

### General Description

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

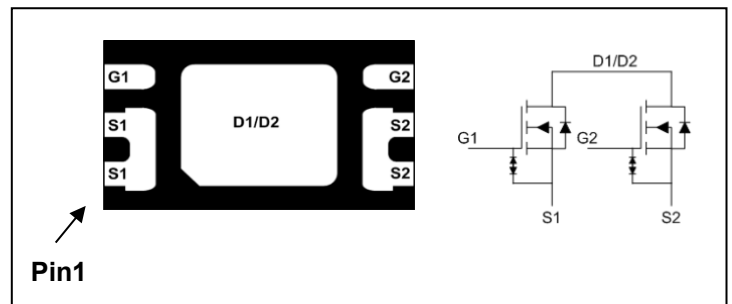
The HSCC8211 meet the RoHS and Green Product requirement with full function reliability approved.

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

### Product Summary

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

### DFN2x3 Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5V_1$	8	A
$I_D@T_A=70^\circ\text{C}$	Continuous Drain Current, $V_{GS} @ 4.5V_1$	6.4	A
$I_{DM}$	Pulsed Drain Current <sub>2</sub>	50	A
$P_D@T_A=25^\circ\text{C}$	Total Power Dissipation <sub>1</sub>	1.56	W
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
$T_J$	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sub>1</sub> ( $t \leq 10s$ )	---	80	$^\circ\text{C/W}$



**N-Channel Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V , I <sub>D</sub> =250uA	20	---	---	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sub>2</sub>	V <sub>GS</sub> =4.5V , I <sub>D</sub> =2A	7	9	13	mΩ
		V <sub>GS</sub> =4.0V , I <sub>D</sub> =2A	7.5	9.5	13.5	
		V <sub>GS</sub> =3.7V , I <sub>D</sub> =2A	8	10	14.5	
		V <sub>GS</sub> =3.1V , I <sub>D</sub> =2A	8.5	11	16.5	
		V <sub>GS</sub> =2.5V , I <sub>D</sub> =2A	9.5	12.5	20	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250uA	0.5	---	1.2	V
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =16V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	1	uA
		V <sub>DS</sub> =16V , V <sub>GS</sub> =0V , T <sub>J</sub> =55°C	---	---	5	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±8V , V <sub>DS</sub> =0V	---	---	±10	uA
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V , I <sub>D</sub> =4A	---	32	---	S
Q <sub>g</sub>	Total Gate Charge (4.5V)	V <sub>DS</sub> =15V , V <sub>GS</sub> =4.5V , I <sub>D</sub> =3A	---	10.6	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	2.2	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	4.1	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =15V , V <sub>GS</sub> =4.5V , R <sub>G</sub> =6Ω I <sub>D</sub> =3A	---	7	---	ns
T <sub>r</sub>	Rise Time		---	36	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	46.5	---	
T <sub>f</sub>	Fall Time		---	15	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =10V , V <sub>GS</sub> =0V , f=1MHz	---	735	---	pF
C <sub>oss</sub>	Output Capacitance		---	83	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	81	---	

**Diode Characteristics**

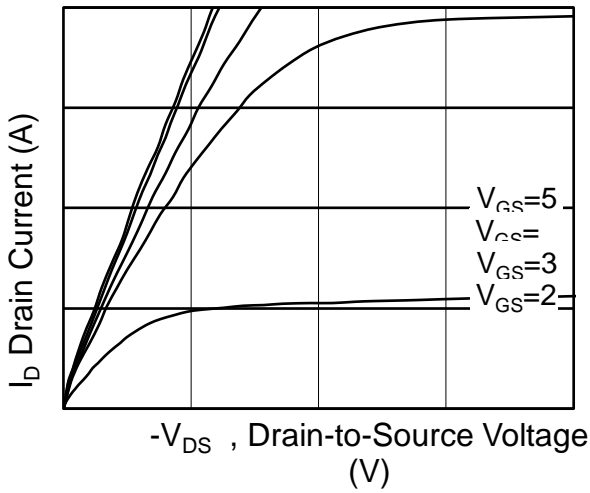
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current <sub>1</sub>	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	8	A
I <sub>SM</sub>	Pulsed Source Current <sub>2</sub>		---	---	50	A
V <sub>SD</sub>	Diode Forward Voltage <sub>2</sub>	V <sub>GS</sub> =0V , I <sub>S</sub> =8.0A , T <sub>J</sub> =25°C	---	---	1.2	V

Note :

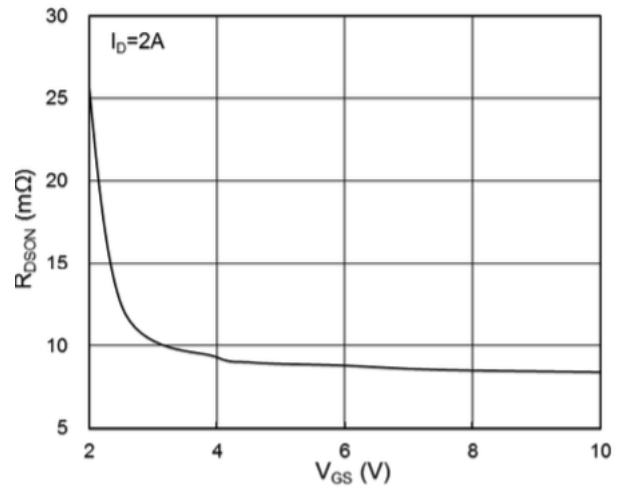
1.The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper, t ≤10s.

2.The data tested by pulsed , pulse width ≤ 10us , duty cycle ≤ 1%

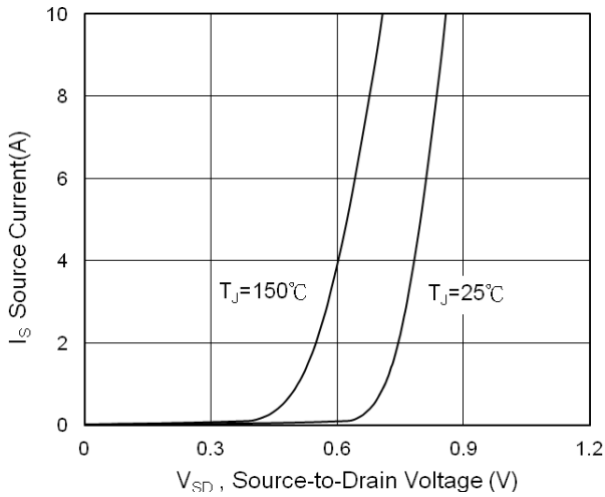
### Typical Characteristics



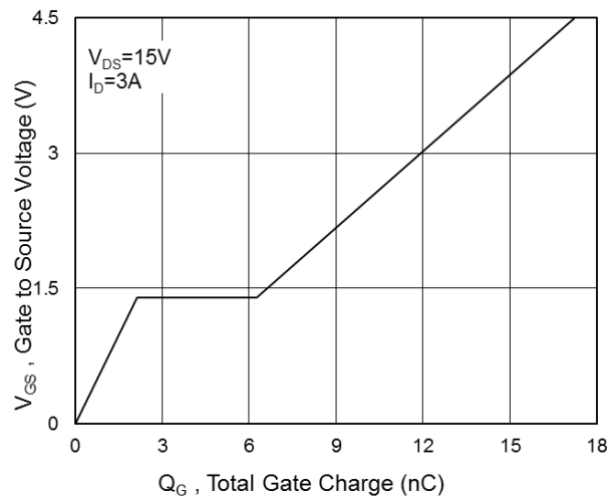
**Fig.1 Typical Output Characteristics**



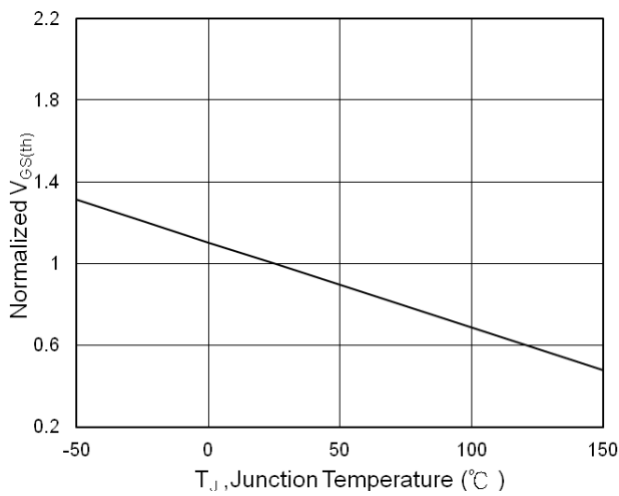
**Fig.2 On-Resistance vs. G-S Voltage**



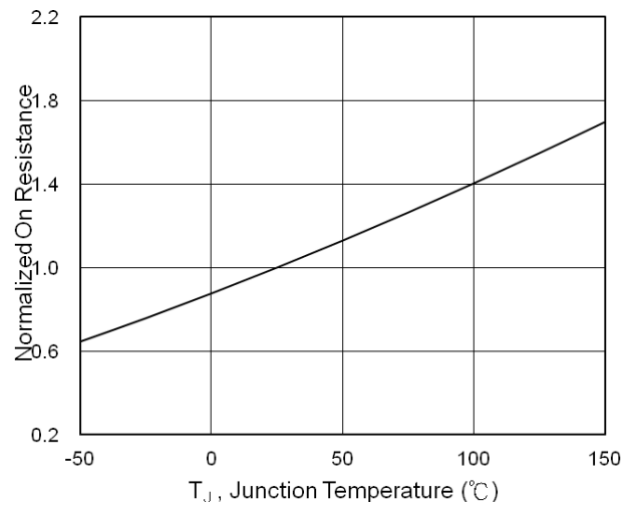
**Fig.3 Forward Characteristics of Reverse**



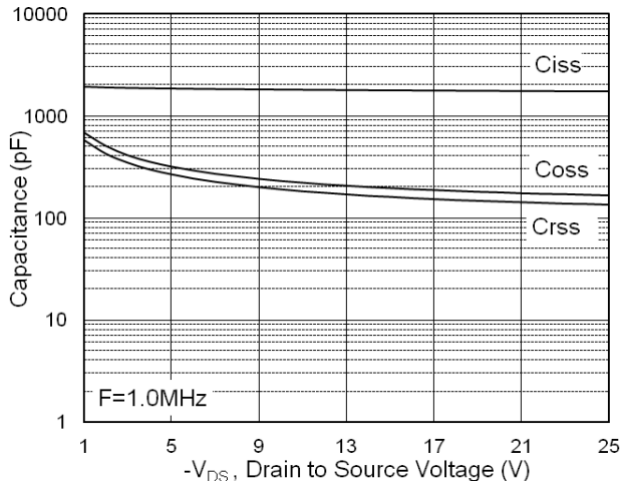
**Fig.4 Gate-Charge Characteristics**



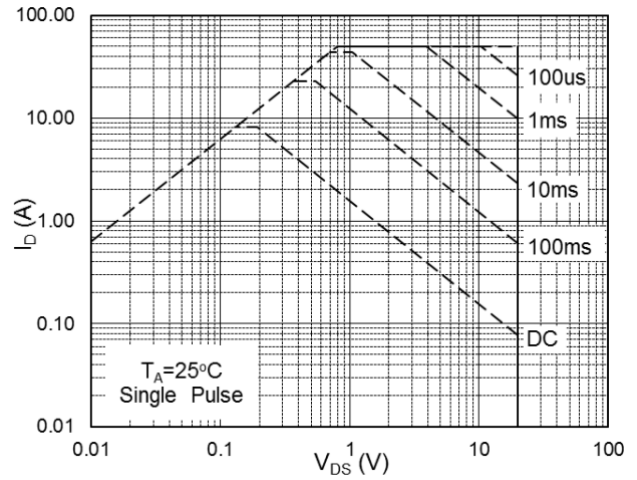
**Fig.5  $V_{GS(th)}$  vs.  $T_J$**



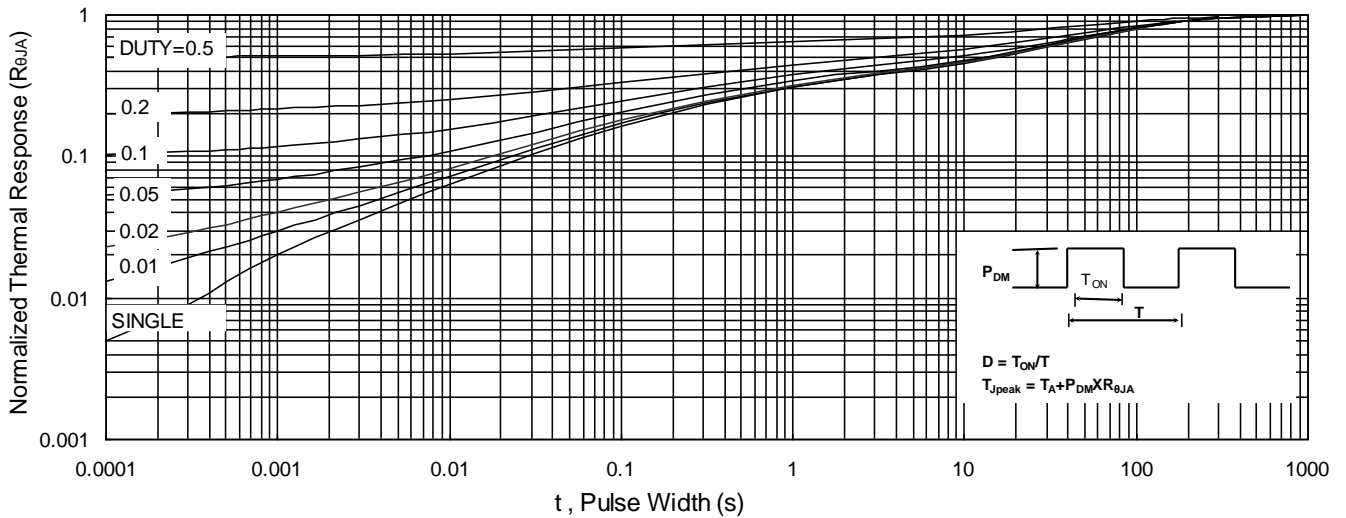
**Fig.6 Normalized  $R_{DS(on)}$  vs.  $T_J$**



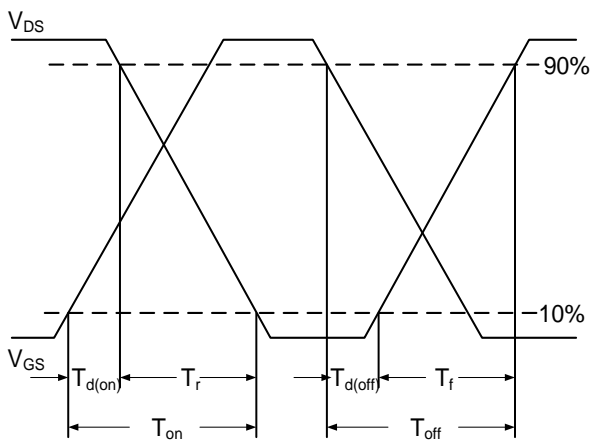
**Fig.7 Capacitance**



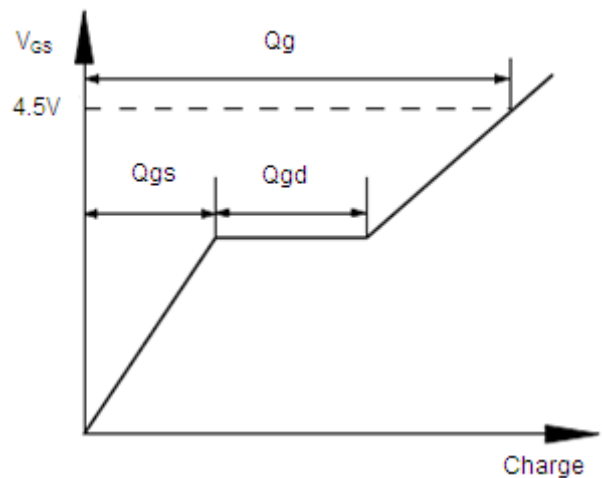
**Fig.8 Safe Operating Area**



**Fig.9 Normalized Maximum Transient Thermal Impedance**



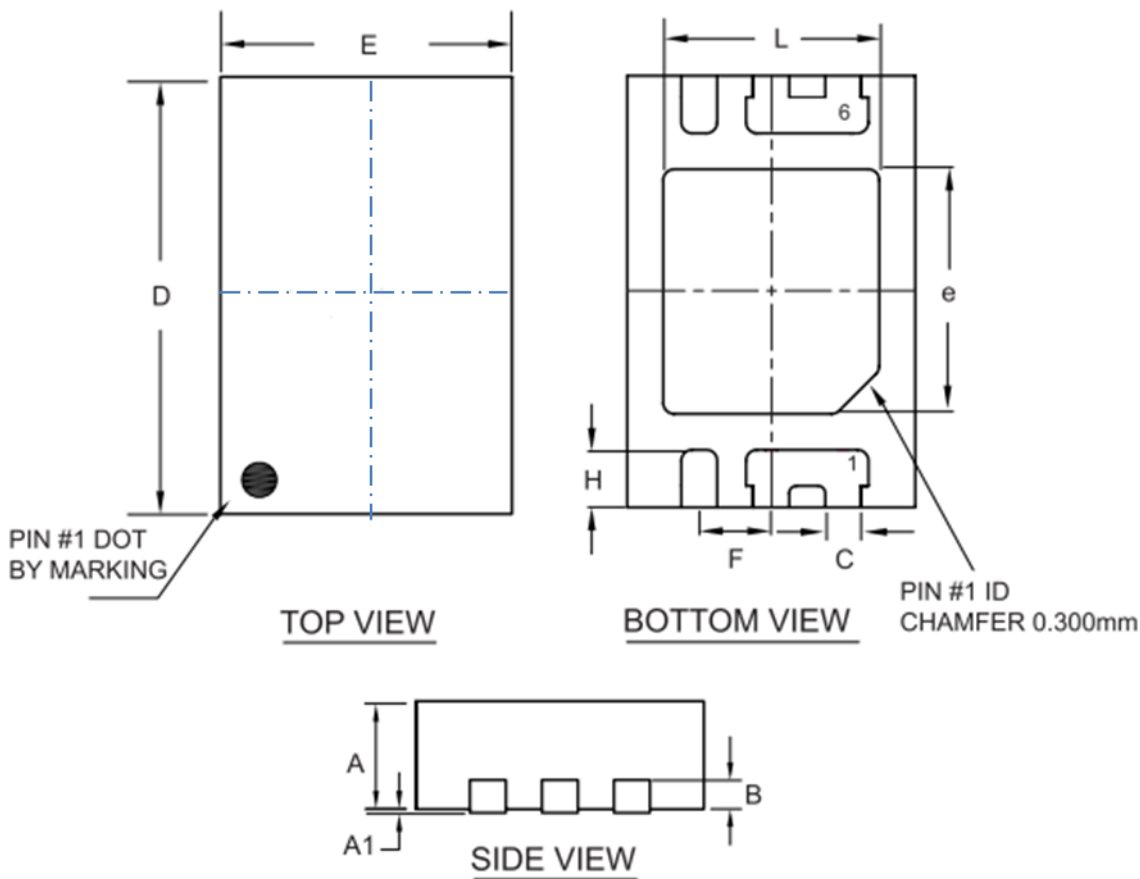
**Fig.10 Switching Time Waveform**



**Fig.11 Gate Charge Waveform**



## DFN2x3 Package Outline Dimensions



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	0.0076	0.008
C	0.200	0.300	0.008	0.012
F	0.500 BSC		0.020 BSC	