8205A

DATASHEET

Specification Revision History：

Version	Date	Description
V1.0	2021/09	New
V1.1	2023/03	Modify Ordering Information
V1.2	2024/02	Modify Ordering Information
V1.3	2025/05	Add application precautions and overall typesetting.

Description

The 8205A is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trenchtechnology and design to provide excellent Ros(ow, with low gate charge. Device is suitable for use in DC-DC conver- sion, power switch and charging circuit.
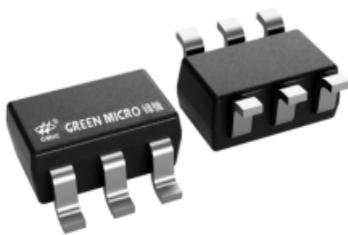
General Features

※Fast switching capability

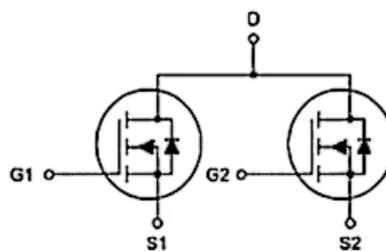※Avalanche energy Specified

※Improved dv/dt capability, high ruggedness

Applications

※Power Switching Application

※Load Switching

The appearance of the product

SOT-23-6

Equivalent Circuit

Ordering Information

Product Model	Package Type	Marking	Packing	Packing Qty
8205A-GM	SOT-23-6	8205A	REEL	3000PCS/REEL

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-Source Voltage	20	V
V_{GSS}	Continuous Gate-Source Voltage	± 8	V
I_D	Continuous Drain Current	6	A
I_{DM}	Pulsed Drain Current	20	A
P_D	Power Dissipation (TA=25°C)	1.14	W
T_J	Junction Temperature	+150	°C
T_{STG}	Storage Temperature	-55~+150	°C

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
OFF CHARACTERISTICS						
V_{DS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	20	---	---	V
$\dfrac{\Delta BV_{DSS}}{\Delta T_J}$	Breakdown Voltage Temperature Coefficient	$I_D=1mA$, Reference to 25°C	---	0.03	---	V/°C
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0V$	---	---	1	µA
I_{GSS}	Gate –Source leakage current	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	± 100	nA
ON CHARACTERISTICS						
$V_{GS(th)}$	Gate-threshold voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	---	1.5	V
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=6.0A$	---	22	25	mΩ
		$V_{GS}=2.5V, I_D=5.2A$	---	26	32	
Dynamic characteristics						
C_{iss}	Input Capacitance	$V_{DS}=20V, V_{GS}=0V, f=1MHz$	---	370	---	pF
C_{oss}	Output Capacitance		---	78	---	
C_{rss}	Reverse Transfer Capacitance		---	73	---	
SWITCHING CHARACTERISTICS						
Q_g	Total Gate Charge	$V_{DS}=20V, V_{GS}=5V, I_D=6.0A$	---	8.4	---	nC
Q_{gs}	Gate Source Charge		---	1	---	
Q_{gd}	Gate Drain Charge		---	1.8	---	
$T_{d(on)}$	Turn-on delay time	$V_{GS}=5V, V_{DS}=10V, R_D=10\Omega, R_G=6\Omega, I_D=6A$	---	3.6	---	ns
T_r	Rise time		---	2.7	---	
$T_{d(off)}$	Turn-off delay time		---	19	---	
T_f	Fall time		---	7.6	---	

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Drain-source body diode characteristics						
V_{SD}	Drain-Source Diode Forward Voltage	I_S=1.7A, V_{GS}=0V	---	---	1.2	V
I_S	Diode Continuous Forward Current	V_D=VG, V_S=1.3V	---	---	1.54	A

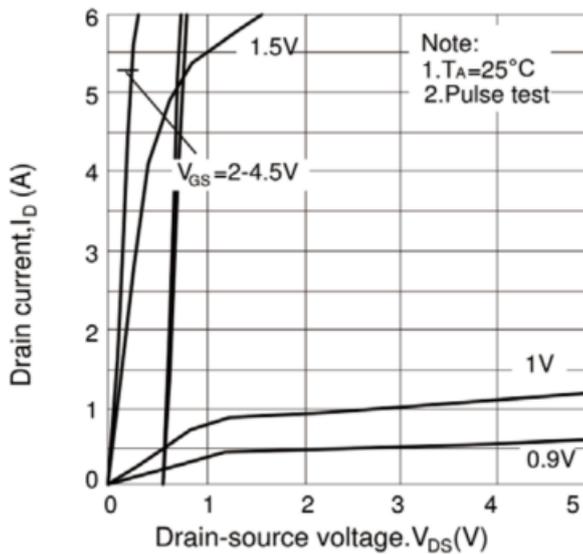Note: Pulse Test : Pulse width ≤ 300µs, Duty cycle ≤ 2%.

Typical Characteristics

Figure 1:Drain current vs.drain-source voltage
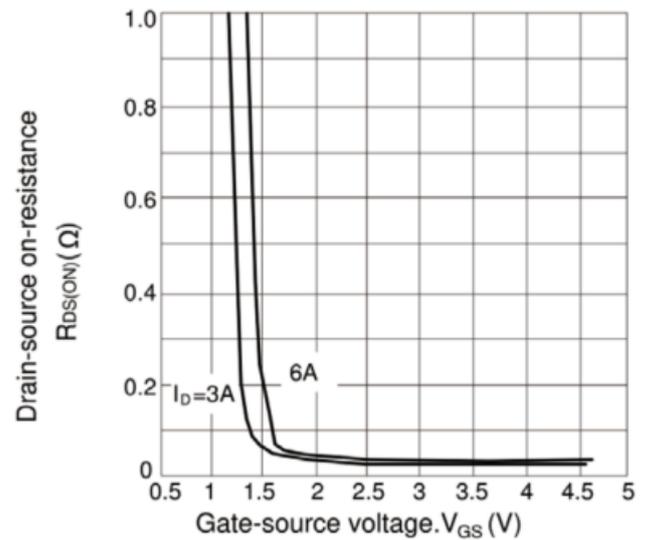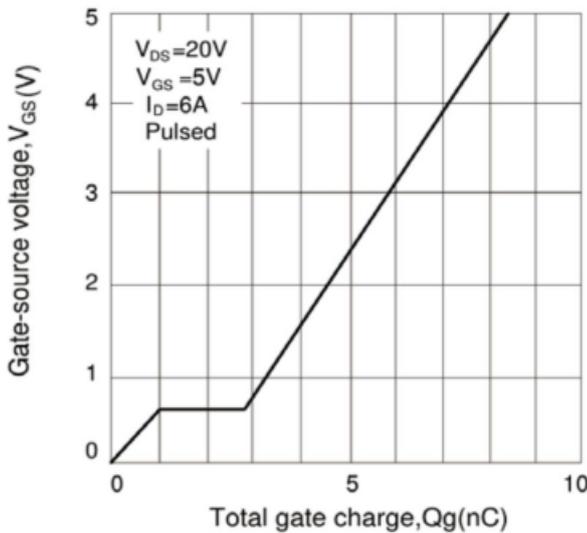

Figure 2:Drain-source on-resistancevs gate
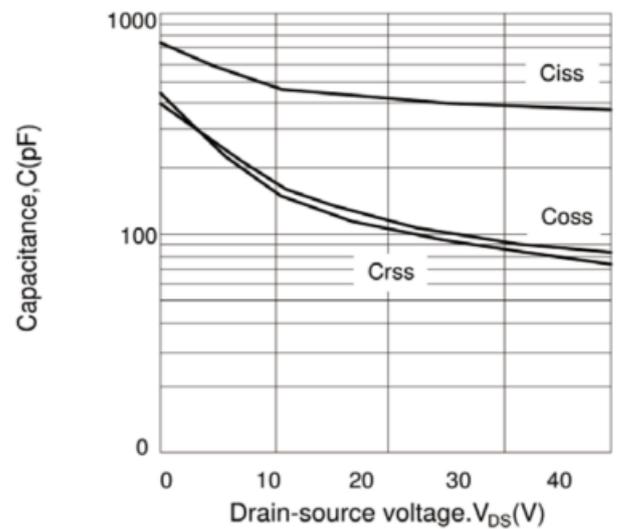

Figure 3:Gate charge characteristics
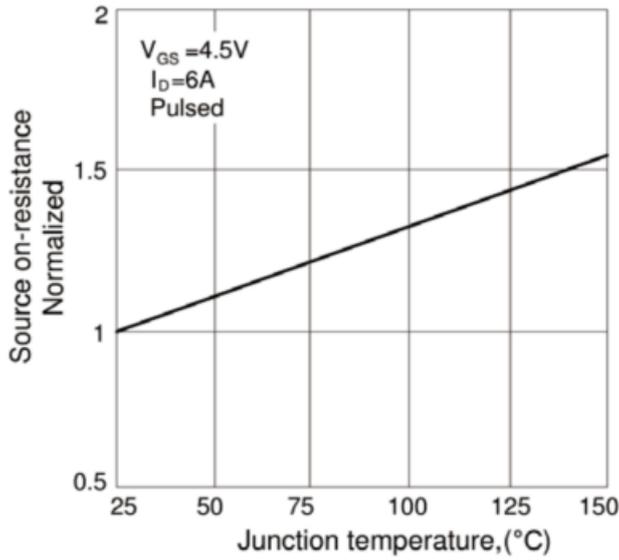

Figure 4:Capacitance characteristics

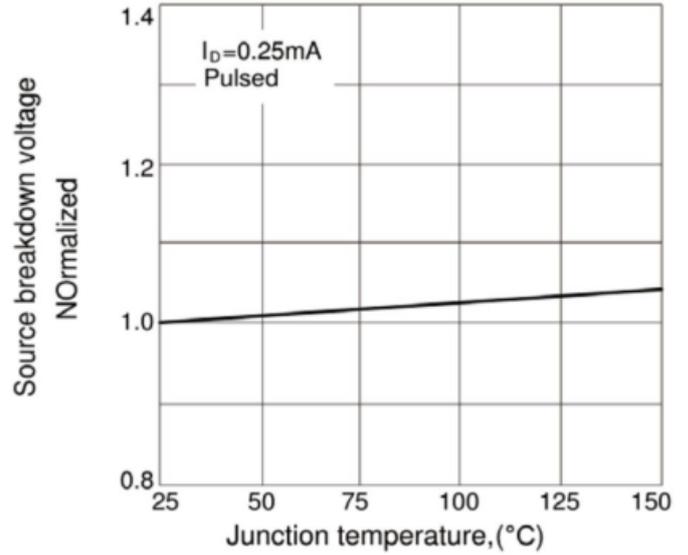Figure 5: Drain-source on-resistance vs. junction temperature
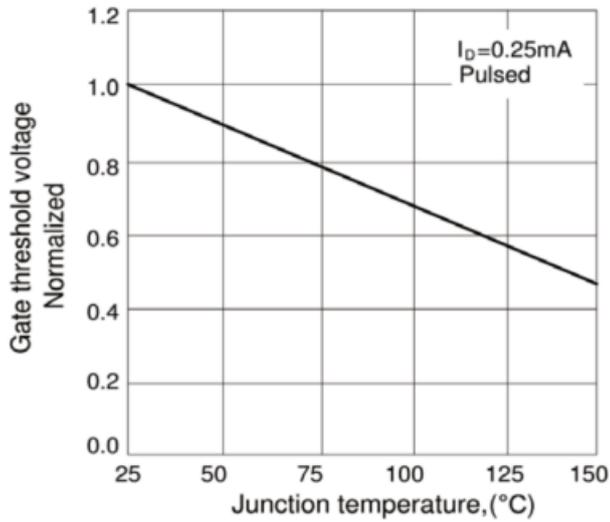

Figure 6: Breakdown voltage vs. junction temperature

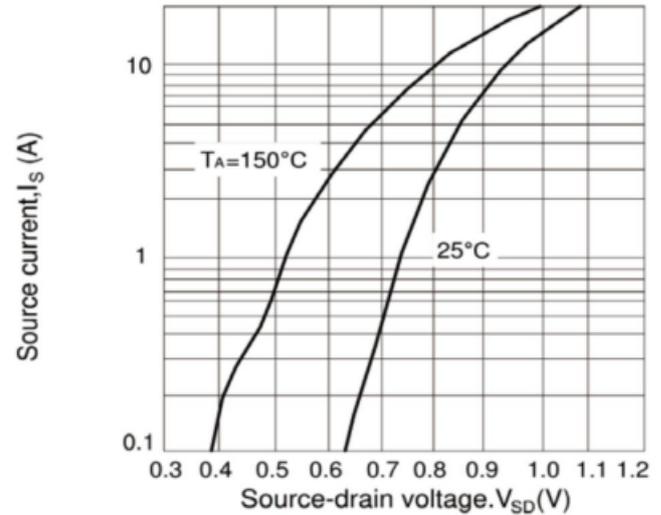Figure 7: Gate threshold voltage vs. Junction temperature

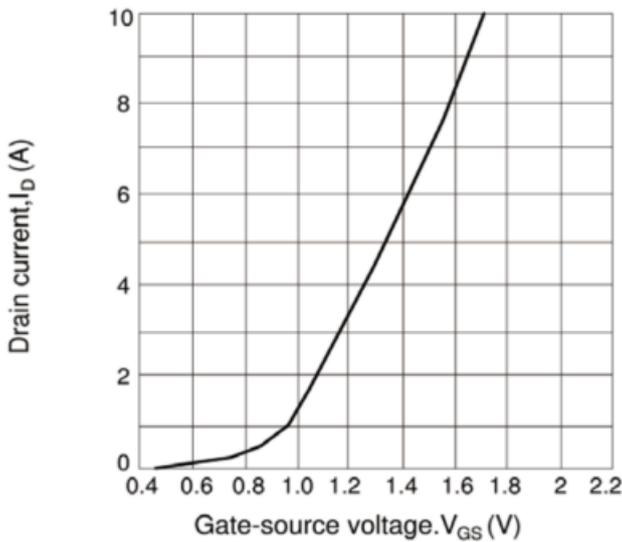Figure 8: Source current vs. source-drain voltage
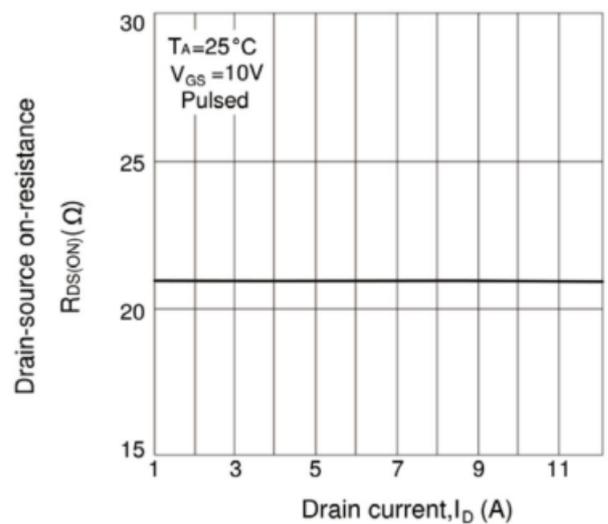

Figure 9: Drain current vs. case-source voltage

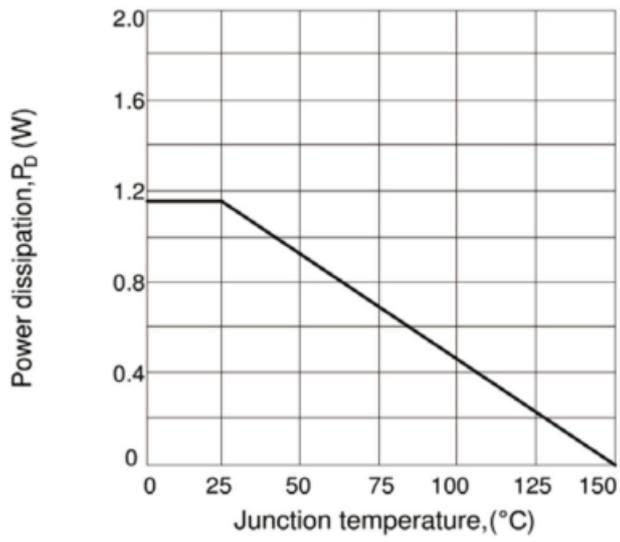Figure 10: Drain-source on-resistance vs. drain current

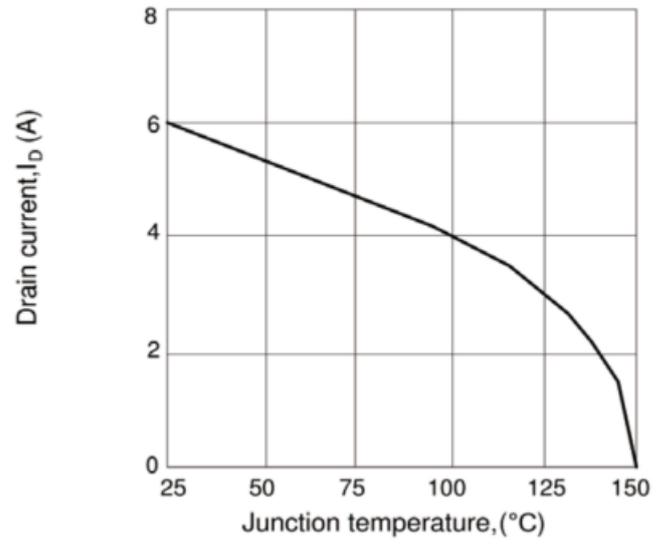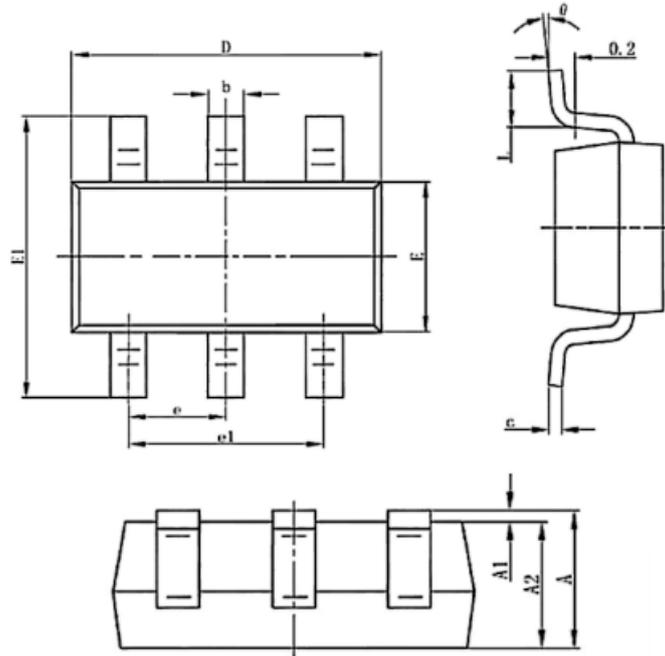Figure 11: Power dissipation vs. junction temperature

Figure 12: Drain current vs. junction temperature

Outline Dimensions

SOT-23-6   Unit : mm

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°

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