

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	180mΩ@10V	20A

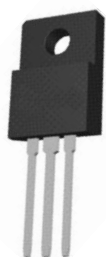
Feature

- Optimized body diode reverse recovery performance
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

Application

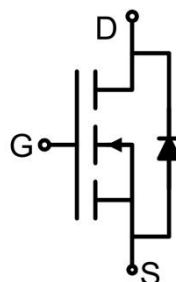
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)

Package

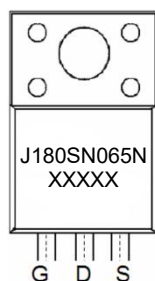


ITO-220AB

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}	650	V
Gate-Source Voltage (V _{DS} =0V) AC (f>1 Hz)	V _{GS}	±30	V
Gate-Source Voltage (V _{DS} =0V) DC	V _{GS}	±20	V
Continuous Drain Current	I _D	20	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	14	A
Pulsed Drain Current ¹⁾	I _{DM}	80	A
Power Dissipation	P _D	33.9	W
Thermal Resistance Junction to Case	R _{θJC}	4.42	°C/W
Operating Junction Temperature	T _J	-55 ~ +175	°C
Storage Temperature	T _{STG}	-55 ~ +175	°C

Electrical characteristics (T_A=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	650			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =650V, V _{GS} =0V, T _C =25°C			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	3	3.5	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =10A		160	180	mΩ
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		1550		pF
Output Capacitance	C _{oss}			60		
Reverse Transfer Capacitance	C _{rss}			5		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V I _D =10.5A		28.5		nC
Gate-Source Charge	Q _{gs}			11.7		
Gate-Drain Charge	Q _{gd}			5		
Turn-on delay time	t _{d(on)}	V _{DS} =380V, V _{GS} =10V I _D =10A, R _G =1.7Ω		32		nS
Turn-on rise time	t _r			18		
Turn-off delay time	t _{d(off)}			90		
Turn-off fall time	t _f			8		
Source-Drain Diode characteristics						
Source-drain current	I _S	T _C =25°C			20	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =20A, T _J =25°C			1.2	V
Reverse Recovery Time	T _{rr}	I _F =10A, di/dt =100A/us T _J =25°C		300		nS
Reverse Recovery Charge	Q _{rr}			4.5		μC
Peak Reverse Recovery Current	I _{rrm}			30		A

Notes:

- 1) Repetitive Rating: Pulse width limited by maximum junction temperature.
- 2) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure1. Safe operating area

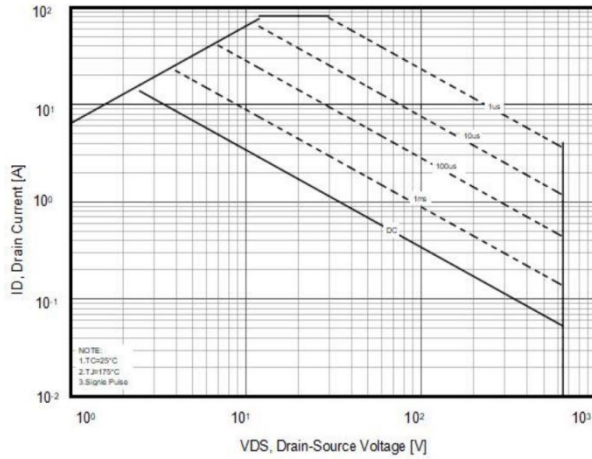


Figure2. Capacitance

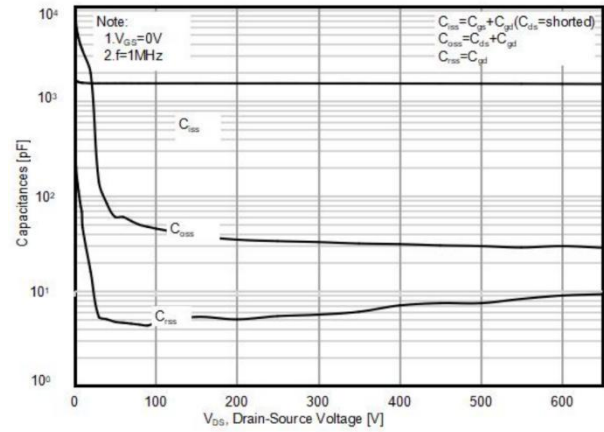


Figure3. Transfer characteristics

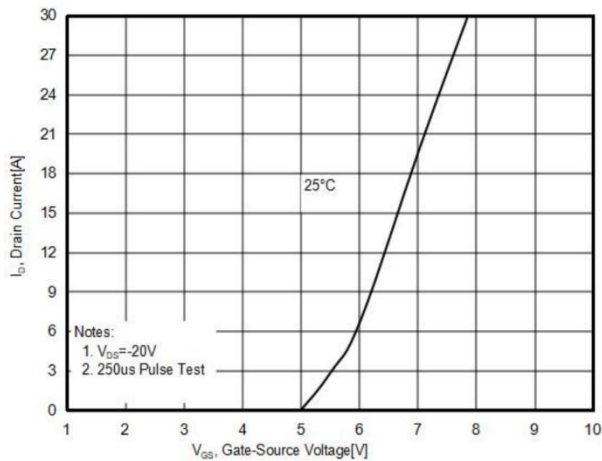


Figure4. Output characteristics

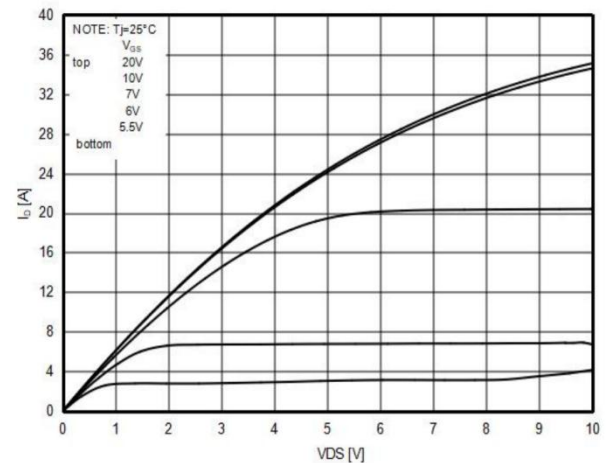


Figure5. $R_{DS(ON)}$ vs Junction Temperature

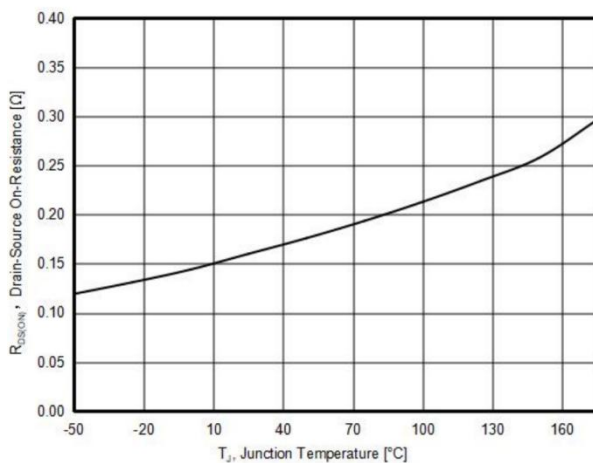
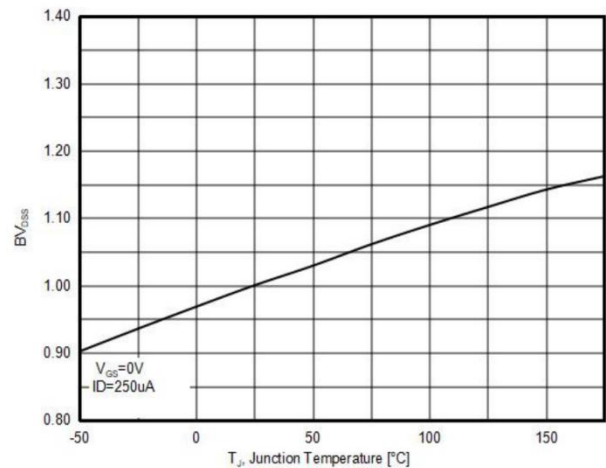


Figure6. BV_{DSS} vs Junction Temperature



Typical Characteristics

Figure7. Maximum I_D vs Junction Temperature

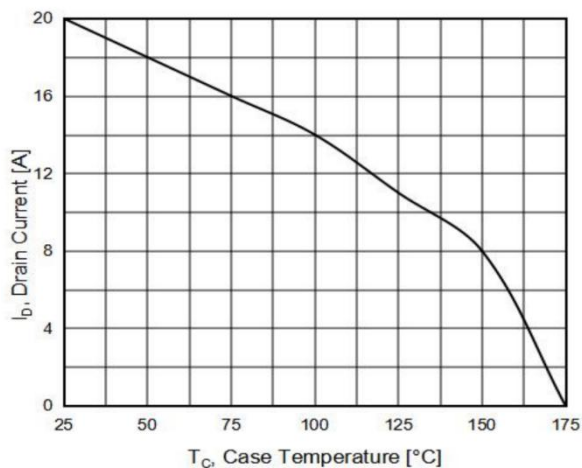


Figure8. Gate charge waveforms

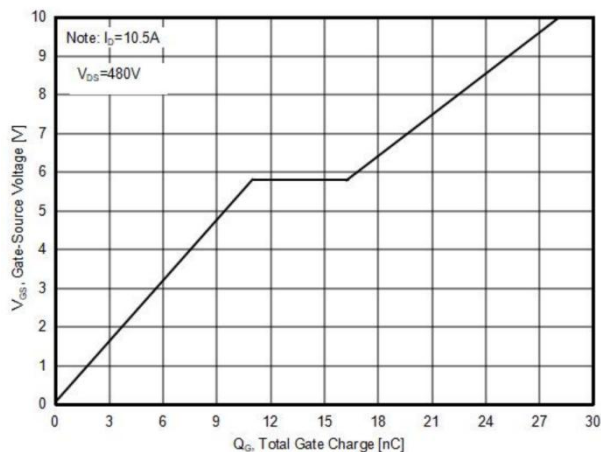


Figure9. Static drain-source on resistance

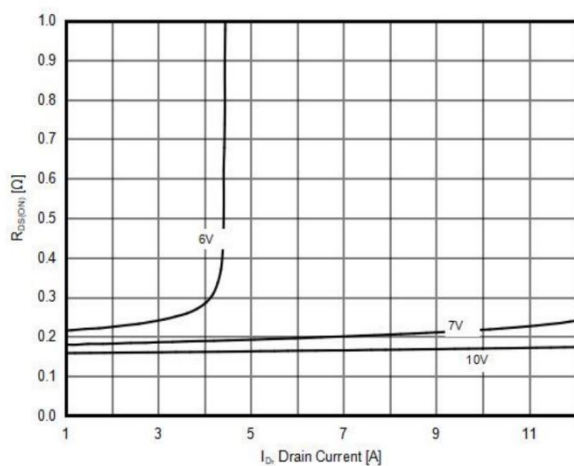
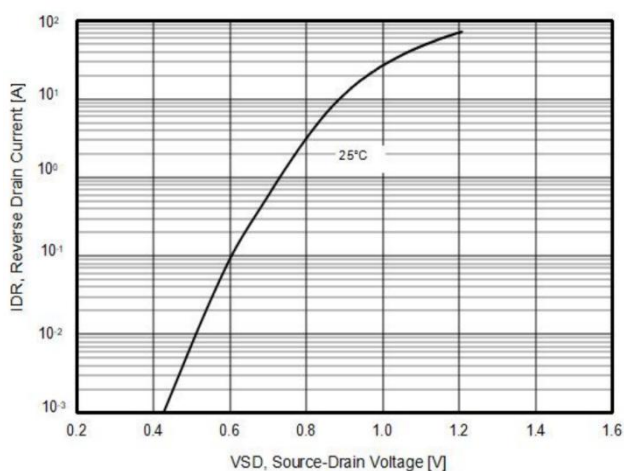
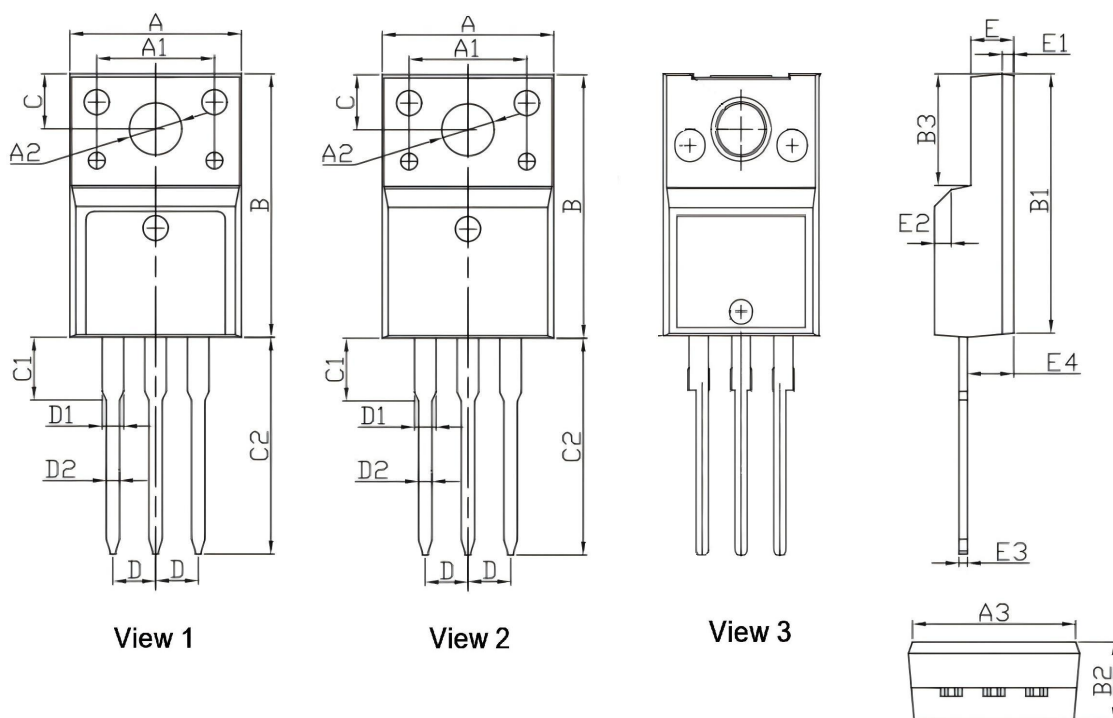


Figure10. Source-Drain Diode Forward Voltage



ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.960	10.400	0.392	0.410
A1	6.850	7.150	0.270	0.281
A2	2.970	3.280	0.117	0.129
A3	9.500	9.900	0.374	0.390
B	15.670	16.100	0.617	0.634
B1	15.400	15.950	0.606	0.622
B2	4.500	4.900	0.177	0.193
B3	6.500	6.900	0.256	0.272
C	3.100	3.500	0.122	0.138
C1	3.050	3.500	0.120	0.138
C2	12.800	13.200	0.504	0.520
D	2.540 BSC		0.100 BSC	
D1	1.130	1.500	0.044	0.059
D2	0.650	0.950	0.026	0.037
E	2.340	2.750	0.092	0.108
E1	0.550	0.850	0.022	0.033
E2	45°		45°	
E3	0.350	0.650	0.014	0.026
E4	2.550	2.950	0.100	0.116