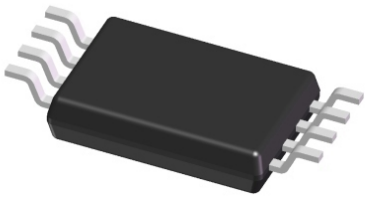
Description

The NM8205A 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 Battery protection or in other Switching application.



General Features

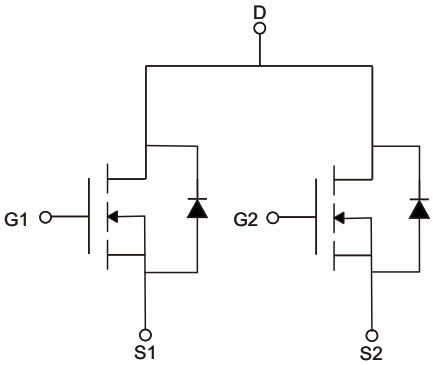
V_{DS}=20V I_D =6.5A

$R_{DS(ON)}$ < 25mΩ @ V_{GS}=10V

Application

Lithium battery protection

Mobile phone fast charging



Schematic Diagram

Absolute Maximum Ratings (T_A=25℃ unless otherwise specified)

Symbol	Parameter		Max	Units
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±12	V
I_D	Continuous Drain Current[Note1]	T_A=25℃	6.5	A
		T_A=70℃	4.8	A
I_{DM}	Pulsed Drain Current[Note2]		24	A
P_D	Power Disspation[Note3]	T_A=25℃	1.5	W
$R_{\theta JA}$	Thermal Resistance , Junction to Ambient		85	℃/W
T_J,T_{STG}	Operating and Storage Temperature Range		-50 to +150	℃

Electrical Characteristics

Ratings at 25 ℃ ambient temperature unless otherwise specified.

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}=0V,I_D=250uA	20	22		V
Static Drain-SourceOn-Resistance	$R_{DS(on)}$	V_{GS}=4.5V,I_D=5.0A		19	25	mΩ
		V_{GS}=2.5V,I_D=4.0A		24	40	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS},I_D=250uA	0.5	0.7	1.2	V
Gate-to-Source Leakage Current	I_{DSS}	V_{DS}=20V,V_{GS}=0V			1	uA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V,V_{GS}=±10V			±100	nA
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V f=1.0MHz		863		pF
Output Capacitance	C_{oss}			87		pF
Reverse Transfer Capacitance	C_{rss}			71		pF
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=4.5V I_D=7A		11.4		nC
Gate-Source Charge	Q_{gs}			1.6		nC
Gate-Drain(”Miller”) Charge	Q_{gd}			2.9		nC
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V,V_{GS}=4.5V I_D=5A, R_{GEN}=3. 3Ω		5		ns
Turn-on Rise Time	t_r			32.4		ns
Turn-o ffDelay Time	$t_{d(off)}$			28		ns
Turn-o ffFall Time	t_f			9		ns
Continuous Source Current[Note1\4]	Is	V_G=V_D=0V , Force Current			6	A
Diode Forward Voltage[Note2]	V_{SD}	Diode Forward Voltage			1.2	V

Note :

1、The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper.
2、The data tested by pulsed , pulse width ≦ 300us , duty cycle ≦ 2%
3、The power dissipation is limited by 175℃ junction temperature
4、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Electrical and Thermal Characteristics

Fig.1 Capacitance vs.Drain-Source Voltage

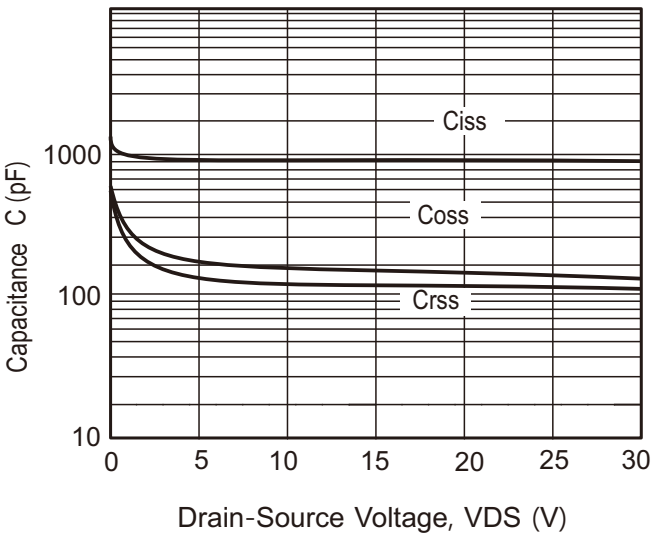


Fig.2 Gate Charge Vs.Gate-Source Voltage

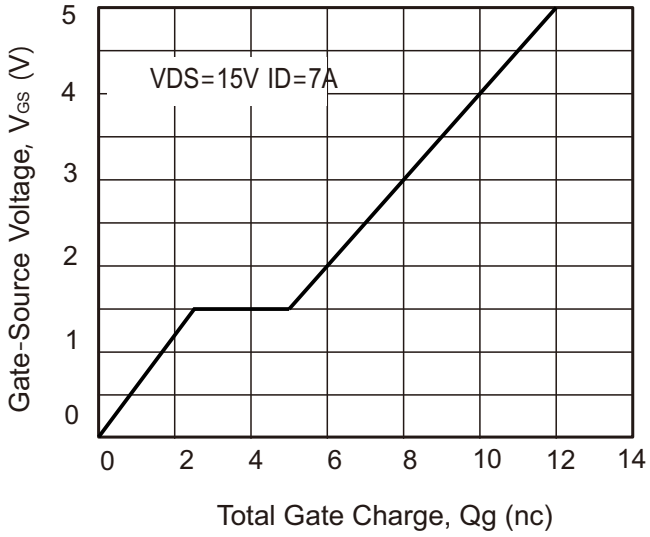


Fig 3 Output Characteristics

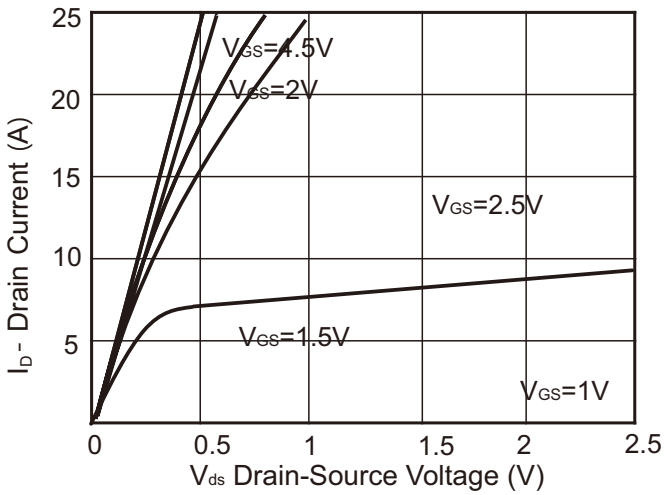


Fig 4 Drain-Source On-Resistance

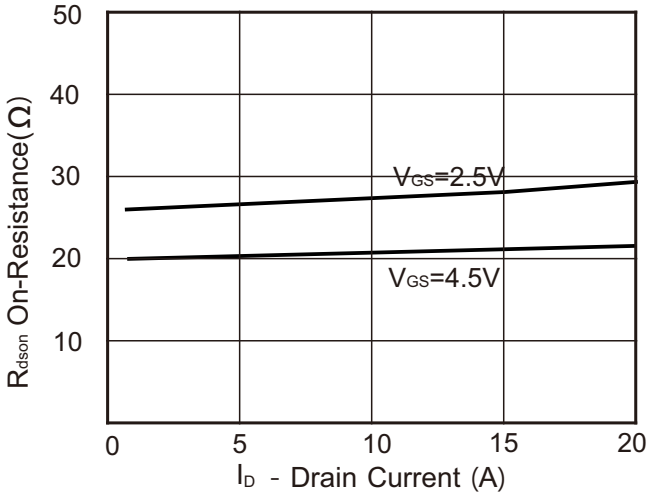


Fig 5 Transfer Characteristics

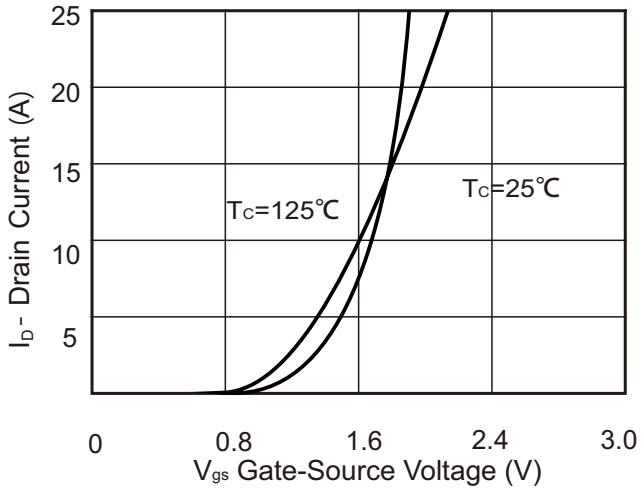


Fig 6 Source- Drain Diode Forward

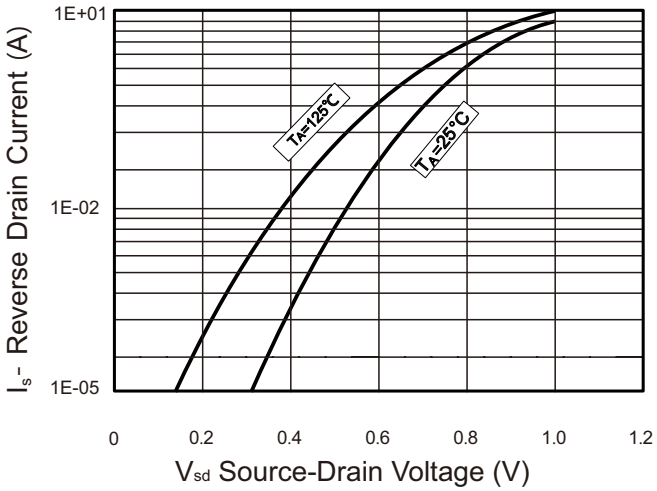


Fig 7 Safe Operation Area

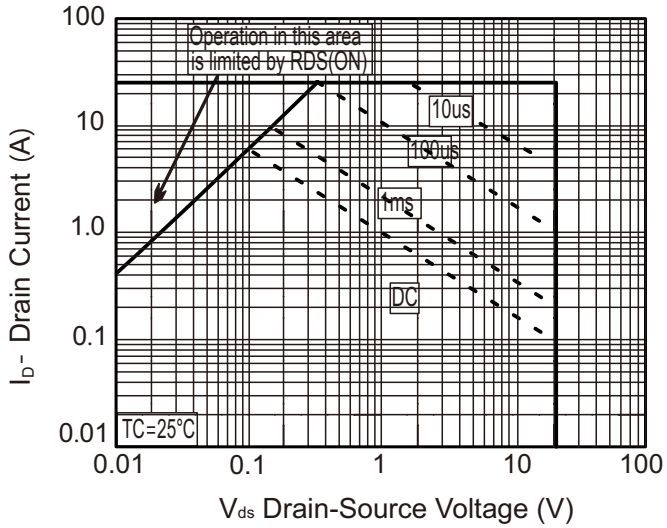


Fig 8 Normalized Breakdown Voltage vs . Junction Temperature

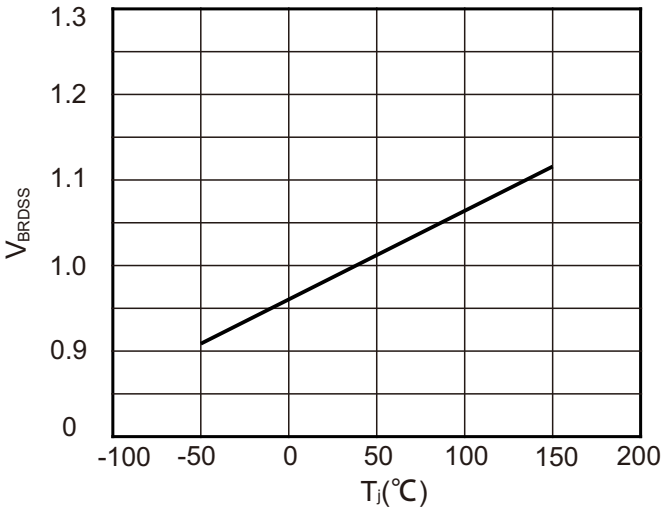


Fig 9 Normalized on Resistance vs . Junction Temperature

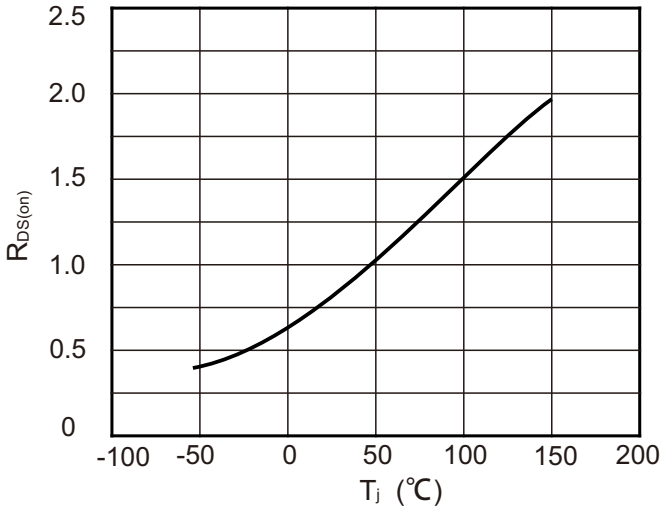
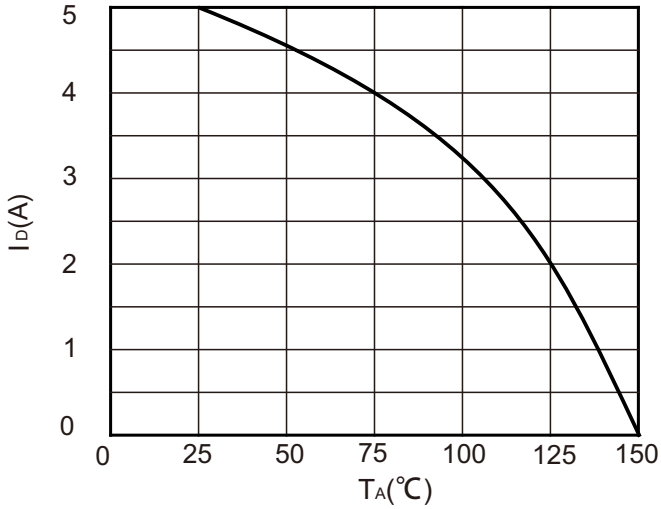
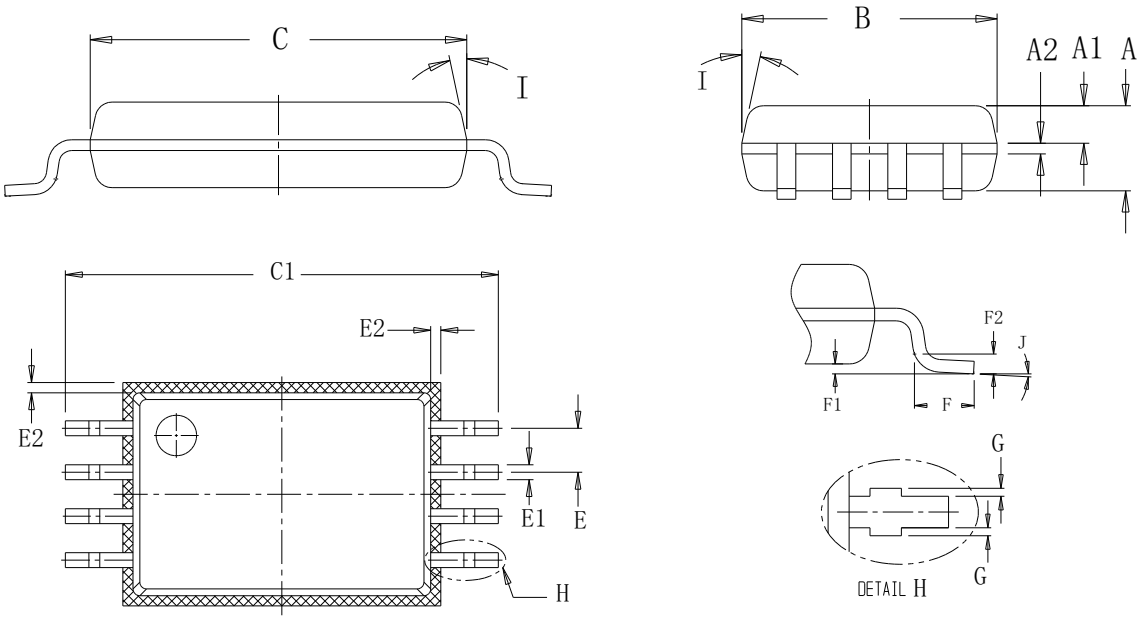


Fig 9 Maximmum Continuous Drain Current vs . Ambient Temperature



PACKAGE OUTLINE

Plastic surface mounted package; 6 leads



Unit		A	A1	A2	B	C	C1	E	E1	E2	F	F1	F2	G	I	J
mm	max	1.05	0.49		2.95	4.35	6.30		0.195		0.5	0			10°	0°
	typ	1.00	0.44	0.127	3.00	4.40	6.40	0.65	0.22	0.12	0.60	0.05	0.2	0.075	12°	3°
	min	0.95	0.39		3.05	4.45	6.50		0.245		0.7	0.1			14°	6°
mil	max	41	19		114	171	248		8	0	20	0			10°	0°
	typ	39	17	5	110	173	252	26	9	5	24	2	8	3	12°	3°
	min	37	15		106	175	256		10	0	28	4			14°	6°

Type number	Marking code
8205A	8205A

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