AJ950SN065ATA

N-Channel Super Junction Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	950mΩ@10V	4.5A

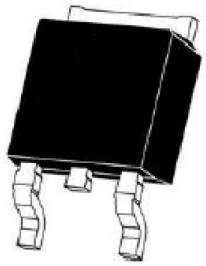
Feature

- Surface-mounted package
- Low Gate Charge

Application

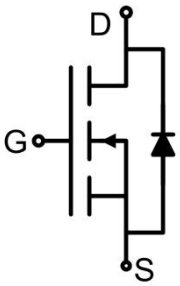
- Power Factor Correction (PFC)
- Uninterruptible Power Supply (UPS)

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}	650	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current (T_C=25℃)	I_D	4.5	A
Continuous Drain Current (T_C=100℃)	I_D(100℃)	2.8	A
Pulsed Drain Current [1]	I_{DM}	9	A
Single Pulse Avalanche Energy [2]	E_{AS}	77	mJ
Power Dissipation (T_C=25℃)	P_D	46	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	2.7	℃/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	650			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =520V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±24V			±300	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	3.5		4.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =1.5A		840	950	mΩ
Dynamic characteristics[3]						
Input Capacitance	C_{iss}	V_{DS} =300V, V_{GS} =0V, f =1MHz		345		pF
Output Capacitance	C_{oss}			12		
Reverse Transfer Capacitance	C_{rss}			5		
Total Gate Charge	Q_g	V_{DS} =300V, V_{GS} =10V, I_D =1.5A		8.5		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			3		
Turn-on delay time	$t_{d(on)}$	V_{DS} =300V, V_{GS} =10V, I_D =1.5A R_G =24Ω		28		nS
Turn-on rise time	t_r			15		
Turn-off delay time	$t_{d(off)}$			28		
Turn-off fall time	t_f			89		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				4.5	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =1.5A			1.2	V
Reverse recovery time	T_{rr}	V_{GS} =0V, I_S =1.5A di/dt =-100 A/μs		147		nS
Reverse recovery charge	Q_{rr}			777		nC

Notes:

1) Pulse Test: Pulse Width ≤100 us, Duty Cycle ≤2%, Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$= 150℃.

2) Limited by $T_{J(MAX)}$, starting T_J= 25℃, L =79 mH, Rg =25Ω, I_{AS} =1.4 A, Vs =10 V.

3) Guaranteed by design, not subject to production.

Typical Characteristics

Fig. 1 Typical Output Characteristics

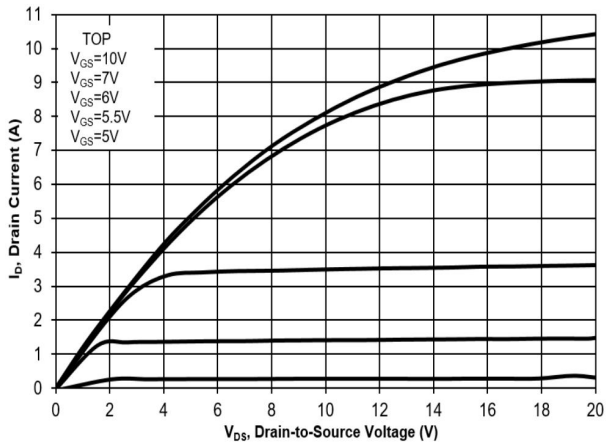


Fig. 2 Typical Transfer Characteristics

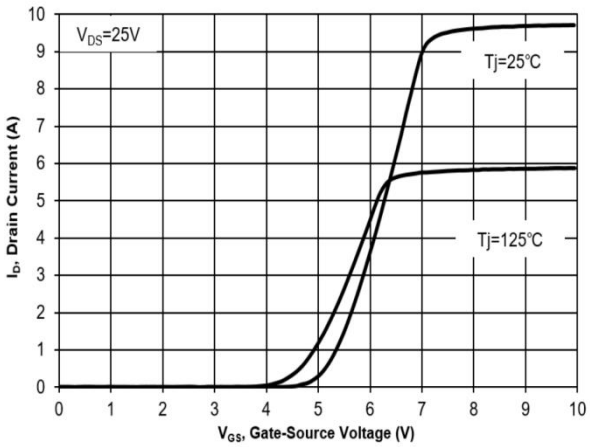


Fig. 3 on-Resistance vs Drain Current

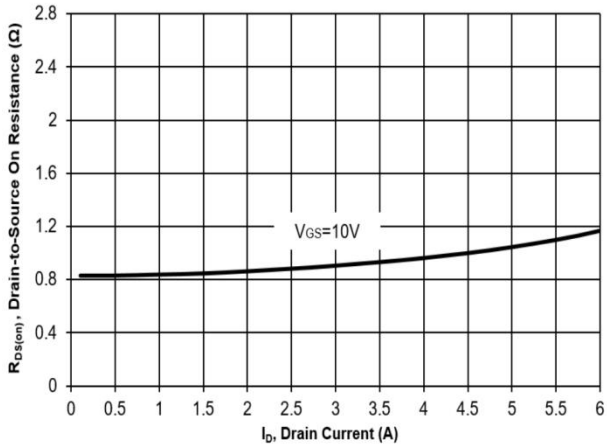


Fig. 4 on-Resistance vs. Gate to Source Voltage

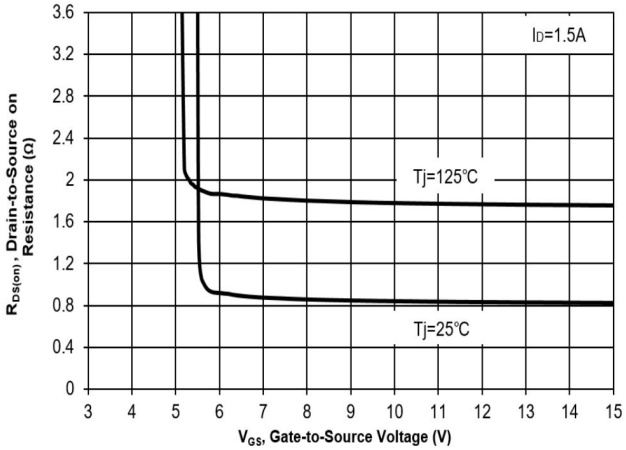


Fig. 5 on-Resistance vs.T_j

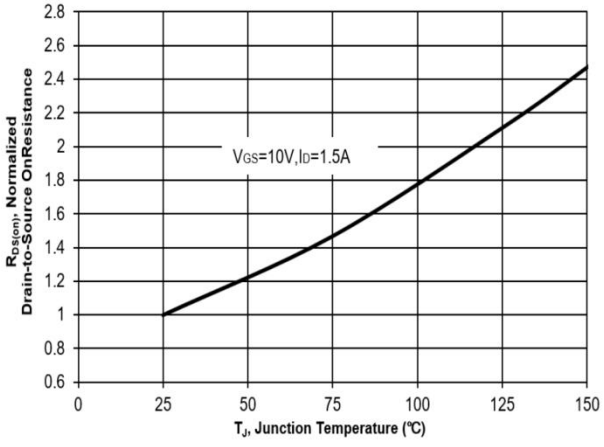
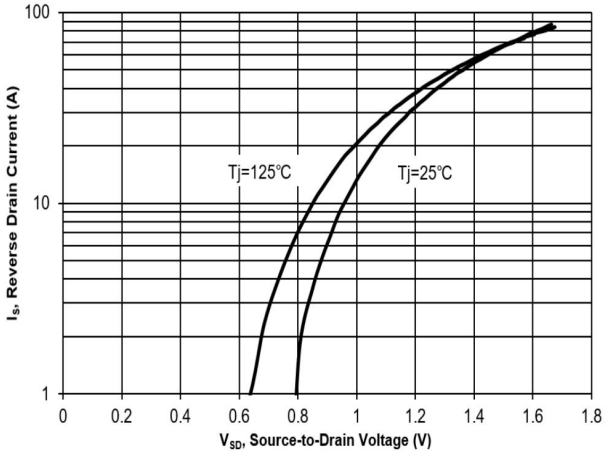


Fig. 6 Typical Body Diode Forward Characteristics



Typical Characteristics

Fig. 7 Typical Junction Capacitance

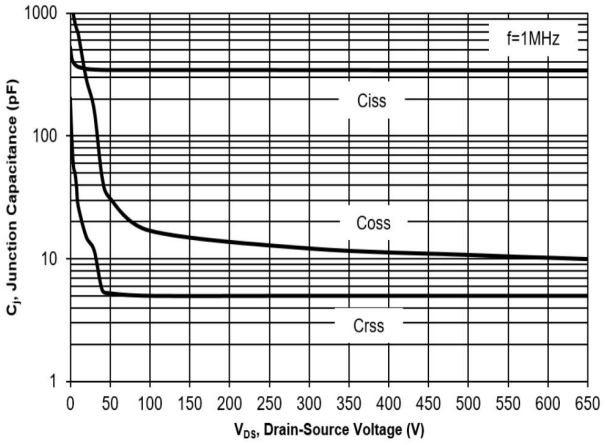


Fig. 8 Drain-Source Leakage Current vs. T_j

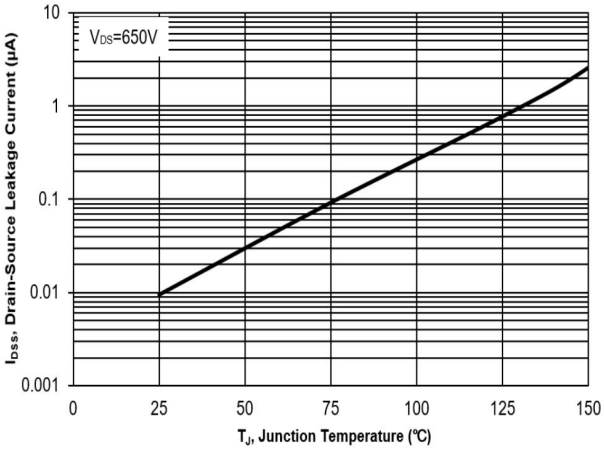


Fig. 9 $V_{(BR)DSS}$ vs. Junction Temperature

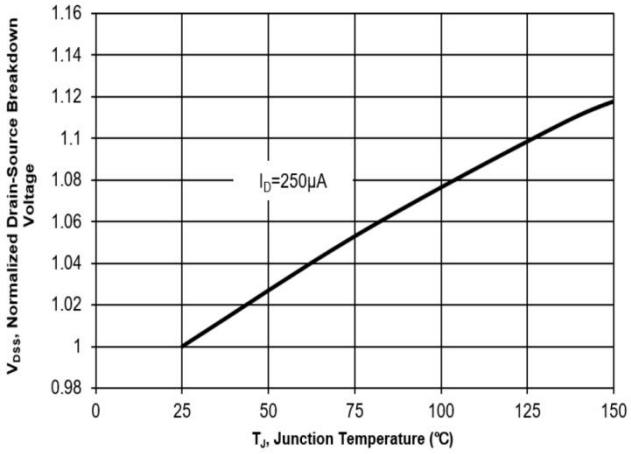


Fig. 10 Gate Threshold Variation vs. T_j

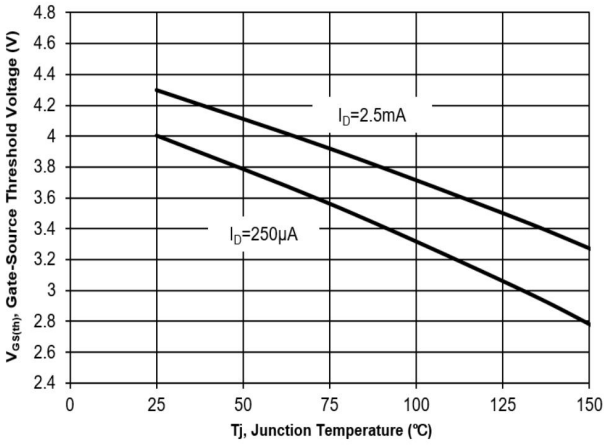


Fig. 11 Gate Charge

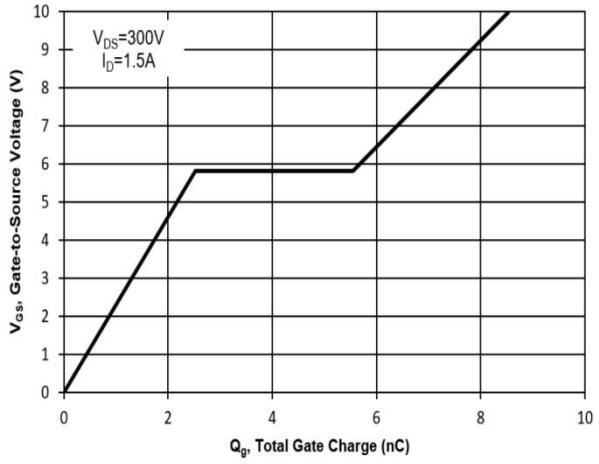
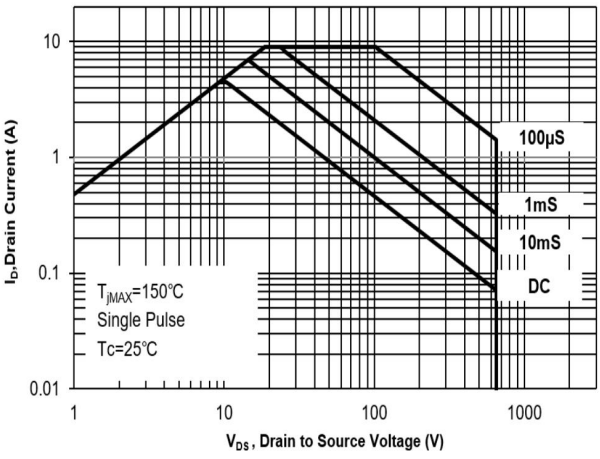


Fig. 12 Safe Operation Area



Typical Characteristics

Fig. 13 Normalized Maximum Transient Thermal Impedance($z_{\theta JC}$)

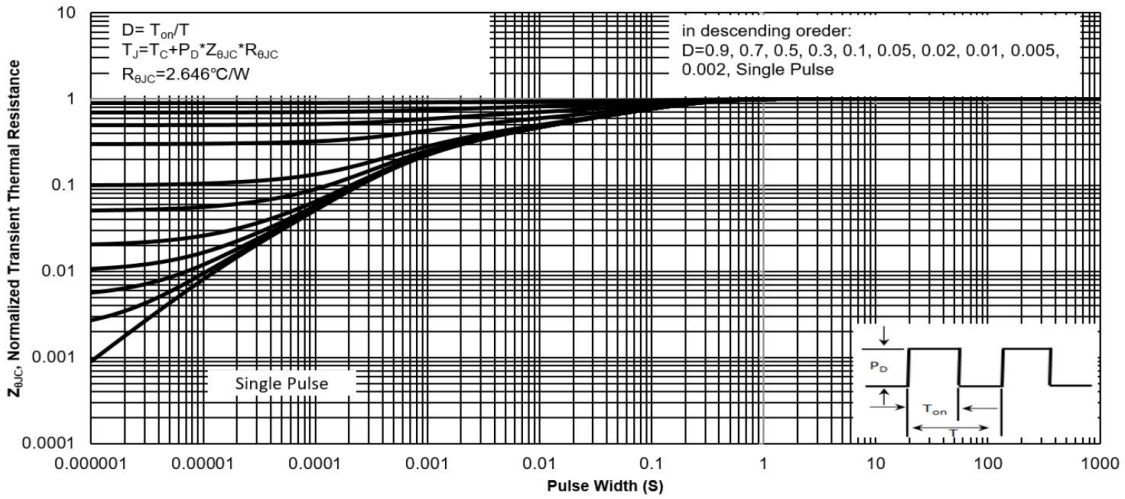
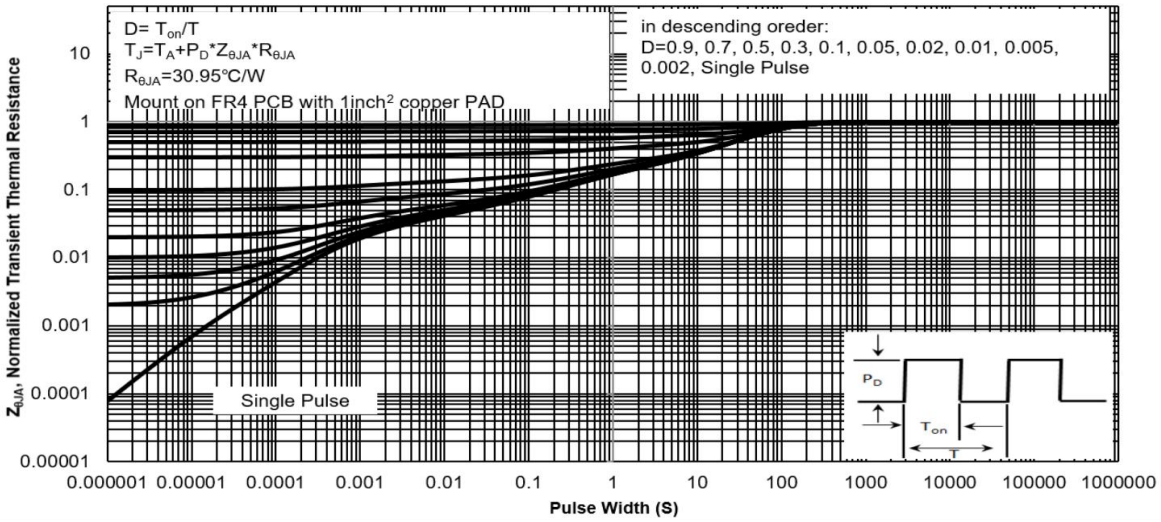
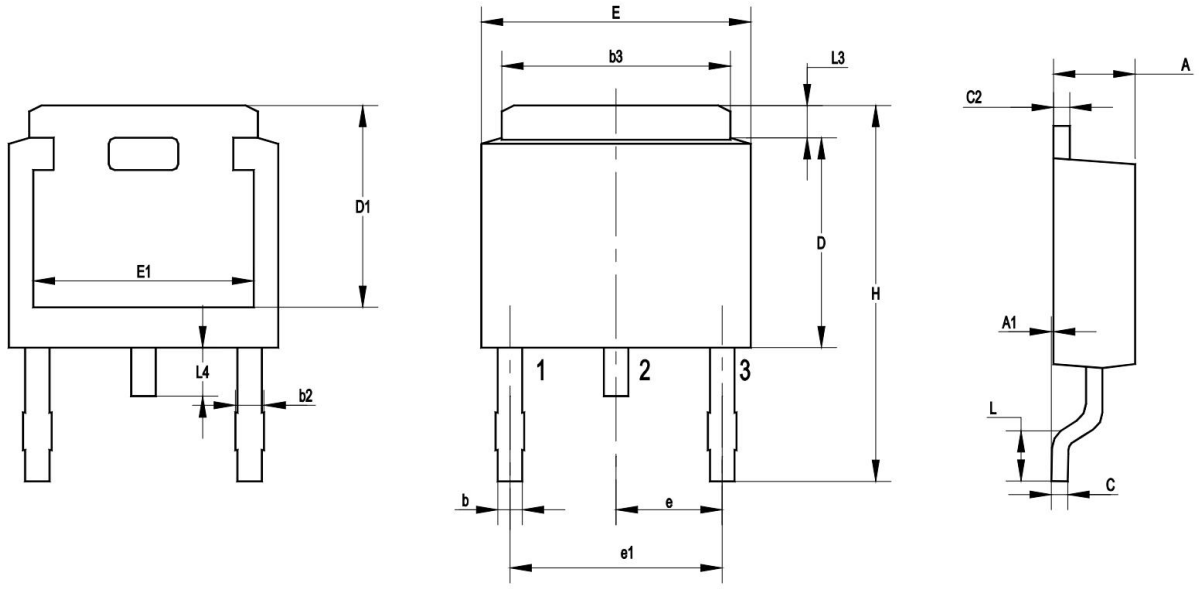


Fig. 14 Normalized Maximum Transient Thermal Impedance($z_{\theta JA}$)



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
A1	0.000	0.150	0.000	0.006
b	0.500	1.000	0.020	0.039
b2	0.650	1.150	0.026	0.045
b3	4.900	5.500	0.193	0.217
C	0.400	0.650	0.016	0.026
C2	0.400	0.650	0.016	0.026
D	5.600	6.200	0.220	0.244
D1	5.000	5.400	0.197	0.213
E	6.100	6.700	0.240	0.264
E1	4.600	5.000	0.181	0.197
e	2.300 TYP.		0.091 TYP.	
e1	4.600 TYP.		0.181 TYP.	
H	9.000	10.700	0.354	0.421
L	1.400	1.780	0.055	0.070
L3	0.850	1.200	0.033	0.047
L4	0.510	1.100	0.020	0.043