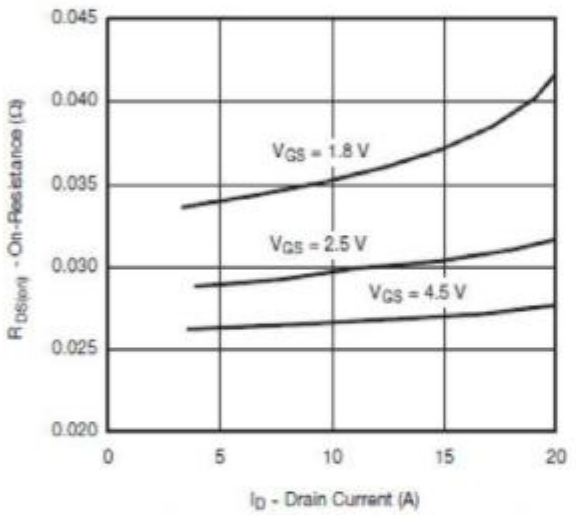
Typical Electrical And Thermal Characteristics (Curves)



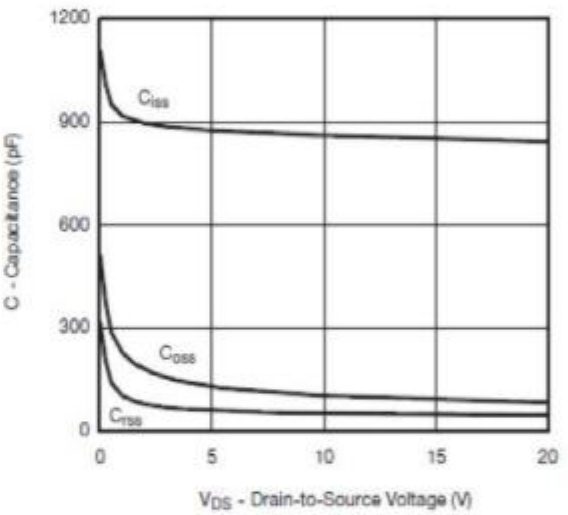
Output Characteristics



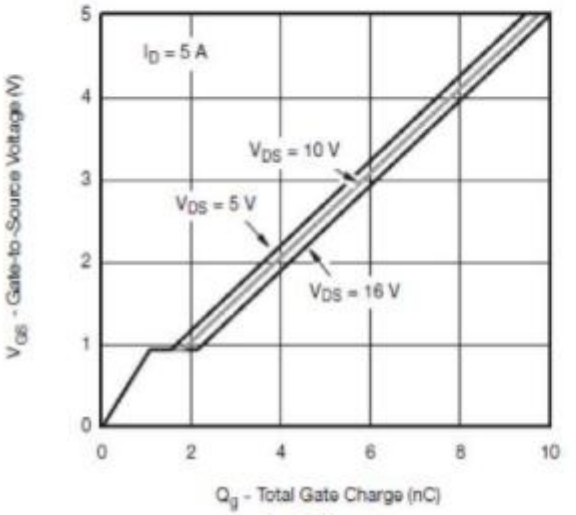
Transfer Characteristics



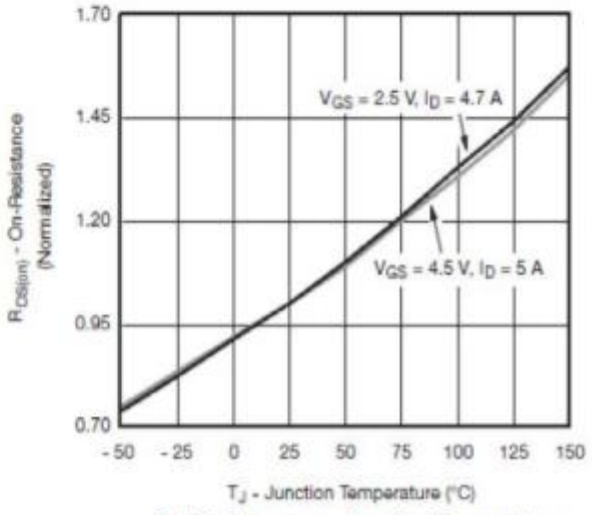
On-Resistance vs. Drain Current and Gate Voltage



Capacitance

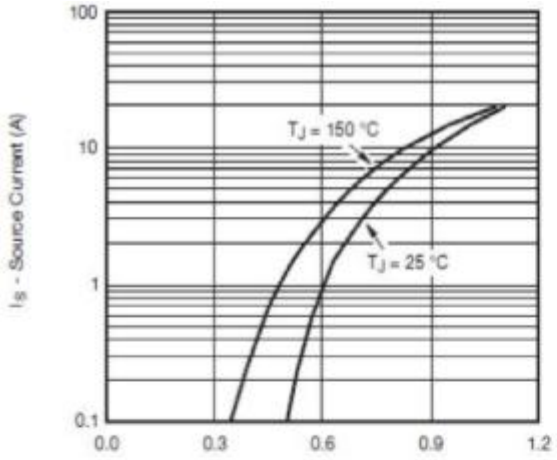


Gate Charge

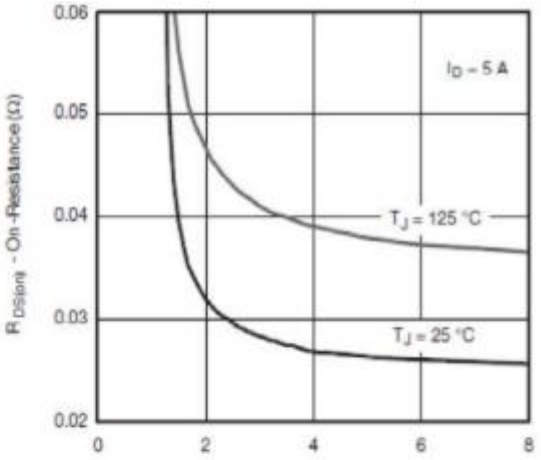


On-Resistance vs. Junction Temperature

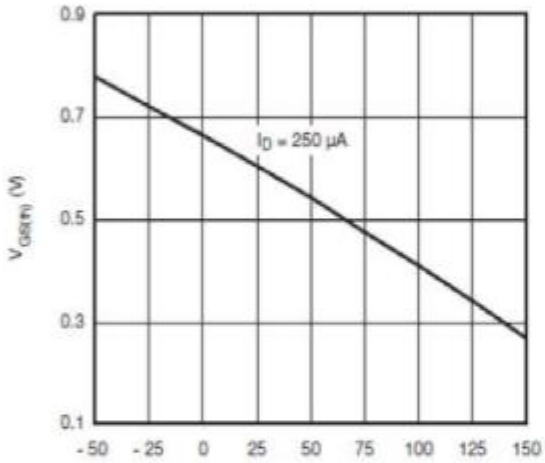
Typical Electrical And Thermal Characteristics (Curves)



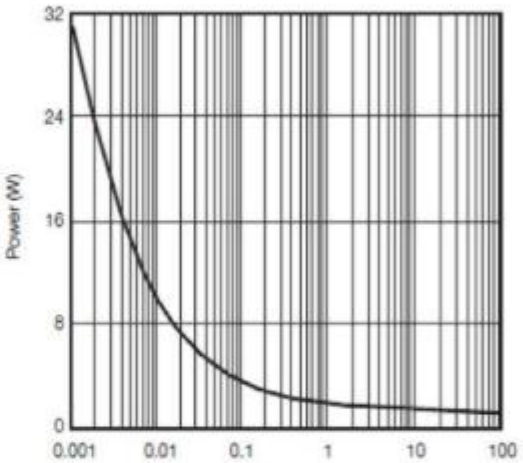
Source-Drain Diode Forward Voltage



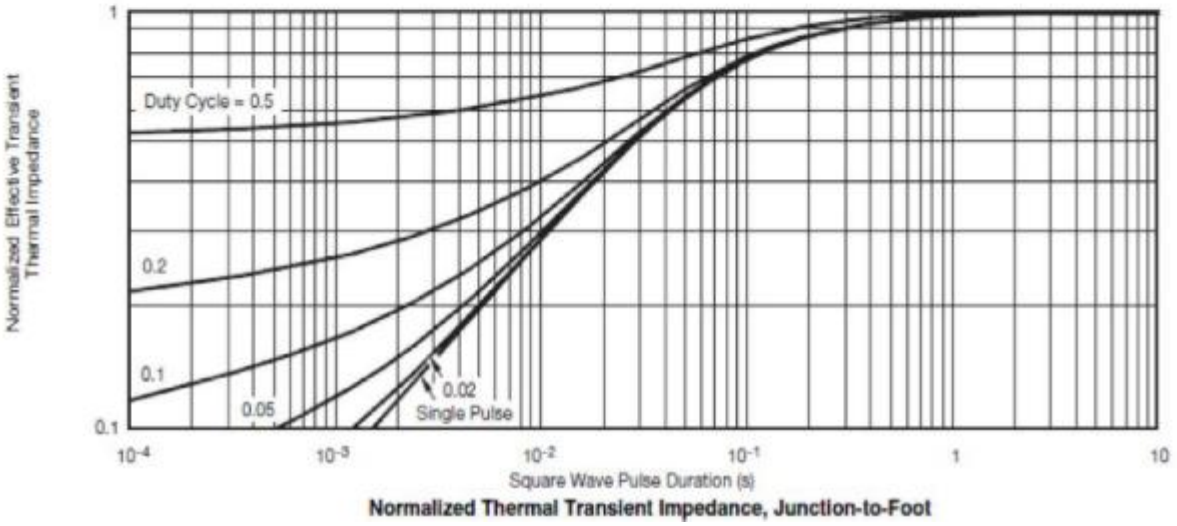
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage

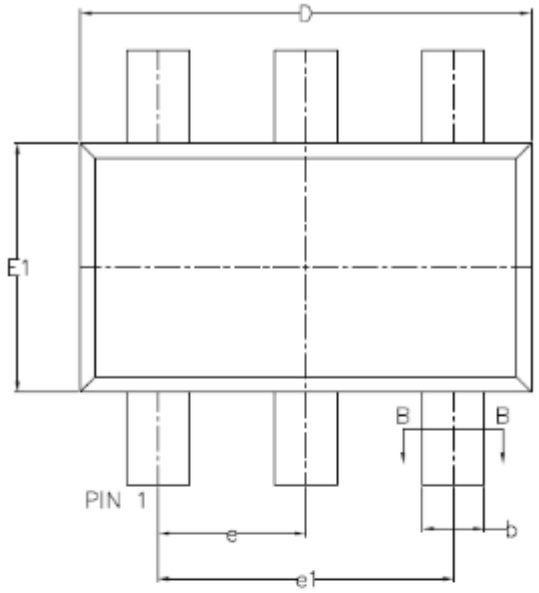


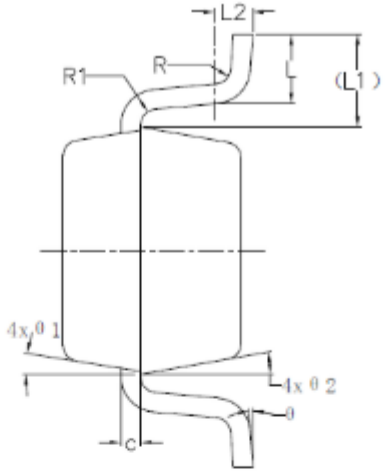
Single Pulse Power (Junction-to-Ambient)

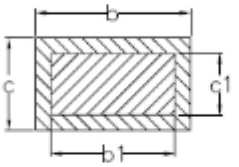


Normalized Thermal Transient Impedance, Junction-to-Foot

SOT23-6L Package Information



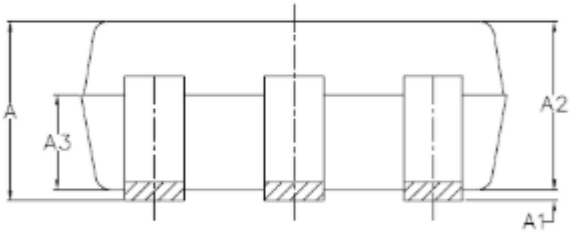




SECTION: B–B

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	–	–	1.45
A1	0.00	–	0.15
A2	0.90	1.15	1.30
A3	0.60	0.65	0.70
b	0.39	–	0.49
b1	0.35	0.40	0.45
c	0.08	–	0.22
c1	0.08	0.13	0.20
D	2.80	2.90	3.00
E	2.60	2.80	3.00
E1	1.50	1.60	1.70
e	0.85	0.95	1.05
e1	1.80	1.90	2.00
L	0.35	0.45	0.60
L1	0.60 REF		
L2	0.25 BSC		
R	0.10	–	–
R1	0.10	–	0.25
θ	0°	–	8°
θ1	7°	9°	11°
θ2	8°	10°	12°



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