

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	540mΩ@10V	8A

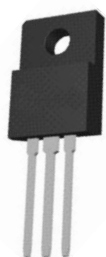
Feature

- New technology for high voltage device
- Low on-resistance and low conduction losses
- Ultra Low Gate Charge cause lower driving requirements

Application

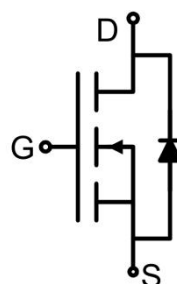
- Power factor correction (PFC)
- Switched mode power supplies (SMPS)
- Uninterruptible power supply (UPS)

Package

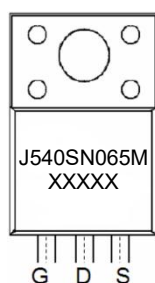


ITO-220AB

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
Continuous Drain Current	I _D	8	A
Continuous Drain Current (T _C =100°C)	I _D (100°C)	5.2	A
Pulsed Drain Current ¹⁾	I _{DM}	32	A
Single Pulse Avalanche Energy ²⁾	E _{AS}	156	mJ
Power Dissipation	P _D	31.6	W
Thermal Resistance Junction to Case	R _{θJC}	3.95	°C/W
Operating Junction Temperature	T _J	-55 ~ +150	°C
Storage Temperature	T _{STG}	-55 ~ +150	°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℃			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		4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =4A		460	540	mΩ
Dynamic characteristics ³⁾						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f =1MHz		590		pF
Output Capacitance	C _{oss}			37		
Reverse Transfer Capacitance	C _{rss}			0.9		
Total Gate Charge	Q _g	V _{DS} =480V, V _{GS} =10V I _D =8A		14.6		nC
Gate-Source Charge	Q _{gs}			4		
Gate-Drain Charge	Q _{gd}			6.7		
Turn-on delay time	t _{d(on)}	V _{DS} =380V, V _{GS} =10V I _D =4A, R _G =4.7Ω		8		nS
Turn-on rise time	t _r			6		
Turn-off delay time	t _{d(off)}			59		
Turn-off fall time	t _f			10		
Source-Drain Diode characteristics						
Source-drain current	I _S	T _C =25℃			8	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =8A, T _J =25℃			1.2	V
Reverse Recovery Time	T _{rr}	I _F =4A, di/dt =-100A/us T _J =25℃		230		nS
Reverse Recovery Charge	Q _{rr}			1.2		μC
Peak Reverse Recovery Current	I _{rrm}			10.5		A

Notes:

1) Repetitive Rating: Pulse width limited by maximum junction temperature.

2) T_J=25°C, V_{DD} =50V, V_G=10V, R_G=25Ω.

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

Typical Characteristics

Figure1. Transient Thermal Impedance

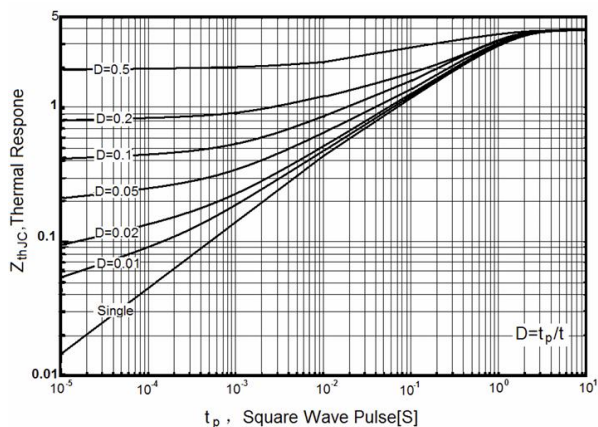


Figure2. Safe operating area

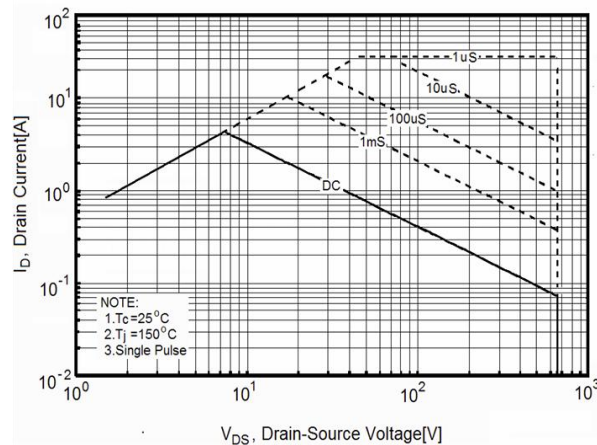


Figure3. Source-Drain Diode Forward Voltage

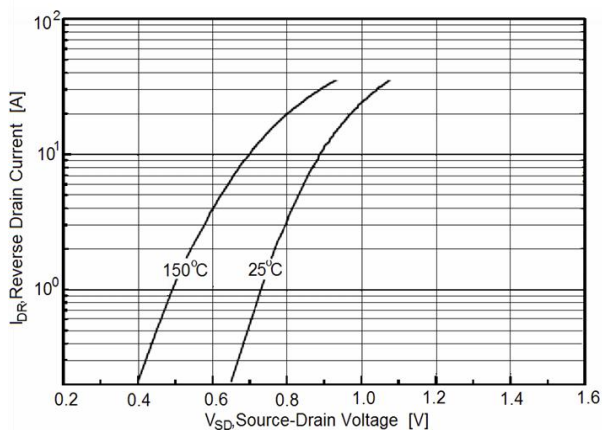


Figure4. Output characteristics

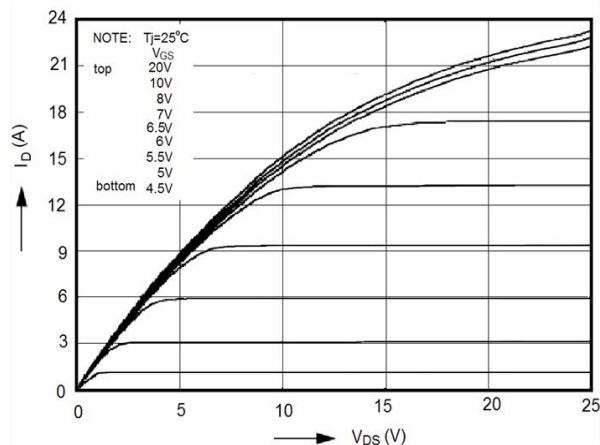


Figure5. Transfer characteristics

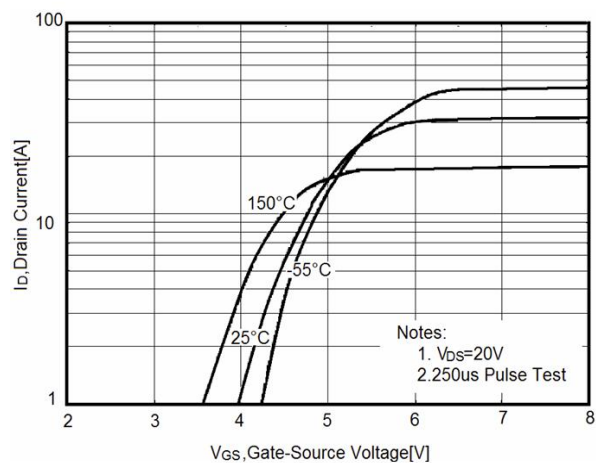
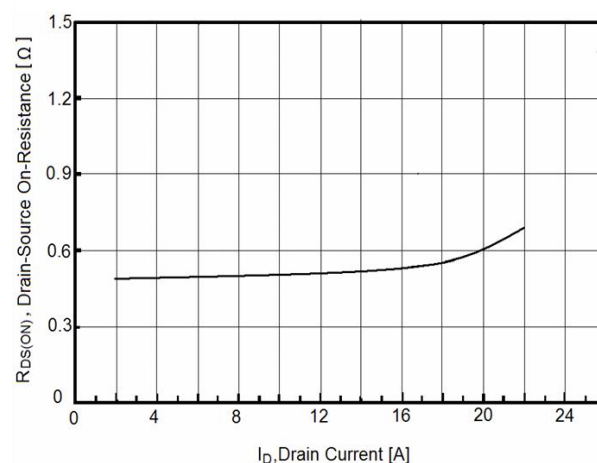


Figure6. Static drain-source on resistance



Typical Characteristics

Figure7. $R_{DS(ON)}$ vs Junction Temperature

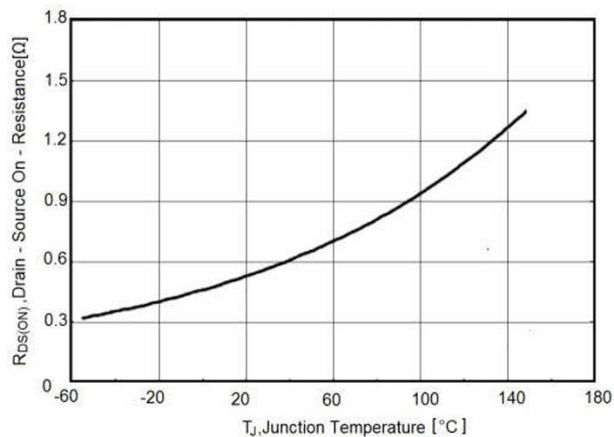


Figure8. BV_{DSS} vs Junction Temperature

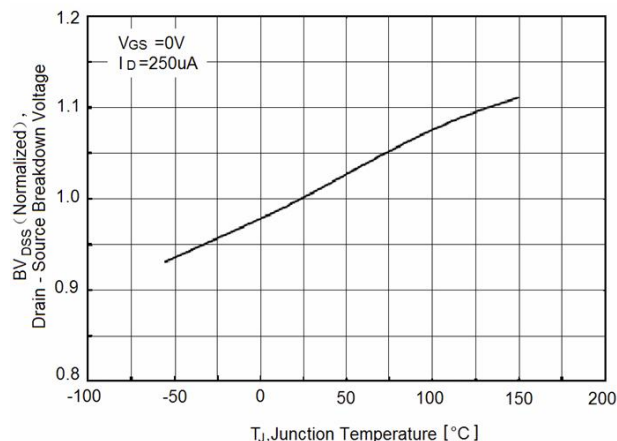


Figure9. Maximum I_D vs Junction Temperature

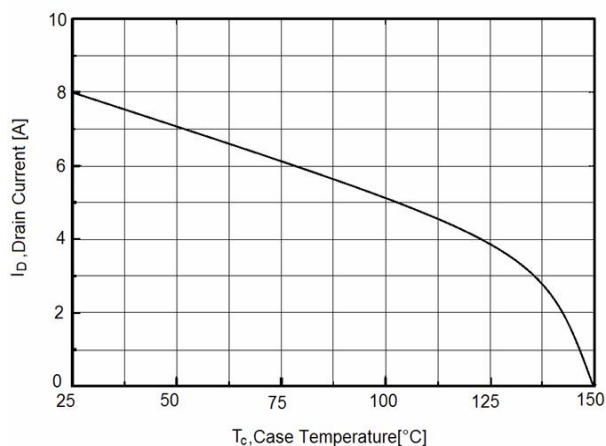


Figure10. Capacitance

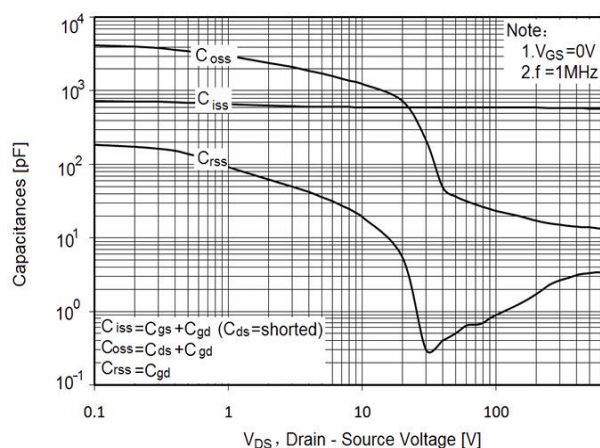
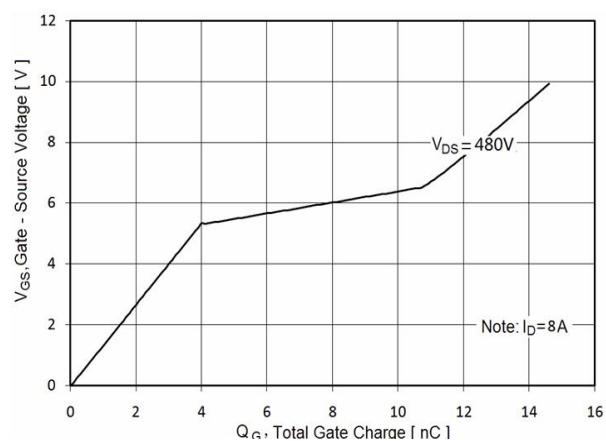
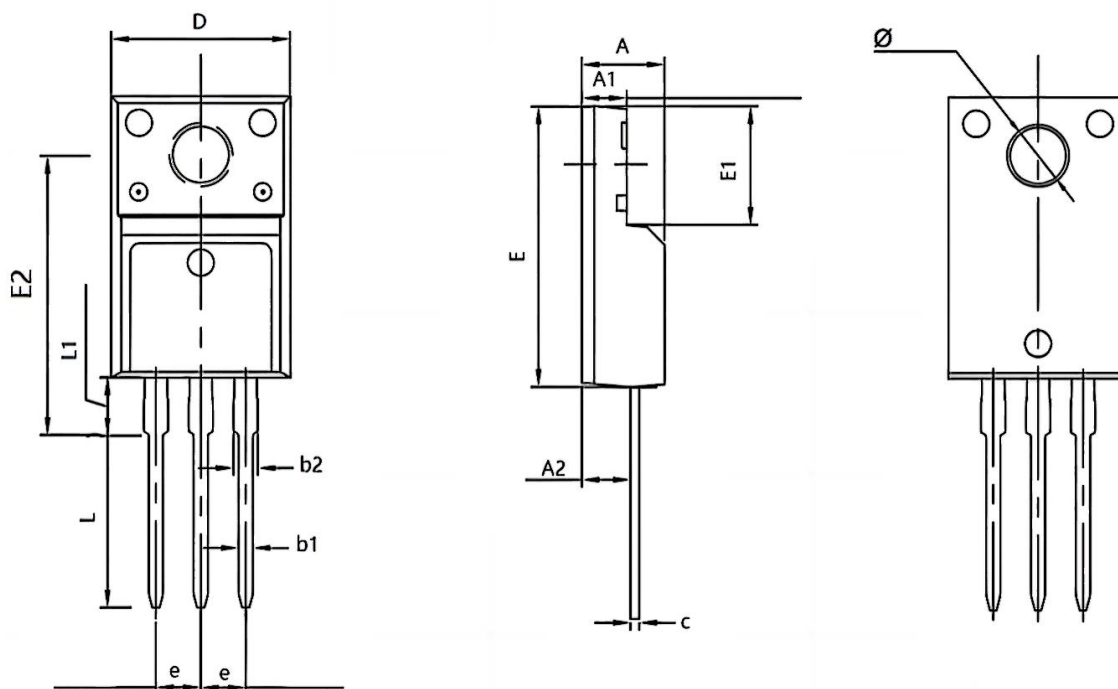


Figure11. Gate charge waveforms



ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.500	4.900	0.177	0.193
A1	2.340	2.740	0.092	0.108
A2	2.560	2.960	0.101	0.117
b1	0.700	0.900	0.028	0.035
b2	1.180	1.580	0.046	0.062
c	0.400	0.600	0.016	0.024
D	9.960	10.460	0.392	0.408
E	15.670	15.970	0.617	0.629
E1	6.500	6.900	0.256	0.272
E2	15.500	16.100	0.610	0.634
e	2.540 TYP		0.100 TYP	
φ	3.080	3.280	0.121	0.129
L	12.640	13.240	0.498	0.521
L1	3.030	3.430	0.119	0.135