

**SED8820N**  
**Dual N-Channel Enhancement Mode Field Effect Transistor**

Revision:A

**Features**

For a single mosfet

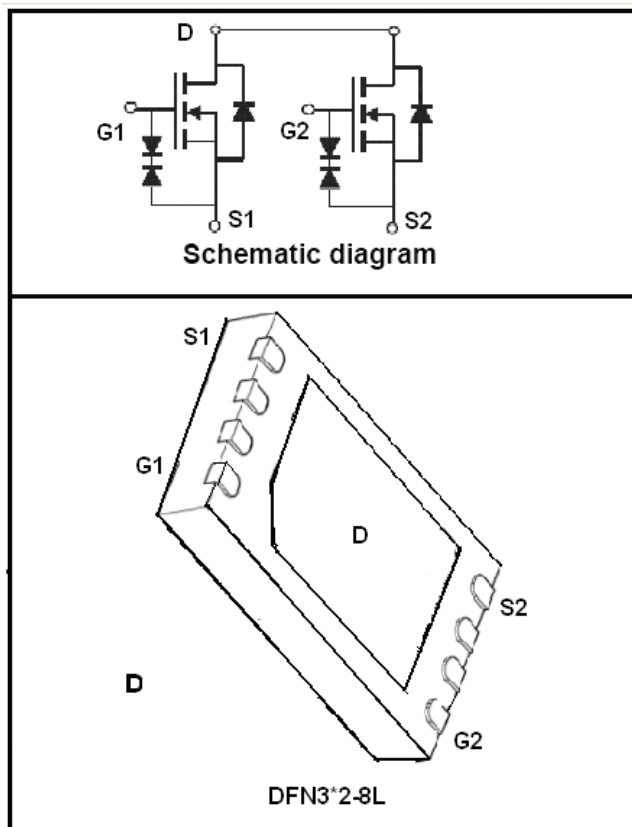
- $V_{DSS} = 20\text{ V}$
- $R_{DS(ON)} < 19\text{m}\Omega$  @  $V_{GS}=4.5\text{V}$  @  $I_{DS}=7\text{A}$
- $R_{DS(ON)} < 23\text{m}\Omega$  @  $V_{GS}=2.5\text{V}$  @  $I_{DS}=4\text{A}$

**Applications**

- Battery protection
- Load switch
- Power management

**Construction**

- Silicon epitaxial planer



**Absolute Maximum Ratings**

Parameter		Symbol	Rating	Units
Drain-Source Voltage		$V_{DS}$	20	V
Gate-Source Voltage		$V_{GS}$	$\pm 12$	V
Drain Current (Note 1)	Continuous	$I_D$	7	A
	Pulsed	$I_{DM}$	28	
Drain-Source Diode Forward Current		$I_S$	1.7	A
Maximum Power Dissipation		$P_D$	1.5	W
Operating Junction Temperature Range		$T_J$	-55 to 150	$^{\circ}\text{C}$
Storage Temperature Range		$T_{STG}$		

# SED8820N

Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)						
Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
<b>OFF CHARACTERISTICS</b>						
B <sub>VDSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0 V	20			V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =16 V, V <sub>GS</sub> =0 V			1	μA
I <sub>GSS</sub>	Gate-Body leakage	V <sub>DS</sub> =0 V, V <sub>GS</sub> =±12 V			±10	μA
<b>ON CHARACTERISTICS</b>						
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =250μA	0.5	0.8	1.2	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =7A	-	16	19	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =5A	-	20	23	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =5A		19		S
<b>DYNAMIC PARAMETERS</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =8V, f=1.0MHz		693		pF
C <sub>oss</sub>	Output Capacitance			189		pF
C <sub>rss</sub>	Reverse Transfer Capacitance			136		pF
<b>SWITCHING PARAMETERS</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>GS</sub> =4.0V		11		nC
Q <sub>gs</sub>	Gate Source Charge	V <sub>DS</sub> =10V		1.8		
Q <sub>gd</sub>	Gate Drain Charge	I <sub>D</sub> =5A		4.9		
t <sub>d(on)</sub>	Turn-On DelayTime	V <sub>GEN</sub> =4.0V		31		ns
t <sub>d(off)</sub>	Turn-Off DelayTime	R <sub>GEN</sub> =10Ω		96		
t <sub>d(r)</sub>	Turn-On Rise Time	V <sub>DD</sub> =10V		62		
t <sub>d(f)</sub>	Turn-Off Fall Time	I <sub>D</sub> =1A		40		

Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

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

Figure 4. On-Resistance Variation with Drain Current and Temperature

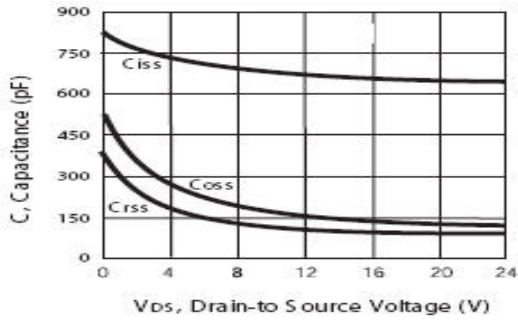


Figure 9. Capacitance

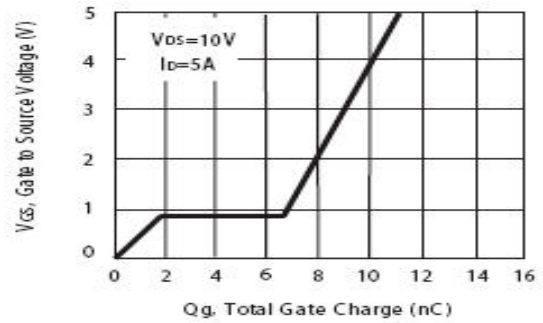


Figure 10. Gate Charge

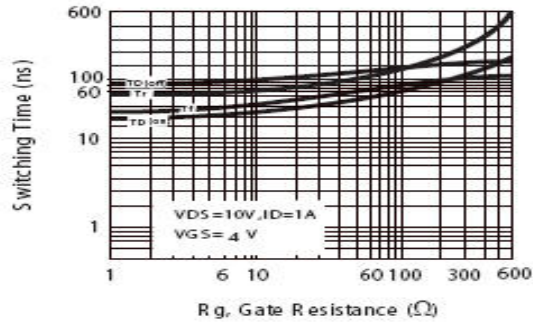


Figure 11. switching characteristics

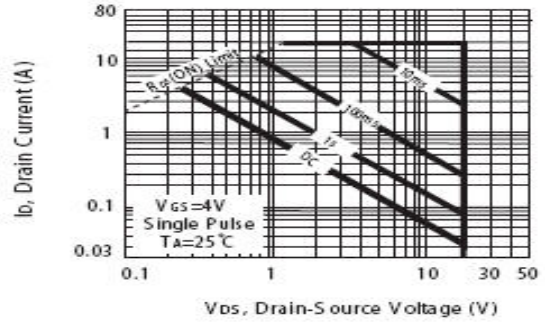


Figure 12. Maximum Safe Operating Area

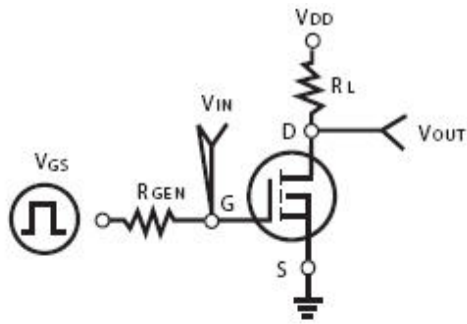


Figure 11. Switching Test Circuit

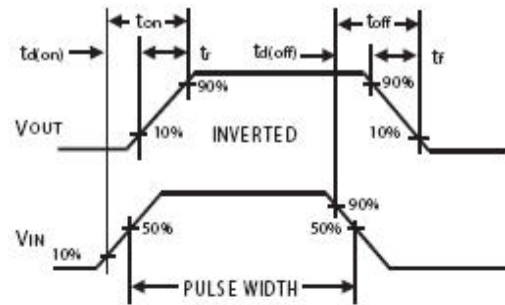
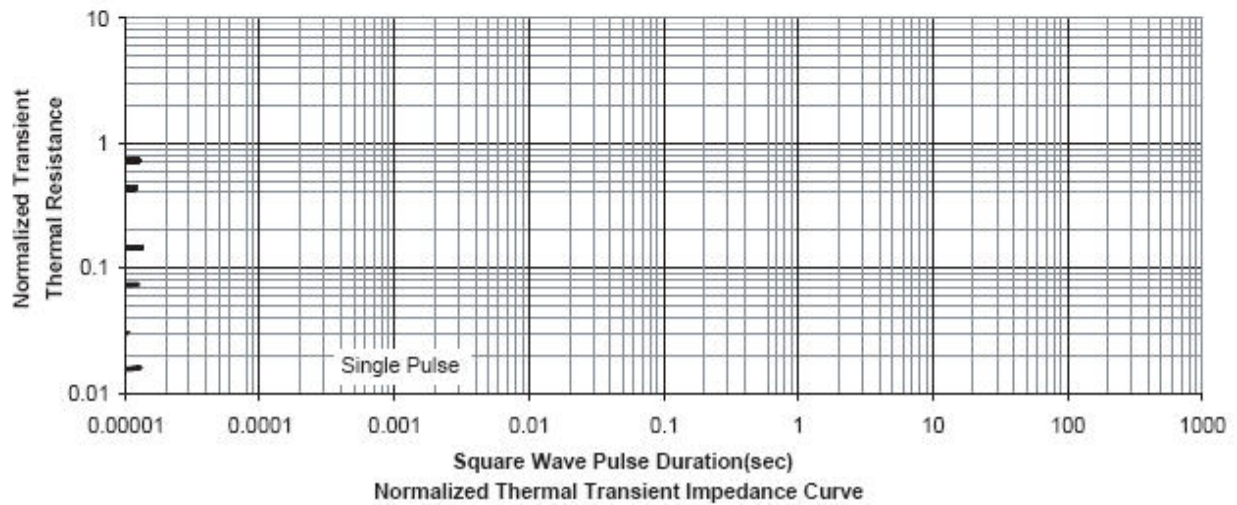


Figure 12. Switching Waveforms

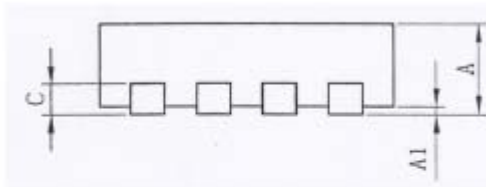
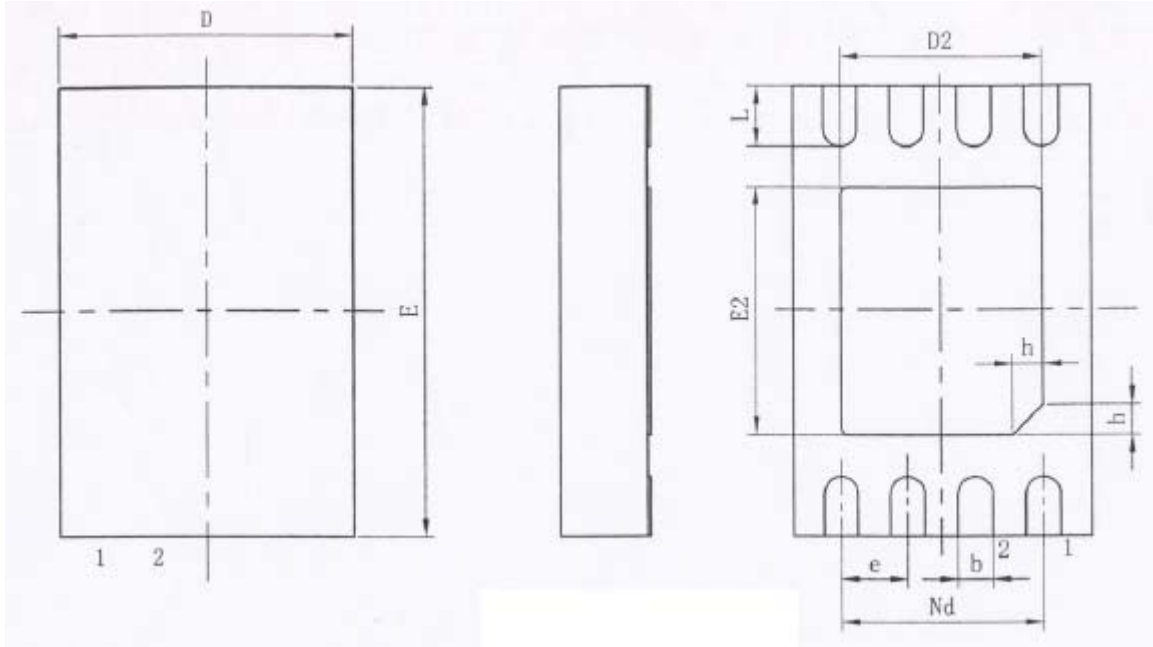


Normalized Thermal Transient Impedance Curve

# SED8820N

PACKAGE DIMENSION (Unit:mm)

DFNWB2\*3-8L



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.70	0.75	0.80
A1	—	0.02	0.05
b	0.18	0.25	0.30
c	0.18	0.20	0.25
D	1.90	2.00	2.10
D2	1.50REF		
e	0.50BSC		
Nd	1.50BSC		
E	2.90	3.00	3.10
E2	1.60REF		
L	0.30	0.40	0.50
h	0.20	0.25	0.30

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