

## HM8820AD Dual N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$ Max
20V	0.012Ω @ 4.5V	9.0A
	0.016Ω @ 2.5V	

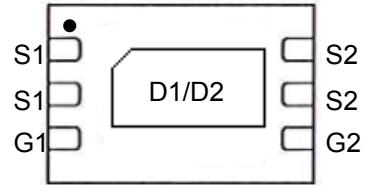
### FEATURE

- TrenchFET Power MOSFET
- Excellent  $R_{DS(on)}$
- Low Gate Charge
- High Power and Current Handling Capability
- Surface Mount Package

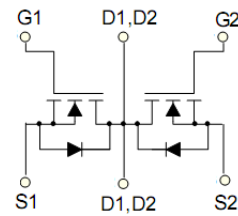
### APPLICATION

- Battery Protection
- Load Switch
- Power Management

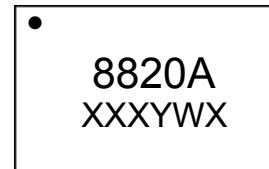
### DFN-2x3-6L



### Equivalent Circuit



### MARKING



Y :year code W :week code

### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	V
Continuous Drain Current	$I_D$	9	A
Pulsed Drain Current (note 1)	$I_{DM}$	45	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	82	$^\circ\text{C/W}$
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55~+150	$^\circ\text{C}$
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	$^\circ\text{C}$

## MOSFET ELECTRICAL CHARACTERISTICS

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC CHARACTERICTISCS						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =19V,V <sub>GS</sub> = 0V			100	nA
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> = 0V			±100	nA
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	0.7	1.0	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.0A	9	12	13	mΩ
		V <sub>GS</sub> =3.8V, I <sub>D</sub> =5.0A	10	13	14	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =4.0A	12	14	17	mΩ
Forward tranconductance (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
DYNAMIC CHARACTERICTISCS (note4)						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V,V <sub>GS</sub> =0V,f =1MHz		615		pF
Output Capacitance	C <sub>oss</sub>			150		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			120		pF
SWITCHING CHARACTERICTISCS (note 4)						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, I <sub>D</sub> =3A R <sub>GEN</sub> =3Ω		7.2		ns
Turn-on rise time	t <sub>r</sub>			13		ns
Turn-off delay time	t <sub>d(off)</sub>			29		ns
Turn-off fall time	t <sub>f</sub>			11		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =10V,V <sub>GS</sub> =4.5V,I <sub>D</sub> =6A		12		nC
Gate-Source Charge	Q <sub>gs</sub>			1.2		nC
Gate-Drain Charge	Q <sub>gd</sub>			3.0		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

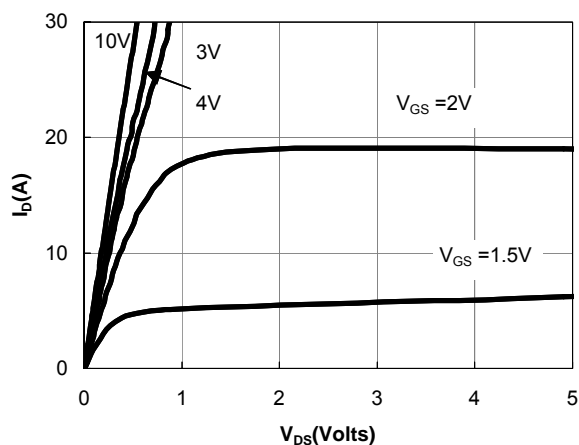


Figure 1: On-Regions Characteristics

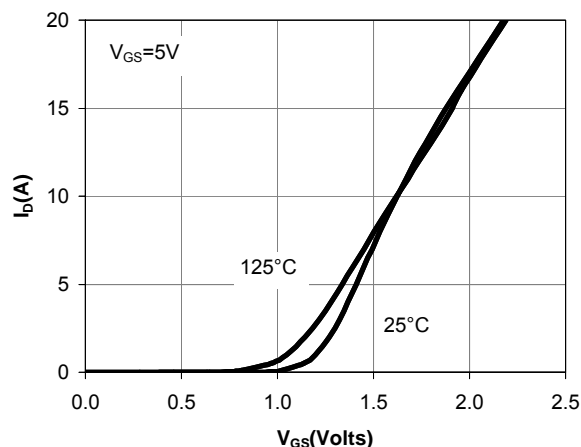


Figure 2: Transfer Characteristics

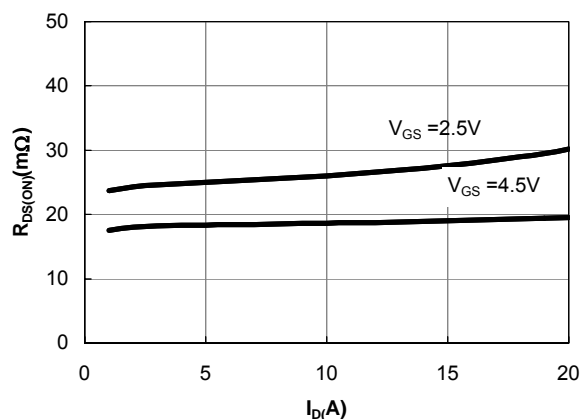


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

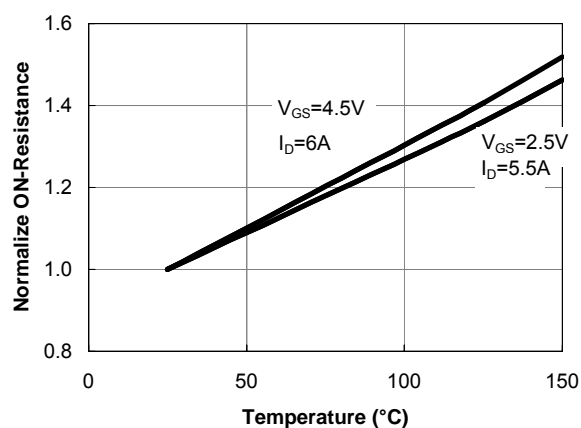


Figure 4: On-Resistance vs. Junction Temperature

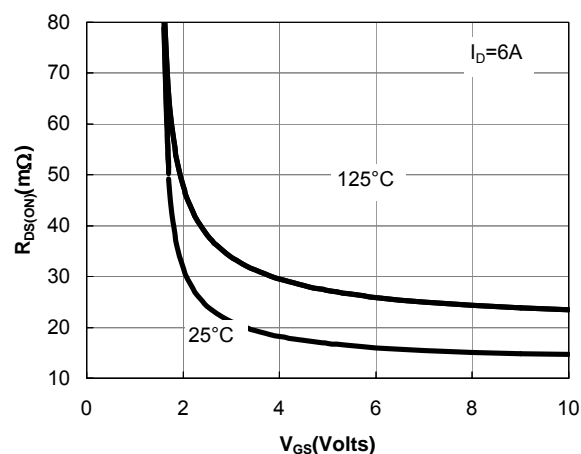


Figure 5: On-Resistance vs. Gate-Source Voltage

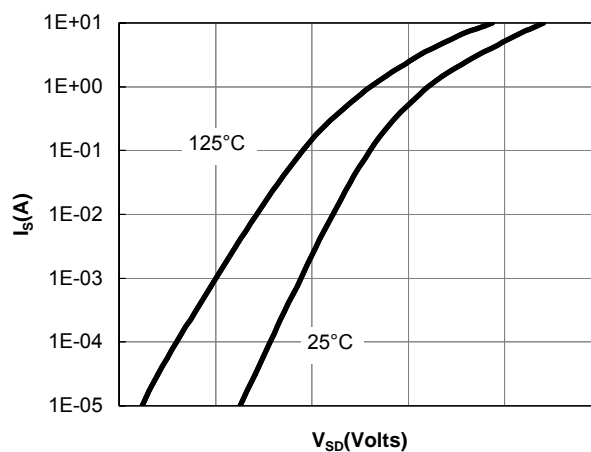
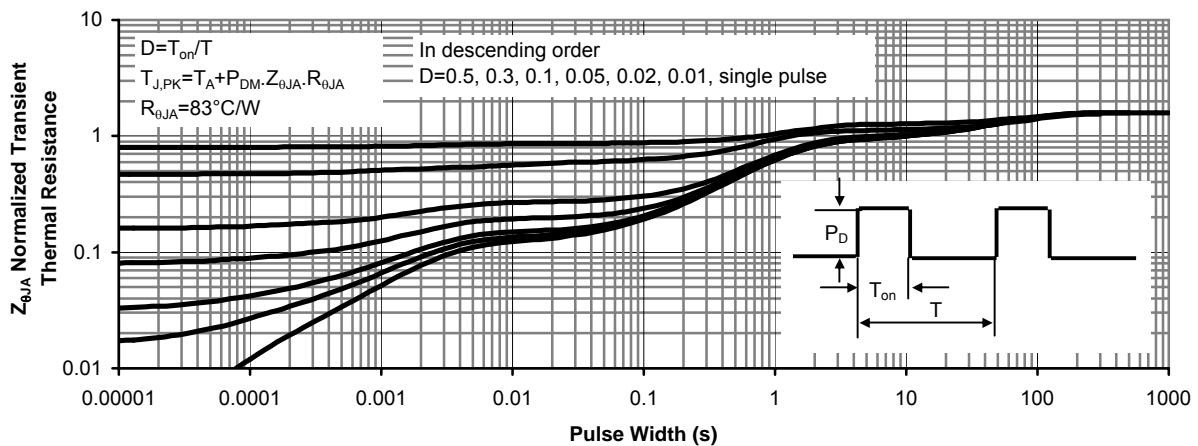
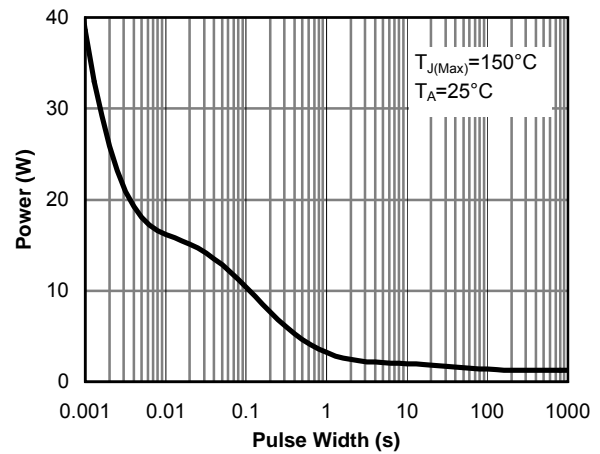
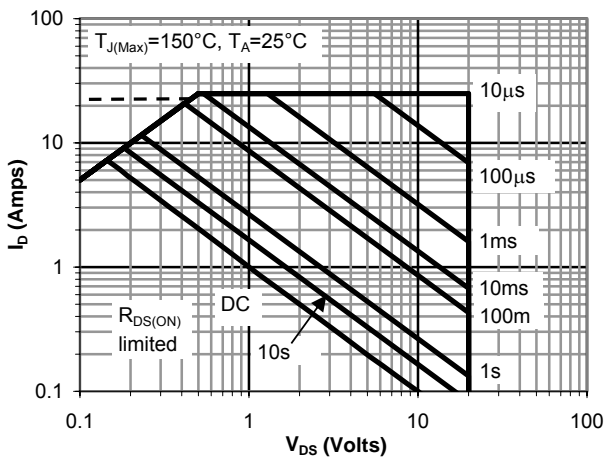
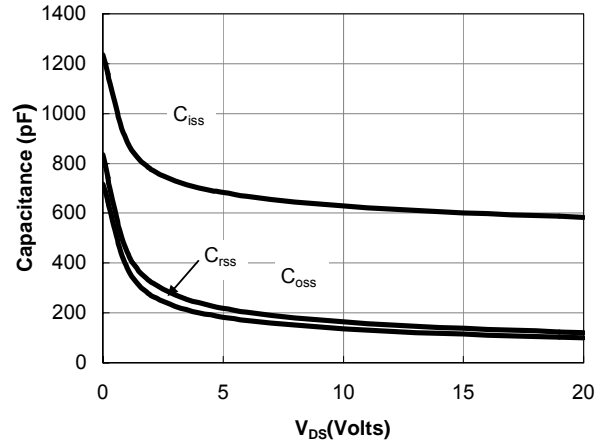
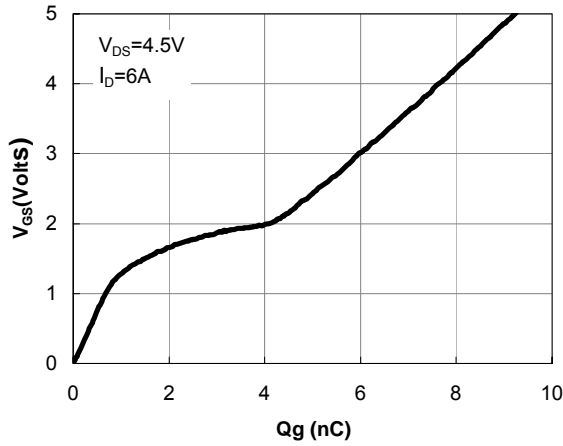
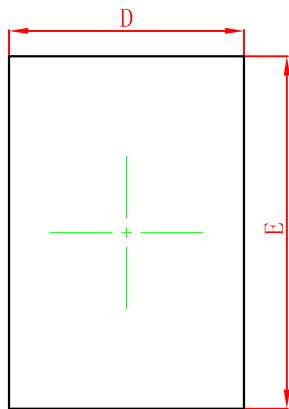


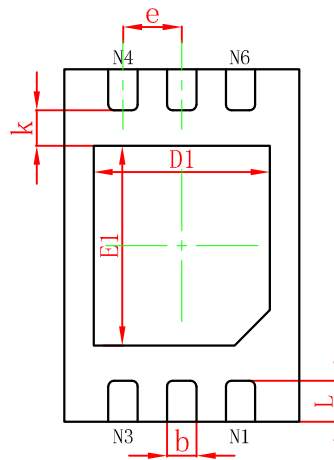
Figure 6: Body-Diode Characteristics

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

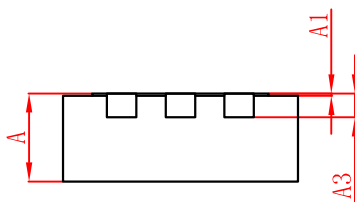




TOP VIEW



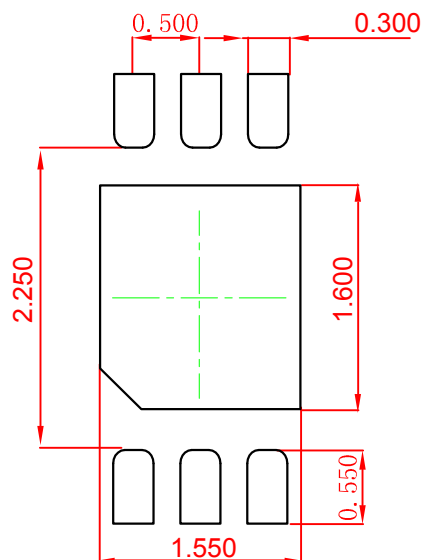
BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.800	0.028	0.031
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.950	2.050	0.077	0.081
E	2.950	3.050	0.116	0.120
D1	1.450	1.550	0.057	0.061
E1	1.650	1.750	0.065	0.069
k	0.200MIN.		0.008MIN.	
b	0.200	0.300	0.008	0.012
e	0.500TYP.		0.020TYP.	
L	0.300	0.400	0.012	0.016

## DFNWB2×3-6L Suggested Pad Layout



Note:  
1. Controlling dimension: in millimeters.  
2. General tolerance:  $\pm 0.050$ mm.  
3. The pad layout is for reference purposes only.