Product Summary

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

Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package
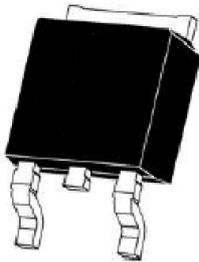
TO-252AB

Circuit diagram

Marking

AD20N06S

N-Channel Enhancement Mode Power MOSFET
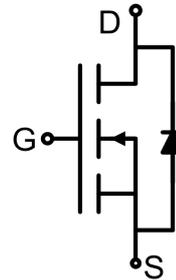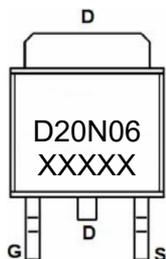
Absolute maximum ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	20	A
Pulsed Drain Current	I_{DM}	60	A
Power Dissipation	P_D	40	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	3.7	℃/W
Single pulse avalanche energy	E_{AS}	72	mJ
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T$_A$=25 ºC, 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
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	1.6	2.5	V
Drain-source on-resistance[1]	$R_{DS(on)}$	V_{GS} =10V, I_D =20A		30	43	mΩ
Dynamic characteristics[2]						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		590		pF
Output Capacitance	C_{oss}			60		
Reverse Transfer Capacitance	C_{rss}			25		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,ID =4.5A		14		nC
Gate-Source Charge	Q_{gs}			2.9		
Gate-Drain Charge	Q_{gd}			5.2		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_D =2A,R_{GEN}=3Ω,R_L=6.7Ω		5		nS
Turn-on rise time	t_r			2.6		
Turn-off delay time	$t_{d(off)}$			16.1		
Turn-off fall time	t_f			2.3		
Source-Drain Diode characteristics						
Diode Forward Current[1]	I_S				20	A
Diode Forward voltage	V_{DS}	V_{GS} =0V, I_S=20A			1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, IF =20A di/dt = 100A/µs [1]		35		nS
Reverse Recovery Charge	Q_{rr}			53		nC

Notes:

1) Pulse Test: Pulse Width < 300µs, Duty Cycle ≤2%.

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

## Typical Characteristics
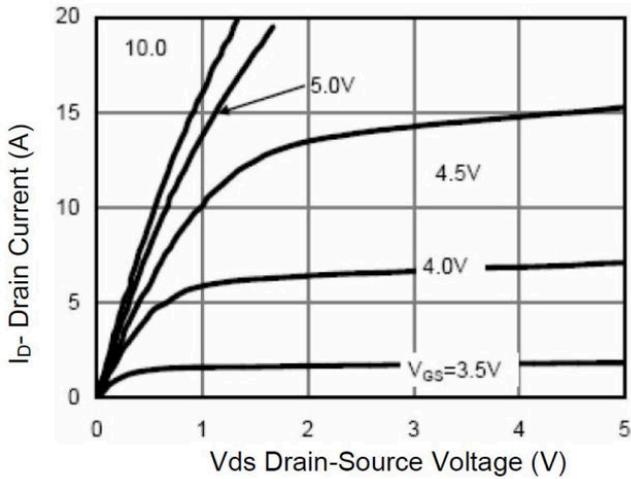
Figure 1 Output Characteristics
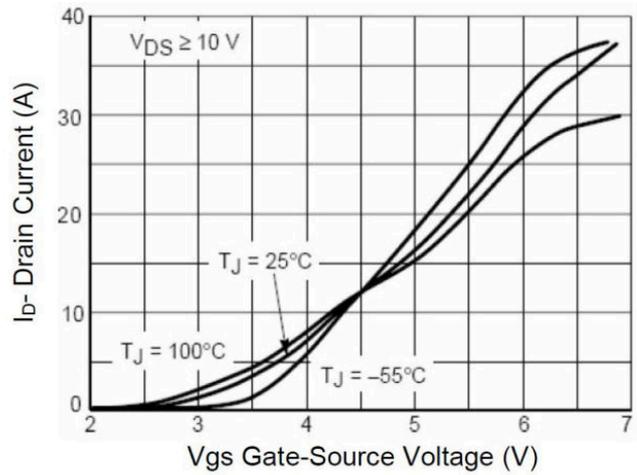

Figure 2 Transfer Characteristics
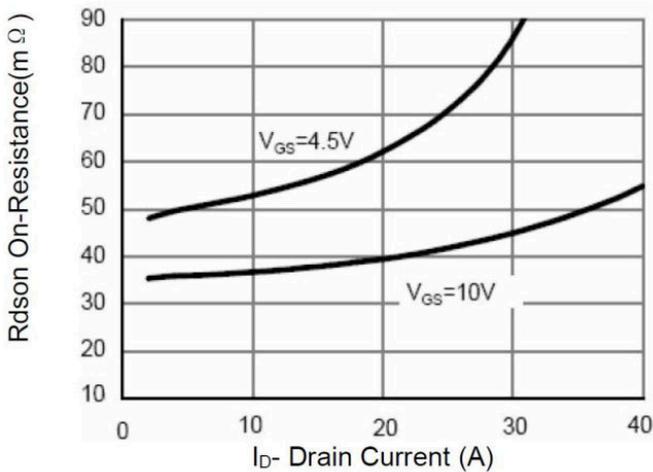
Figure 3 Rdson- Drain Current
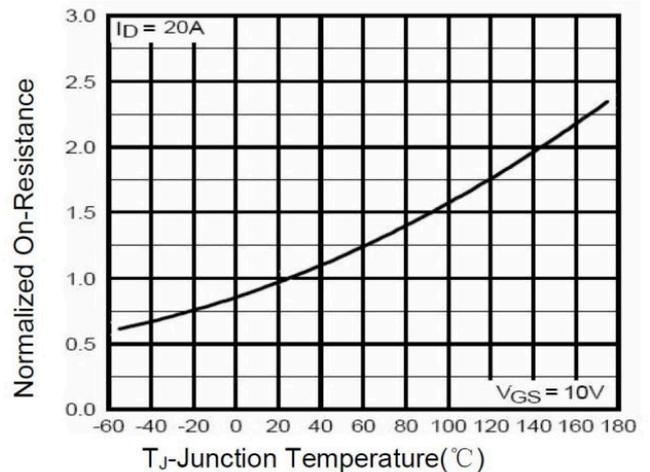
Figure 4 Rdson-Junction Temperature
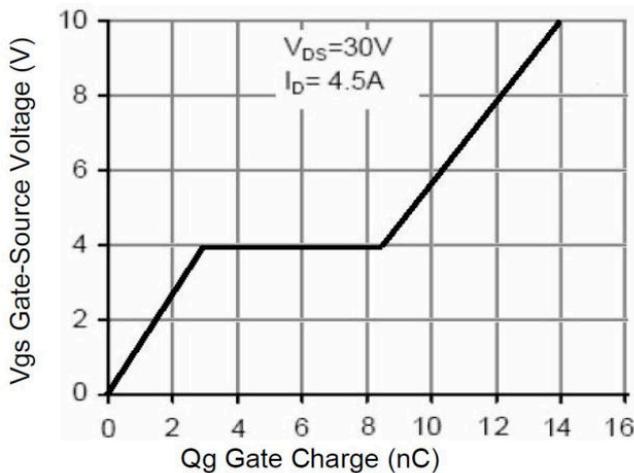
Figure 5 Gate Charge
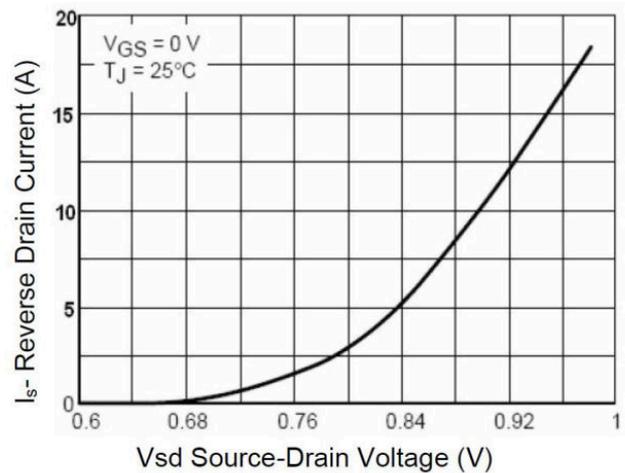
Figure 6 Source- Drain Diode Forward

| Document ID	Issued Date	Revised Date	Revision	Page.
AS-3150113	2003/03/08	2019/11/04	F	5

Typical Characteristics
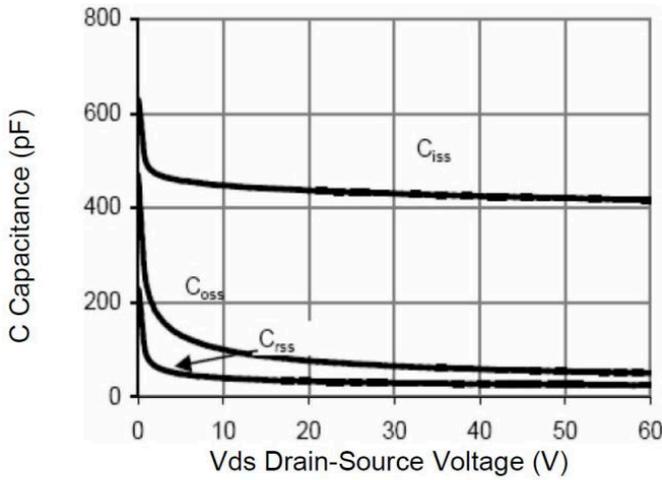

Figure 7 Capacitance vs Vds
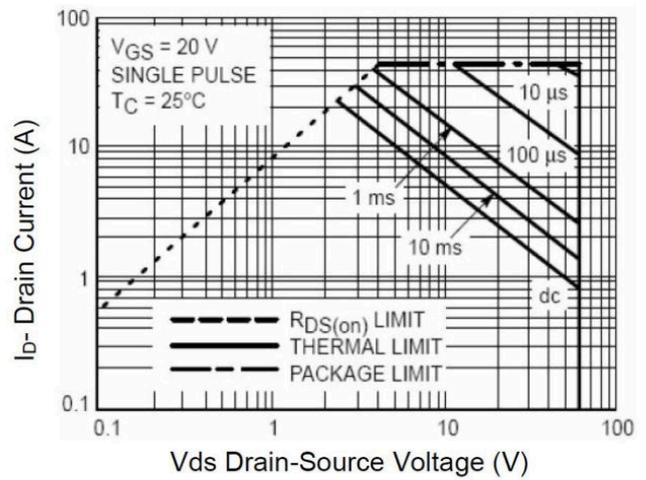

Figure 8 Safe Operation Area
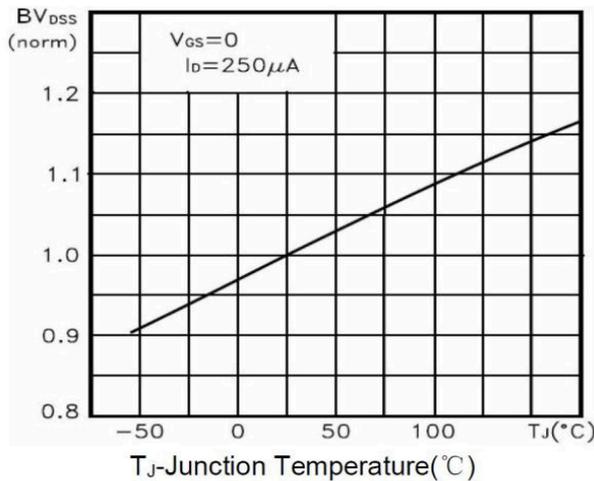
Figure 9 BV$_{DSS}$ vs Junction Temperature
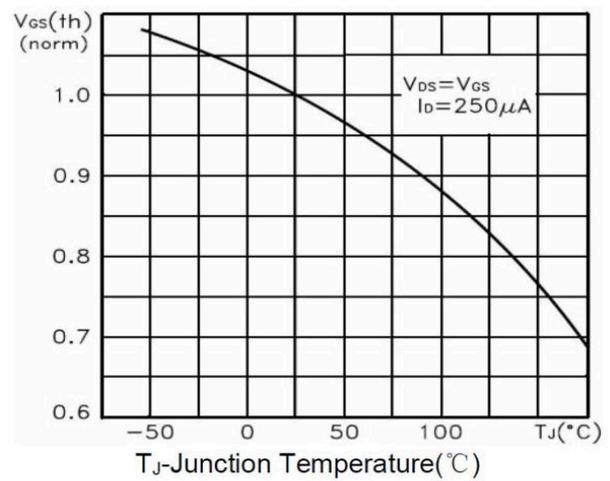
Figure 10 V$_{GS(th)}$ vs Junction Temperature
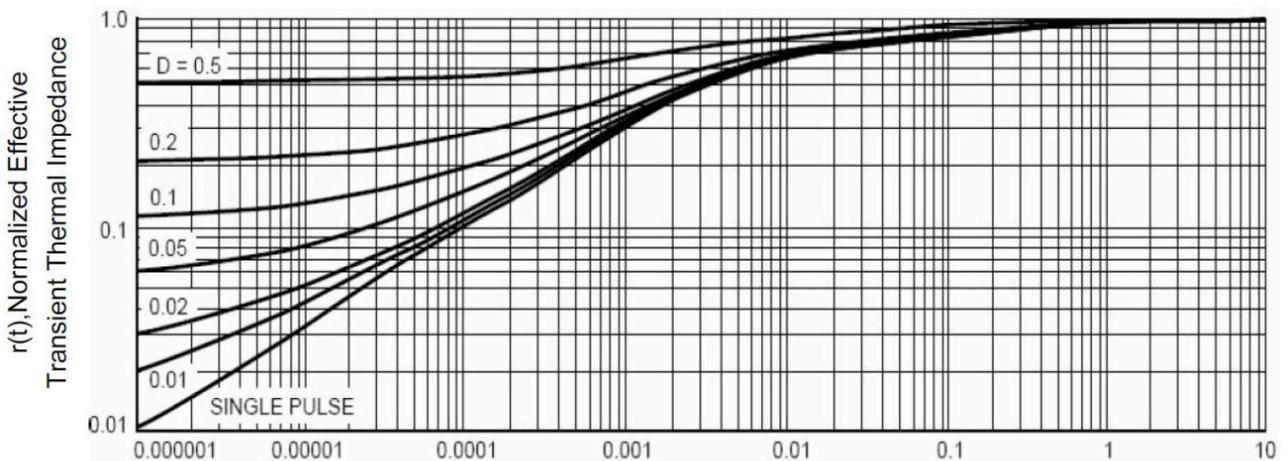
Figure 11 Normalized Maximum Transient Thermal Impedance

http://www.anbonsemi.com
TEL:+86-755-23776891
FAX:+86-755-81482182

Page 4

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3150113	2003/03/08	2019/11/04	F	5

ANBONSEMI
INNOVATOR IN SEMICONDUCTOR

TO-252AB Package Information
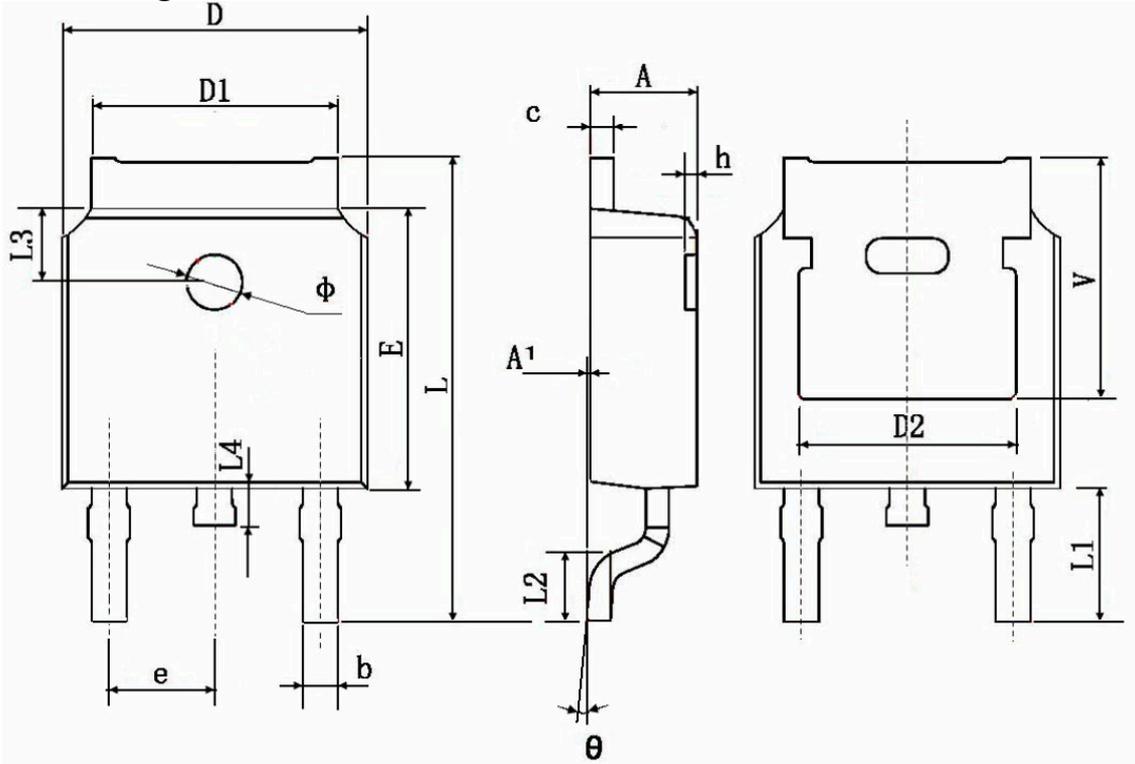
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

http://www.anbonsemi.com
TEL:+86-755-23776891
FAX:+86-755-81482182

Document ID	Issued Date	Revised Date	Revision	Page.
AS-3150113	2003/03/08	2019/11/04	F	5