

AON2410

30V N-Channel MOSFET

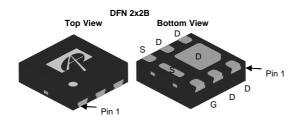
General Description

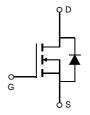
The AON2410 combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

Product Summary

 $\begin{array}{ll} V_{DS} & 30V \\ I_{D} \; (at \; V_{GS} \! = \! 4.5V) & 8A \\ R_{DS(ON)} \; (at \; V_{GS} = 4.5V) & < 21 m\Omega \\ R_{DS(ON)} \; (at \; V_{GS} = 2.5V) & < 28 m\Omega \end{array}$







Absolute Maximum Ratings T _A =25℃ unless otherwise noted							
Parameter		Symbol	Maximum	Units			
Drain-Source Voltage		V _{DS}	30	V			
Gate-Source Voltage		V _{GS}	±12	V			
Continuous Drain	T _A =25℃		8	Δ.			
Current ^G	T _A =70℃	'D	6	A			
Pulsed Drain Current Č		I _{DM}	32	A			
	T _A =25℃		2.8	10/			
Power Dissipation ^A	T _A =70℃	$-P_{D}$	1.8	W			
Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	C			

Thermal Characteristics							
Parameter		Symbol Typ		Max	Units		
Maximum Junction-to-Ambient A	t ≤ 10s	D	37	45	C/W		
Maximum Junction-to-Ambient AD	Steady-State	$\kappa_{\theta JA}$	66	80	€/W		



Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions		Min	Тур	Max	Units
STATIC F	PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	$I_D = 250 \mu A, V_{GS} = 0 V$		30			V
I _{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V, V_{GS} =0V				1	μA
·DSS	Zero Gate Voltage Brain Garrent		T _J =55℃			5	μπ
I _{GSS}	Gate-Body leakage current	V_{DS} =0V, V_{GS} =±12V				±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}$, $I_{D}=250\mu A$		0.6	1.07	1.5	V
$I_{D(ON)}$	On state drain current	V_{GS} =4.5V, V_{DS} =5V		32			Α
R _{DS(ON)}	Static Drain-Source On-Resistance	V_{GS} =4.5V, I_D =8A			17.1	21	mΩ
			T _J =125℃		26	32	11122
		V_{GS} =2.5V, I_D =4A			21.2	28	mΩ
g _{FS}	Forward Transconductance	V_{DS} =5V, I_{D} =8A			50		S
V_{SD}	Diode Forward Voltage	I _S =1A,V _{GS} =0V			0.7	1	V
Is	Maximum Body-Diode Continuous Current					3.5	Α
DYNAMIC	PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz			813		pF
Coss	Output Capacitance				98		pF
C _{rss}	Reverse Transfer Capacitance				56		pF
R_g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz			2.3	3.5	Ω
SWITCHI	NG PARAMETERS						
Q_g	Total Gate Charge				8	12	nC
Q_{gs}	Gate Source Charge	V _{GS} =4.5V, V _{DS} =15V, I _D =8A			1.2		nC
Q_{gd}	Gate Drain Charge				2.6		nC
t _{D(on)}	Turn-On DelayTime				3		ns
t _r	Turn-On Rise Time	V_{GS} =4.5V, V_{DS} =15V, R_L =1.8 Ω , R_{GEN} =3 Ω			3		ns
t _{D(off)}	Turn-Off DelayTime				26		ns
t _f	Turn-Off Fall Time				3.5		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =8A, dI/dt=100A/μs			10		ns
Q_{rr}	Body Diode Reverse Recovery Charge	I _F =8A, dl/dt=100A/μs			2.4		nC

A. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25° C. The Power dissipation P_{DSM} is based on R $_{0.JA}$ t \leq 10s value and the maximum allowed junction temperature of 150° C. The value in any given

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application depends on the user's specific board design.

B. The power dissipation P_D is based on T_{J(MAX)}=150° C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$ =150° C. Ratings are based on low frequency and duty cycles to keep initial T_J=25° C.

D. The R_{BJA} is the sum of the thermal impedance from junction to case R_{BJC} and case to ambient. E. The static characteristics in Figures 1 to 6 are obtained using <300 μ s pulses, duty cycle 0.5% max.

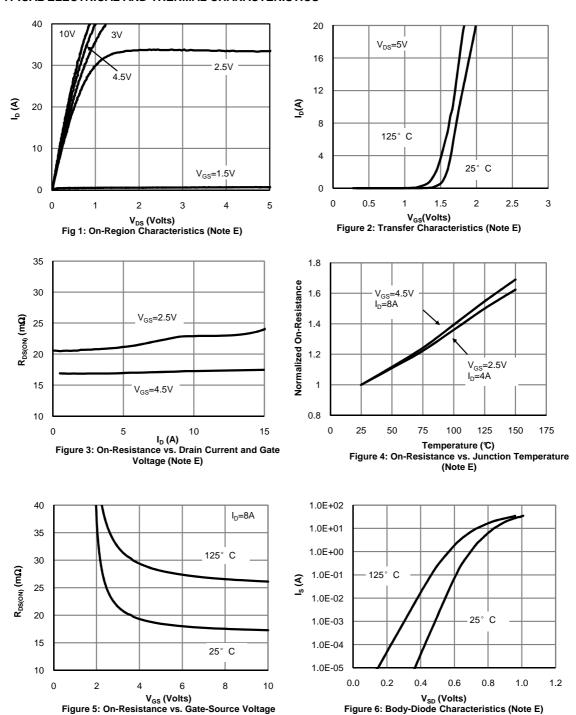
F. These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of $T_{J(MAX)}$ =150° C. The SOA curve provides a single pulse rating.

G. The maximum current rating is package limited.

H. These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C.



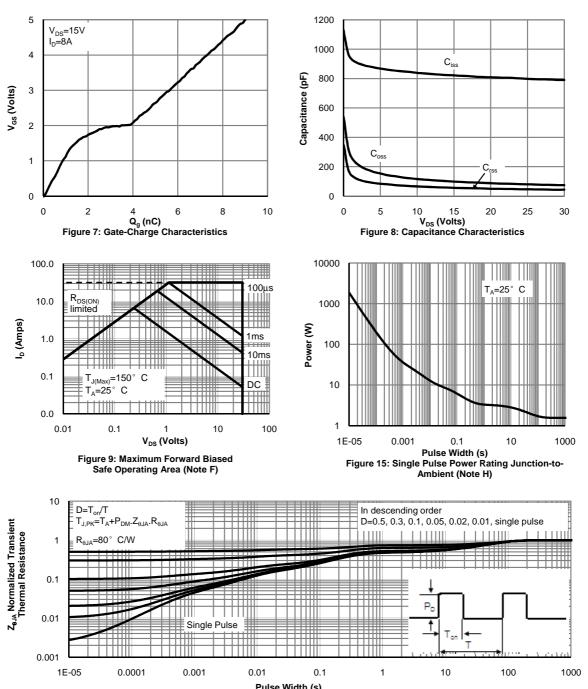
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS



(Note E)



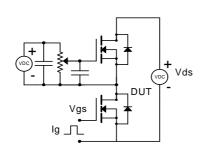
TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

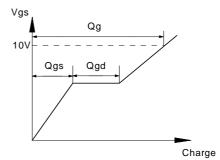


Pulse Width (s)
Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)

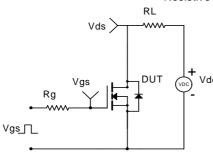


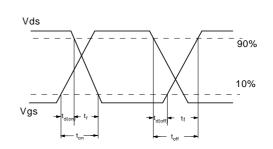
Gate Charge Test Circuit & Waveform



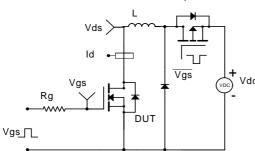


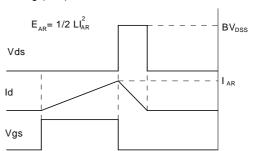
Resistive Switching Test Circuit & Waveforms





Unclamped Inductive Switching (UIS) Test Circuit & Waveforms





Diode Recovery Test Circuit & Waveforms

