AP005SN500ATF

N-Channel Enhancement Mode MOSFET

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
500V	1.7Ω@10V	5A

Feature

- Self-aligned planar Technology
- Low conduction loss

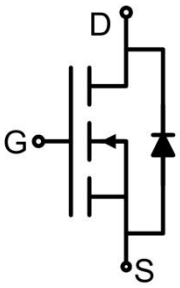
Application

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

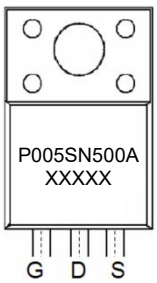
Package

ITO-220AB

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}	500	V
Gate-Source Voltage	V_{GS}	±30	V
Continuous Drain Current[1)]	I_D	5	A
Pulsed Drain Current[3)]	I_{DM}	25	A
Single Pulse Avalanche Energy[2)]	E_{AS}	247	mJ
Power Dissipation[4)]	P_D	32.9	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.8	℃/W
Operating Junction Temperature	T_J	-55 ~ +150	℃
Storage Temperature	T_{STG}	-55 ~ +150	℃

Electrical characteristics (T_J=25 °C, 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	500			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =650V, 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		4	V
Drain-source on-resistance[3)]	$R_{DS(on)}$	V_{GS} =10V, I_D =2.5A		1.5	1.7	Ω
Dynamic characteristics[5)]						
Input Capacitance	C_{iss}	V_{DS} =25V, V_{GS} =0V, f =1MHz		700		pF
Output Capacitance	C_{oss}			94		
Reverse Transfer Capacitance	C_{rss}			12		
Total Gate Charge	Q_g	V_{DS} =520V, V_{GS} =10V, I_D =7A		19		nC
Gate-Source Charge	Q_{gs}			3.7		
Gate-Drain Charge	Q_{gd}			11		
Turn-on delay time	$t_{d(on)}$	V_{DS} =325V, I_D =7A, R_G =25Ω		13		nS
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			76		
Turn-off fall time	t_f			40		
Source-Drain Diode characteristics						
Diode Forward Current	I_S	T_C =25℃			7	A
Diode Forward voltage	V_{SD}	V_{GS} =0V, I_S =7A			1.4	V
Reverse Recovery Time	T_{rr}	V_{GS} =0V, I_S =7A di/dt =100A/μs		260		nS
Reverse Recovery Charge	Q_{rr}			3.8		μC

Notes:

1) The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.

2) EAS condition: T_J =25℃, V_{DD} =50V, R_G = 25 Ω, I_{AS}=4.5A .

3) The test condition is Pulse Test: Pulse width ≤300μs, Duty Cycle ≤1%.

4) The power dissipation is limited by 150℃ junction temperature.

5) Guaranteed by design, not subject to production testing.

Typical Characteristics

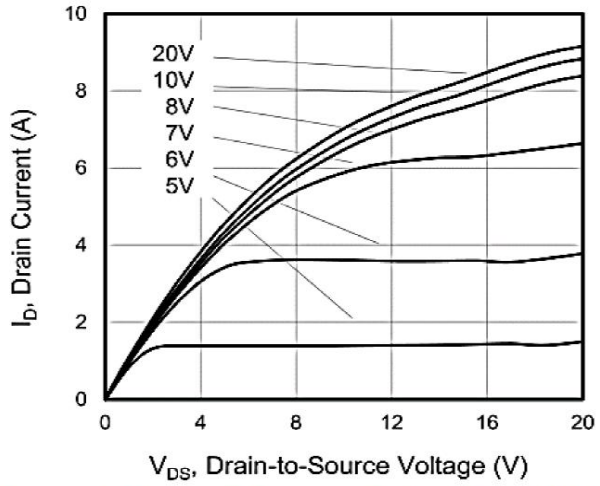


Figure 1. Output Characteristics (T_J= 25°C)

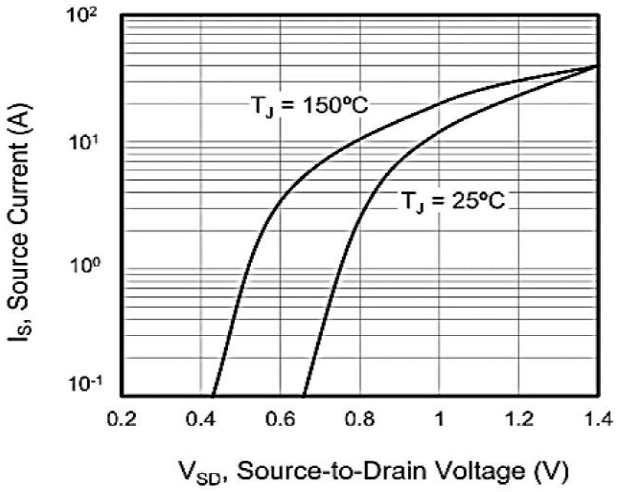


Figure 2. Body Diode Forward Voltage

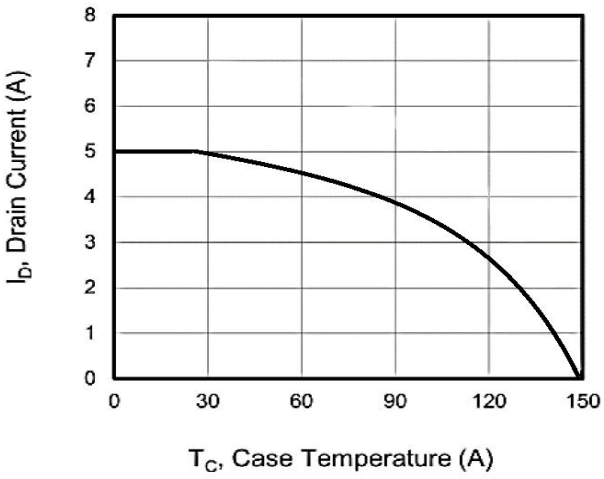


Figure 3. Drain Current vs. Temperature

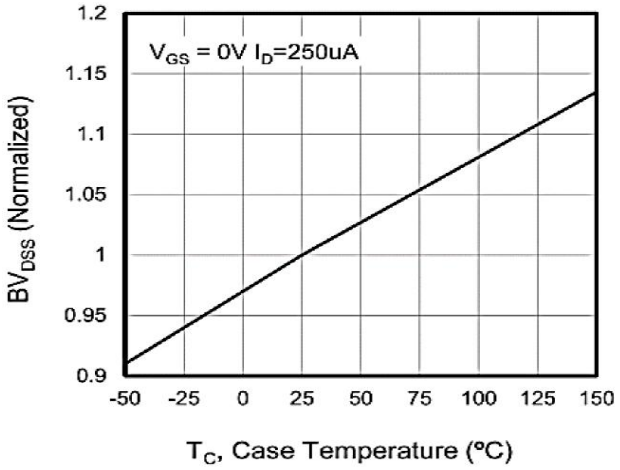


Figure 4. BVDSS Variation vs. Temperature

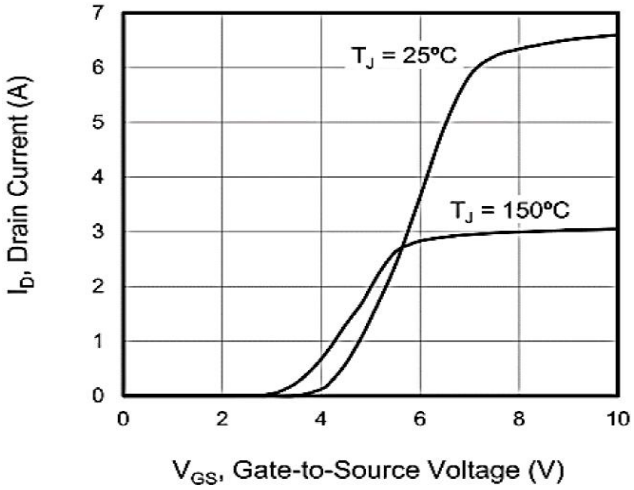


Figure 5. Transfer Characteristics

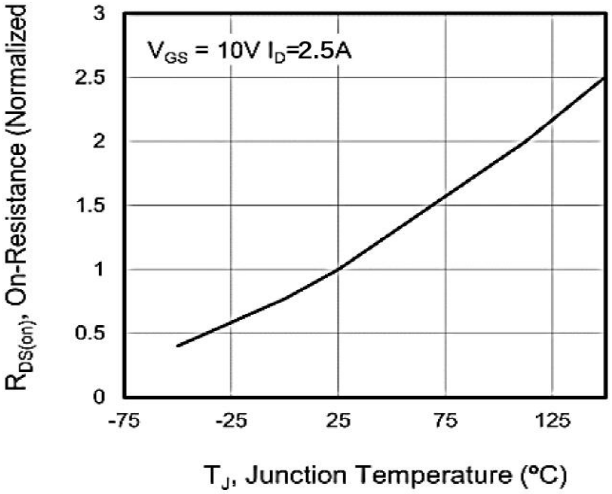


Figure 6. On-Resistance vs. Temperature

Typical Characteristics

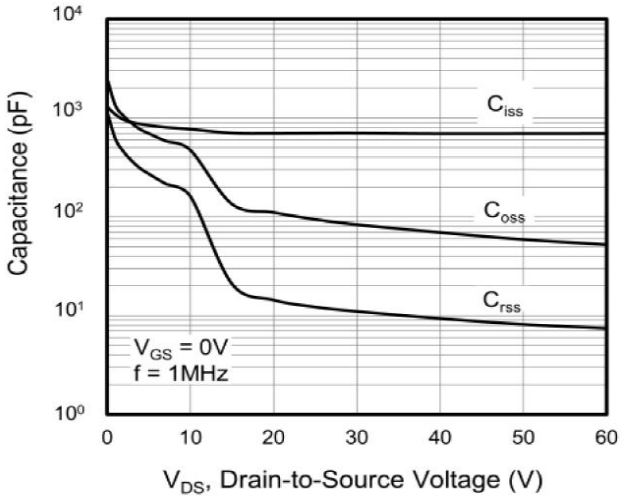


Figure 7. Capacitance

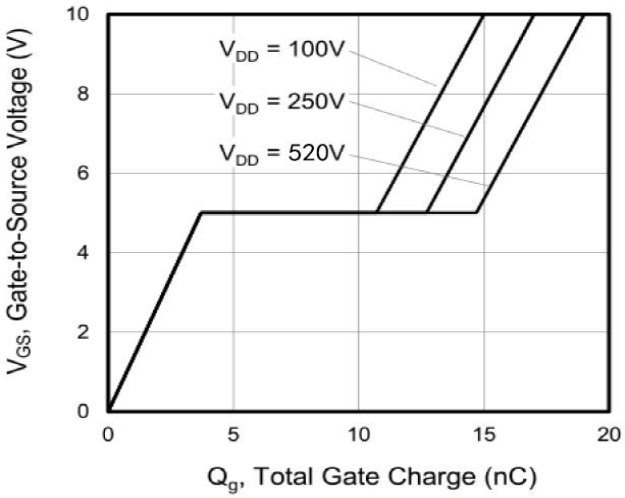


Figure 8. Gate Charge

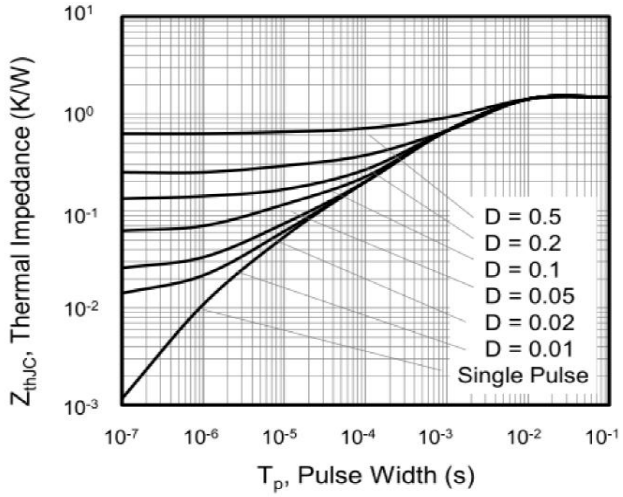
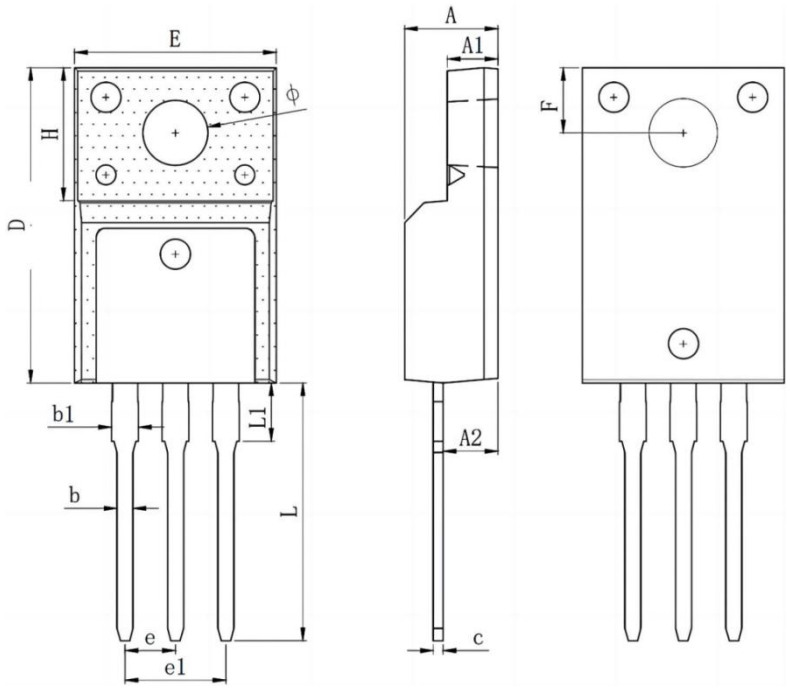


Figure 9. Transient Thermal Impedance

ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.500	5.000	0.177	0.197
A1	2.340	2.840	0.092	0.112
A2	2.400	3.400	0.094	0.134
b	0.700	0.950	0.028	0.037
b1	1.050	1.550	0.041	0.061
c	0.400	0.650	0.016	0.026
D	15.570	16.170	0.613	0.637
H	6.700 REF.		0.264 REF.	
E	9.860	10.460	0.388	0.412
e	2.540 BSC.		0.100 BSC.	
e1	5.080 BSC.		0.200 BSC.	
L	12.650	13.300	0.498	0.524
L1	2.780	3.380	0.109	0.133
F	3.150	3.550	0.124	0.140
ϕ	3.000	3.650	0.118	0.144