HUASHUO SEMICONDUCTOR

HSCC8211

Dual N-Ch Fast Switching MOSFETs

General Description

The HSCC8211 is the low RDSON trenched N-CH MOSFETs with robust ESD protection. This product is suitable for Lithium-ion battery pack applications.

The HSCC8211 meet the RoHS and Green Product requirement with full function reliability approved.

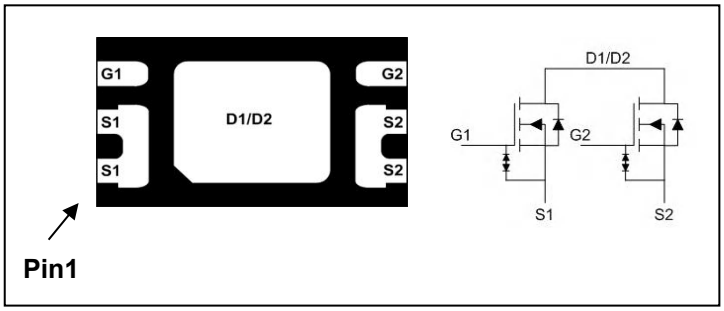
Product Summary

V_{DS}	20	V
$R_{DS(ON),max}$	13	mΩ
I_D	8	A

Features

- Low drain-source ON resistance
- Green Device Available
- ESD Protected Embedded

DFN2x3 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D@T_A=25°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	8	A
I_D@T_A=70°C	Continuous Drain Current, V_{GS} @ 4.5V[1]	6.4	A
I_{DM}	Pulsed Drain Current[2]	50	A
P_D@T_A=25°C	Total Power Dissipation[1]	1.56	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1] (t ≤10s)	---	80	°C/W

N-Channel Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V , I_D=250uA	20	---	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance[2]	V_{GS}=4.5V , I_D=2A	7	9	13	mΩ
		V_{GS}=4.0V , I_D=2A	7.5	9.5	13.5	
		V_{GS}=3.7V , I_D=2A	8	10	14.5	
		V_{GS}=3.1V , I_D=2A	8.5	11	16.5	
		V_{GS}=2.5V , I_D=2A	9.5	12.5	20	
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.5	0.6	1.2	V
I_{DSS}	Drain-Source Leakage Current	V_{DS}=16V , V_{GS}=0V , T_J=25℃	---	---	1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=55℃	---	---	5	
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±8V , V_{DS}=0V	---	---	±10	uA
gfs	Forward Transconductance	V_{DS}=5V , I_D=4A	---	32	---	S
Q_g	Total Gate Charge (4.5V)	V_{DS}=15V , V_{GS}=4.5V , I_D=3A	---	10.6	---	nC
Q_{gs}	Gate-Source Charge		---	2.2	---	
Q_{gd}	Gate-Drain Charge		---	4.1	---	
$T_{d(on)}$	Turn-On Delay Time	V_{DD}=15V , V_{GS}=4.5V , R_G=6Ω I_D=3A	---	7	---	ns
T_r	Rise Time		---	36	---	
$T_{d(off)}$	Turn-Off Delay Time		---	46.5	---	
T_f	Fall Time		---	15	---	
C_{iss}	Input Capacitance	V_{DS}=10V , V_{GS}=0V , f=1MHz	---	735	---	pF
C_{oss}	Output Capacitance		---	83	---	
C_{rss}	Reverse Transfer Capacitance		---	81	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current[1]	V_G=V_D=0V , Force Current	---	---	8	A
I_{SM}	Pulsed Source Current[2]		---	---	50	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V , I_S=8.0A , T_J=25℃	---	---	1.2	V

Note :
1.The data tested by surface mounted on a 1 inch^2 FR-4 board with 2OZ copper, t ≤10s.
2.The data tested by pulsed , pulse width ≦ 10us , duty cycle ≦ 1%

Typical Characteristics

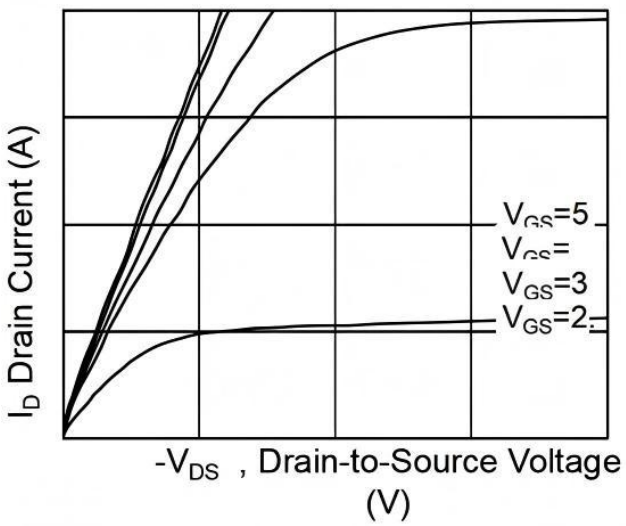


Fig.1 Typical Output Characteristics

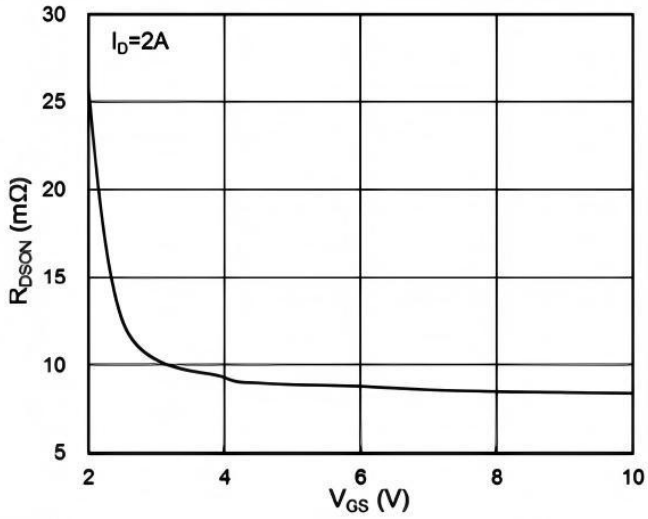


Fig.2 On-Resistance vs. G-S Voltage

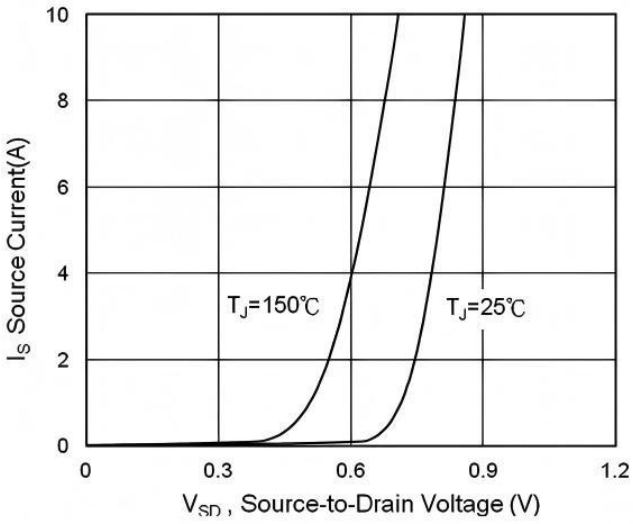


Fig.3 Forward Characteristics of Reverse diode

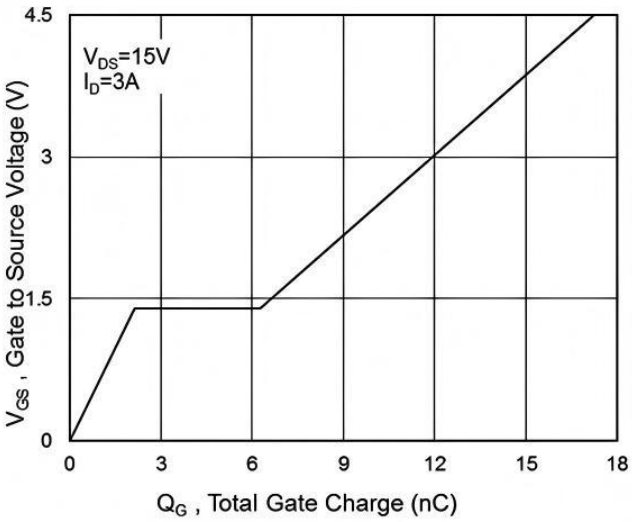


Fig.4 Gate-Charge Characteristics

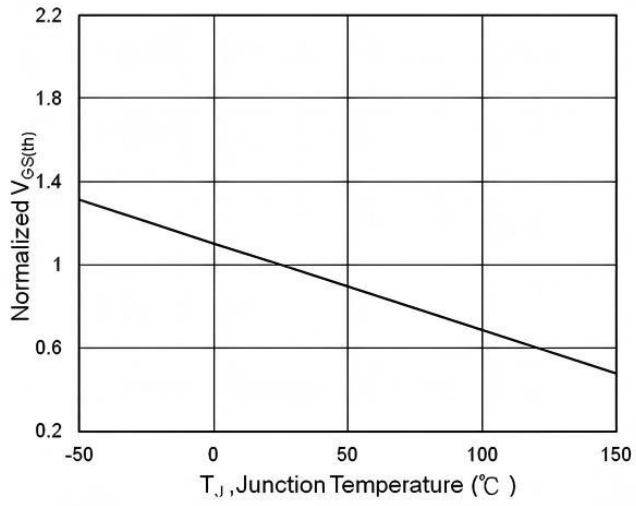


Fig.5 $V_{GS(th)}$ vs. T_J

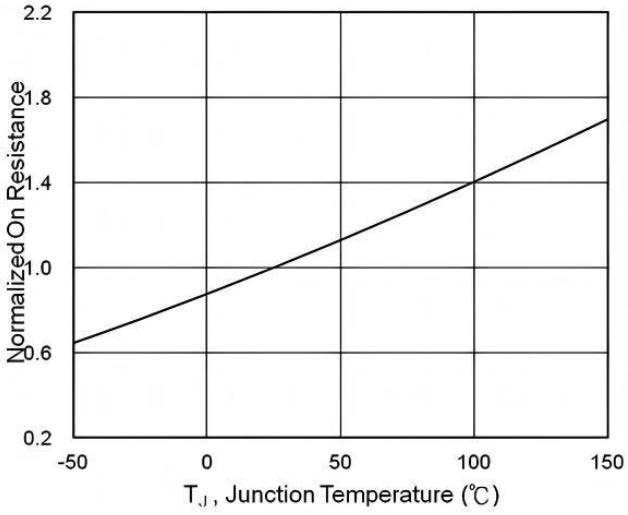


Fig.6 Normalized R_{DSON} vs. T_J

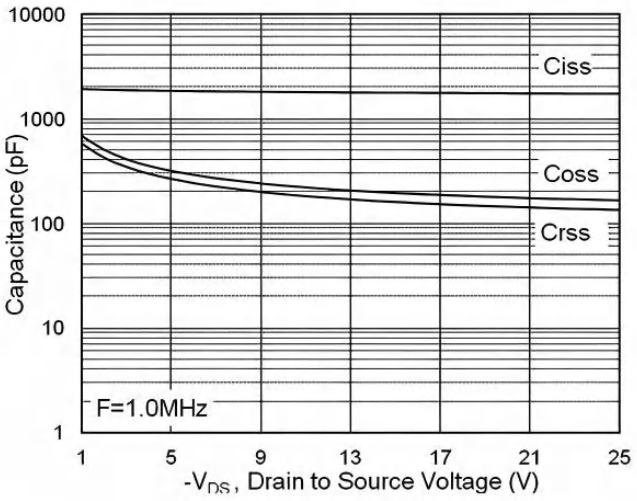


Fig.7 Capacitance

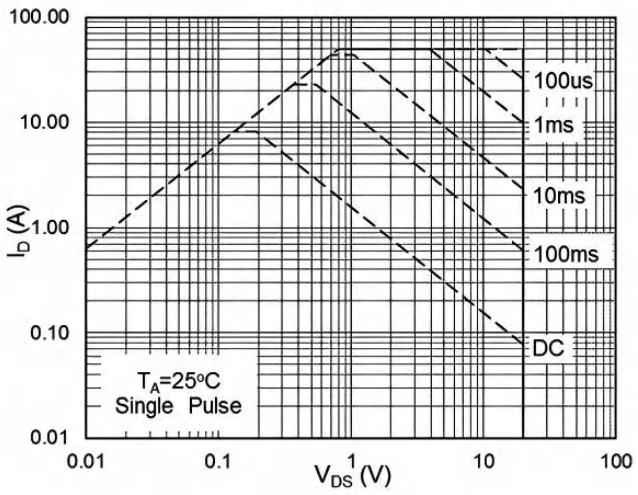


Fig.8 Safe Operating Area

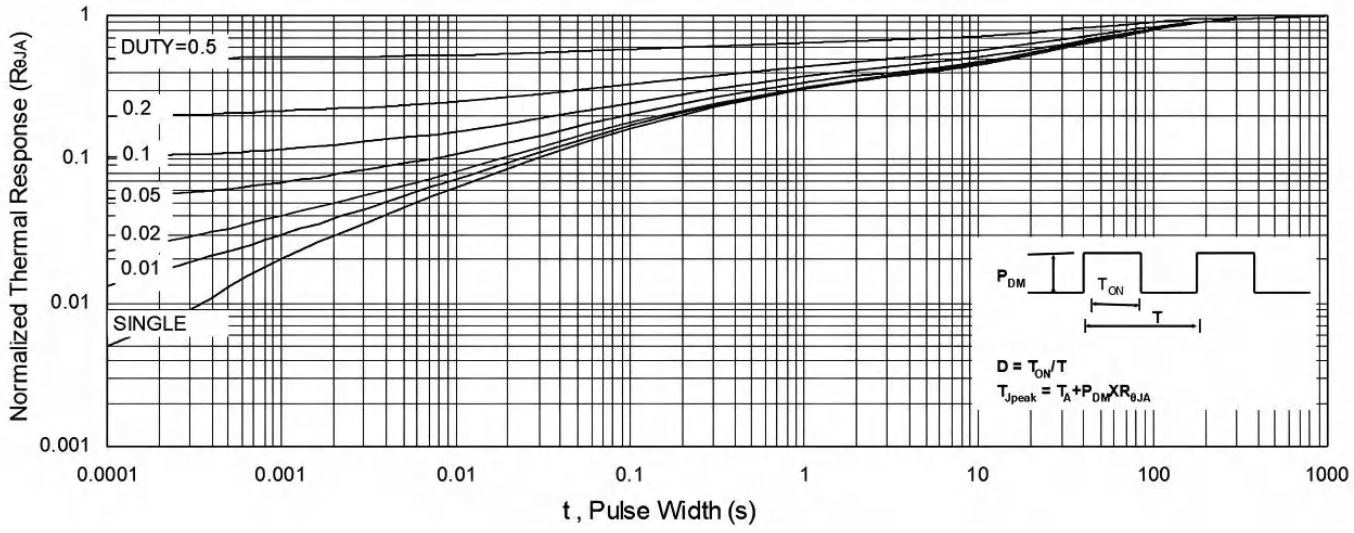


Fig.9 Normalized Maximum Transient Thermal Impedance

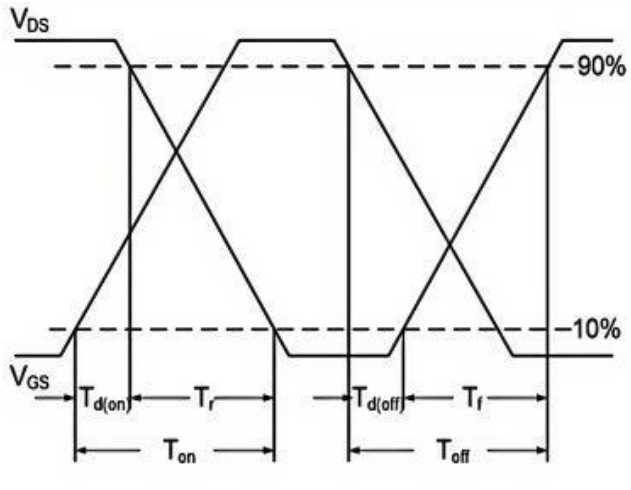


Fig.10 Switching Time Waveform

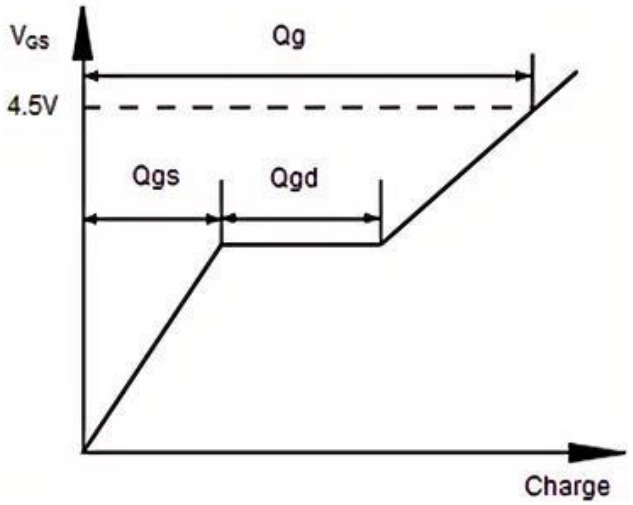
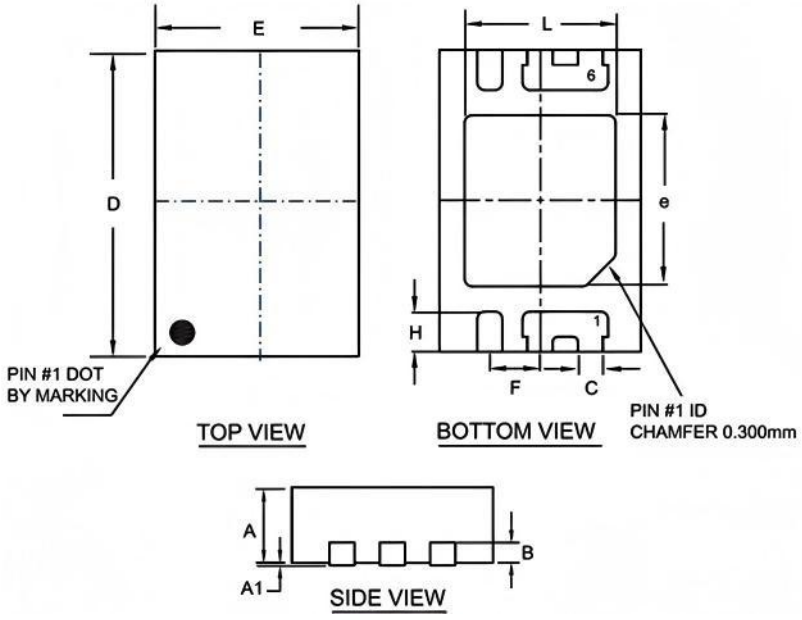


Fig.11 Gate Charge Waveform

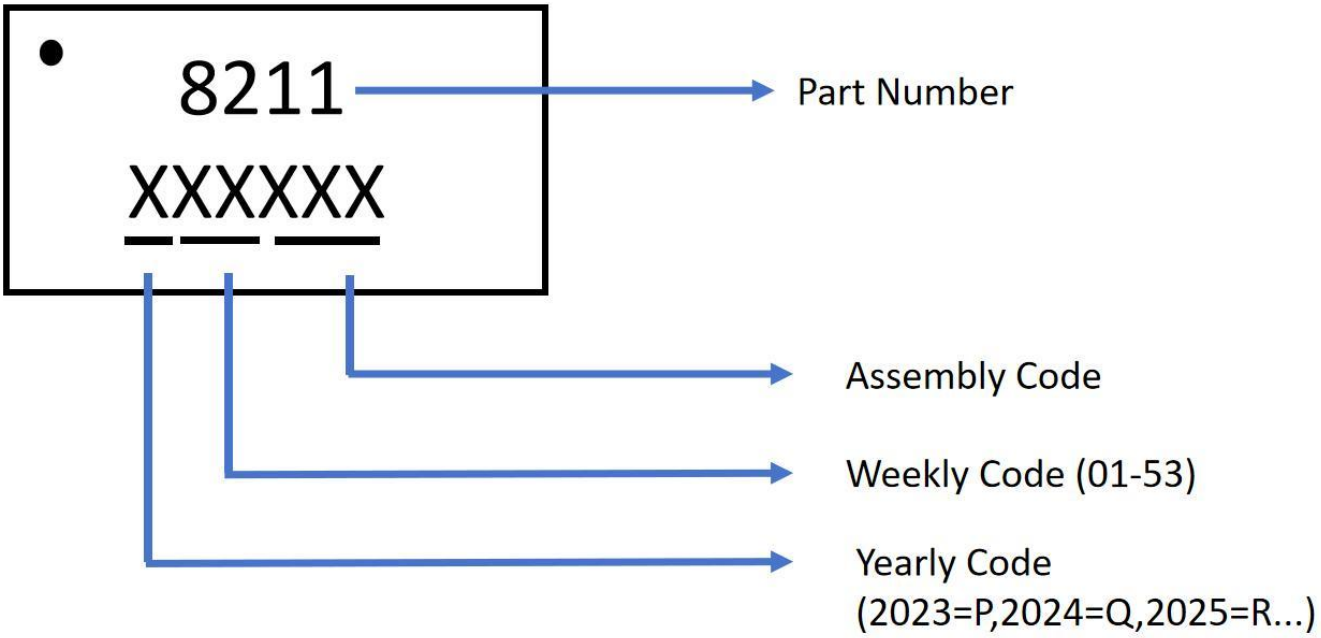
Ordering Information

Part Number	Package code	Packaging
HSCC8211	DFN2*3	3000/Tape&Reel

DFN2*3 Package Outline



SYMBOLS	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
D	2.950	3.050	0.116	0.120
E	1.950	2.050	0.077	0.081
H	0.350	0.450	0.014	0.018
L	1.450	1.550	0.057	0.061
e	1.650	1.750	0.065	0.069
B	0.195	0.211	0.008	0.008
C	0.200	0.300	0.008	0.012
F	0.500 BSC		0.02 BSC	


8211
XXXXXX
Part Number
Assembly Code
Weekly Code (01-53)
Yearly Code
(2023=P,2024=Q,2025=R...)