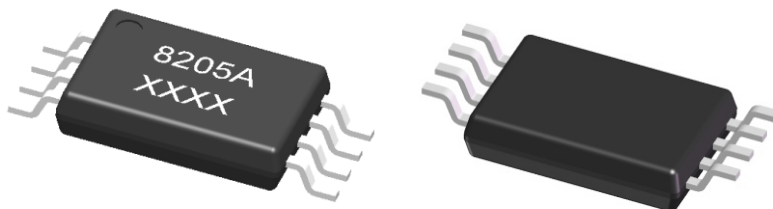


Description

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

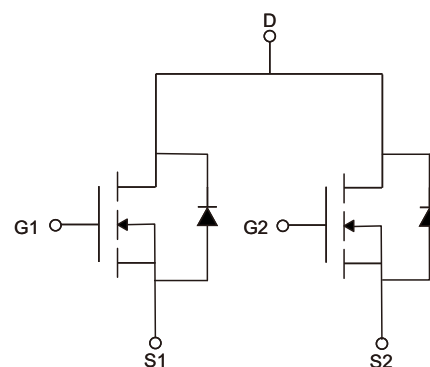
$V_{DS}=20V$ $I_D=6.5A$

$R_{DS(ON)} < 25m\Omega$ @ $V_{GS}=10V$

Application

Lithium battery protection

Mobile phone fast charging



Schematic Diagram

Absolute Maximum Ratings ($T_A=25^\circ C$ 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}	$T_A=25^\circ C$	6.5
		$T_A=70^\circ C$	4.8
I_{DM}	Pulsed Drain Current ^{Note2}	24	A
P_D	Power Dissipation ^{Note3}	$T_A=25^\circ C$	1.5
$R_{\theta JA}$	Thermal Resistance , Junction to Ambient	85	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range	-50 to +150	$^\circ C$



Electrical Characteristics

Ratings at 25 °C ambient temperature unless otherwise specified.

Parameter	Symbol	Conditions	Minimum	Typical	Maximum	Units
Drain-Source Breakdown Voltage	B_{VDSS}	$V_{GS}=0V, I_D=250\mu A$	20	22		V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=5.0A$		19	25	m Ω
		$V_{GS}=2.5V, I_D=4.0A$		24	40	m Ω
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.5	0.7	1.2	V
Gate-to-Source Leakage Current	I_{DSS}	$V_{DS}=20V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 10V$			± 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	$t_{d(on)}$	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=5A, R_{GEN}=3.3\Omega$		5		ns
Turn-on Rise Time	t_r			32.4		ns
Turn-off Delay Time	$t_{d(off)}$			28		ns
Turn-off Fall Time	t_f			9		ns
Continuous Source Current ^{Note1/4}	I_s	$V_G=V_D=0V$, 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 inch² FR-4 board with 2OZ copper.
- 2、 The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、 The power dissipation is limited by 175°C 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

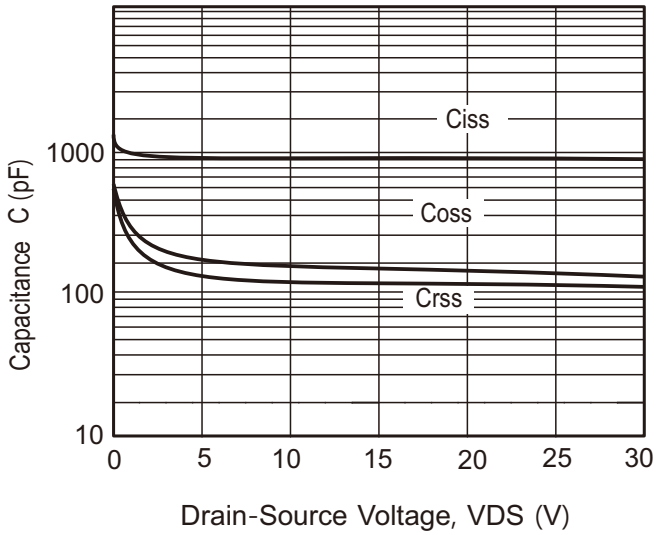


Fig.2 Gate Charge Vs.Gate-Source Voltage

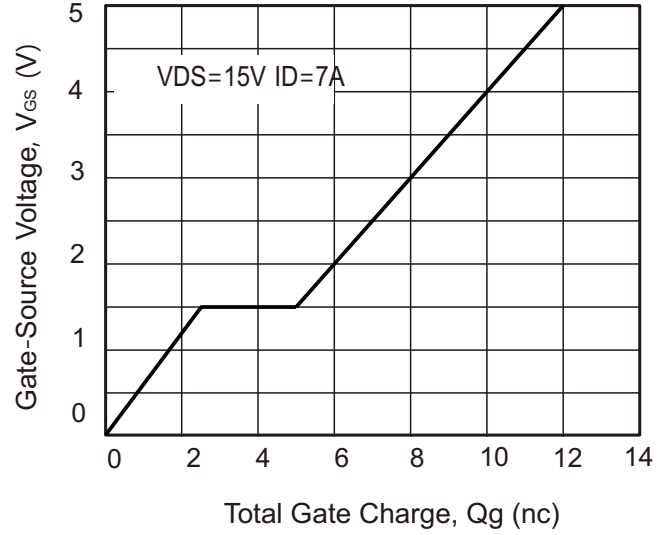


Fig 3 Output Characteristics

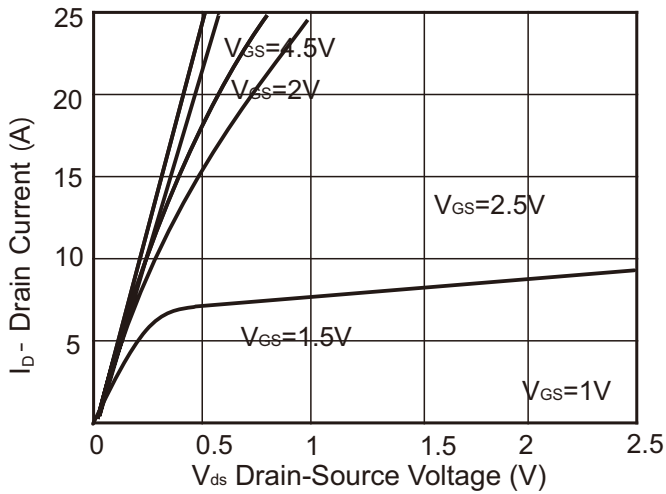


Fig 4 Drain-Source On-Resistance

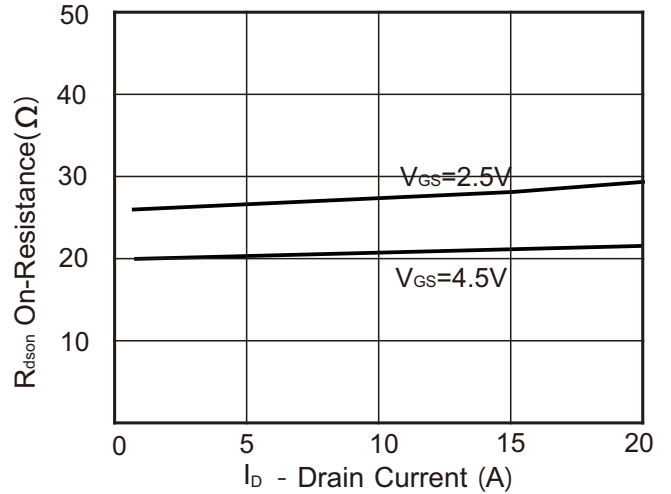


Fig 5 Transfer Characteristics

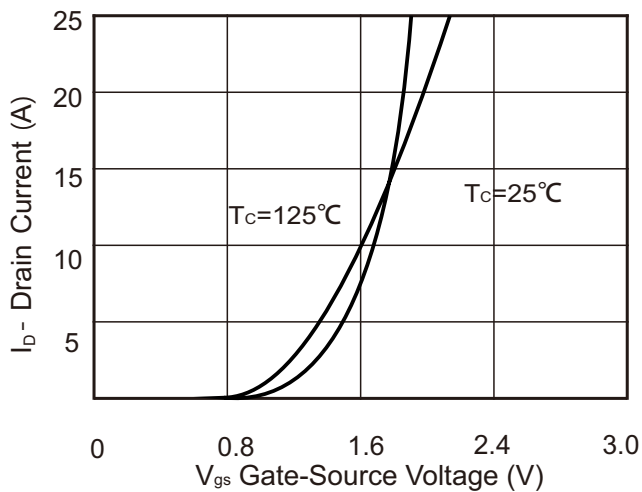


Fig 6 Source- Drain Diode Forward

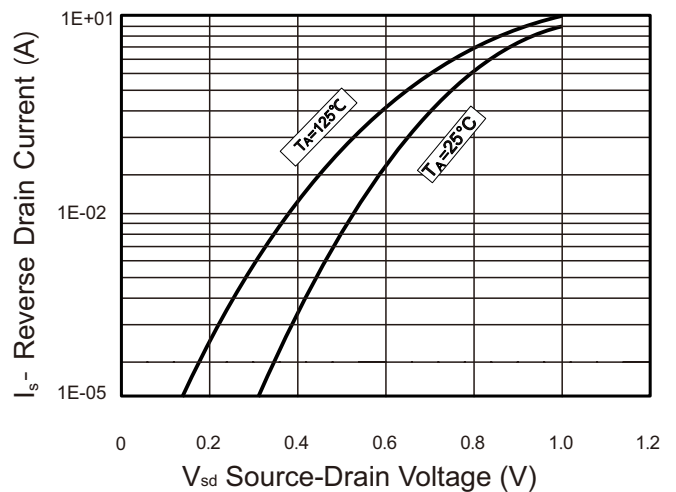




Fig 7 Safe Operation Area

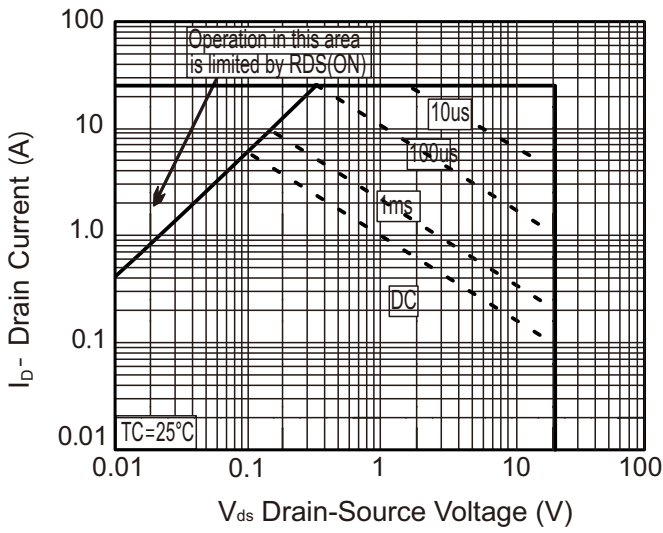


Fig 8 Normalized Breakdown Voltage vs . Junction Temperature

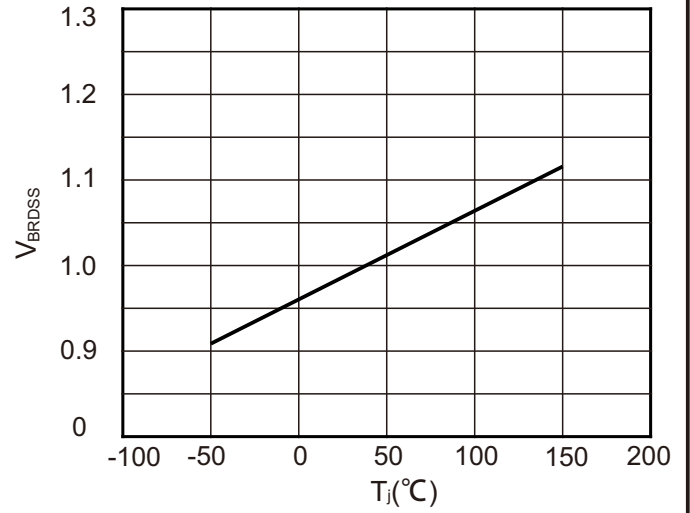


Fig 9 Normalized on Resistance vs . Junction Temperature

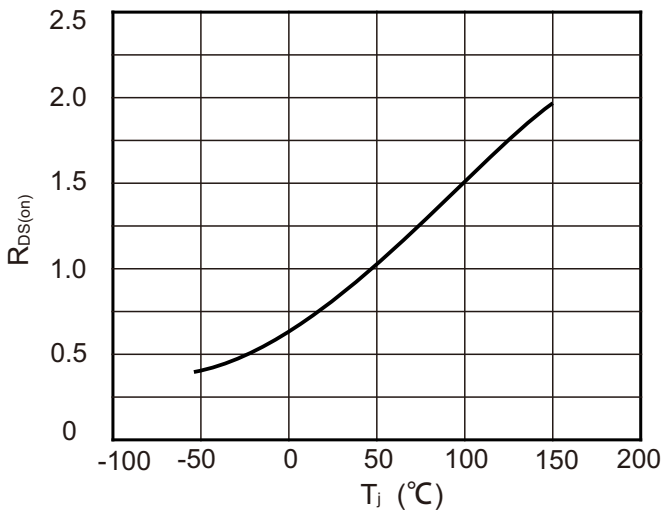
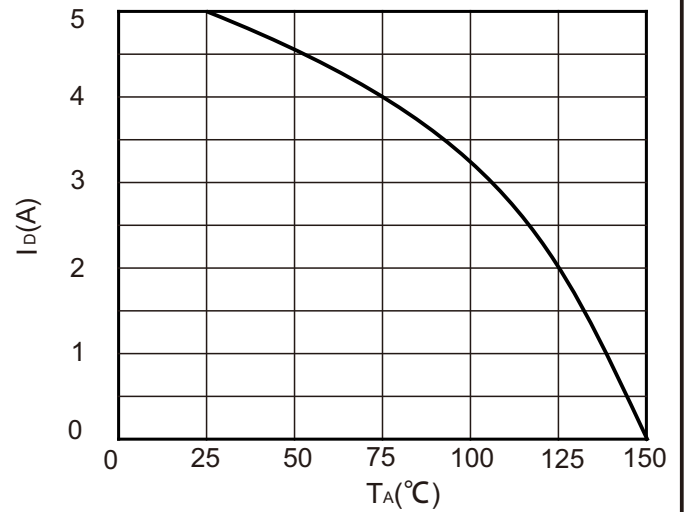


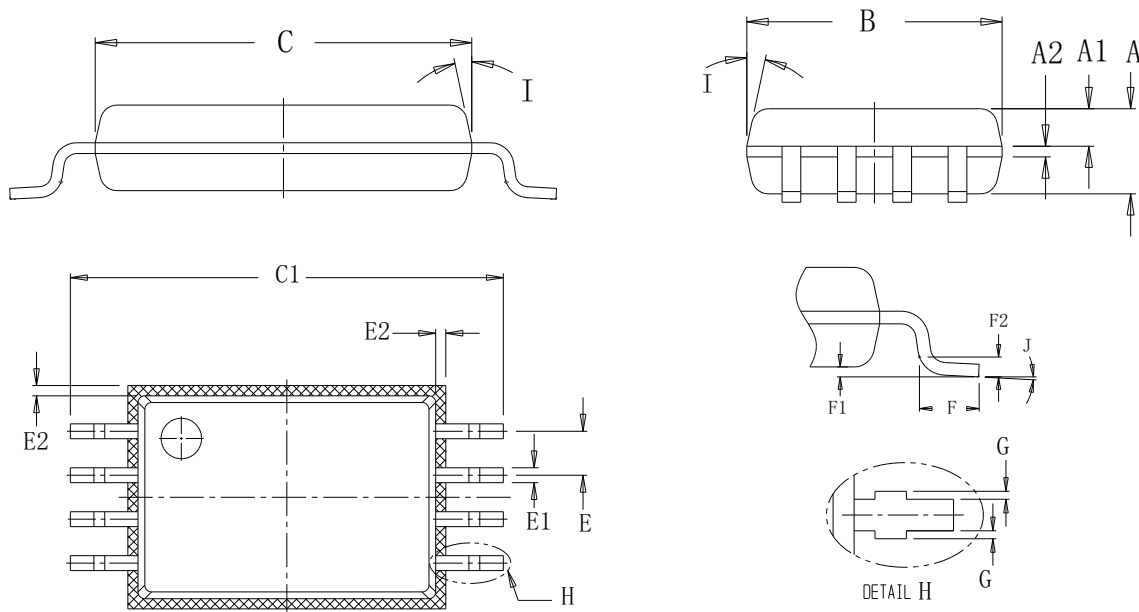
Fig 9 Maximum Continuous Drain Current vs . Ambient Temperature





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