

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
500V	$0.3\Omega @ 10V$	20A

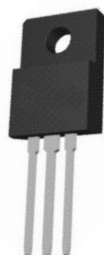
Feature

- Self-aligned planar Technology
- Low conduction loss

Application

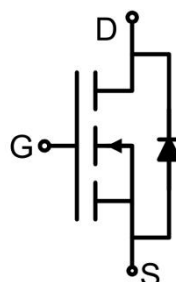
- Uninterruptible power supply (UPS)
- Power factor correction (PFC)

Package

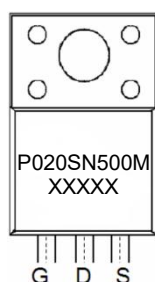


ITO-220AB

Circuit diagram



Marking



Absolute maximum ratings (T_c=25°C 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	I _D	20	A
Pulsed Drain Current ¹⁾	I _{DM}	65	A
Power Dissipation ²⁾	P _D	29.8	W
Single Pulse Avalanche Energy ³⁾	E _{AS}	405	mJ
Thermal Resistance, Junction-to-Case	R _{θJC}	4.19	°C/W
Junction Temperature	T _J	150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°C

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} =500V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±30V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	2	3	5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =8A		0.26	0.3	Ω
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		1670		pF
Output Capacitance	C _{oss}			247		
Reverse Transfer Capacitance	C _{rss}			6.8		
Total Gate Charge	Q _g	V _{DS} =250V, V _{GS} =10V, I _D =16A		31		nC
Gate-Source Charge	Q _{gs}			13		
Gate-Drain Charge	Q _{gd}			9		
Turn-on delay time	t _{d(on)}	V _{DD} =250V, I _D =16A, R _G =25Ω		27		nS
Turn-on rise time	t _r			45		
Turn-off delay time	t _{d(off)}			61		
Turn-off fall time	t _f			38		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				20	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =16A			1.4	V
Reverse Recovery Time	T _{rr}	V _{GS} =0V, I _S =16A		342		nS
Reverse Recovery Charge	Q _{rr}	di _F /dt = 100A/μs		4		μC

Notes:

- 1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.
- 2) The power dissipation is limited by 150°C junction temperature.
- 3) The EAS data shows Max. rating .L=4.1mH, I_{AS}=16A, V_{DD}=50V, R_G=25Ω, Starting T_J=25°C.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

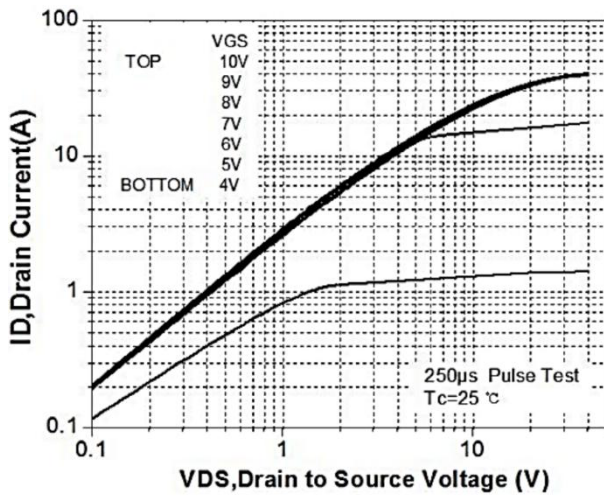


Figure 1. On-Region Characteristics

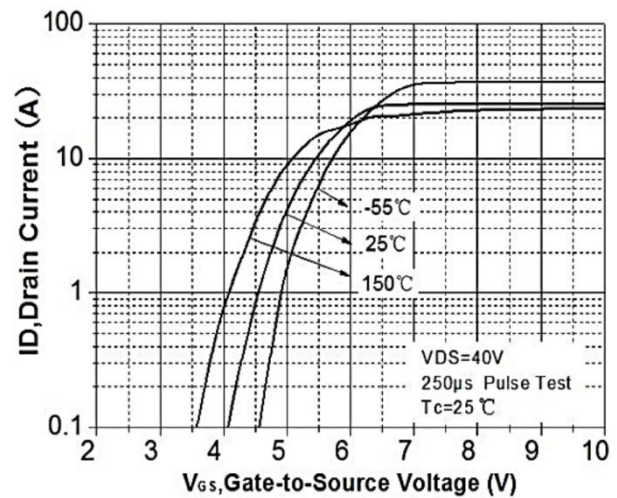


Figure 2. Transfer Characteristics

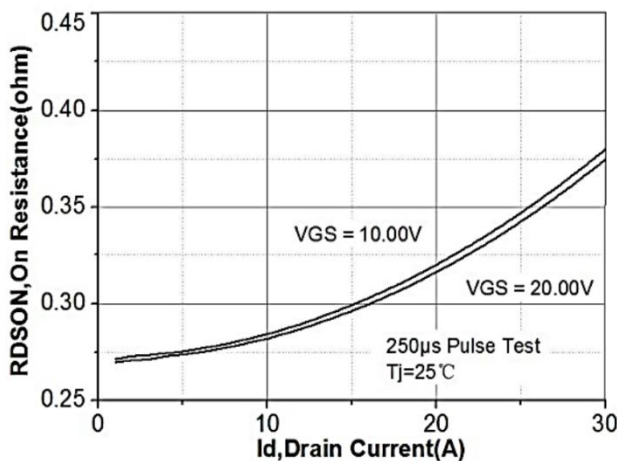


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

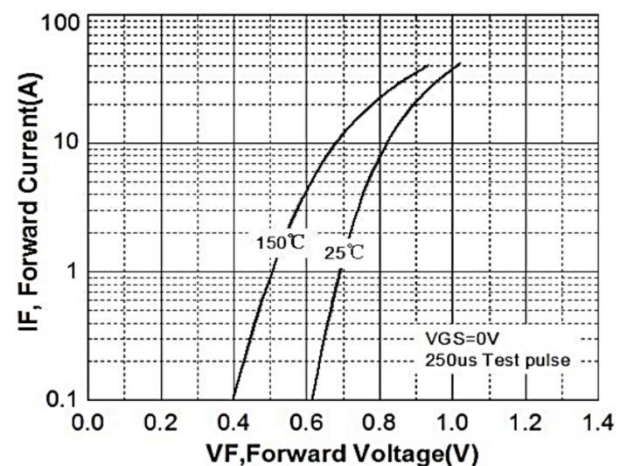


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

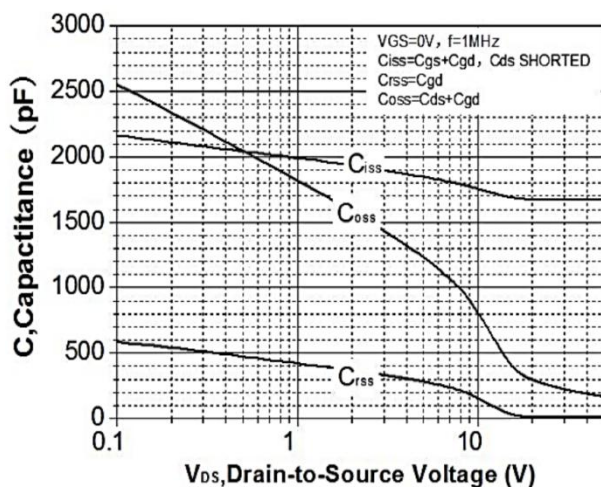


Figure 5. Capacitance Characteristics

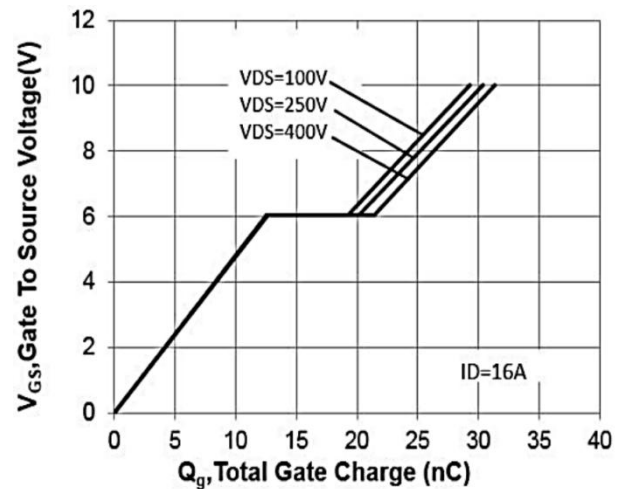
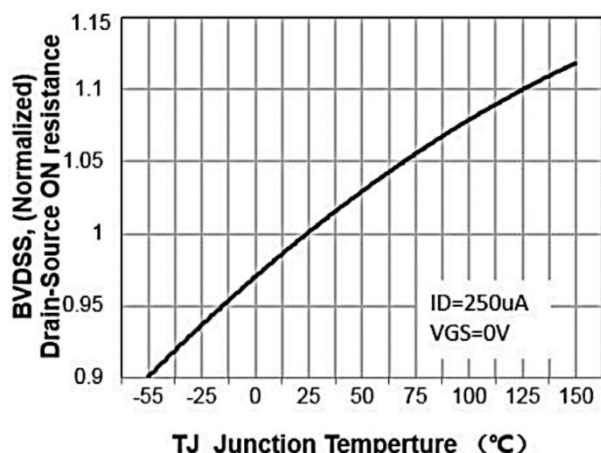
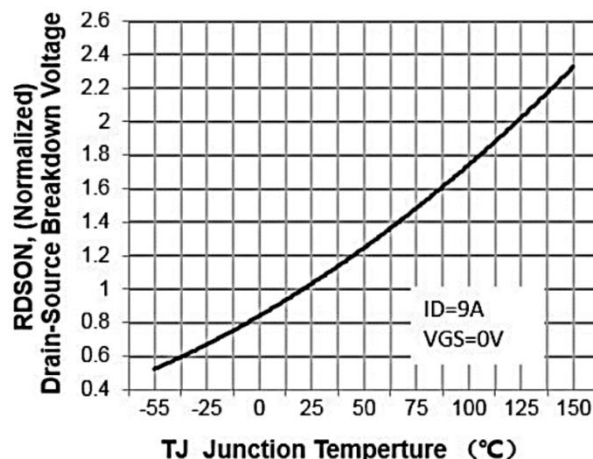


Figure 6. Gate Charge Characteristics

Typical Characteristics



TJ Junction Temperature (°C)
Figure 7. Breakdown Voltage Variation vs Temperature



TJ Junction Temperature (°C)
Figure 8. On-Resistance Variation vs Temperature

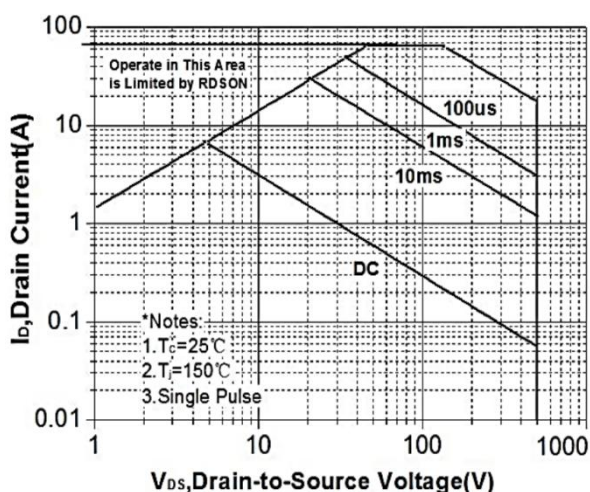


Figure 9. Maximum Safe Operating Area

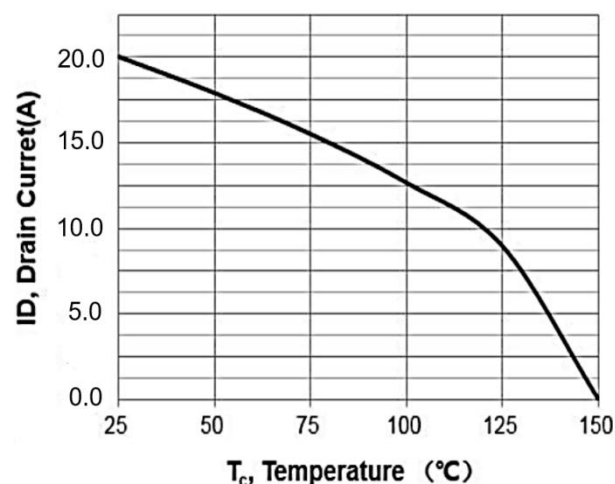


Figure 10. Maximum Drain Current vs Case Temperature

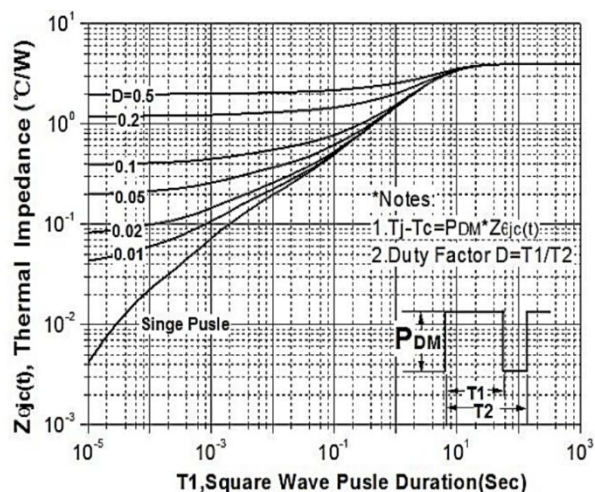
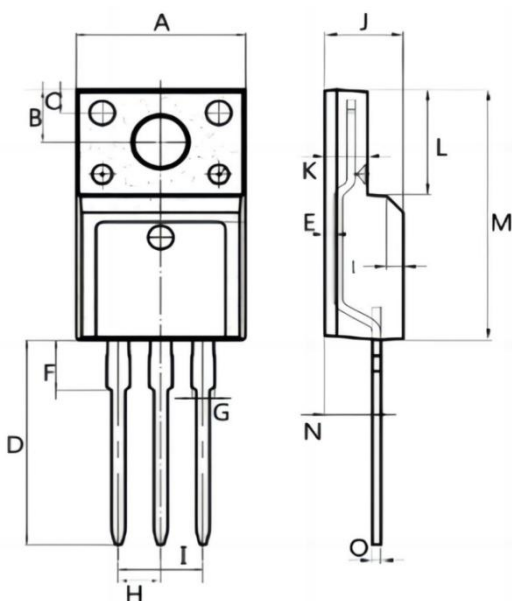


Figure 11. Transient Thermal Response Curve

ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.900	10.300	0.390	0.406
B	2.900	3.500	0.114	0.138
C	1.150	1.450	0.045	0.057
D	12.750	13.250	0.502	0.522
E	0.550	0.750	0.022	0.030
F	3.100	3.500	0.122	0.138
G	1.250	1.450	0.049	0.057
H	2.540 BSC.		0.100 BSC.	
I	5.080 BSC.		0.200 BSC.	
J	4.550	4.750	0.179	0.187
K	2.400	2.700	0.094	0.106
L	6.350	6.750	0.250	0.266
M	15.000	16.000	0.591	0.630
N	2.750	3.150	0.108	0.124
O	0.450	0.600	0.018	0.024