■ DESCRIPTION

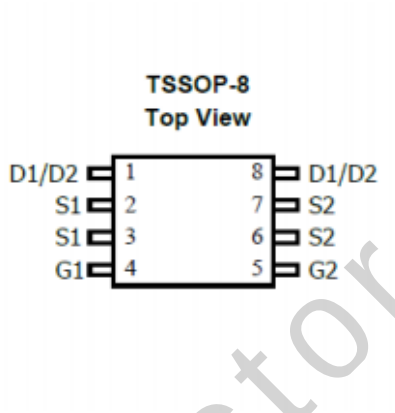
The 8820 is the Dual N-Channel logic enhancement mode power field effect transistor which is produced using high cell density advanced trench technology to provide excellent $R_{DS(ON)}$.

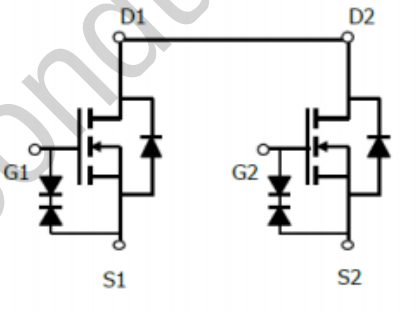
This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application, and low in-lin power loss are needed in a very small outline surface mount package

■ FEATURE

- ***20V/7.0A, $R_{DS(ON)}$=12mΩ(typ.) @V_{GS}=4.5V***
- ***20V/5.5A, $R_{DS(ON)}$=15mΩ(typ.) @V_{GS}=2.5V***
- Super high design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- This is a Full RoHS compliance
- TSSOP8 package design

■ PIN CONFIGURATION





■ APPLICATIONS

- Power Management in Note Book
- Portable Equipment
- Battery Powered System

■ ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (T_A=25℃)	V_{GS}=10V	7.0	A
	Continuous Drain Current (T_A=75℃)		6.0	A
I_{DM}	Pulsed Drain Current		30	A
I_S	Continuous Source Current (Diode Conduction)		1	A
P_D	Power Dissipation	T_A=25℃	1.5	W
		T_A=75℃	1.0	
T_J	Operation Junction Temperature		150	℃
T_{STG}	Storage Temperature Range		-55~+150	℃

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress rating only and functional device operation is not implied

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■ *THERMAL DATA*

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient		62.5		℃/W

■ *ELECTRICAL CHARACTERISTICS(T_A=25℃ Unless otherwise noted)*

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250uA	0.4	0.85	1.4	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0			1	uA
		V_{DS}=20V, V_{GS}=0 T_J=55℃			5	
$I_{D(ON)}$	On=State Drain Current	V_{DS}≧5V, V_{GS}=4.5V	7			A
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=4.5V, I_D=7A	10	12.5	19	mΩ
		V_{GS}=2.5V, I_D=5.5A	13	16	22	
		V_{GS}=1.8V, I_D=5A	14	18	28	
G_{fs}	Forward Transconductance	V_{DS}=5V, I_D=7A		31		S
Source-Drain Diode						
V_{SD}	Diode Forward Voltage	I_S=1.0A, V_{GS}=0V		0.7	1.3	V
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=10V V_{GS}=4.5V I_D=7.0A		16		nC
Q_{gs}	Gate-Source Charge			1.7		
Q_{gd}	Gate-Drain Charge			6.8		
C_{iss}	Input Capacitance	V_{DS}=10V V_{GS}=0V f=1MHz		1120		pF
C_{oss}	Output Capacitance			1950		
C_{rss}	Reverse Transfer Capacitance			155		
$T_{d(on)}$	Turn-On Time	V_{DS}=10V I_D=7.0A V_{GEN}=5V R_G=3.3Ω		7.2		nS
T_r				11		
$T_{d(off)}$	Turn-Off Time			64		
T_f				32		

Note: 1. Pulse test: pulse width<=300uS, duty cycle<=2%

2.Static parameters are based on package level with recommended wire bonding

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■ *TYPICAL CHARACTERISTICS (25℃ Unless Note)*

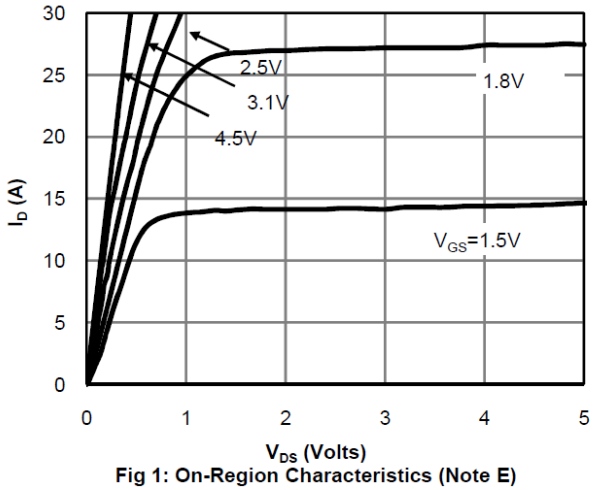


Fig 1: On-Region Characteristics (Note E)

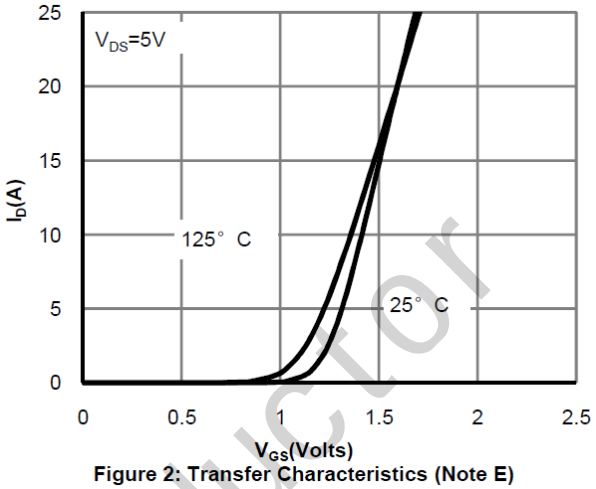


Figure 2: Transfer Characteristics (Note E)

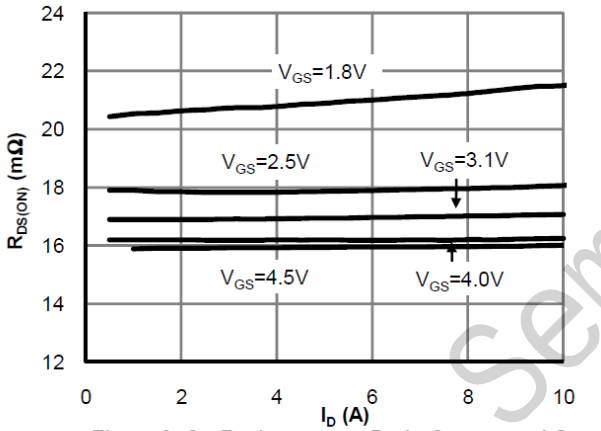


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

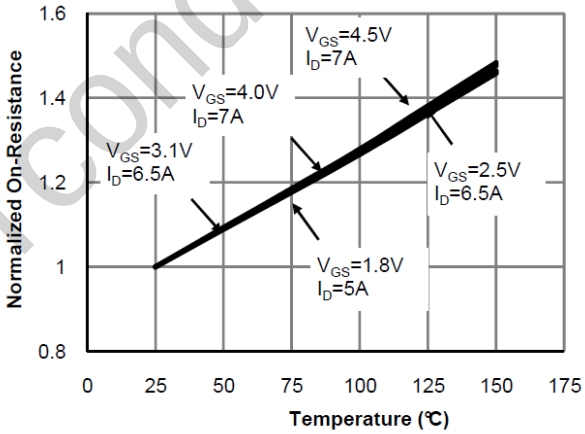


Figure 4: On-Resistance vs. Junction Temperature (Note E)

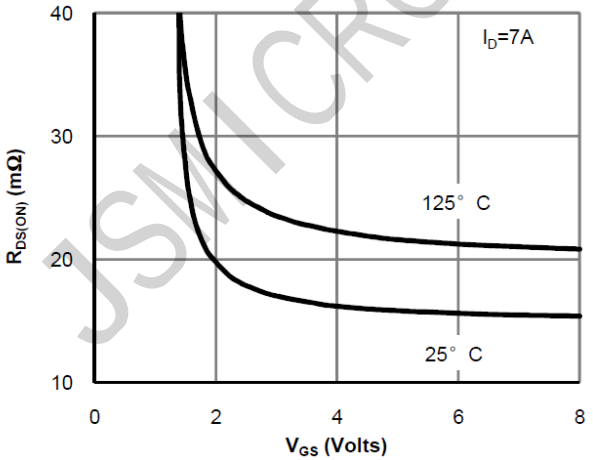


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

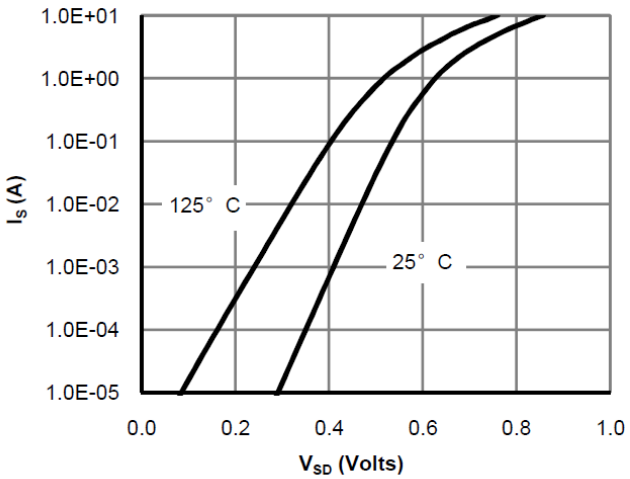


Figure 6: Body-Diode Characteristics (Note E)

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■ *TYPICAL CHARACTERISTICS (continuous)*

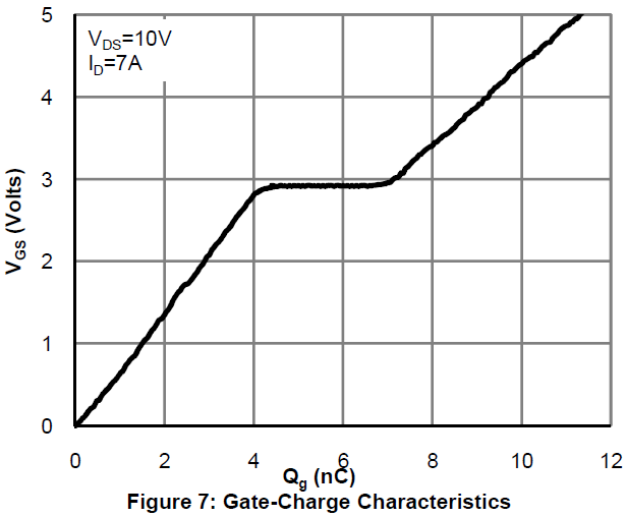


Figure 7: Gate-Charge Characteristics

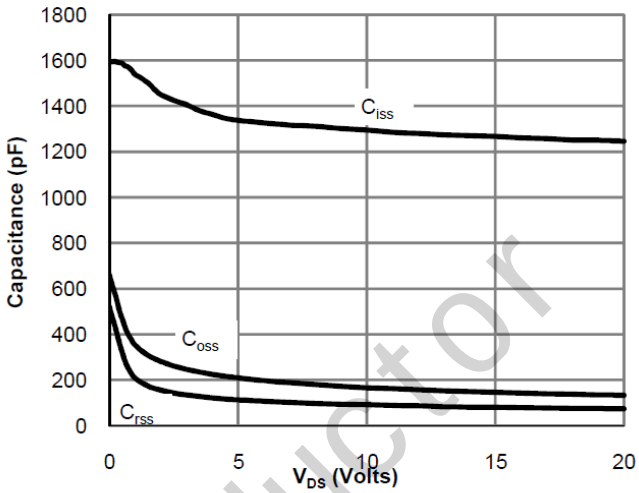


Figure 8: Capacitance Characteristics

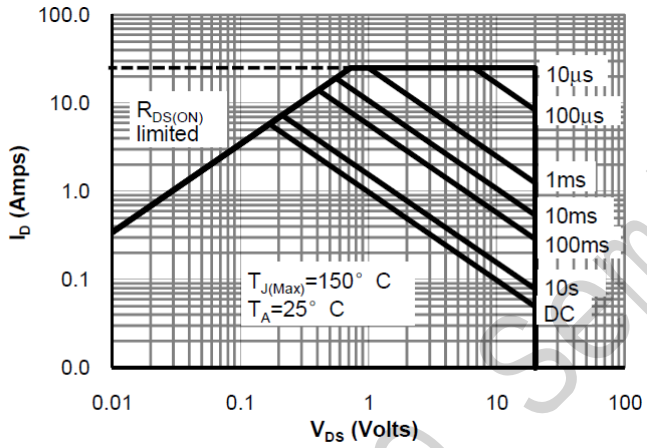


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

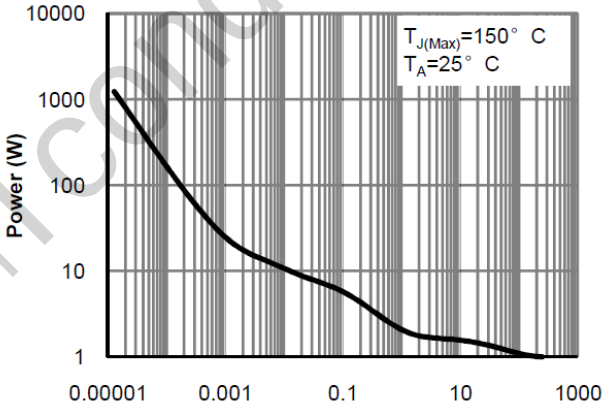


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

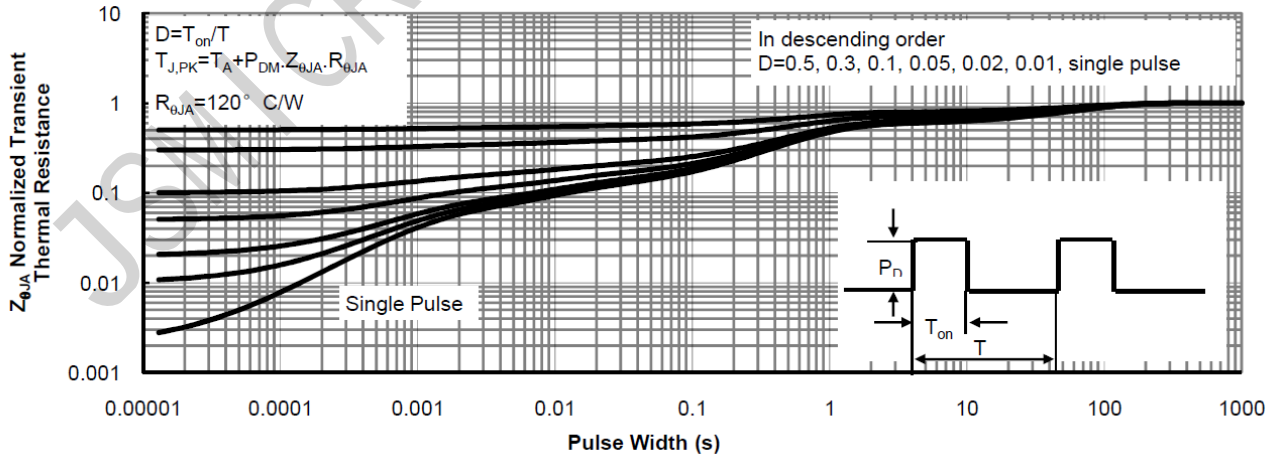
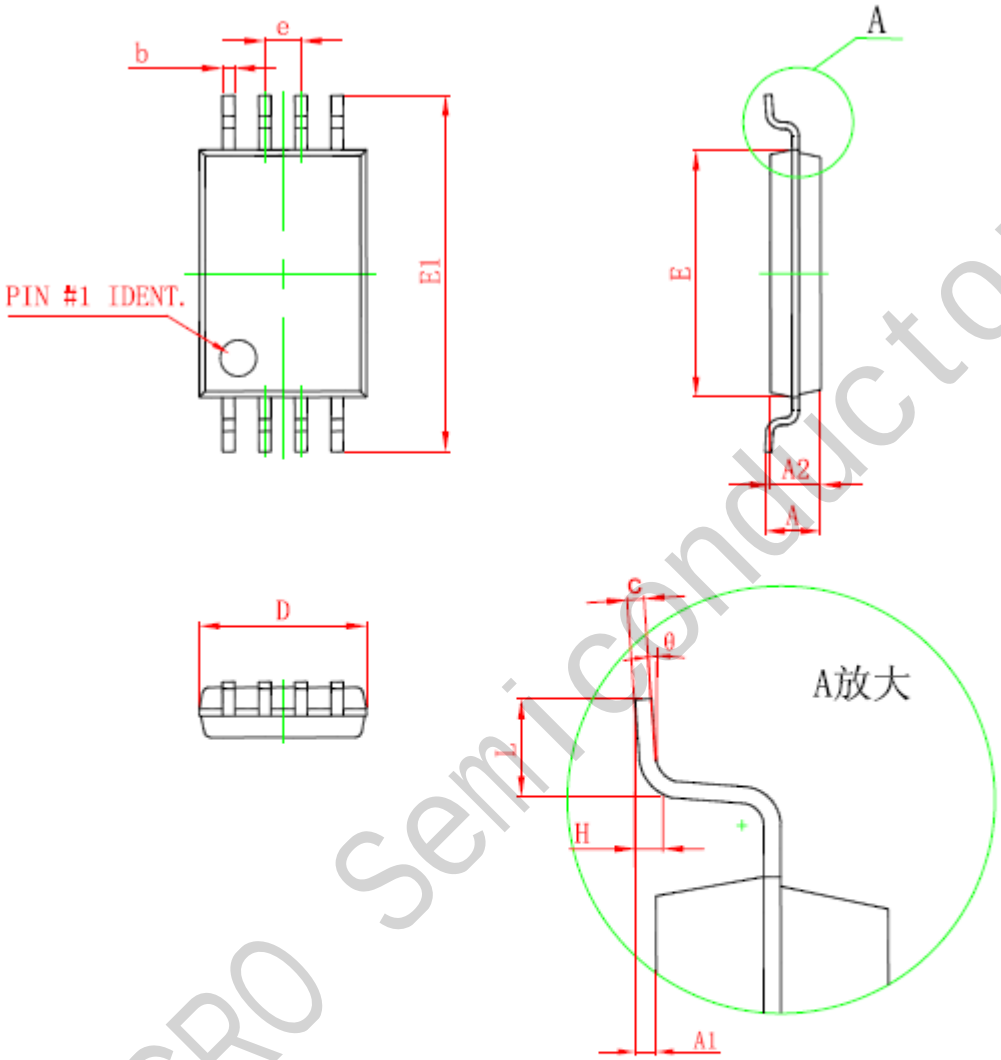


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

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■ *TSSOP8L PACKAGE OUTLINE DIMENSIONS*



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
D	2.900	3.100	0.114	0.122
E	4.300	4.500	0.169	0.177
b	0.190	0.300	0.007	0.012
c	0.090	0.200	0.004	0.008
E1	6.250	6.550	0.246	0.258
A		1.100		0.043
A2	0.800	1.000	0.031	0.039
A1	0.020	0.150	0.001	0.006
e	0.65 (BSC)		0.026 (BSC)	
L	0.500	0.700	0.020	0.028
H	0.25 (TYP)		0.01 (TYP)	
θ	1°	7°	1°	7°

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