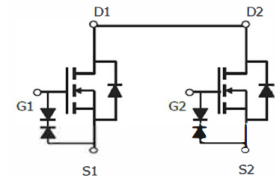
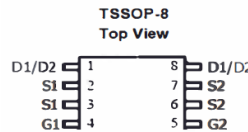


General Description

The AO8814 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

Application

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



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
AO8814	TSSOP-8	8814	3000

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Drain Current – Continuous ($T_C=25^{\circ}\text{C}$)	7.0	A
	Drain Current – Continuous ($T_C=100^{\circ}\text{C}$)	6.0	A
I_{DM}	Drain Current – Pulsed ¹	30	A
EAS	Single Pulse Avalanche Energy ²	14	mJ
IAS	Single Pulse Avalanched Current ²	1	A
P_D	Power Dissipation ($T_C=25^{\circ}\text{C}$)	1.5	W
	Power Dissipation – Derate above 25°C	0.017	W/ $^{\circ}\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}\text{C}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4	0.75	1.0	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 8V$			± 10	μA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=20V, V_{GS}=0$			1	μA
		$V_{DS}=20V, V_{GS}=0$ $T_J=55^\circ\text{C}$			5	
$I_{D(ON)}$	On-State Drain Current	$V_{DS}\geq 5V, V_{GS}=4.5V$	7			A
$R_{DS(ON)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=7A$	10	12.5	19	m Ω
		$V_{GS}=4.0V, I_D=7A$	11	13.5	19	
		$V_{GS}=3.1V, I_D=6.5A$	12	14	20	
		$V_{GS}=2.5V, I_D=5.5A$	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	$V_{DS}=10V$ $V_{GS}=0V$ $f=1\text{MHz}$		1120		pF
C_{oss}	Output Capacitance			1950		
C_{rss}	Reverse Transfer Capacitance			155		
$T_{d(on)}$	Turn-On Time	$V_{DS}=10V$ $I_D=7.0A$		7.2		nS
T_r				11		
$T_{d(off)}$	Turn-Off Time	$V_{GEN}=5V$ $R_G=3.3\Omega$		64		
T_f				32		

Note: 1. Pulse test: pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$

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

Typical Characteristics

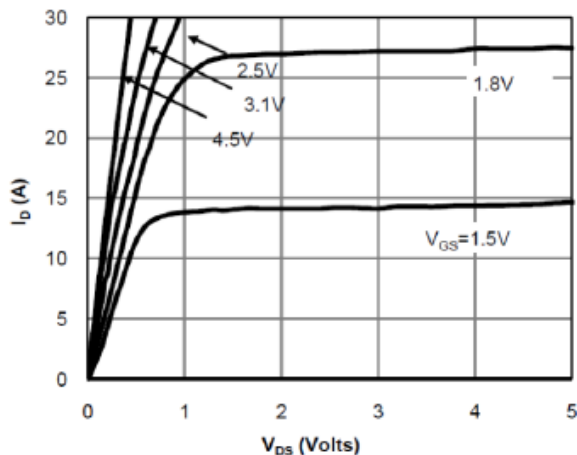


Fig 1: On-Region Characteristics (Note E)

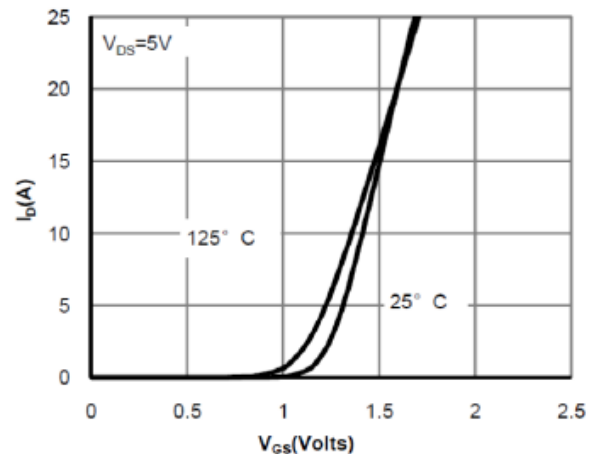


Figure 2: Transfer Characteristics (Note E)

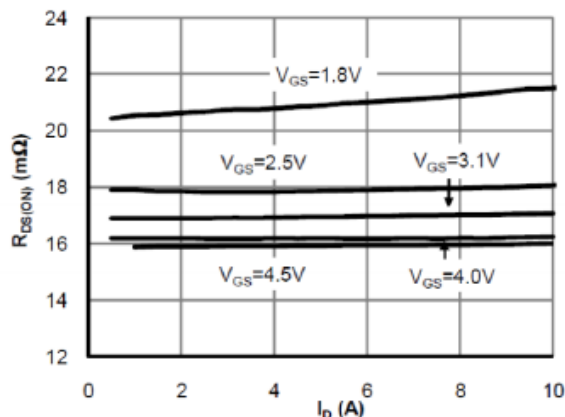


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

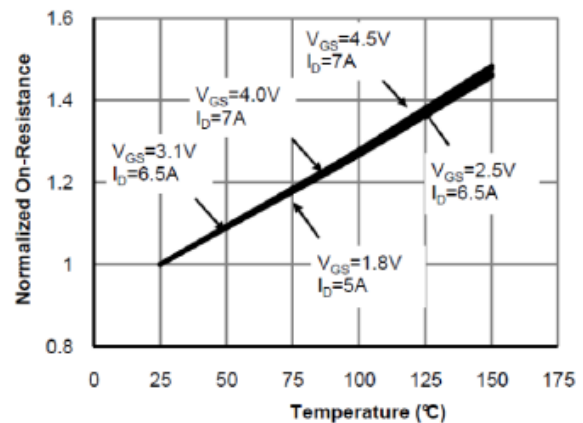


Figure 4: On-Resistance vs. Junction Temperature (Note E)

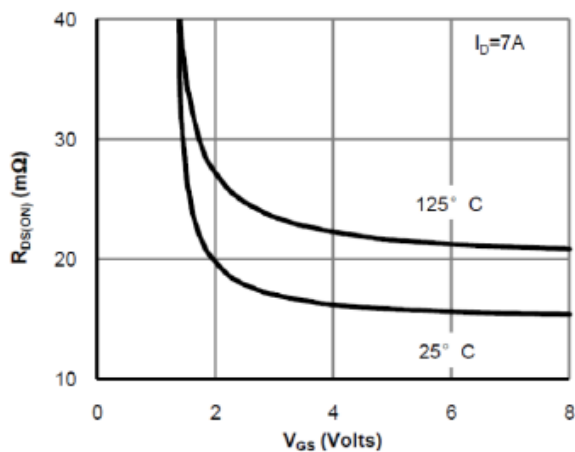


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

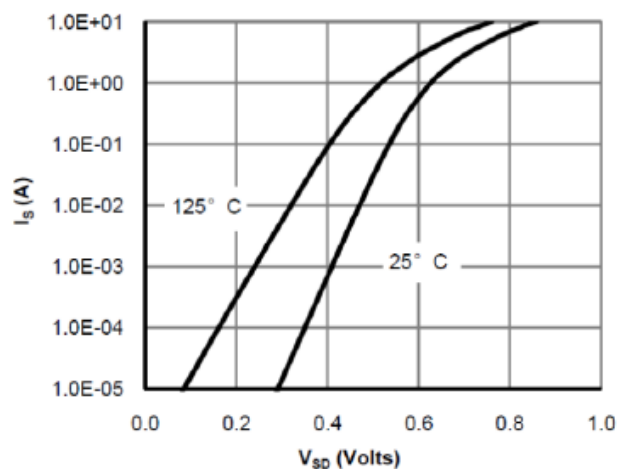


Figure 6: Body-Diode Characteristics (Note E)

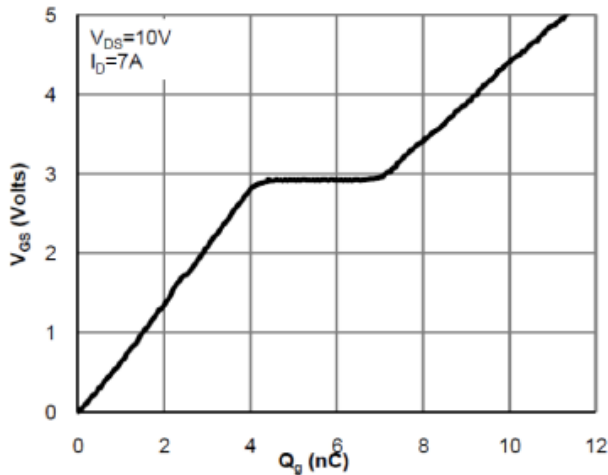


Figure 7: Gate-Charge Characteristics

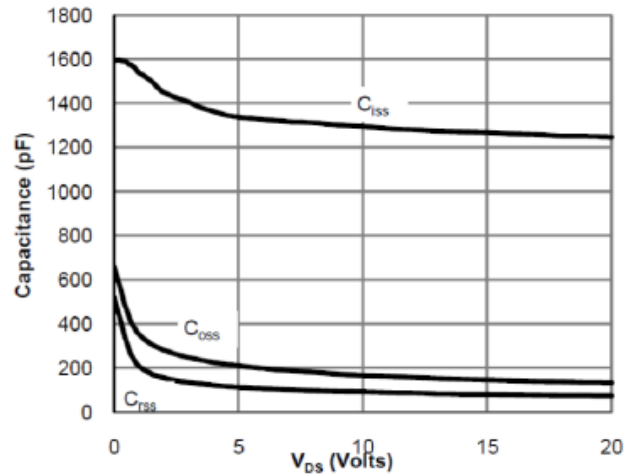


Figure 8: Capacitance Characteristics

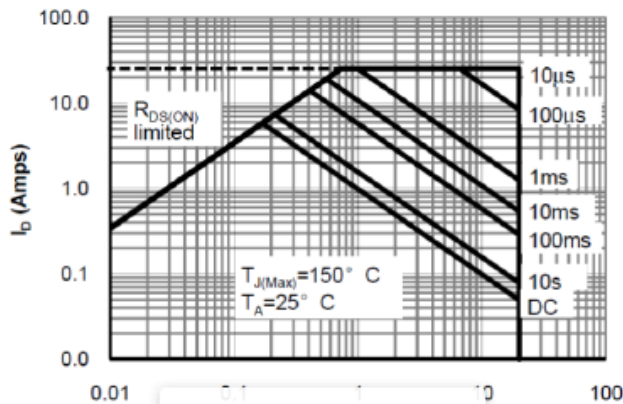


Figure 9: Maximum Forward Biased Safe Operating Area (MOSFET)

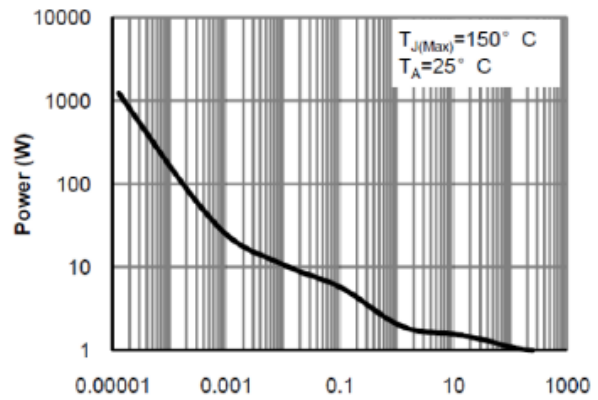


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

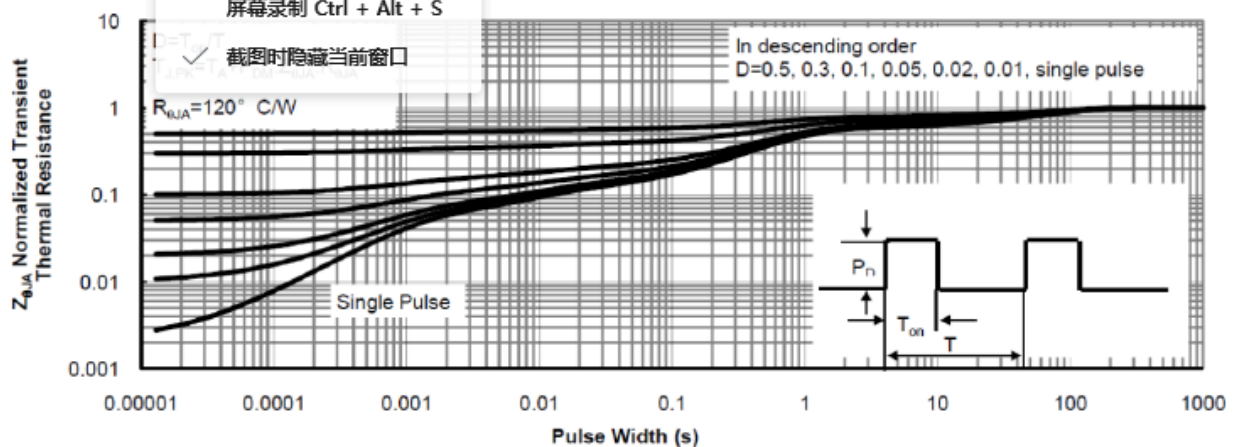
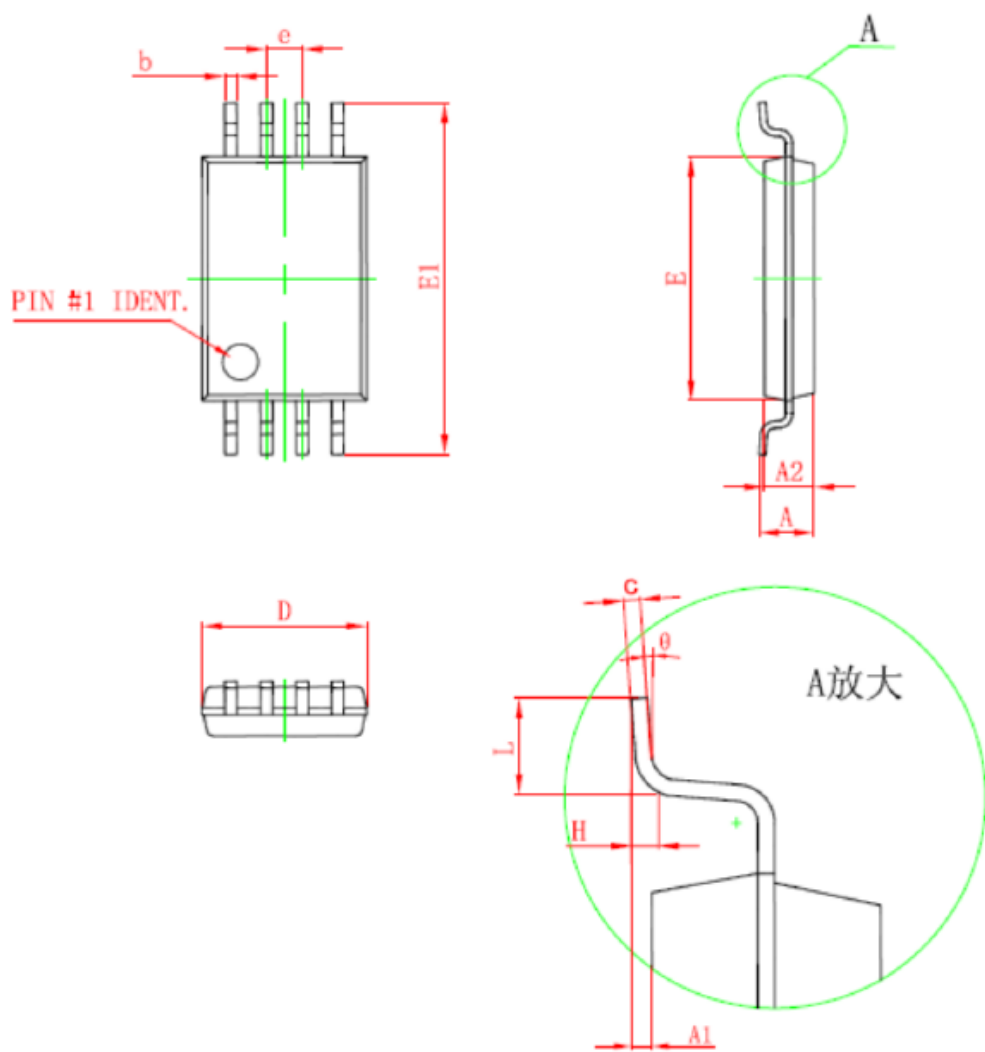


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Package Mechanical Data-TSSOP-8



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°