AD110N06S

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	5mΩ@10V	110A
	6mΩ@4.5V	

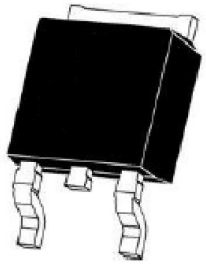
Feature

- Excellent gate charge x $R_{DS(on)}$ product
- Very low on-resistance $R_{DS(on)}$
- Pb-free lead plating

Application

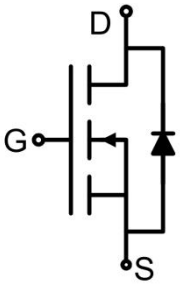
- DC/DC Converter
- Power switching application
- Uninterruptible power supply

Package

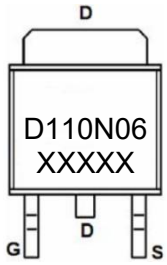


TO-252AB

Circuit diagram



Marking



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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(T_C =25 ºC)	I_D	110	A
Drain Current-Continuous(T_C =100 ºC)	I_D	70	A
Pulsed Drain Current[1)]	I_{DM}	450	A
Power Dissipation(T_C =25 ºC)[2)]	P_D	80	W
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.2	℃/W
Single pulse avalanche energy	E_{AS}	722	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	2	2.5	4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =55A		3.5	5.0	mΩ
		V_{GS} =6V, I_D =20A		4.2	6.0	
Dynamic characteristics						
Input Capacitance	C_{iss}	V_{DS} =30V,V_{GS} =0V,f =1MHz		4150		pF
Output Capacitance	C_{oss}			1050		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	V_{DS} =30V,V_{GS} =10V,ID =55A		80		nC
Gate-Source Charge	Q_{gs}			22		
Gate-Drain Charge	Q_{gd}			12		
Turn-on delay time	$t_{d(on)}$	V_{DD}=30V,V_{GS}=10V, I_D =55A,R_{GEN}=2.2Ω		25		nS
Turn-on rise time	t_r			9		
Turn-off delay time	$t_{d(off)}$			65		
Turn-off fall time	t_f			25		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				110	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=55A			1.2	V
Reverse Recovery Time	t_{rr}	TJ = 25°C, I_F = 55A di/dt = 100A/μs		70		nS
Reverse Recovery Charge	Q_{rr}			80		nC

Notes:

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

2) Pd is based on max. junction temperature, using ≤10s junction-ambient thermal resistance.

Typical Characteristics

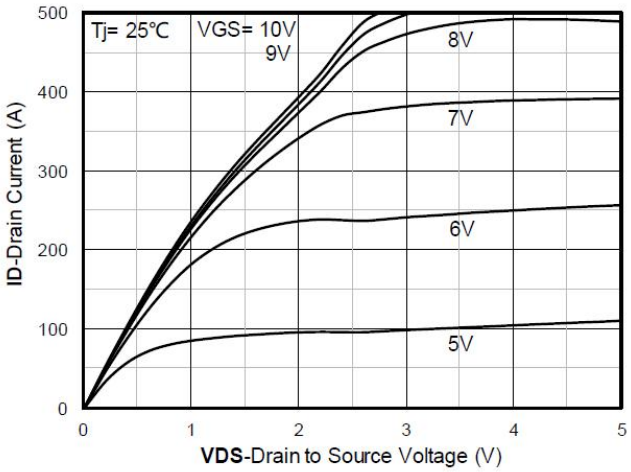

Figure 1. Output Characteristics

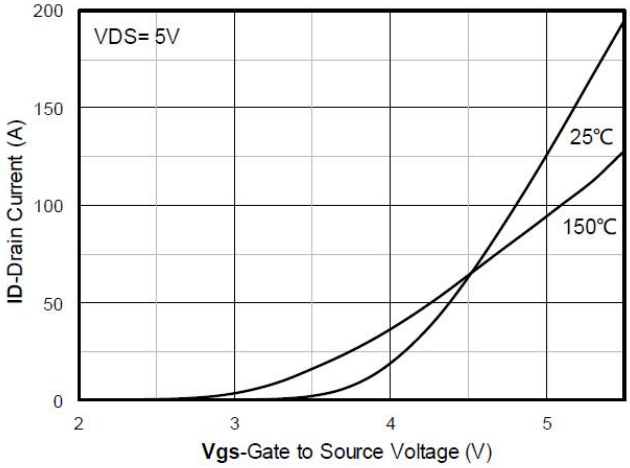

Figure 2. Transfer Characteristics

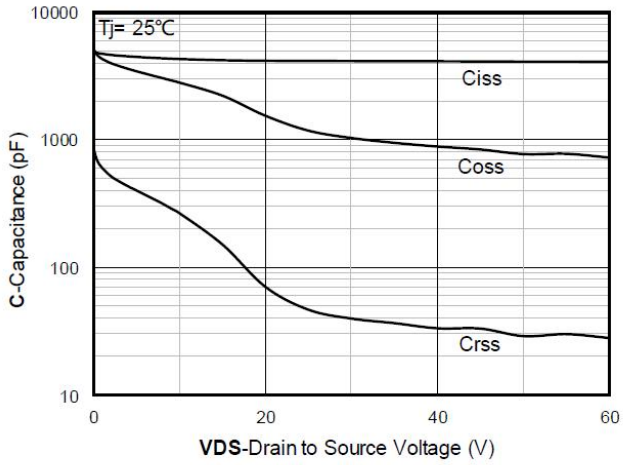

Figure 3. Capacitance Characteristics

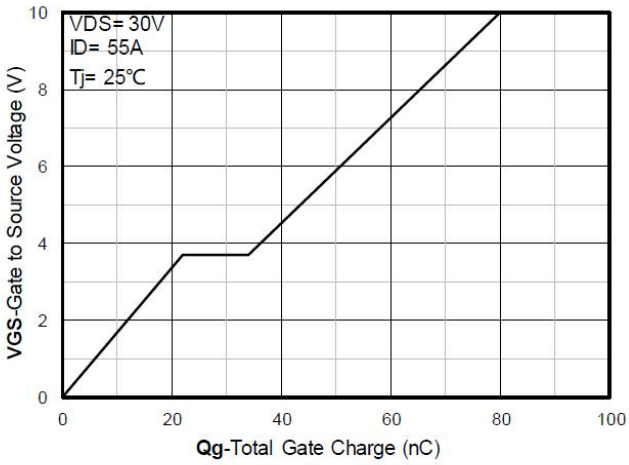

Figure 4. Gate Charge

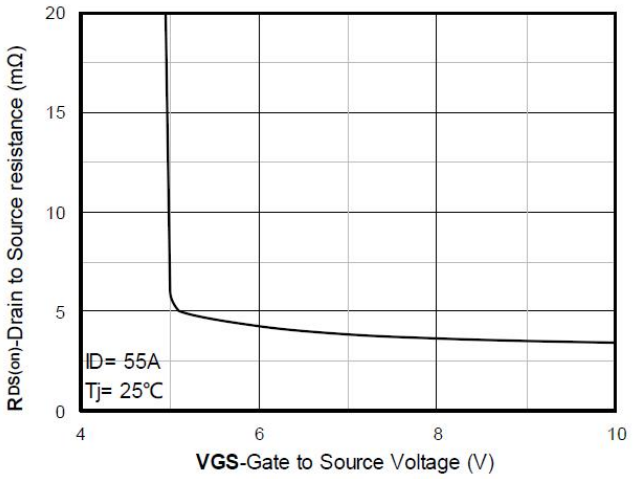

Figure 5. On-Resistance vs Gate to Source Voltage

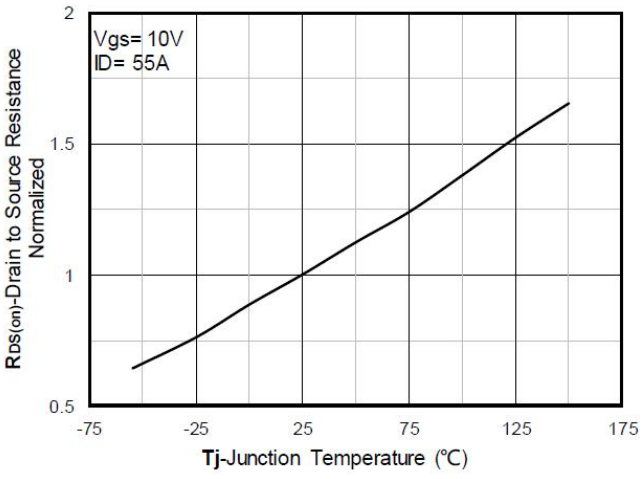

Figure 6. Normalized On-Resistance

Typical Characteristics

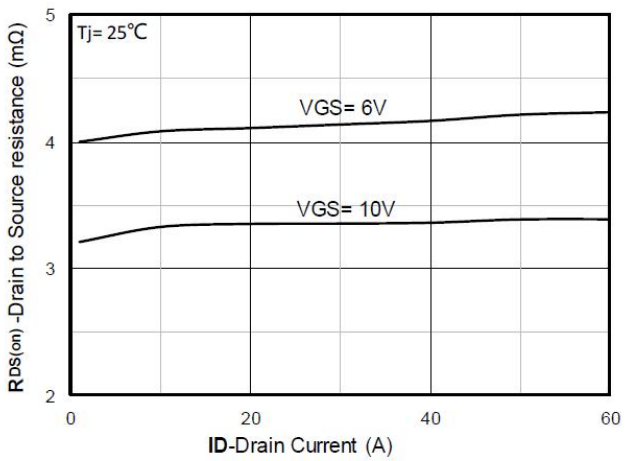

Figure 7. $R_{DS(on)}$ VS Drain Current

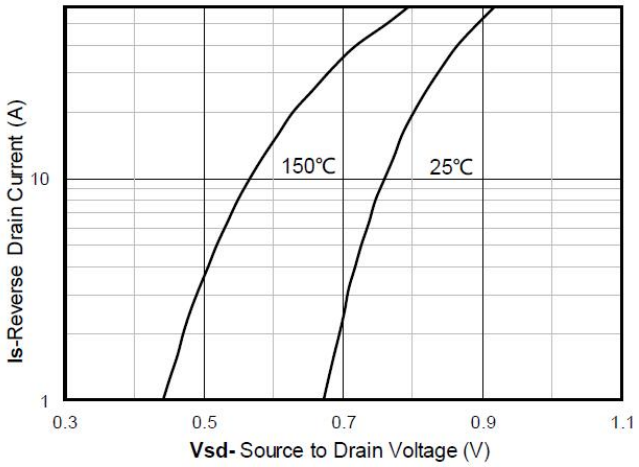

Figure 8. Forward characteristics of reverse diode

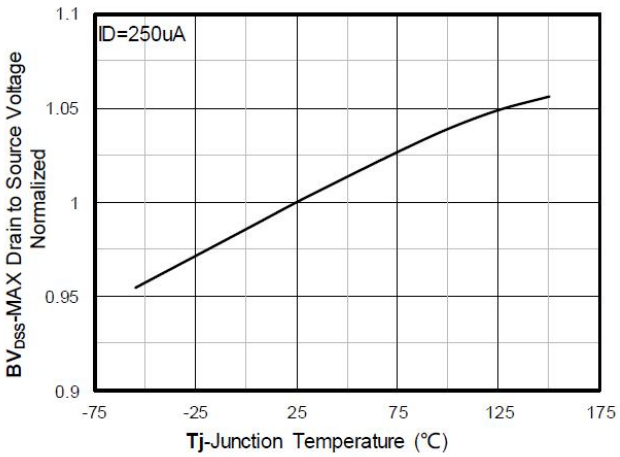

Figure 9. Normalized breakdown voltage

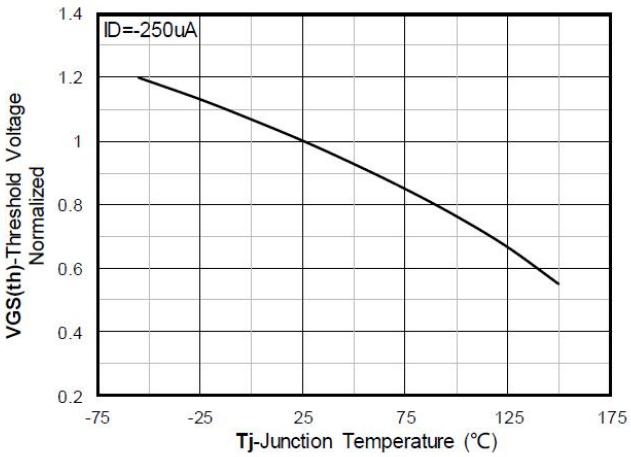

Figure 10. Normalized Threshold voltage

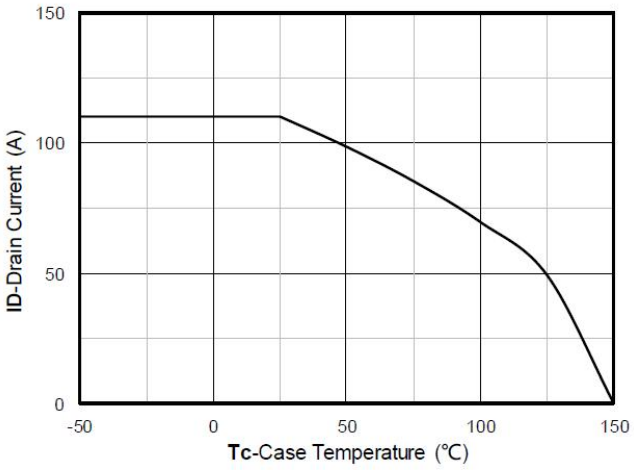

Figure 11. Current dissipation

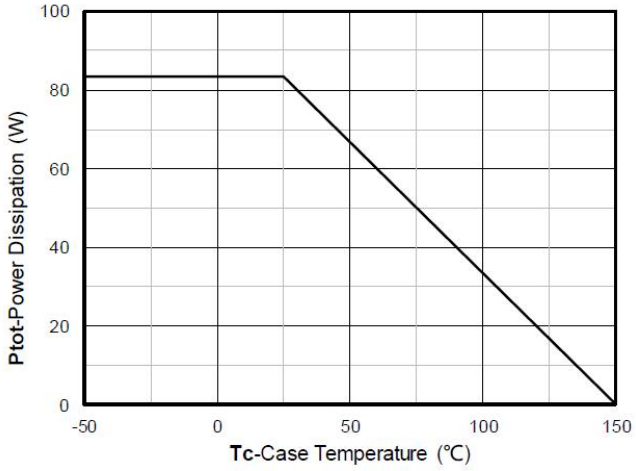

Figure 12. Power dissipation

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AS-3150368	2022/03/08	-	A	6

Typical Characteristics

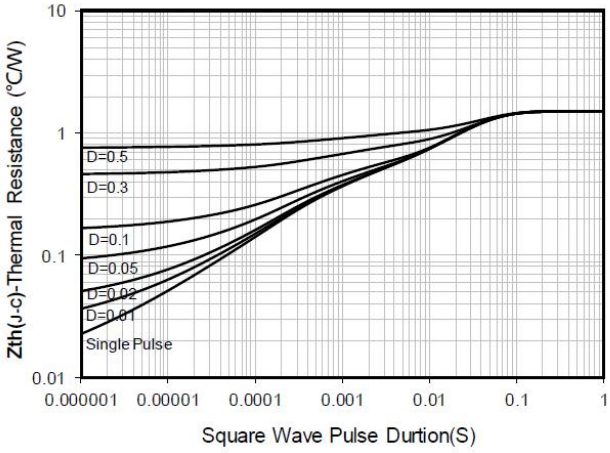


Figure 13. Maximum Transient Thermal Impedance

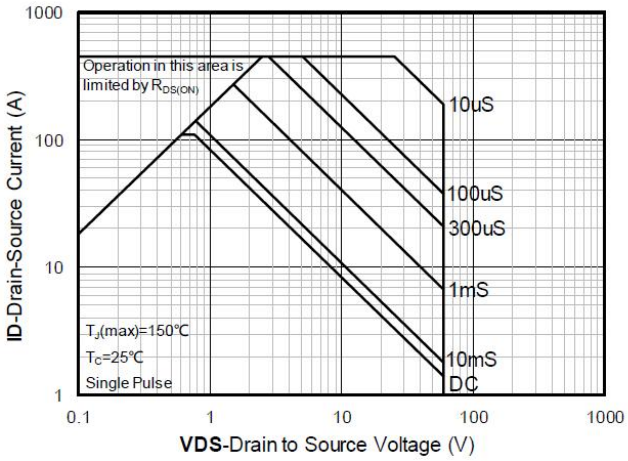
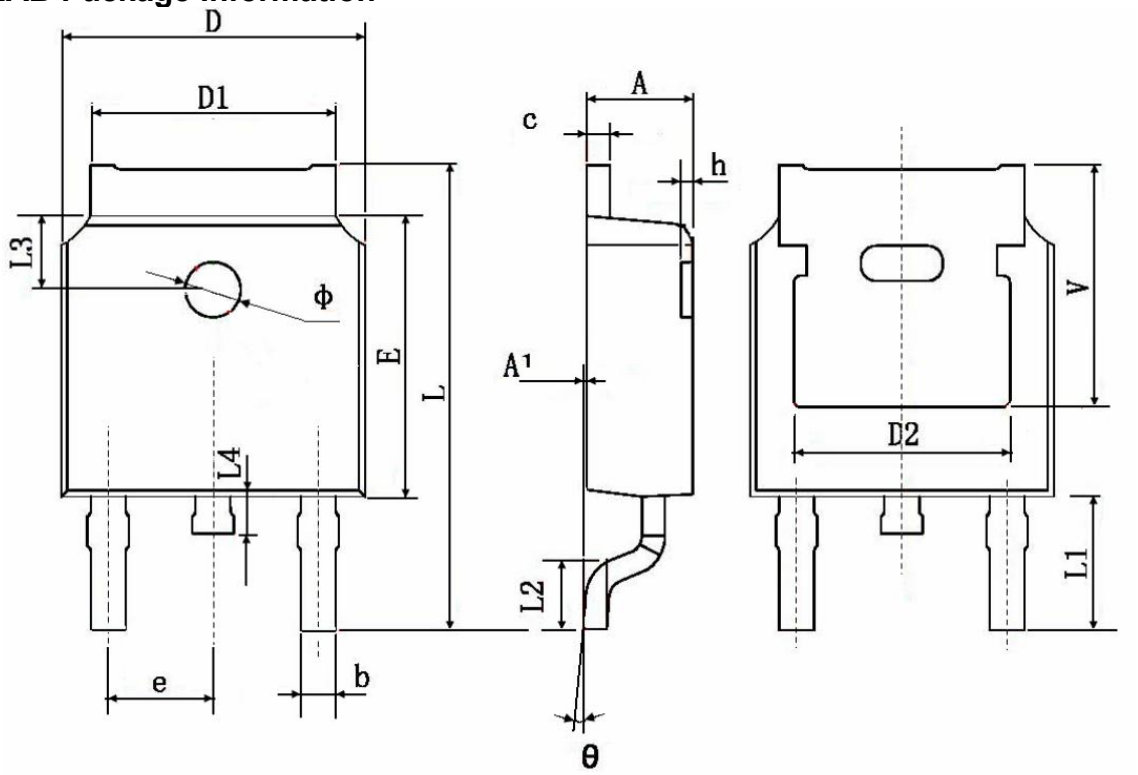


Figure 14. Safe Operation Area

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.	