AJ500SN080MTA

N-Channel Super Junction Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
800V	500mΩ@10V	9A

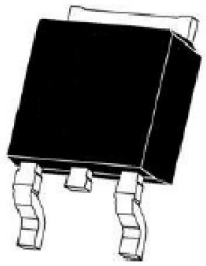
Feature

- Low on-resistance
- Low gate charge
- Superior power density and outstanding efficiency

Application

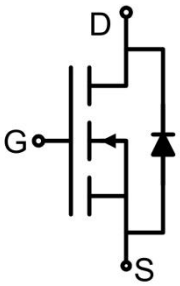
- Power factor correction (PFC)
- Uninterruptible Power Supply (UPS)

Package

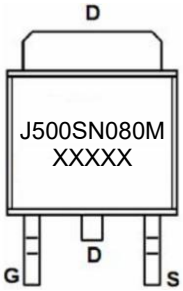


TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	800	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	9	A
Pulsed Drain Current [1]	I_{DM}	28	A
Power Dissipation[2]	P_D	52	W
Single Pulse Avalanche Energy[3]	E_{AS}	270	mJ
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.4	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=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	800			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =800V, V_{GS} =0V			1	μA
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±30V,			±100	nA
Gate threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.5	3.5	4.5	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =4.5A		400	500	mΩ
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =100V, V_{GS} =0V, f =1MHz		1099		pF
Output Capacitance	C_{oss}			52		
Reverse Transfer Capacitance	C_{rss}			1		
Total Gate Charge	Q_g	V_{DS} =400V, V_{GS} =10V, I_D =9A		24.6		nC
Gate-Source Charge	Q_{gs}			5.6		
Gate-Drain Charge	Q_{gd}			9		
Turn-on delay time	$t_{d(on)}$	V_{DS} =400V,V_{GS} =10V, I_D =9A, R_G =25Ω		28		nS
Turn-on rise time	t_r			34.4		
Turn-off delay time	$t_{d(off)}$			100		
Turn-off fall time	t_f			28		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				9	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=9A			1.3	V
Reverse recovery time	t_{rr}	V_{GS} =0V, I_S=9A di_F/dt=100 A/μs		258		nS
Reverse recovery charge	Q_{rr}			3.15		μC

Notes:

1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2) The power dissipation is limited by 150℃ junction temperature.
3) The EAS data shows Max. rating . L=60mH, I_{AS}=3A, V_{DD}=50V, R_G=25Ω.
4) Guaranteed by design, not subject to production.

Typical Characteristics

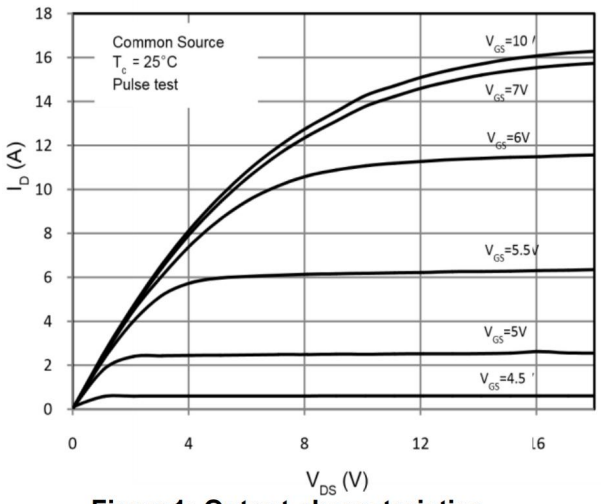


Figure1: Output characteristics

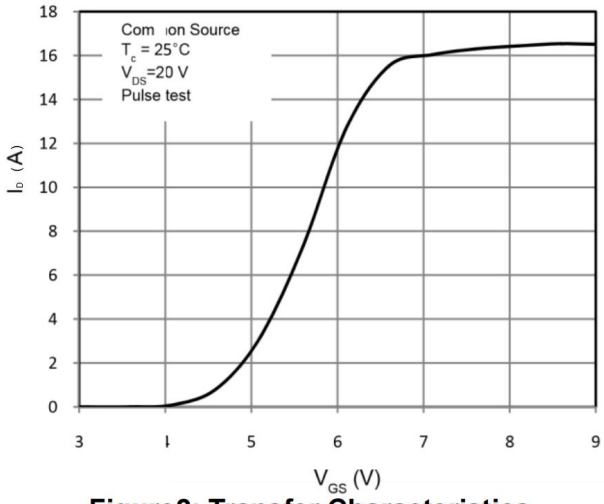


Figure2: Transfer Characteristics

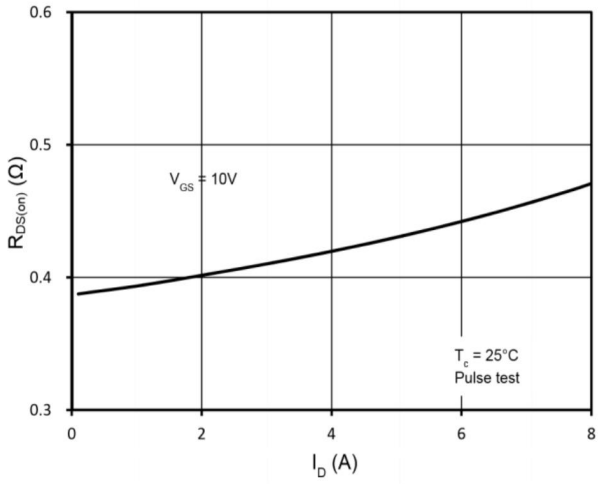


Figure 3. Static Drain-Source On Resistance

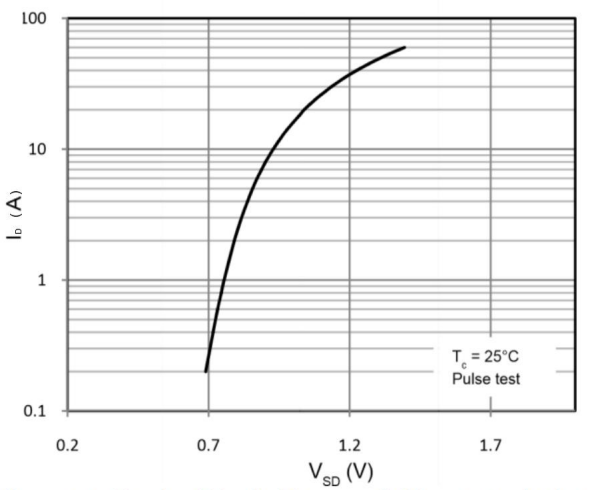


Figure 4. Body- Diode Forward Characteristics

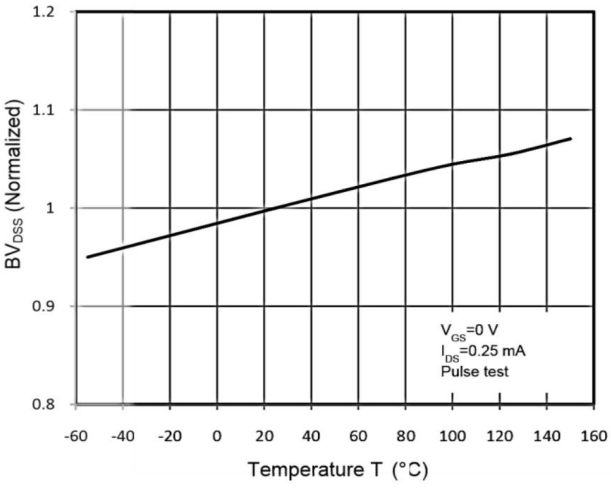


Figure 5. Normalized BV_{DSS} vs. Temperature

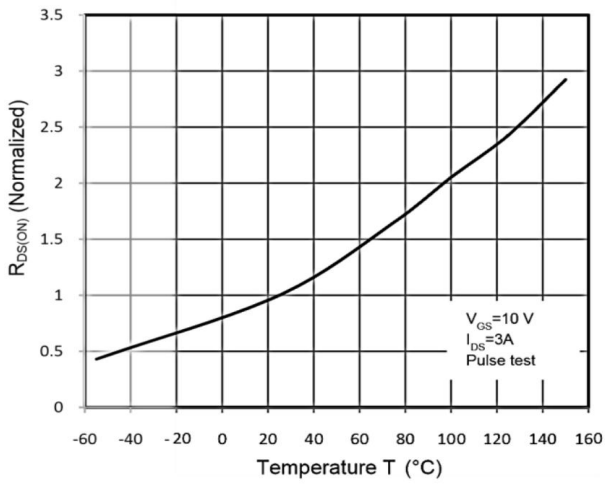


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

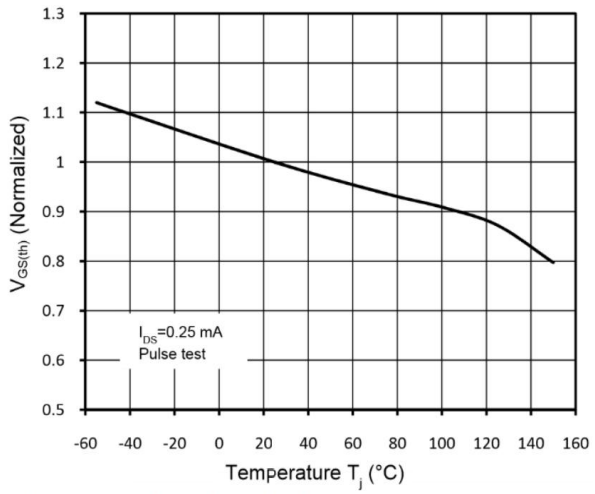


Figure 7. Threshold Voltage vs. Temperature

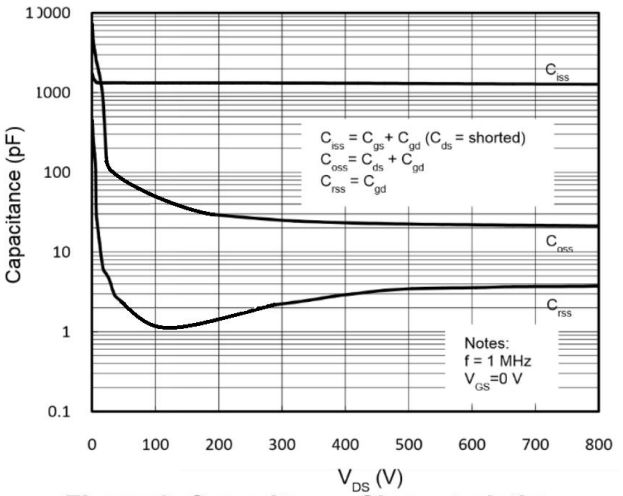


Figure 8. Capacitance Characteristics

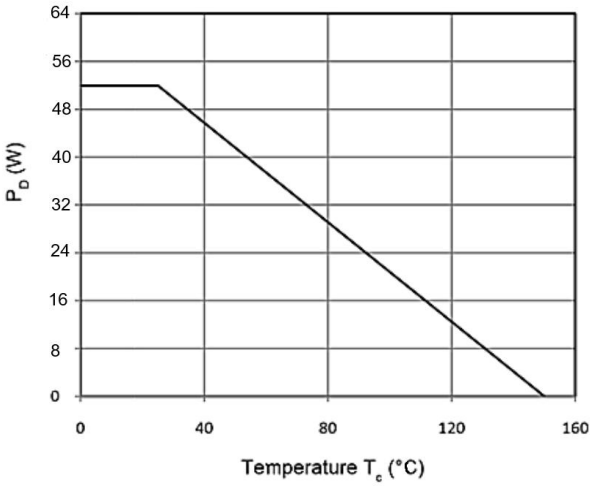


Figure9: VGS（th) vs junction temperature

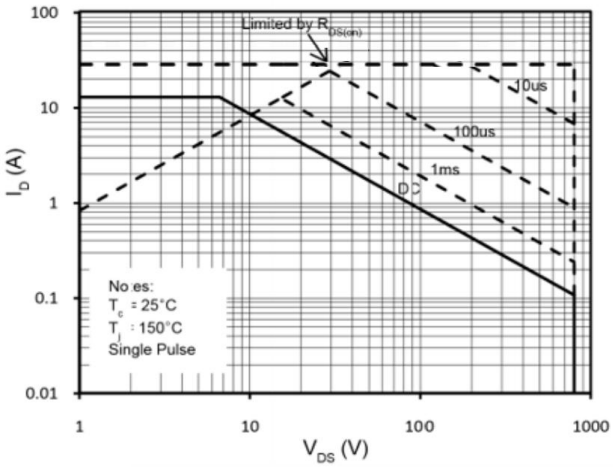


Figure10: Safe operating area

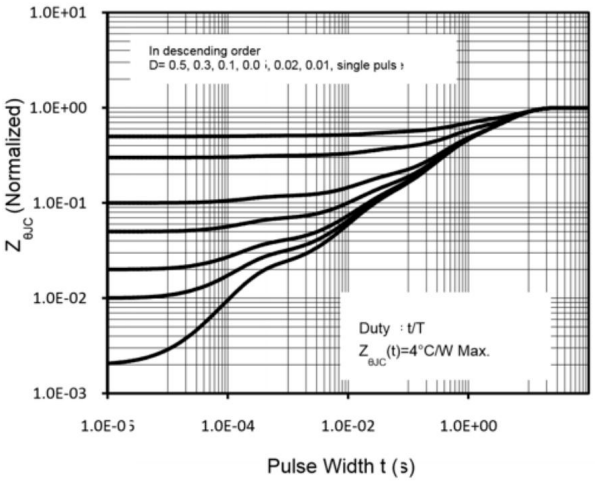
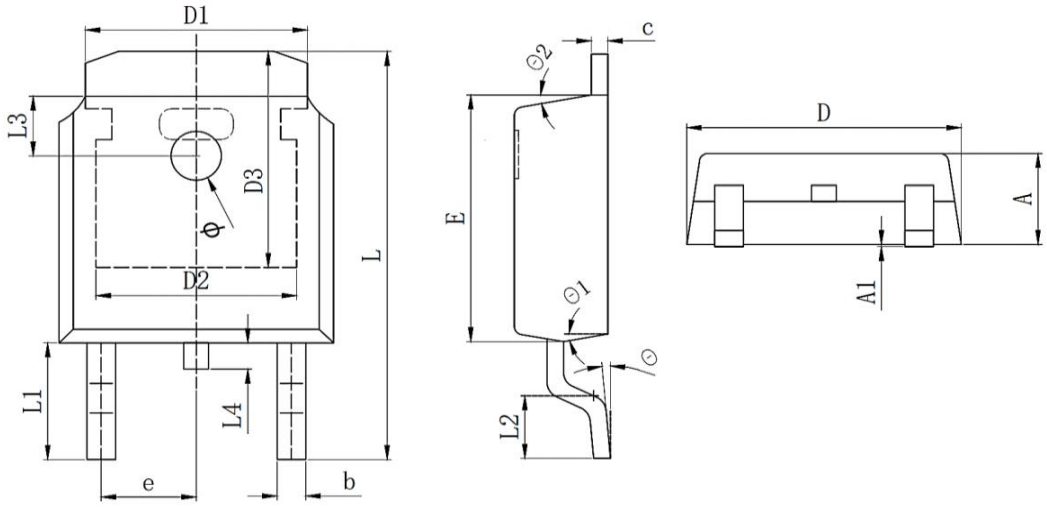


Figure11: Transient thermal impedance

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	0.128	0.000	0.005
b	0.640	0.860	0.025	0.034
c	0.450	0.600	0.018	0.024
D	6.400	6.800	0.252	0.268
D1	5.330 REF.		0.210 REF.	
D2	4.830 REF.		0.190 REF.	
D3	5.250 REF.		0.207 REF.	
E	5.900	6.300	0.232	0.248
e	2.286 BSC.		0.090 BSC.	
L	9.800	10.400	0.386	0.409
L1	2.888 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.650 REF.		0.065 REF.	
L4	0.600	1.000	0.024	0.039
ϕ	1.100	1.300	0.043	0.051
θ	0°	10°	0°	10°
θ1	5°	10°	5°	10°
θ2	5°	10°	5°	10°