

**8820 Dual N-Channel MOSFET**

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$ Max
20V	0.014 $\Omega$ @ 4.5V	6.0A
	0.018 $\Omega$ @ 2.5V	

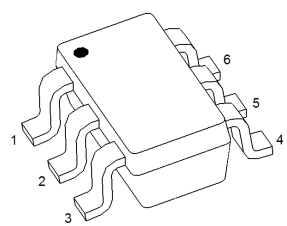
**FEATURE**

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

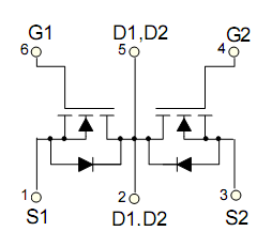
**APPLICATION**

- Battery Protection
- Load Switch
- Power Management

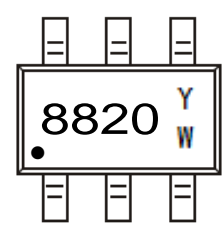
**SOT-23-6**



**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	$I_D$	6	A
Pulsed Drain Current (note 1)	$I_{DM}$	25	A
Thermal Resistance from Junction to Ambient (note 2)	$R_{\theta JA}$	100	$^\circ\text{C}/\text{W}$
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
<b>STATIC CHARACTERISTICS</b>						
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		1.0	V
Drain-source on-resistance (note 3)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =6A	9.0	12.5	14	mΩ
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =5.5A	12.0	15.5	18	mΩ
Forward transconductance (note 3)	g <sub>FS</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =6A		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		615		pF
Output Capacitance	C <sub>oss</sub>			150		pF
Reverse Transfer Capacitance	C <sub>rss</sub>			120		pF
<b>SWITCHING CHARACTERISTICS (note 4)</b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =5V, V <sub>DS</sub> =10V, R <sub>L</sub> =1.4Ω, 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

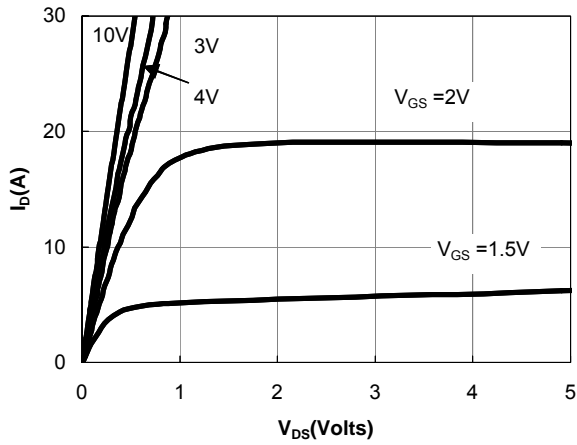


Figure 1: On-Regions Characteristic CS

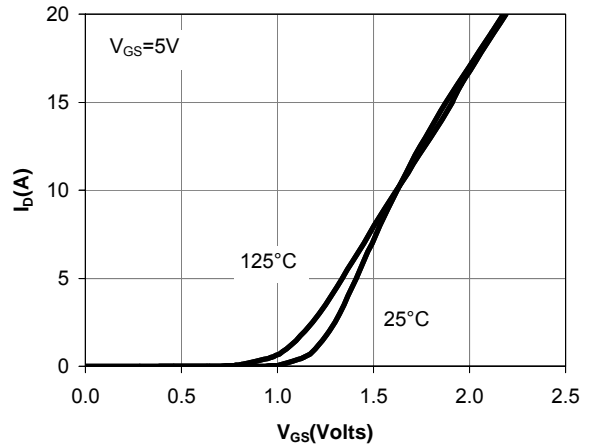


Figure 2: Transfer Characteristics

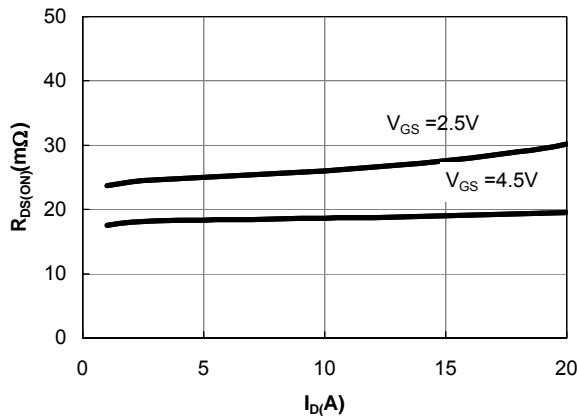


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

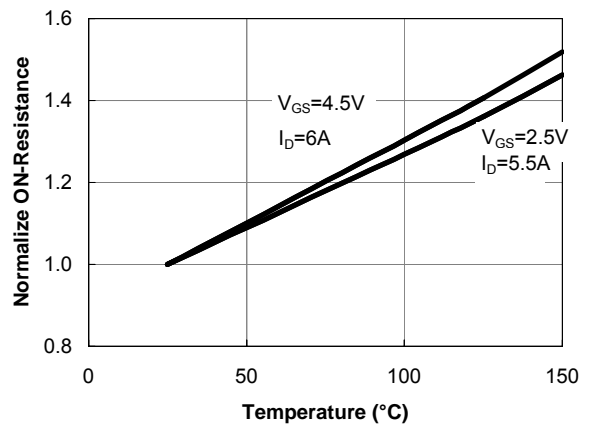


Figure 4: On-Resistance vs. Junction Temperature

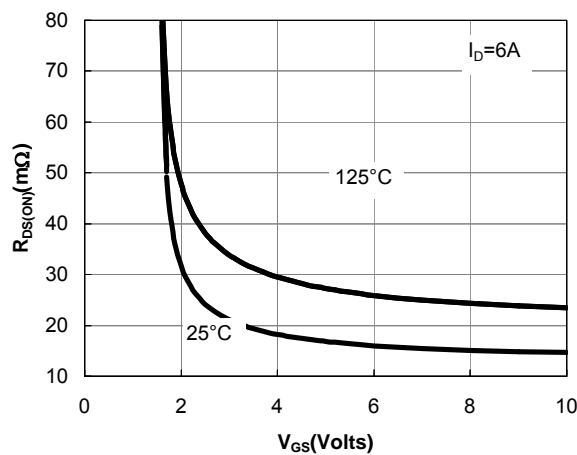


Figure 5: On-Resistance vs. Gate-Source Voltage

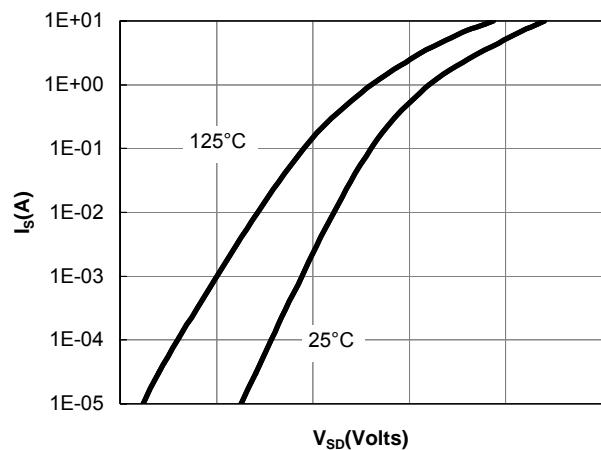


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

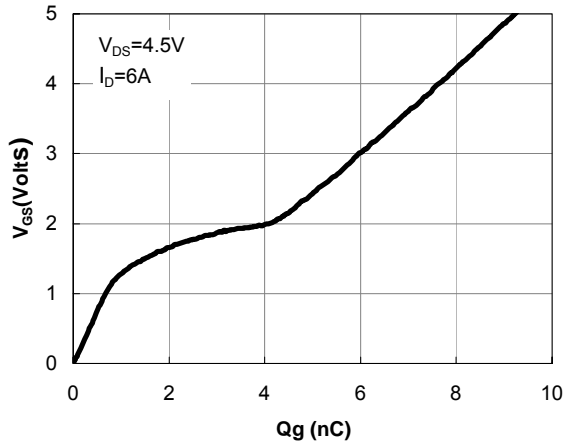


Figure 7: Gate-Charge Characteristics

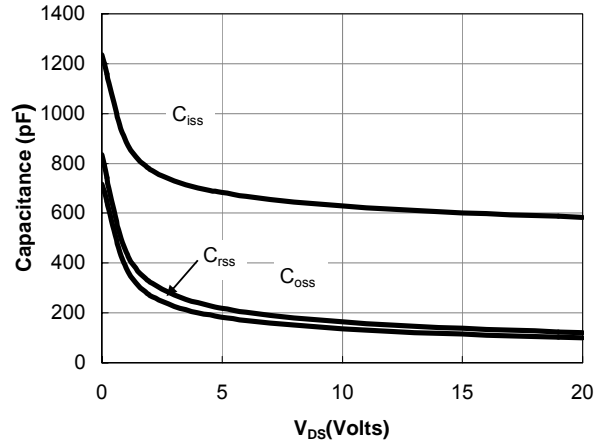


Figure 8: Capacitance Characteristics

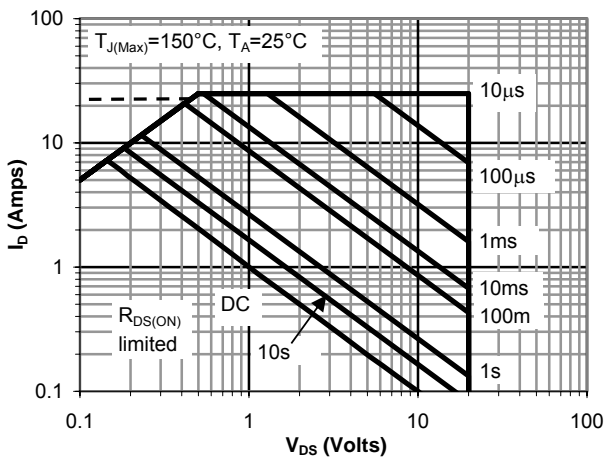


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

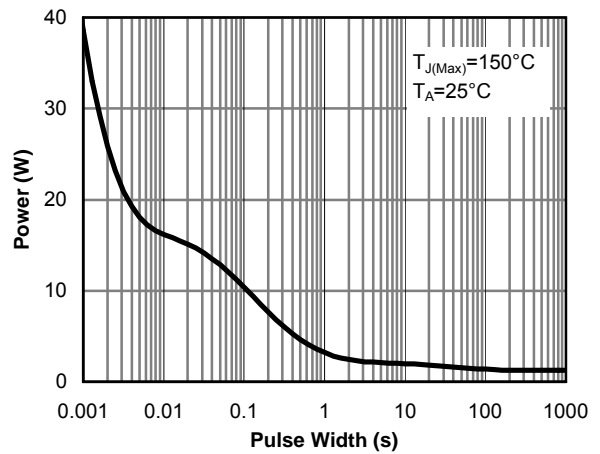


Figure 10: Single Pulse Power Rating Junction-to-

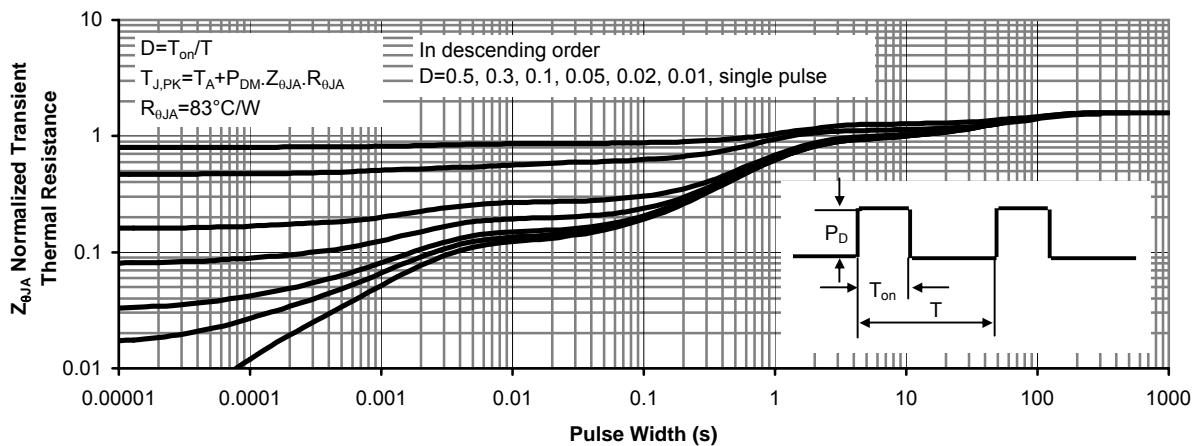
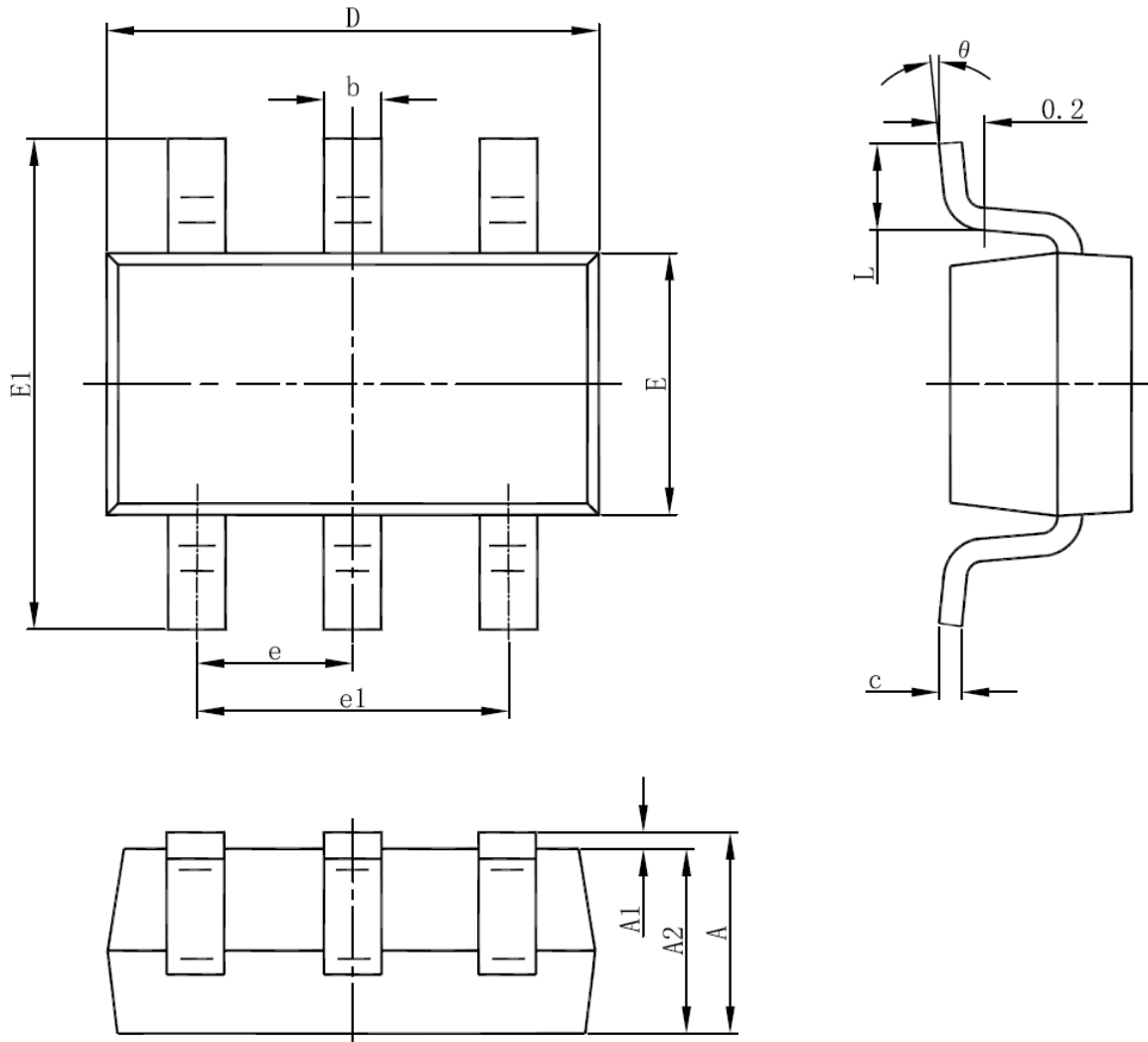


Figure 11: Normalized Maximum Transient Thermal Impedance

**SOT23-6 Package Information**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
$\theta$	0°	8°	0°	8°