# AOD4184A

Description：

This N-Channel MOSFET uses advanced trench technology and

design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.
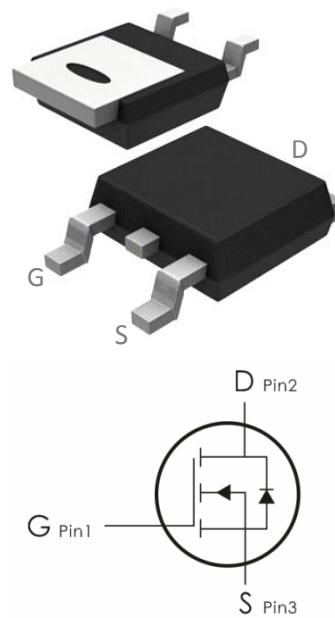
Features：

1) V_{DS}=40V, I_D=80A, $R_{DS(ON)}$<7mΩ @V_{GS}=10V

2) Low gate charge.

3) Green device available.

4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.

5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	$\pm$20	V
I_D	Continuous Drain Current-TC=25℃	80	A
	Continuous Drain Current-TC=100℃	56	
	Pulsed Drain Current	350	
E_{AS}	Single Pulse Avalanche Energy[5]	750	mJ
P_D	Power Dissipation	80	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case[2]	1.88	℃/W

Electrical Characteristics：(T$_C$=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV$_{DSS}$	Drain-Sourtce Breakdown Voltage	V$_{GS}$=0V,I$_D$=250μA	40	45	---	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{GS}$=0V, V$_{DS}$=40V	---	---	1	μA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±20V, V$_{DS}$=0A	---	---	±100	nA
On Characteristics[3]						
V$_{GS(th)}$	GATE-Source Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250μA	1.2	1.8	2.5	V
R$_{DS(ON)}$	Drain-Source On Resistance	V$_{GS}$=10V,I$_D$=20A	---	---	7	mΩ
G$_{FS}$	Forward Transconductance	V$_{DS}$=10V, I$_D$=20A	15	---	---	S
Dynamic Characteristics[4]						
C$_{iss}$	Input Capacitance		---	5000	---	
C$_{oss}$	Output Capacitance	V$_{DS}$=20V, V$_{GS}$=0V, f=1MHz	---	900	---	pF
C$_{rss}$	Reverse Transfer Capacitance		---	500	---	
Switching Characteristics[4]						
td(on)	Turn-On Delay Time		---	12	---	ns
t$_r$	Rise Time	V$_{DD}$=20V, R$_L$=1Ω	---	11	---	ns
t$_{d(off)}$	Turn-Off Delay Time	V$_{GS}$=10V,R$_G$=3Ω	---	39	---	ns
t$_f$	Fall Time		---	12	---	ns
Q$_g$	Total Gate Charge		---	61	---	nC
Q$_{gs}$	Gate-Source Charge	V$_{GS}$=20V, V$_{DS}$=10V, I$_D$=20A	---	15.3	---	nC
Q$_{gd}$	Gate-Drain "Miller" Charge		---	14.5	---	nC
Drain-Source Diode Characteristics						
V$_{SD}$	Source-Drain Diode Forward Voltage[3]	V$_{GS}$=0V,I$_S$=10A	---	---	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, t ⩽ 10 sec.

3. Pulse Test: Pulse Width ⩽ 300 μs, Duty Cycle ⩽ 2%.

4. Guaranteed by design, not subject to production

5. EAS condition : Tj=25℃,VDD=20V,VG=10V,L=1mH,Rg=25Ω，IAS=42A.

## Typical Characteristics： (T$_C$=25℃ unless otherwise noted)
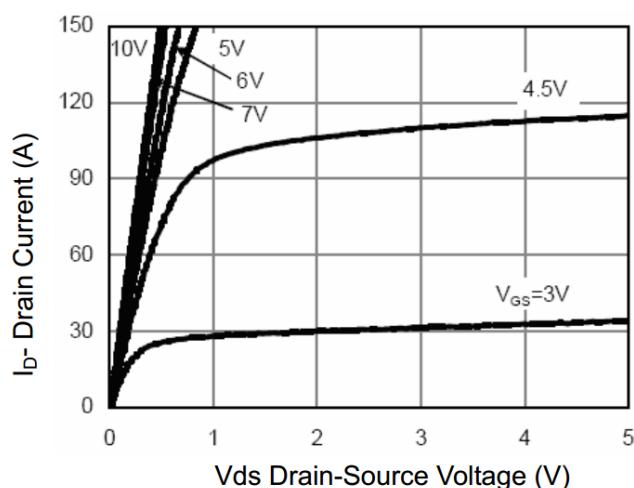
**Figure 1 Output Characteristics**
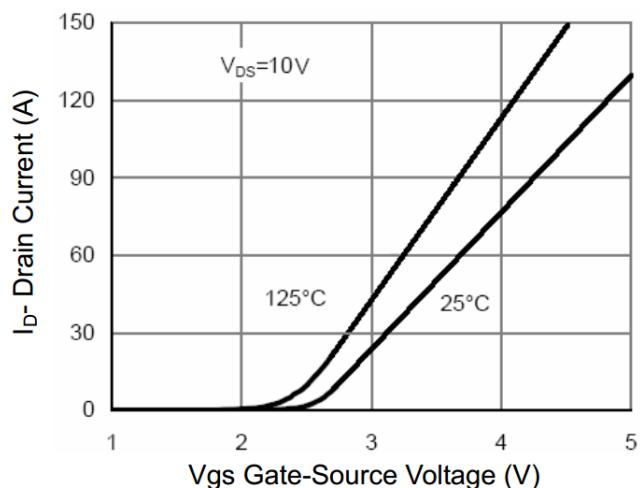
Figure 2 Transfer Characteristics
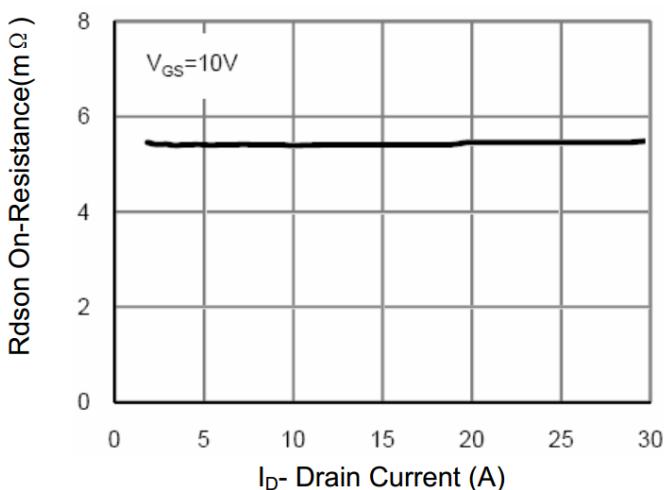
Figure 3 Rdson- Drain Current
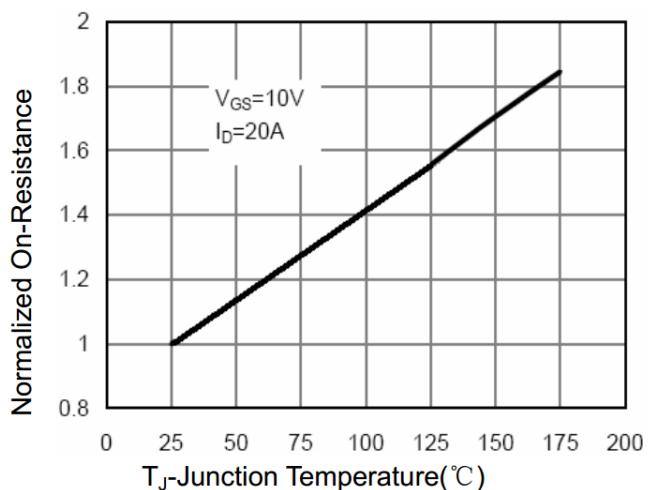
Figure 4 Rdson-JunctionTemperature

Figure 5 Gate Charge

**Figure 6 Source- Drain Diode Forward**

**Figure 7 Capacitance vs Vds**


Figure 8 Safe Operation Area


Figure 9 Power De-rating


Figure 10ID Current- Junction Temperature
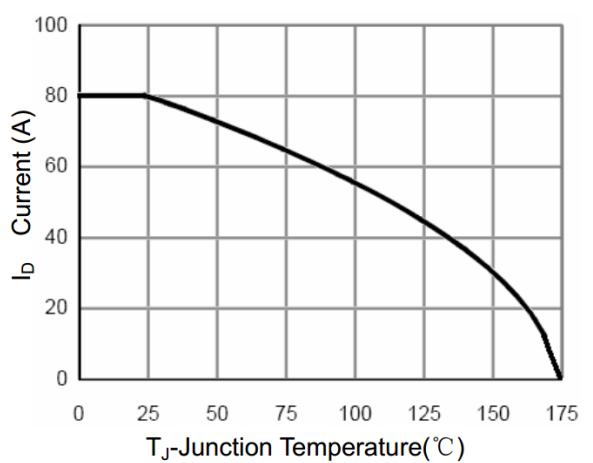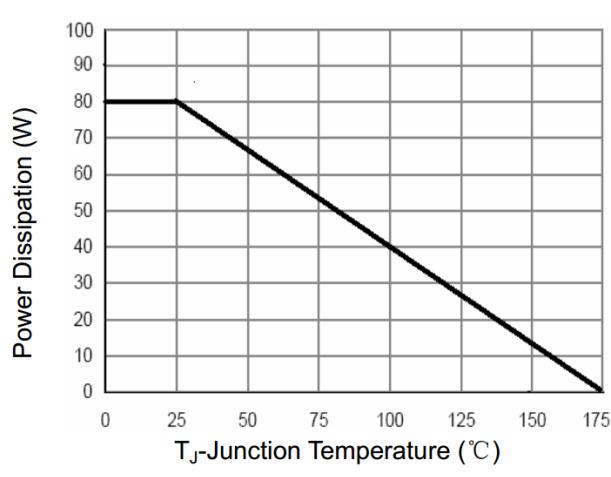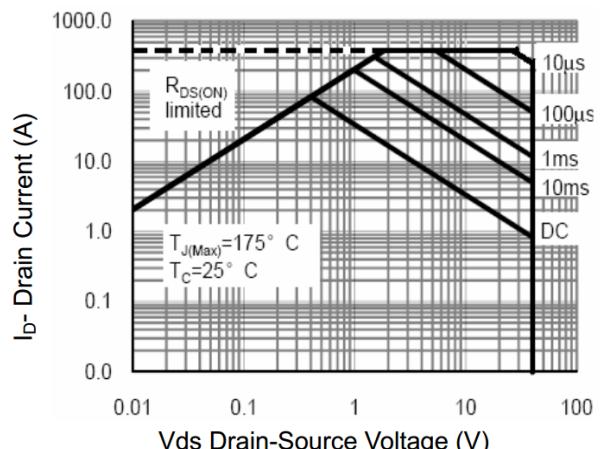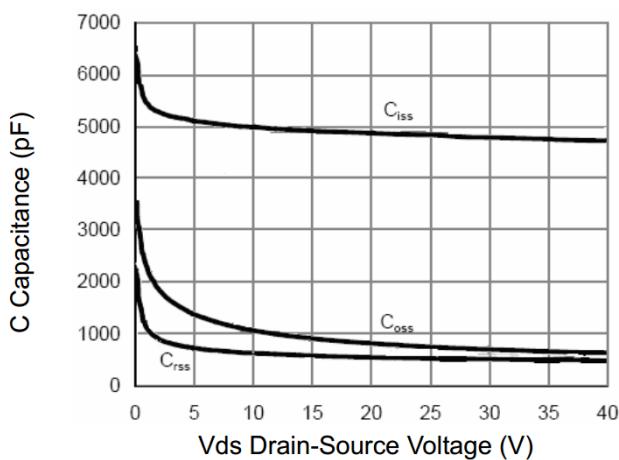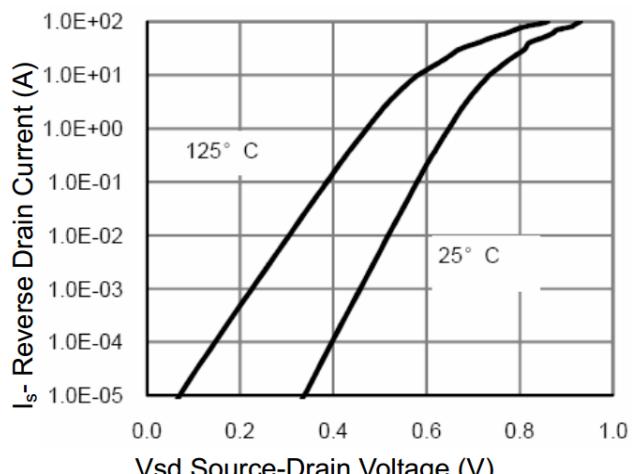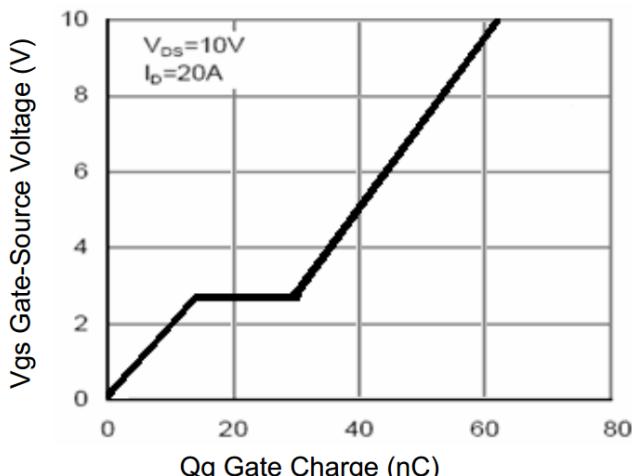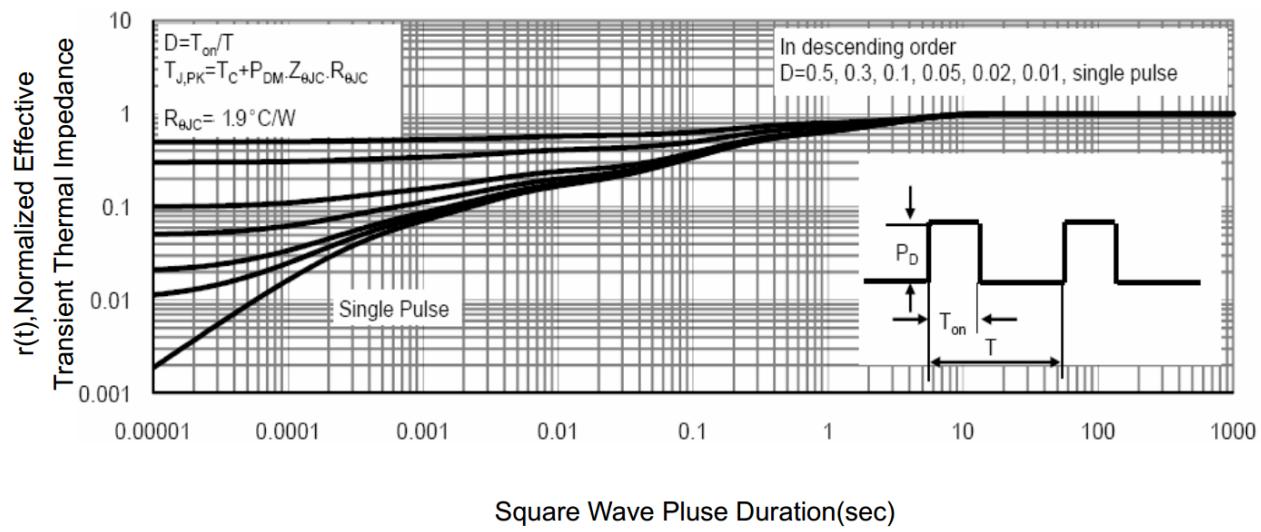
Figure 11 Normalized Maximum Transient Thermal Impedance

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