

**8821 Dual N-Channel MOSFET**

<b>V<sub>(BR)DSS</sub></b>	<b>R<sub>DS(on)MAX</sub></b>	<b>I<sub>D</sub> Max</b>
19V	0.007Ω @ 4.5V	15A
	0.009Ω @ 2.5V	

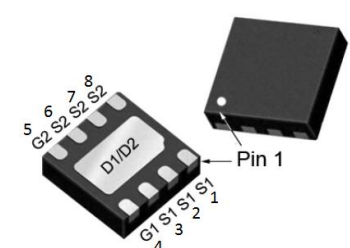
**FEATURE**

- TrenchFET Power MOSFET
- Excellent R<sub>DS(on)</sub>
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package
- ESD Rating:2000V HBM

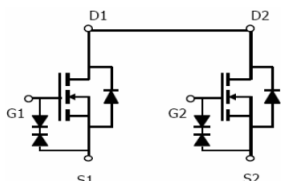
**APPLICATION**

- Battery Protection
- Load Switch
- Power Management

**DFN-3x3-8L**



**Equivalent Circuit**



**MARKING**

8821

TFXYWC

Y :year code W :week code

**ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	19	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Continuous Drain Current	I <sub>D</sub>	15	A
Pulsed Drain Current (note 1)	I <sub>DM</sub>	45	A
Thermal Resistance from Junction to Ambient (note 2)	R <sub>θJA</sub>	38	°C/W
Junction Temperature	T <sub>J</sub>	150	°C
Storage Temperature	T <sub>STG</sub>	-55~+150	°C
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	T <sub>L</sub>	260	°C



**MOSFET ELECTRICAL CHARACTERISTICS**

**T<sub>a</sub> =25 °C unless otherwise specified**

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	19			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =19V, V <sub>GS</sub> = 0V			1	uA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> = 0V			±7	uA
Gate threshold voltage (note 3)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.5	0.6	1.0	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =8.0A	4.5	5.5	7.0	mΩ
		V <sub>GS</sub> =3.5V, I <sub>D</sub> =7.0A	5.5	6.0	8.0	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =6.0A	6.5	7.0	9.0	mΩ
Forward transconductance (note 3)	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =4A		10		S
Diode forward voltage (note 3)	V <sub>SD</sub>	I <sub>S</sub> =1.50A, V <sub>GS</sub> = 0V			1.0	V
<b>DYNAMIC CHARACTERISTICS (note4)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f =1MHz		879		pF
Output Capacitance	C <sub>oss</sub>			245		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			232		pF
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =6A R <sub>GEN</sub> =3Ω		6.2		ns
Turn-on rise time	t <sub>r</sub>			15		ns
Turn-off delay time	t <sub>d(off)</sub>			42		ns
Turn-off fall time	t <sub>f</sub>			13		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A		16		nC
Gate-Source Charge	Q <sub>gs</sub>			3.2		nC
Gate-Drain Charge	Q <sub>gd</sub>			5.0		nC

**Notes :**

- 1.Repetitive rating: Pluse width limited by maximum junction temperature
- 2.Surface Mounted on FR4 board, t ≤ 10 sec.
3. Pulse test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

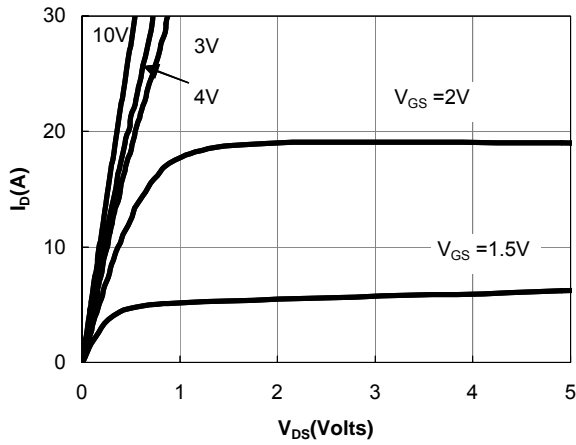


Figure 1: On-Regions Characteristic CS

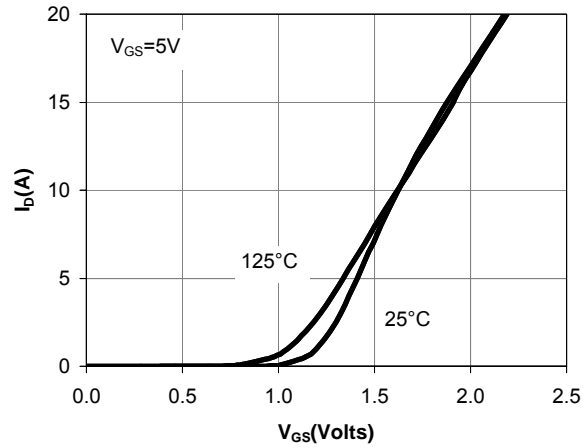


Figure 2: Transfer Characteristics

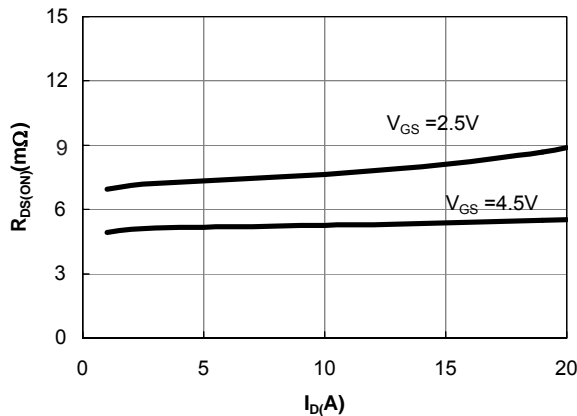


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

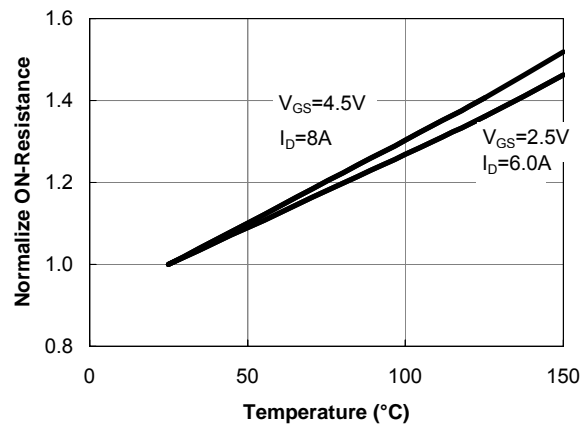


Figure 4: On-Resistance vs. Junction Temperature

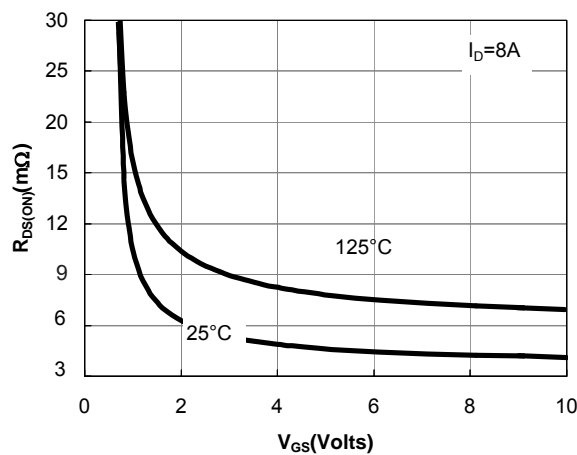


Figure 5: On-Resistance vs. Gate-Source Voltage

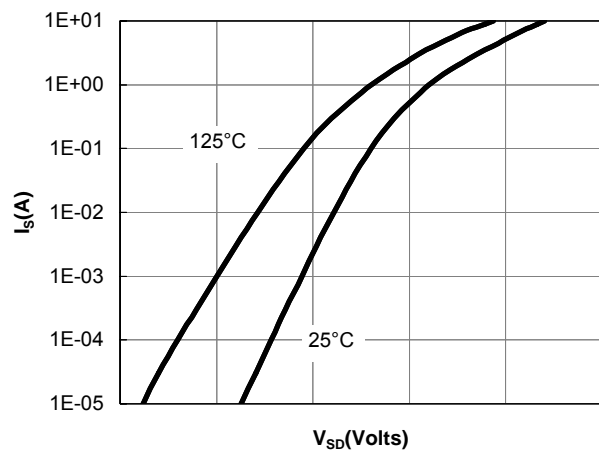


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

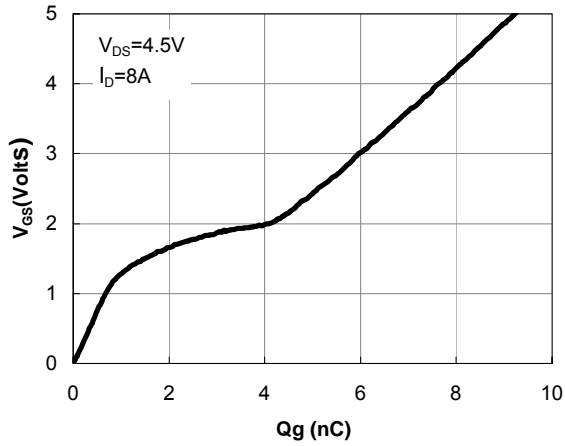


Figure 7: Gate-Charge Characteristics

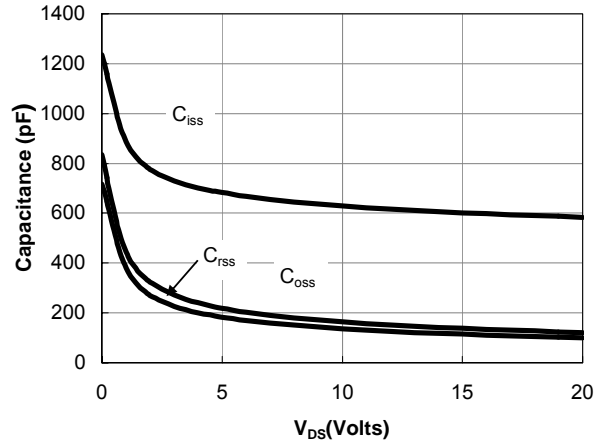


Figure 8: Capacitance Characteristics

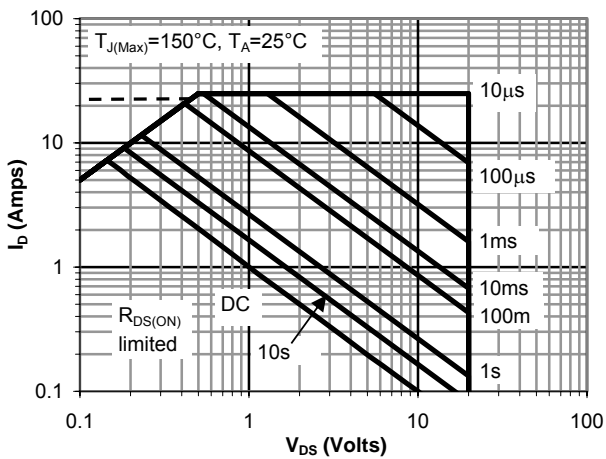


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

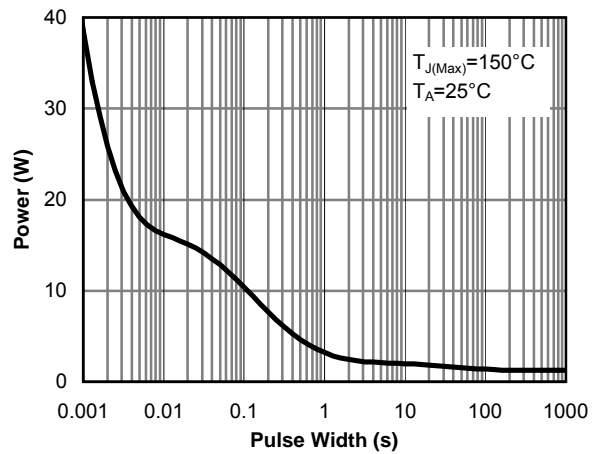


Figure 10: Single Pulse Power Rating Junction-to-

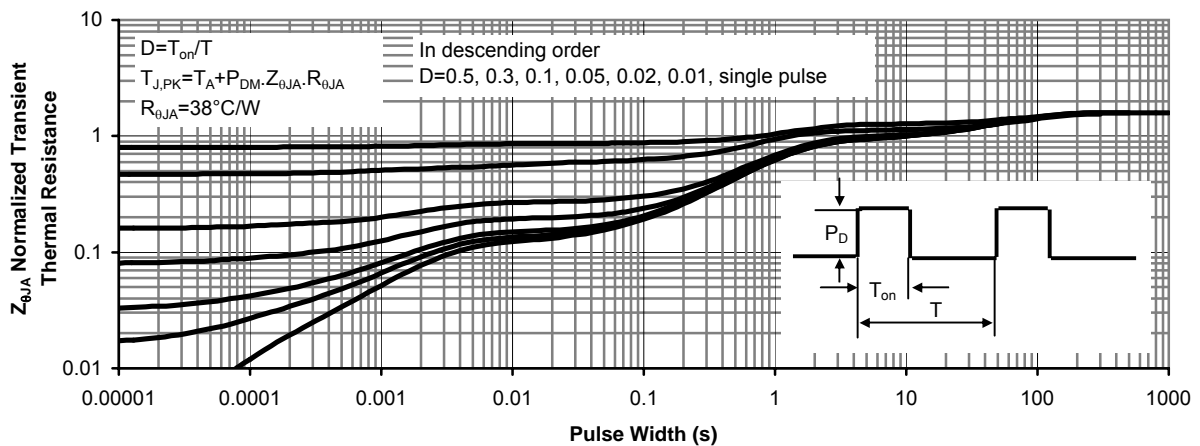
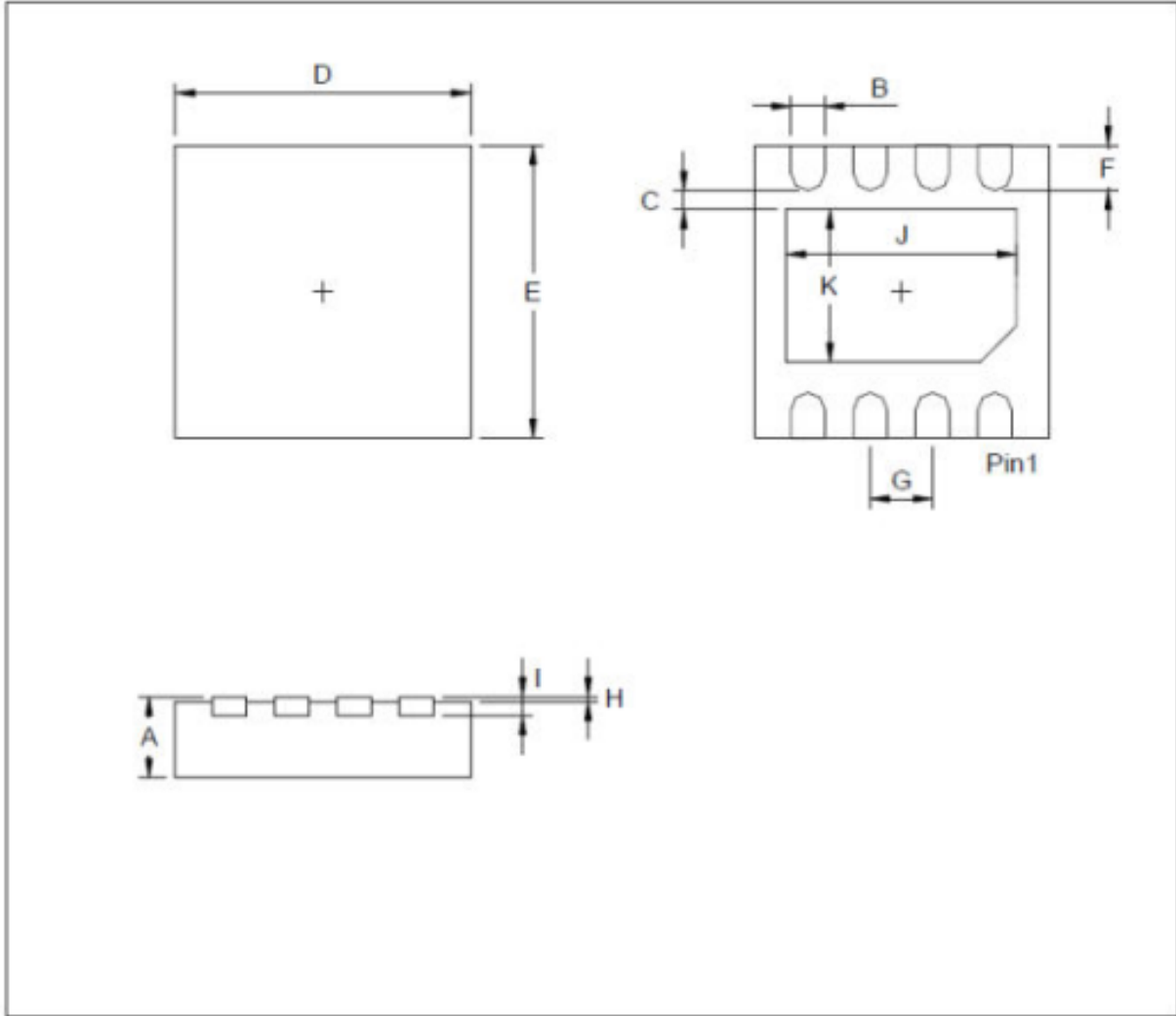


Figure 11: Normalized Maximum Transient Thermal Impedance

PDFN3×3 Package Outline Data



Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	0.7		0.8	I		0.203	
B	0.25		0.35	J	2.2		2.4
C	0.2			K	1.4		1.6
D	2.924		3.076				
E	2.924		3.076				
F	0.324		0.476				
G		0.65					
H	0		0.05				