AD4N60AS

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
600V	2.5Ω@10V	4A

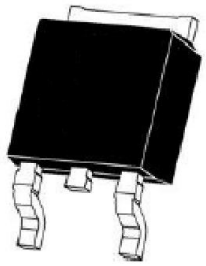
Feature

- Fast switching capability
- High ruggedness
- Low gate charge

Application

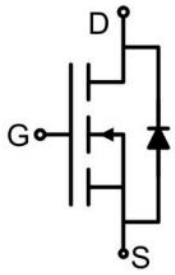
- High Speed Switching Applications
- Power Supplies and Adaptors

Package



TO-252AB

Circuit diagram



Marking

AD4N60AS

N-Channel Enhancement Mode Power MOSFET

Absolute maximum ratings (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current(T_C =25℃)	I_D	4	A
Continuous Drain Current(T_C =100℃)	I_D(100℃)	2.5	A
Pulsed Drain Current[1]	I_{DM}	16	A
Power Dissipation(T_C =25℃)	P_D	83	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.5	℃/W
Single pulse avalanche energyt[2]	E_{AS}	173	mJ
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_A=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	600			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =600V,V_{GS} = 0V			1	μA
Gate-body leakage current	I_{GSS}	V_{GS} =±30V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =2A		2.1	2.5	Ω
Transconductance	g_{FS}	V_{DS} =25V,I_D =5A		4.3		S
Dynamic characteristics[5]						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz		564		pF
Output Capacitance	C_{oss}			66		
Reverse Transfer Capacitance	C_{rss}			12		
Gate Resistance	R_g	V_{DS}=0V,F_{REQ}=1MHz		1.1		Ω
Total Gate Charge[3]	Q_g	V_{DS} =480V,V_{GS} =10V, I_D=4A,[3,4]		12		nC
Gate-Source Charge	Q_{gs}			4.0		
Gate-Drain Charge	Q_{gd}			4.8		
Turn-on delay time[3]	$t_{d(on)}$	V_{DS}=300V, I_D =4A, R_G=25Ω[3,4]		30		nS
Turn-on rise time	t_r			75		
Turn-off delay time	$t_{d(off)}$			60		
Turn-off fall time	t_f			55		
Source-Drain Diode characteristics						
Diode Forward voltage[3]	V_{SD}	V_{GS} =0V,I_{SD}=4A			1.4	V
Diode Forward Current	I_S				4	A
Reverse Recovery Time[3]	t_{rr}	I_F =4A, di/dt = 100A/μs		250		nS
Reverse Recovery Charge	Q_{rr}			4.5		μC

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.
2) L = 10mH,V_{DD} = 50V, R_G = 25 Ω, Starting T_J = 25°C.
3) Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%.
4) Essentially independent of operating temperature.
5) Guaranteed by design, not subject to production.

Typical Characteristics

Fig.1 Output characteristics

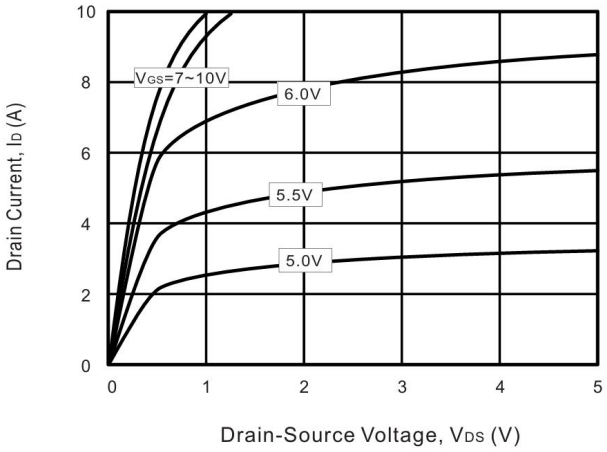


Fig.2 Power Dissipation

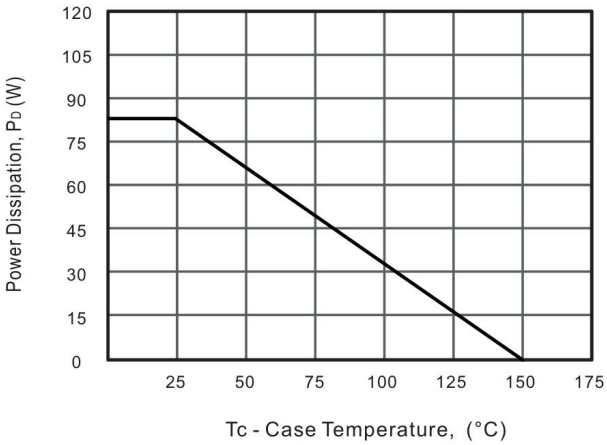


Fig.3 Drain Current Derating

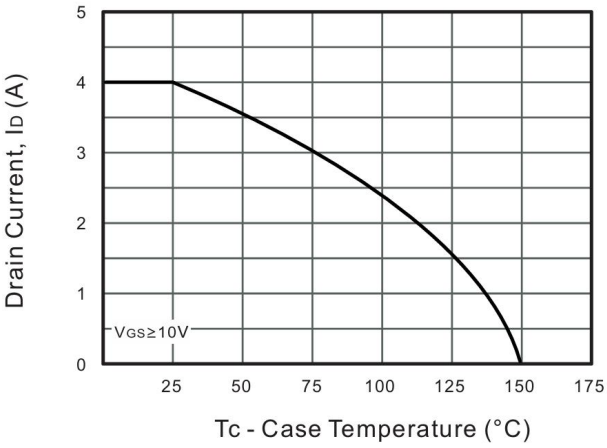


Fig.4 Drain-Source On-Resistance vs. Drain Current

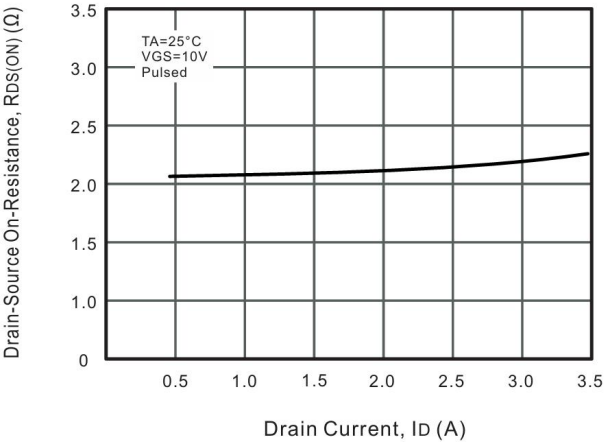


Fig.5 Gate Threshold Voltage vs. Junction Temperature

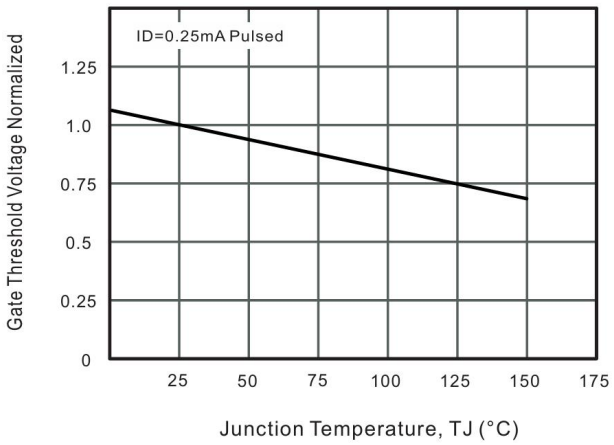
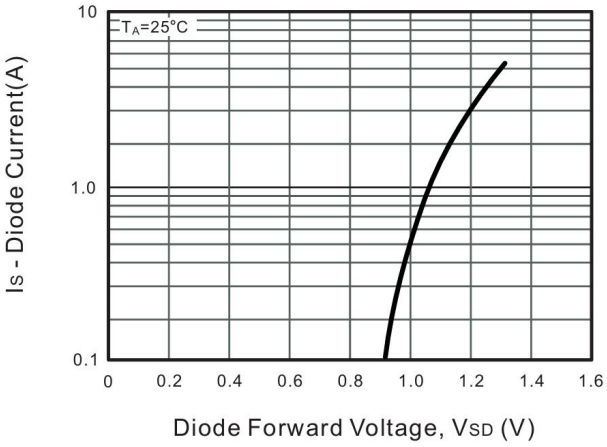


Fig.6 Body-diode Forward Characteristics



Typical Characteristics

Fig.7 Drain-Source On-Resistance vs. Junction Temperature

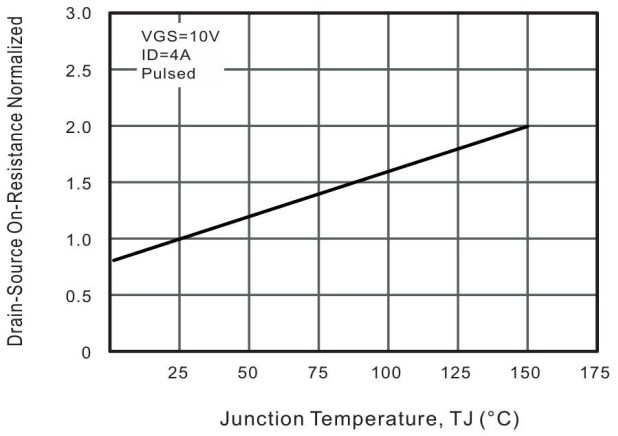


Fig.8 Breakdown Voltage vs. Junction Temperature

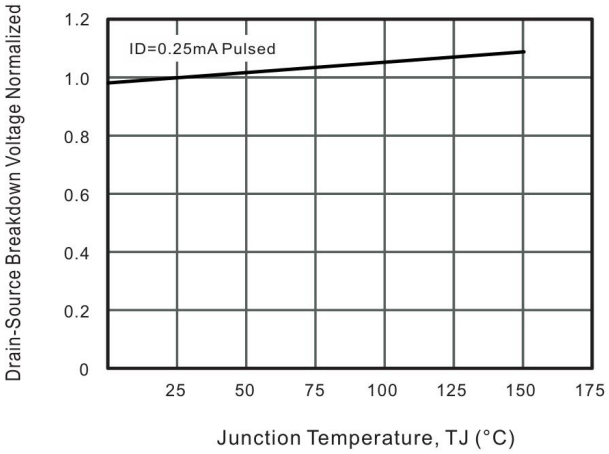


Fig.9 Capacitance Characteristics

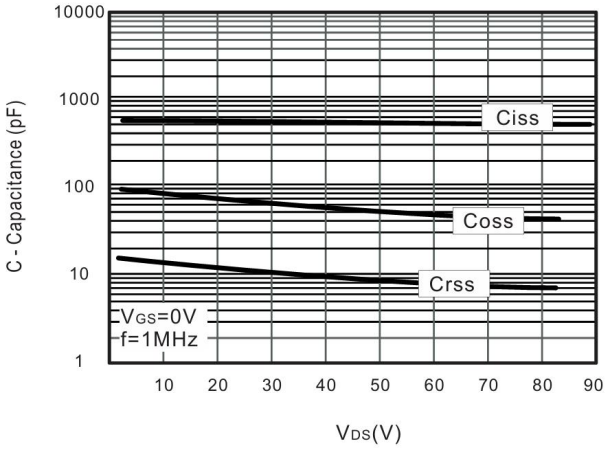


Fig.10 Gate Charge Characteristics

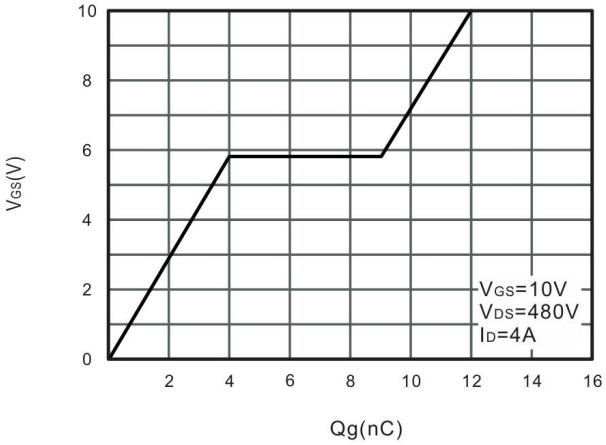


Fig.11 Safe Operating Area

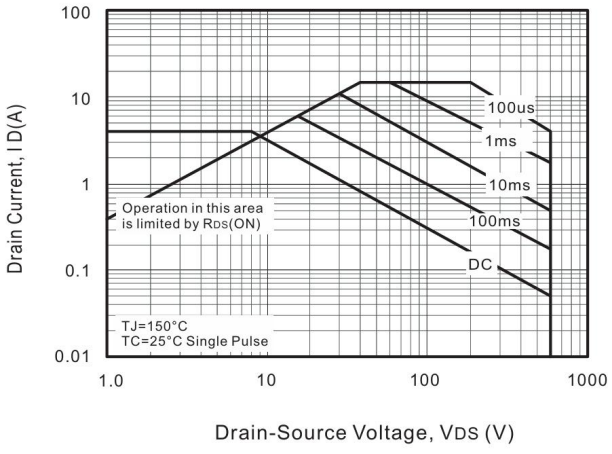
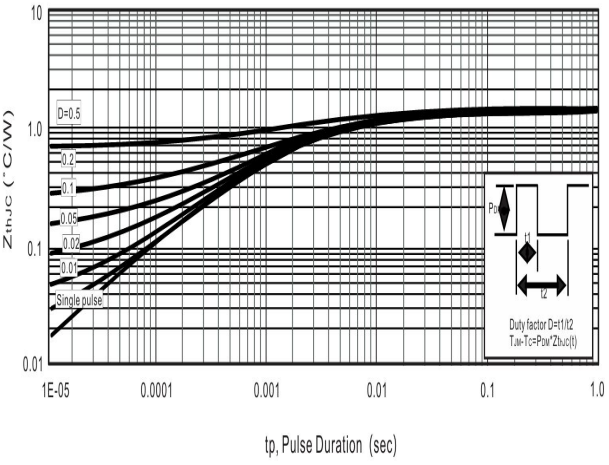
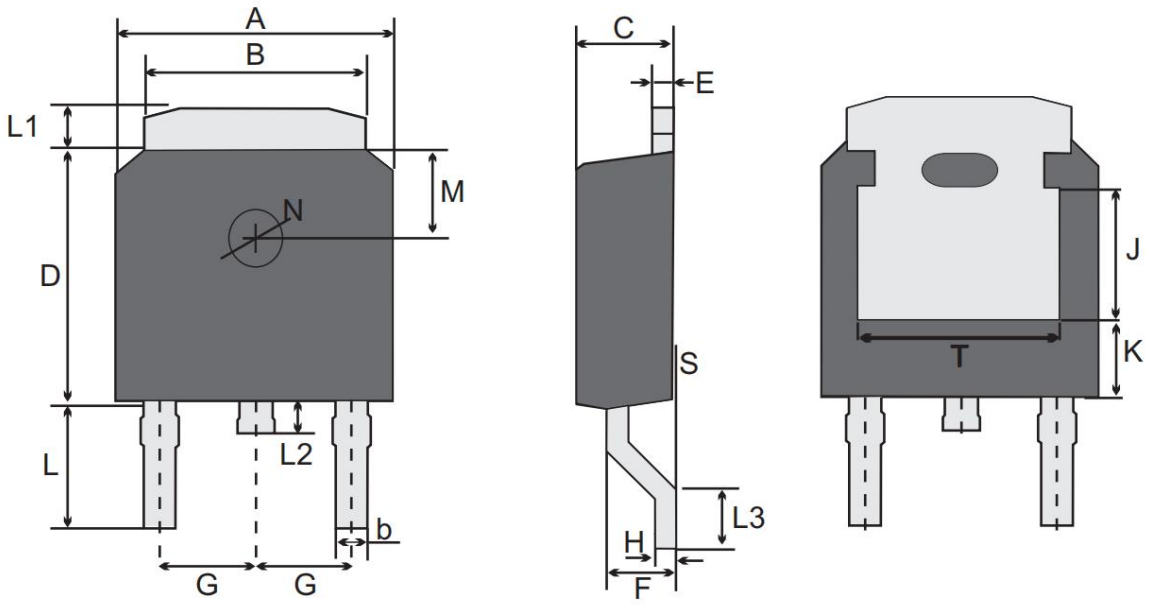


Fig.12 Max. Transient Thermal Impedance



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.300	6.700	0.248	0.264
B	5.130	5.530	0.202	0.218
b	0.660	0.860	0.026	0.034
C	2.100	2.500	0.083	0.098
D	5.900	6.300	0.232	0.248
E	0.410	0.610	0.016	0.024
F	1.270	1.870	0.050	0.074
G	2.300 TYP.		0.091 TYP.	
H	0.450	0.550	0.018	0.022
L	2.600	3.100	0.102	0.122
L1	0.800	1.200	0.031	0.047
L2	0.600	1.000	0.024	0.039
L3	1.000	1.750	0.039	0.069
S	0.000	0.230	0.000	0.009
M	1.800 TYP.		0.071 TYP.	
N	1.300 TYP.		0.051 TYP.	
J	3.200 REF		0.126 REF	
K	1.800 REF		0.071 REF	
T	4.830 REF		0.190 REF	