AD20N06AS

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	43mΩ@10V	20A
	47mΩ@4.5V	

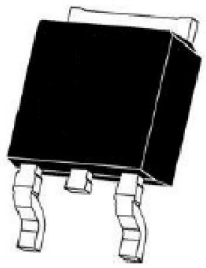
Feature

- Trench Power MV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Application

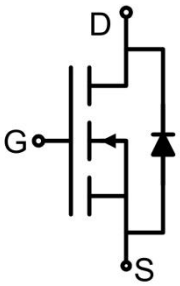
- DC-DC Converters
- Power management functions
- Backlighting

Package

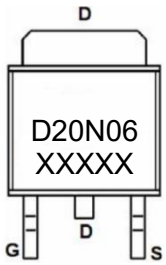


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current (T_C=25℃)	I_D	20	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	12	A
Pulsed Drain Current[1)]	I_{DM}	60	A
Power Dissipation[2)] (T_C=25℃)	P_D	28	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	4.4	℃/W
Single pulse avalanche energy[3)]	E_{AS}	30	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25 °C, 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	60			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =60V,V_{GS} = 0V			1	μA
		V_{DS} =60V,V_{GS} = 0V,T_J=150℃			100	
Gate-body leakage current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	1.0	1.5	2.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		34	43	mΩ
		V_{GS} =4.5V, I_D =10A		36	47	
Dynamic characteristics[4)]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		1018		pF
Output Capacitance	C_{oss}			70		
Reverse Transfer Capacitance	C_{rss}			62		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,I_D =10A		26		nC
Gate-Source Charge	Q_{gs}			5.4		
Gate-Drain Charge	Q_{gd}			6.5		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_D =2A, R_L=1Ω,R_{GEN}=3Ω		10		nS
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			29		
Turn-off fall time	t_f			22		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				20	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=10A			1.2	V
Reverse Recovery Time	t_{rr}	I_F =20A,di/dt = 500A/μs		23		nS
Reverse Recovery Charge	Q_{rr}			11.7		nC

Notes:

1) Repetitive rating; pulse width limited by max. junction temperature.

2) Pd is based on max. junction temperature, using junction-case thermal resistance.

3) T_j=25℃, V_{DD}=40V, V_G=10V, L=0.5mH, IAS=11A

4) Guaranteed by design, not subject to production testing.

Typical Characteristics

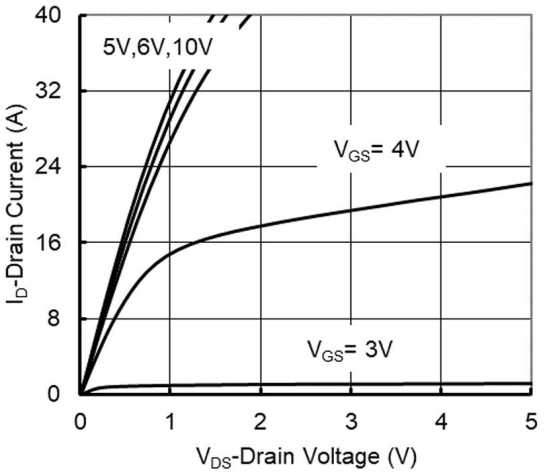


Figure 1. Output Characteristics

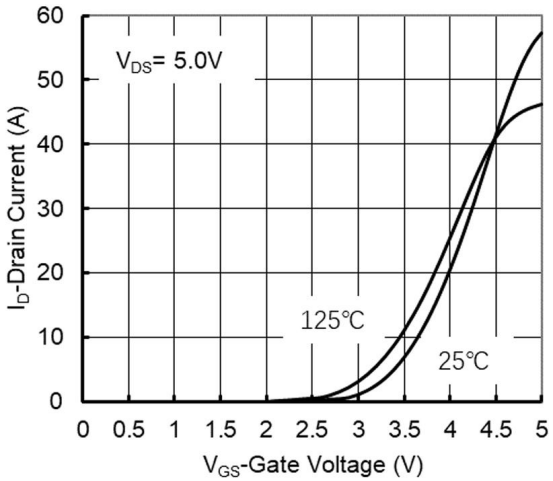


Figure 2. Transfer Characteristics

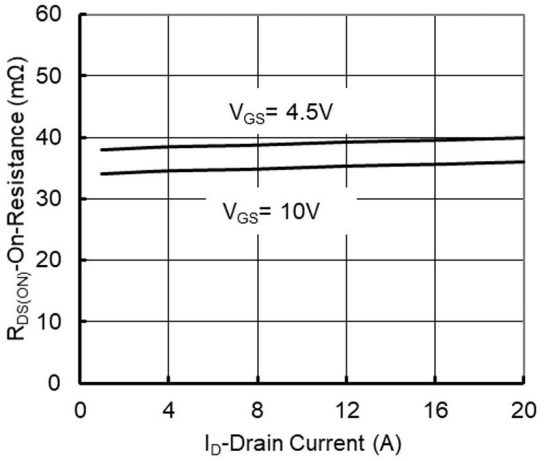


Figure 3 . On-Resistance vs. Drain Current and Gate Voltage

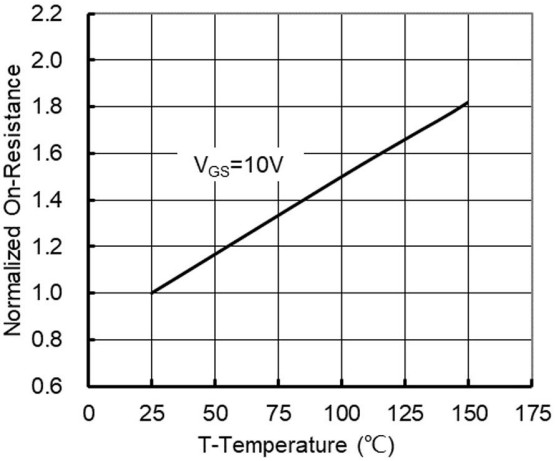


Figure 4. On-Resistan ce vs. Junction Temperature

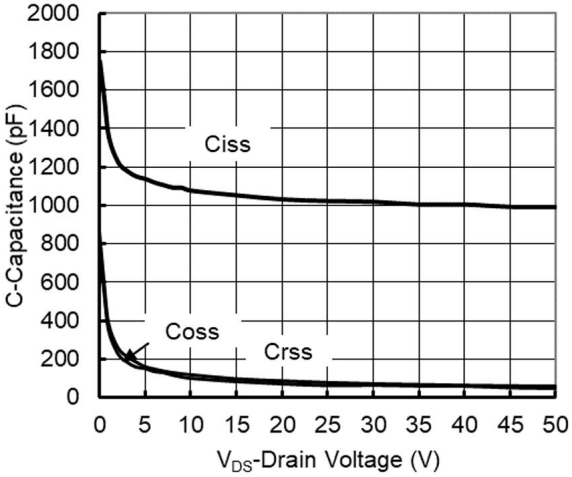


Figure 5. Capacitance Characteristics

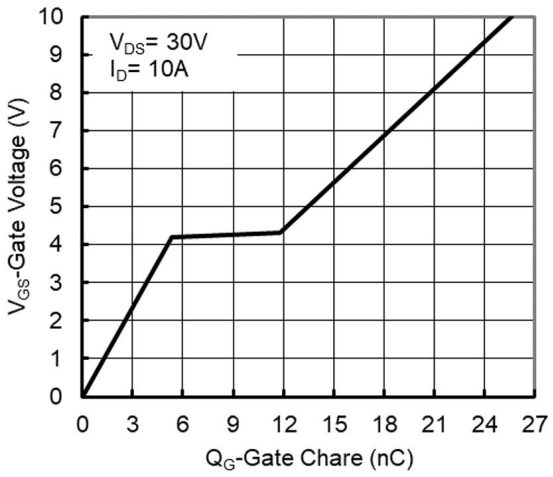


Figure 6. Gate Charge

Typical Characteristics

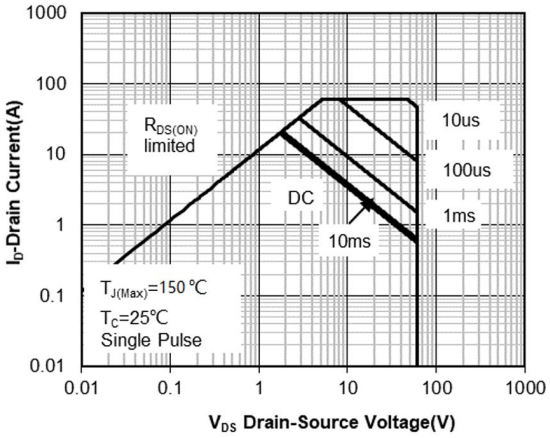


Figure 7. Safe Operation Area

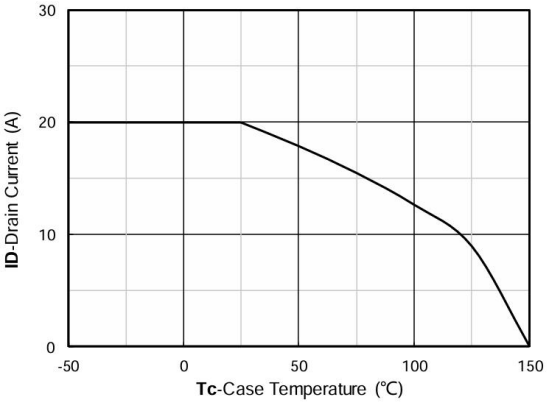


Figure 8. Maximum Continuous Drain Current vs Case Temperature

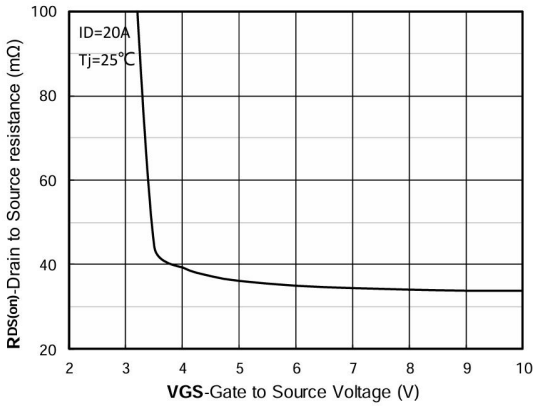


Figure 9. On-Resistance vs Gate to Source Voltage

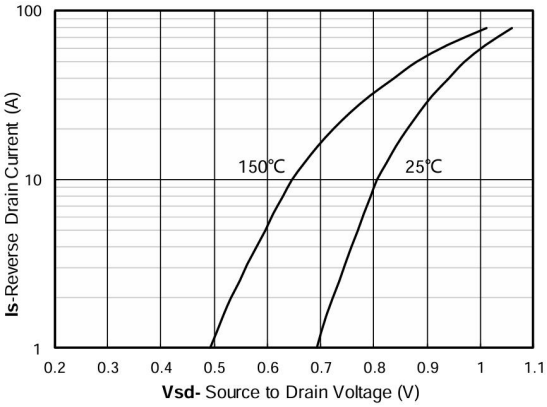


Figure 10. Forward characteristics of reverse diode

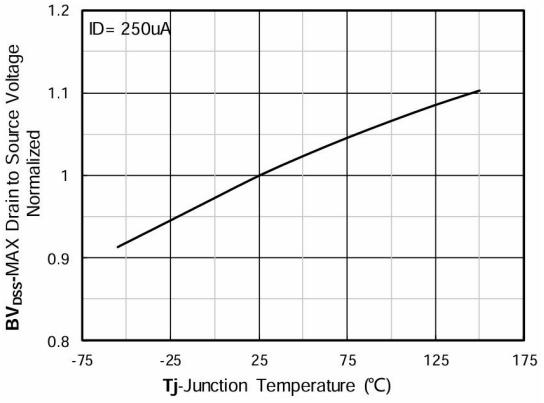


Figure 11. Normalized breakdown voltage

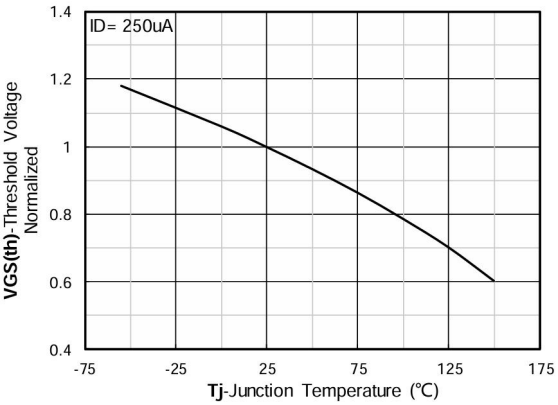


Figure 12. Normalized Threshold voltage

Typical Characteristics

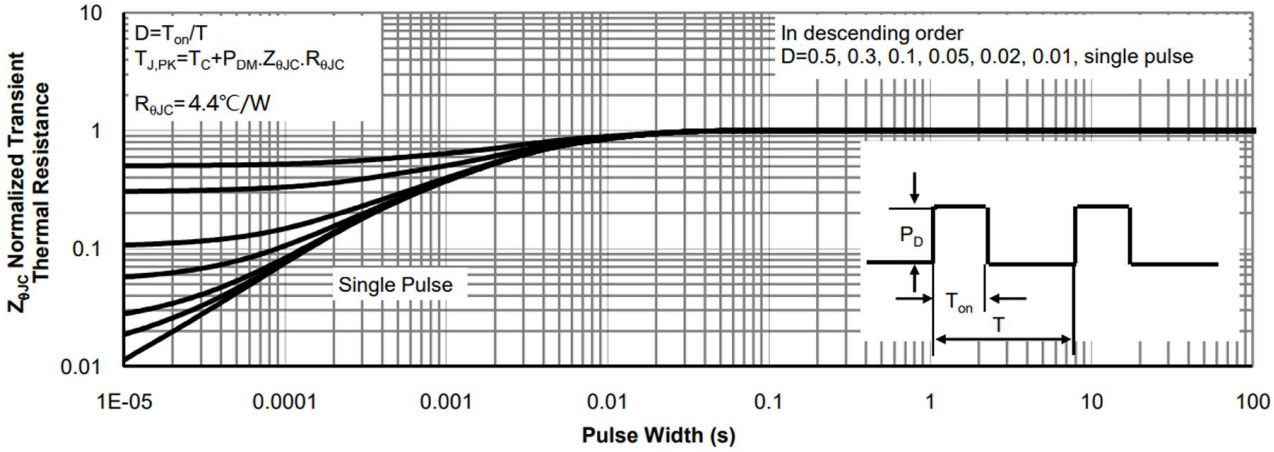
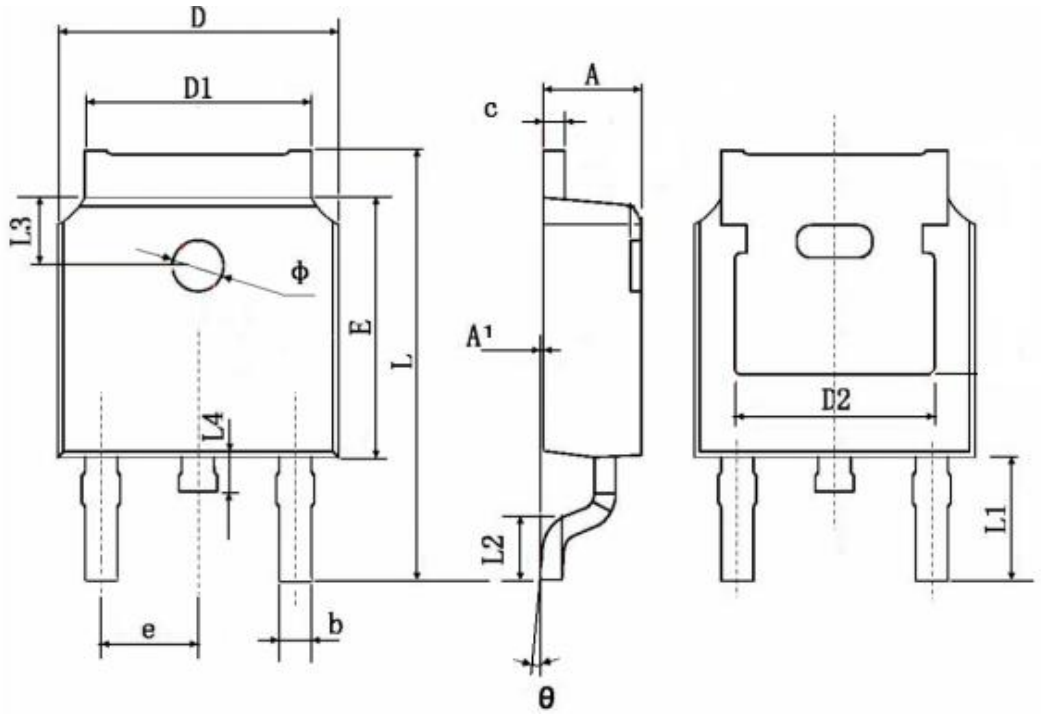


Figure 13. Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.200	0.000	0.008
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.500	0.201	0.217
D2	4.830 REF.		0.190 REF.	
E	6.000	6.200	0.236	0.244
e	2.186	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 REF.		0.114 REF.	
L2	1.250	1.800	0.049	0.070
L3	1.600 REF.		0.063 REF.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	10°	0°	10°