AJ600SN070MTA

N-Channel Super Junction Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
700V	600mΩ@10V	8A

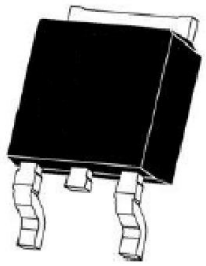
Feature

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

Application

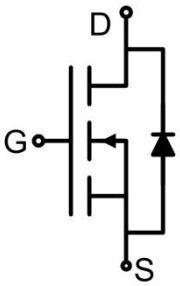
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)

Package



TO-252AB

Circuit diagram



Marking

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N-Channel Super Junction Power MOSFET

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	700	V
Gate-Source Voltage (V_{GS}=0V), AC (f > 1Hz)	V_{GS}	±30	V
Continuous Drain Current	I_D	8	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	5.2	A
Pulsed Drain Current [1]	I_{DM}	32	A
Single pulse avalanche energy[2]	E_{AS}	156	mJ
Power Dissipation	P_D	69	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.81	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	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	700			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =700V, V_{GS} =0V, T_C=25℃			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	3		4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =4A		540	600	mΩ
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =50V, V_{GS} =0V, f =1MHz		590		pF
Output Capacitance	C_{oss}			37		
Reverse Transfer Capacitance	C_{rss}			0.9		
Total Gate Charge	Q_g	V_{DS} =480V, V_{GS} =10V, I_D =8A		14.6		nC
Gate-Source Charge	Q_{gs}			4		
Gate-Drain Charge	Q_{gd}			6.7		
Turn-on delay time	$t_{d(on)}$	V_{DS} =420V, V_{GS} =10V, I_D =4A R_G =4.7Ω		9		nS
Turn-on rise time	t_r			6.5		
Turn-off delay time	$t_{d(off)}$			61		
Turn-off fall time	t_f			10		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	T_C =25℃			8	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_{SD} =8A, T_J =25℃			1.2	V
Reverse recovery time	T_{rr}	I_F =4A, di/dt =100 A/μs T_J =25℃		230		nS
Reverse recovery charge	Q_{rr}			1.2		μC
Peak Reverse Recovery Current	I_{rrm}			10.5		A

Notes:

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

2) T_j =25℃,V_{DD} =50V, V_G =10V, R_G =25Ω.

3) Guaranteed by design, not subject to production.

Typical Characteristics

Figure1. Safe operating area

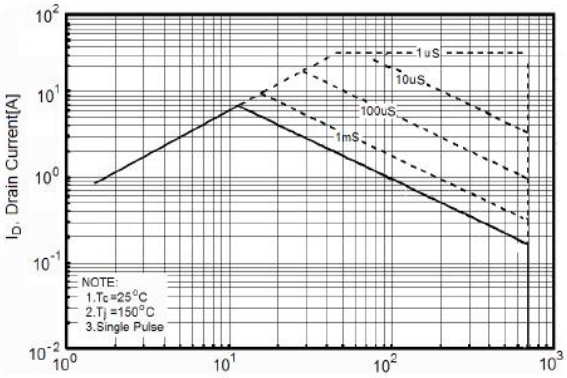


Figure2. Transient Thermal Impedance

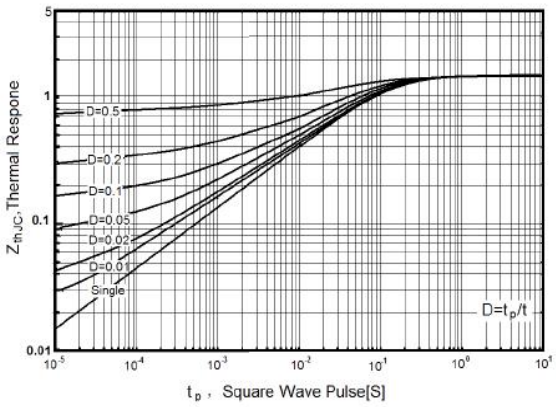


Figure3. Source-Drain Diode Forward Voltage

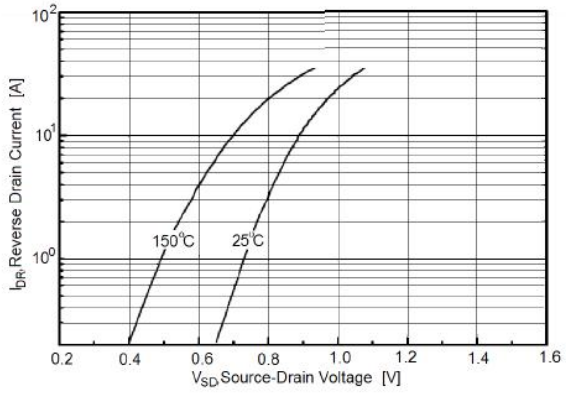


Figure4. Output characteristics

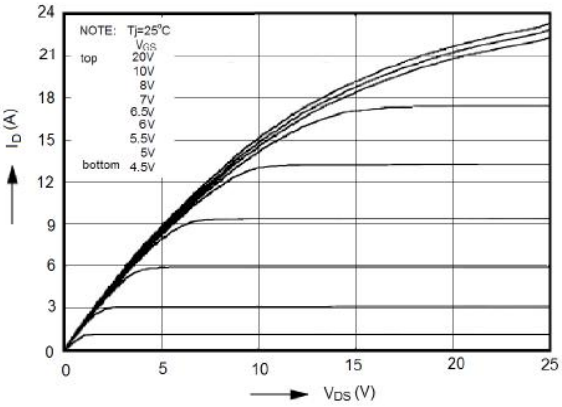


Figure5. Transfer characteristics

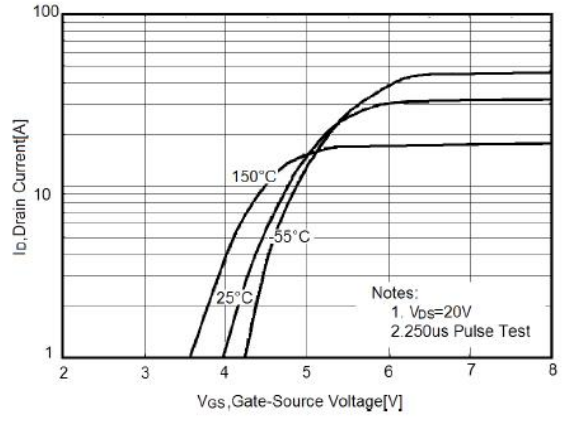
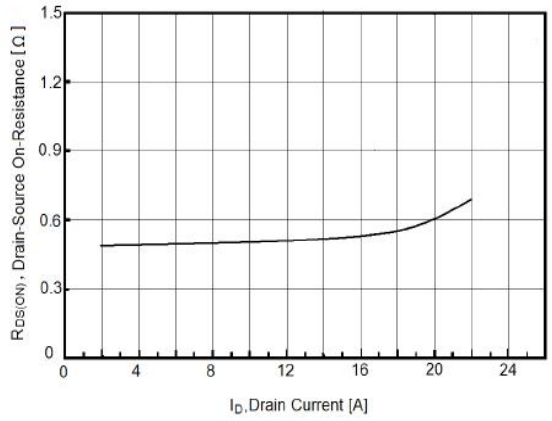


Figure6. Static drain-source on resistance



Typical Characteristics

Figure7. $R_{DS(ON)}$ vs Junction Temperature

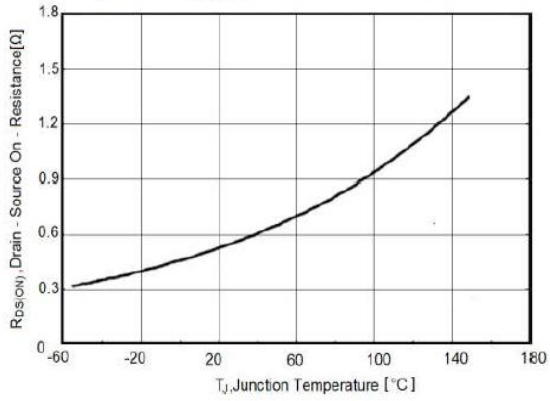


Figure8. BV_{DSS} vs Junction Temperature

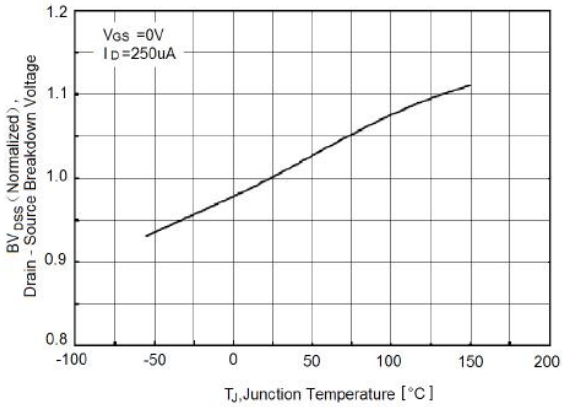


Figure9. Maximum I_D vs Junction Temperature

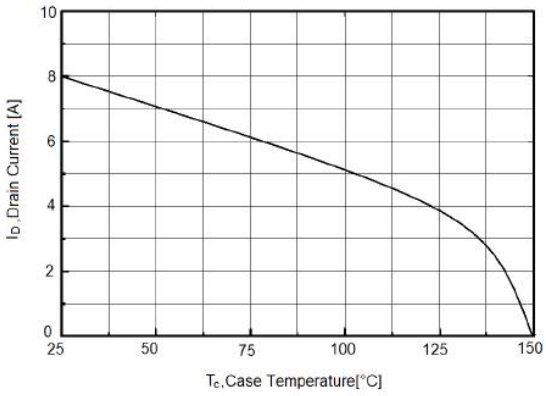


Figure10. Capacitance

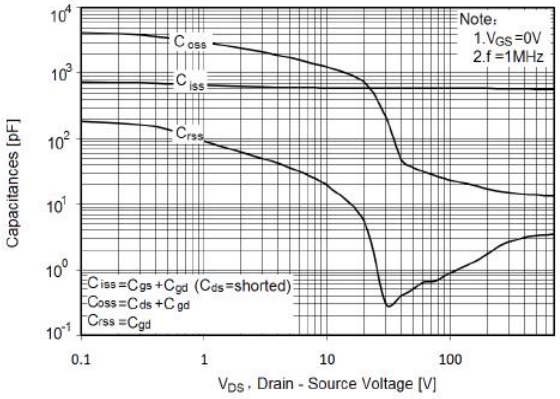
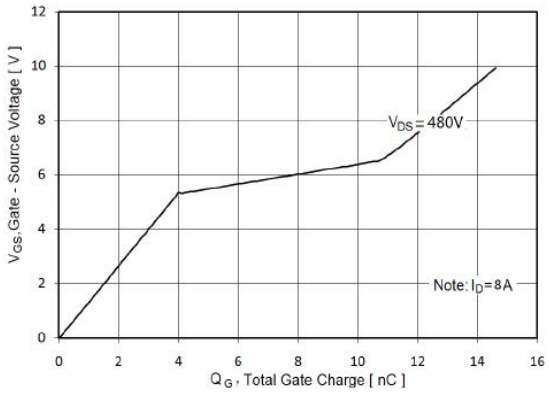
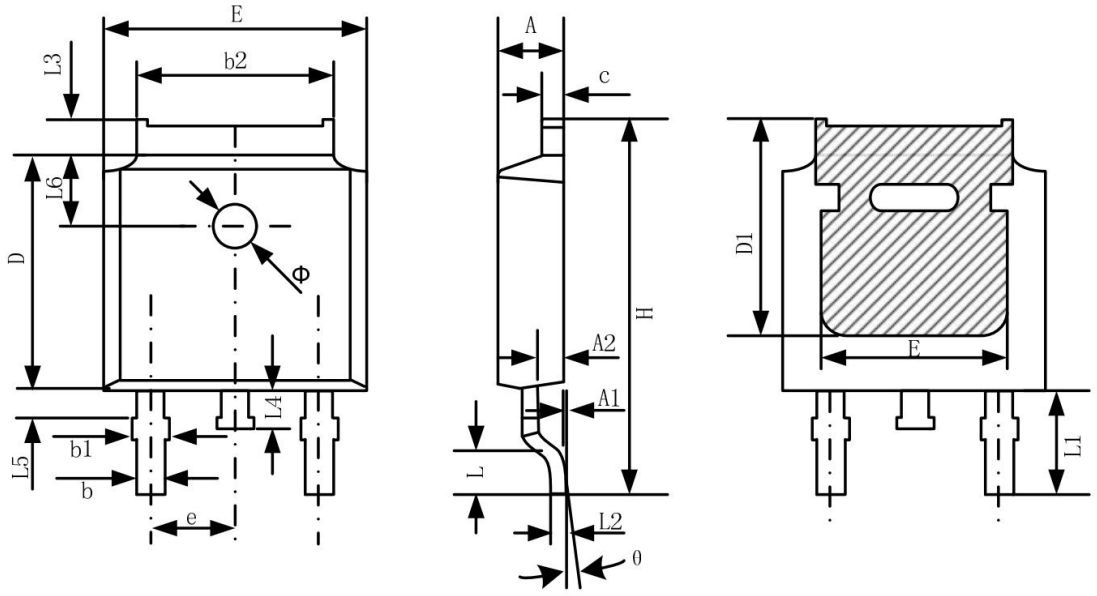


Figure11. Gate charge waveforms



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.043
b	0.720	0.850	0.028	0.033
b1	0.720	0.900	0.028	0.035
b2	5.130	5.460	0.202	0.215
c	0.470	0.600	0.019	0.024
D	6.000	6.200	0.236	0.244
D1	5.250	-	0.207	-
E	6.500	6.700	0.256	0.264
E1	4.700	-	0.185	-
e	2.190	2.390	0.086	0.094
H	9.800	10.400	0.386	0.409
L	1.400	1.700	0.055	0.067
L1	2.900 REF.		0.114 REF.	
L2	0.508 BSC.		0.020 BSC.	
L3	0.900	1.250	0.035	0.049
L4	0.600	1.000	0.024	0.039
L5	0.150	0.750	0.006	0.030
L6	1.800 REF.		0.071 REF.	
ϕ	1.200	1.400	0.047	0.055
θ	0°	8°	0°	8°