AP005SN400MTA

N-Channel Enhancement Mode Power MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
400V	1.5Ω@10V	5A

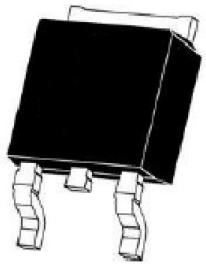
Feature

- Self-aligned planar technology
- Low conduction loss

Application

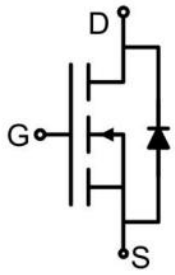
- Uninterruptible power supply (UPS)
- Power factor correction (PFC)

Package



TO-252AB

Circuit diagram



Marking

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N-Channel Enhancement Mode Power MOSFET

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V_{GS}=0V)	V_{DS}	400	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current	I_D	5	A
Pulsed Drain Current [1]	I_{DM}	20	A
Power Dissipation[2]	P_D	45	W
Single Pulse Avalanche Energy[3]	E_{AS}	90	mJ
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.8	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	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	400			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =400V, 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	3.5	4	V
Drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =2.5A		1.2	1.5	mΩ
Dynamic characteristics[4]						
Input Capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V, f =1MHz		462		pF
Output Capacitance	C_{oss}			54.2		
Reverse Transfer Capacitance	C_{rss}			8.8		
Total Gate Charge	Q_g	V_{DS} =400V,V_{GS} =10V, I_D =5A		13.5		nC
Gate-Source Charge	Q_{gs}			2		
Gate-Drain Charge	Q_{gd}			6		
Turn-on delay time	$t_{d(on)}$	V_{DS}=250V, I_D=5A, R_G=25Ω		10		nS
Turn-on rise time	t_r			25		
Turn-off delay time	$t_{d(off)}$			40		
Turn-off fall time	t_f			52		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	T_C =25℃			5	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S=5A			1.4	V
Reverse Recovery Time	t_{rr}	V_{GS} =0V, I_S=5A di/dt= 100A/μs		220		nS
Reverse Recovery Charge	Q_{rr}			3		μC

Notes:

1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
2) The EAS data shows Max. rating . I_{AS}=2.5A, V_{DD}=50V, R_G=25Ω, Starting T_J= 25℃.
3) The power dissipation is limited by 150℃ junction temperature.
4) Guaranteed by design, not subject to production.

Typical Characteristics

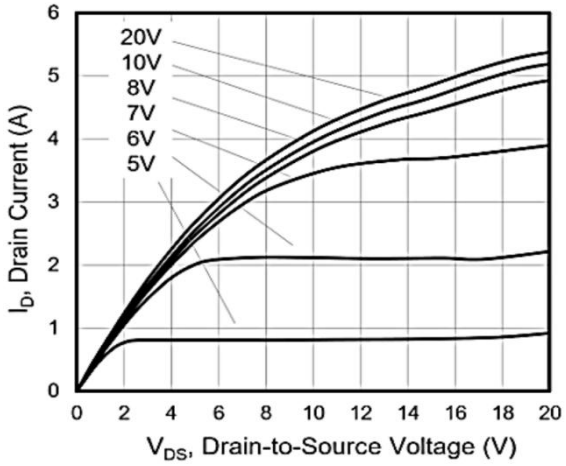


Figure 1. Output Characteristics (TJ = 25°C)

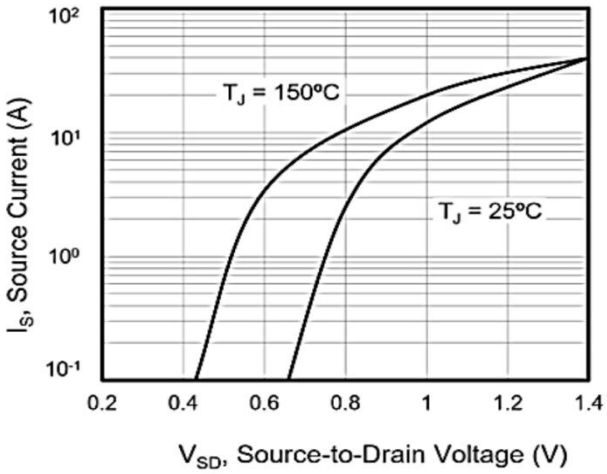


Figure 2. Body Diode Forward Voltage

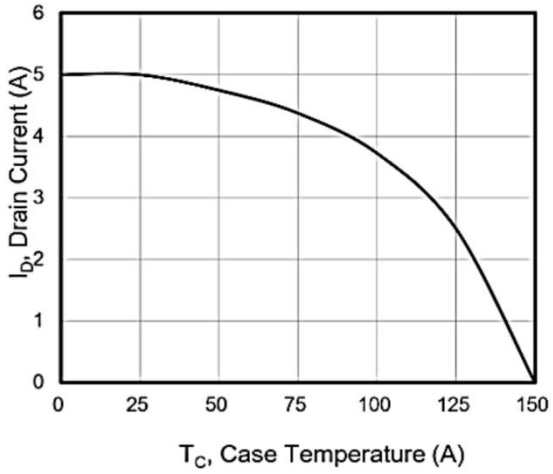


Figure 3. Drain Current vs. Temperature

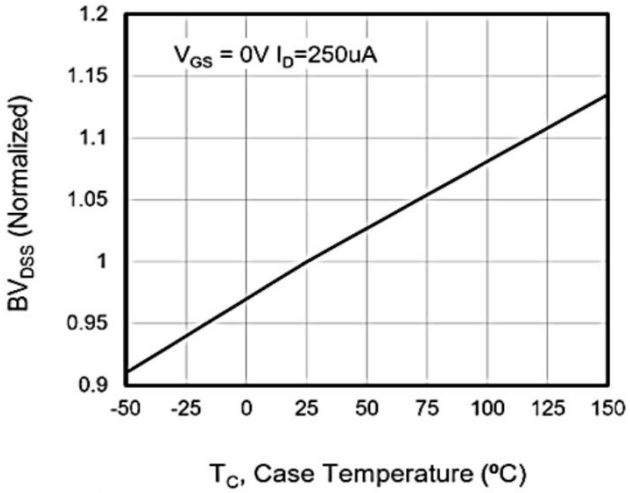


Figure 4. BV DSS Variation vs. Temperature

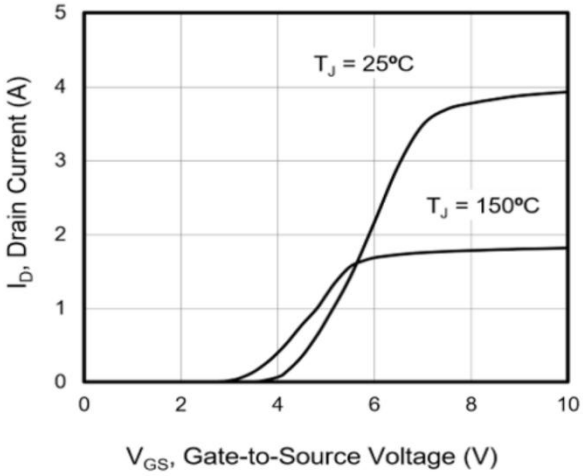


Figure 5. Transfer Characteristics

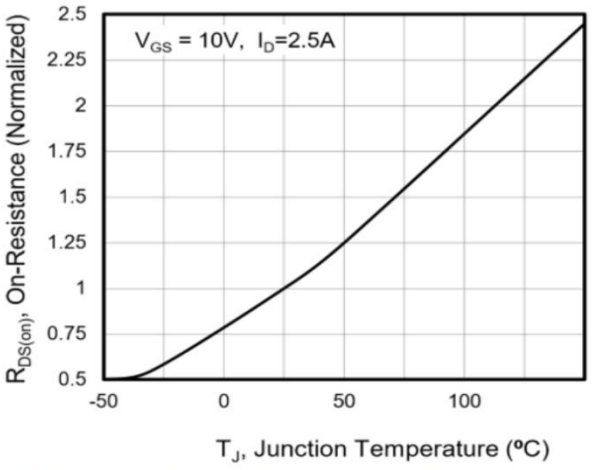


Figure 6. On-Resistance vs. Temperature

Typical Characteristics

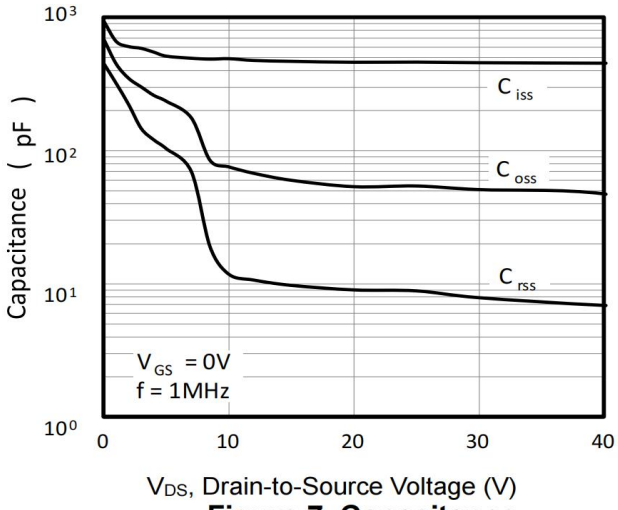


Figure 7. Capacitance

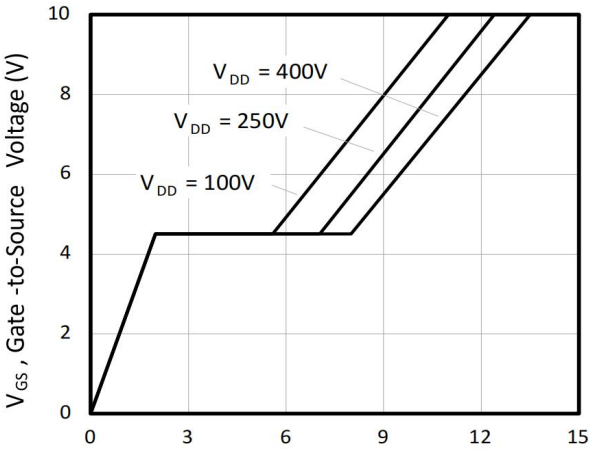


Figure 8. Gate Charge

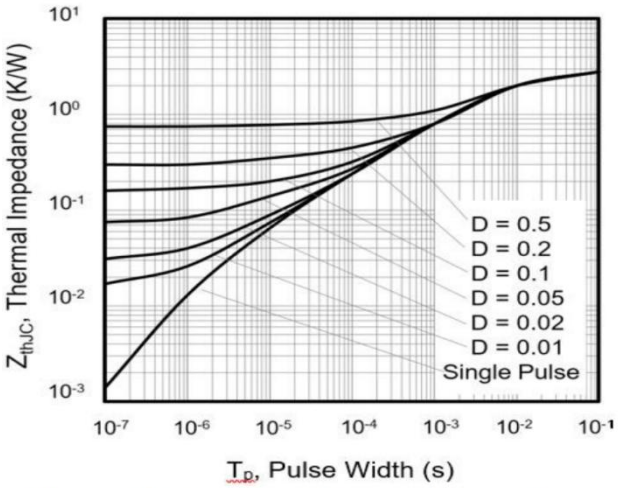
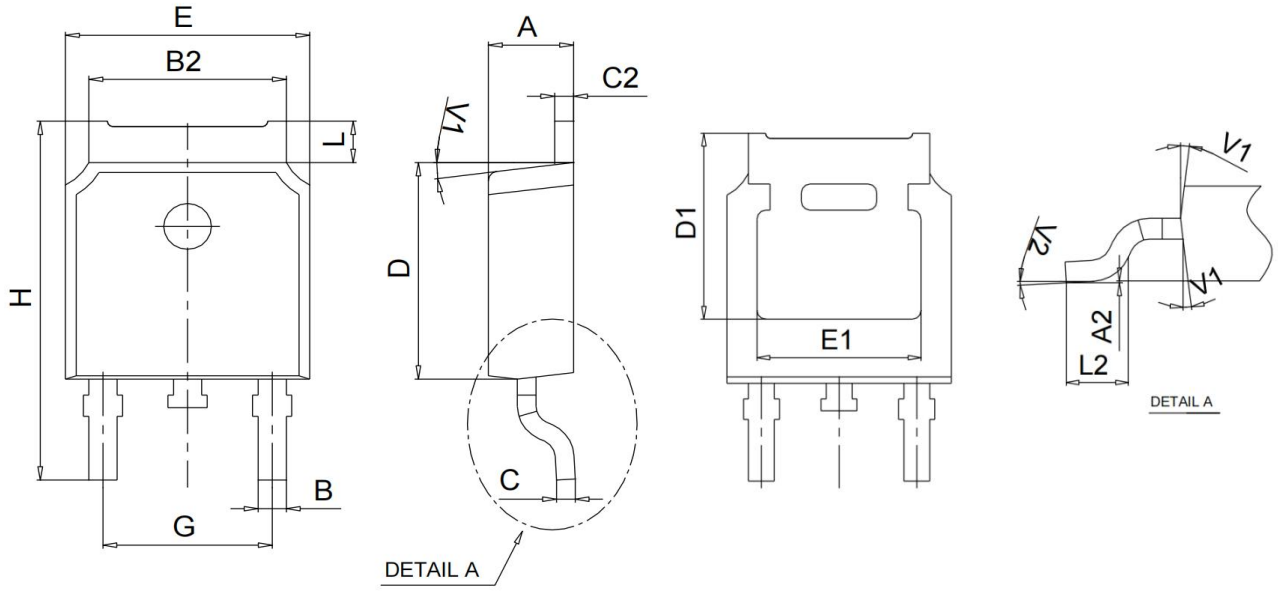


Figure 9. Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.100	2.500	0.083	0.098
A2	0.000	0.100	0.000	0.004
B	0.660	0.860	0.026	0.034
B2	5.180	5.480	0.202	0.216
C	0.400	0.600	0.016	0.024
C2	0.440	0.580	0.017	0.023
D	5.900	6.300	0.232	0.248
D1	5.300 REF.		0.209 REF.	
E	6.400	6.800	0.252	0.268
E1	4.630	-	0.182	-
G	4.470	4.670	0.176	0.184
H	9.500	10.700	0.374	0.421
L	1.090	1.210	0.043	0.048
L2	1.350	1.650	0.053	0.065
V1	7° BSC.		7° BSC.	
V2	0°	6°	0°	8°