

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
650V	600mΩ@10V	8A

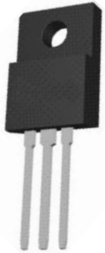
Feature

- Super Junction high voltage MOSFET technology
- Low $R_{DS(ON)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity

Application

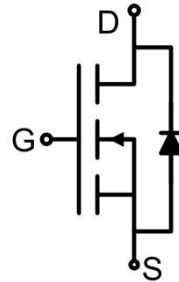
- Switching mode power supplies(SMPS)
- PWM motor controls
- LED lighting
- Adapter

Package



ITO-220AB

Circuit diagram



Marking



Absolute maximum ratings($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	650	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	8	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	5	A
Pulsed Drain Current ¹⁾	I_{DM}	12	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	90	mJ
Power Dissipation ³⁾ ($T_C=25^\circ\text{C}$)	P_D	34	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3.7	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	650			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=650\text{V}, V_{GS}=0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0\text{V}, V_{GS}=\pm 30\text{V}$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu\text{A}$	2.8	3.3	3.8	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=4\text{A}$		530	600	m Ω
Dynamic characteristics⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=325\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$		465		pF
Output Capacitance	C_{oss}			13		
Reverse Transfer Capacitance	C_{riss}			1.8		
Total Gate Charge	Q_g	$V_{DS}=325\text{V}, V_{GS}=10\text{V}, I_D=8\text{A}$		13		nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			6.2		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=325\text{V}, V_{GS}=10\text{V}, I_D=8\text{A}$ $R_G=2.2\Omega$		34		nS
Turn-on rise time	t_r			16		
Turn-off delay time	$t_{d(off)}$			23		
Turn-off fall time	t_f			12		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				8	A
Diode Forward voltage	V_{SD}	$V_{GS}=0\text{V}, I_S=8\text{A}$			1.2	V
Reverse recover time	T_{rr}	$I_F=8\text{A}, di/dt=-100\text{A}/\mu\text{s}$		221		nS
Reverse recovery charge	Q_{rr}			2.2		μC

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2) $T_J=25^\circ\text{C}, V_G=10\text{V}, R_G=25\Omega, L=30\text{mH}, I_{AS}=2.45\text{A}$.
- 3) P_d is based on max. junction temperature, using junction-case and junction-ambient thermal resistance.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

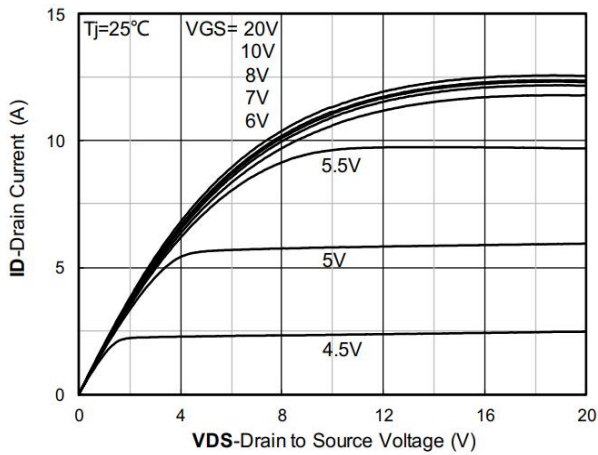


Figure 1. Output Characteristics

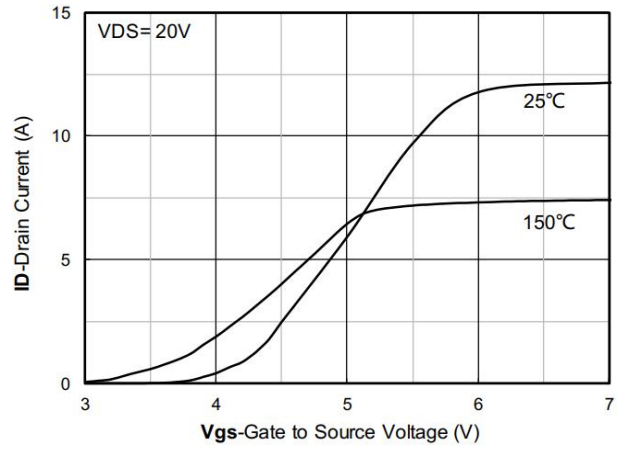


Figure 2. Transfer Characteristics

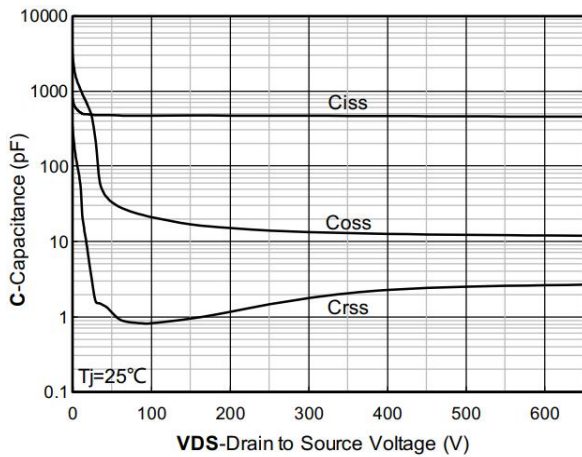


Figure 3. Capacitance Characteristics

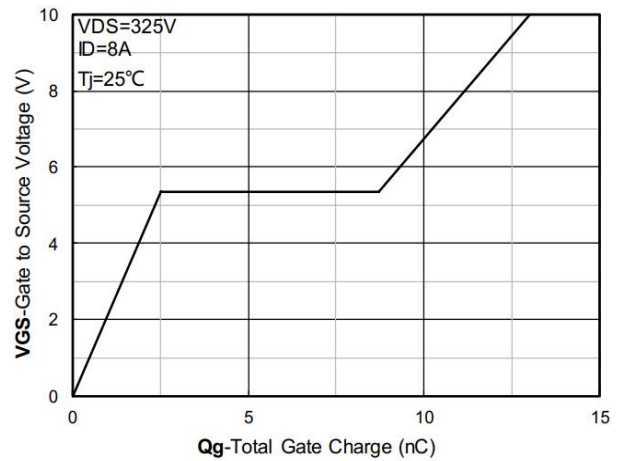


Figure 4. Gate Charge

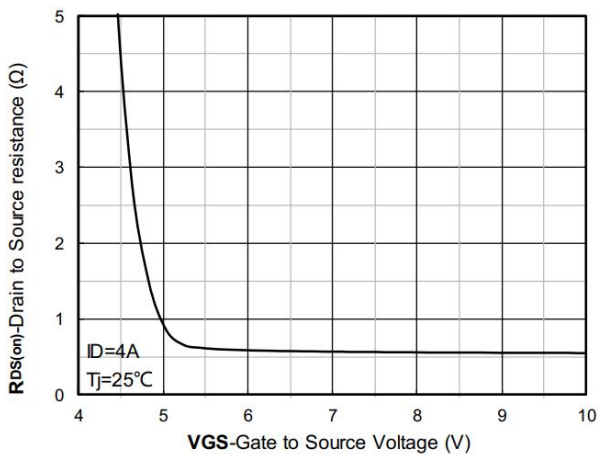


Figure 5. On-Resistance vs Gate to Source Voltage

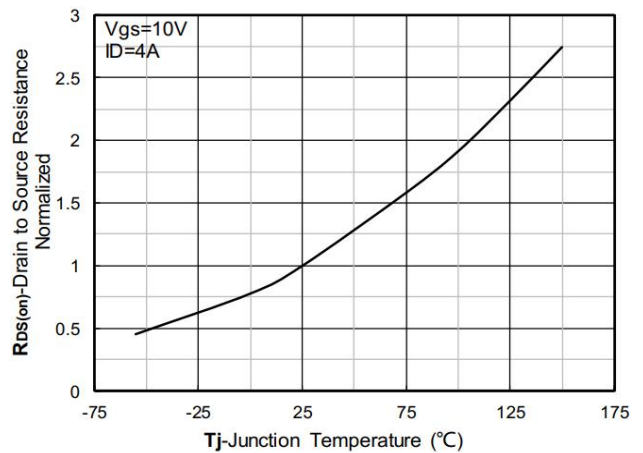


Figure 6. Normalized On-Resistance

Typical Characteristics

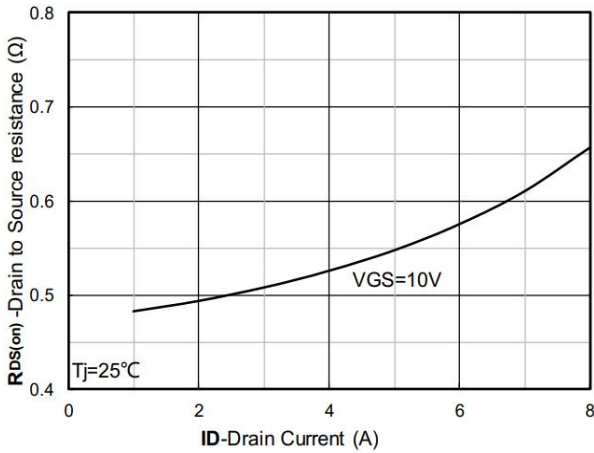


Figure 7. $R_{DS(on)}$ VS Drain Current

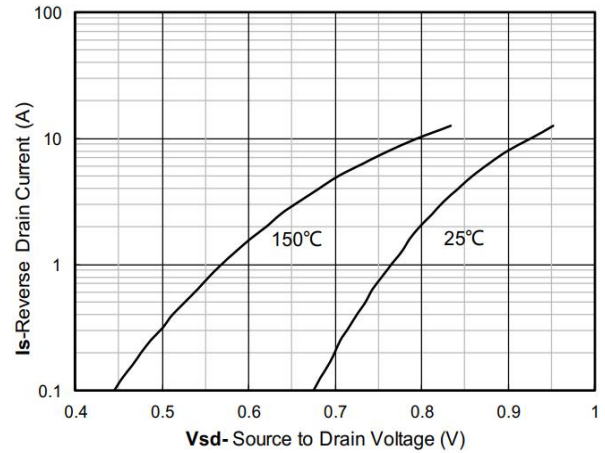


Figure 8. Forward characteristics of reverse diode

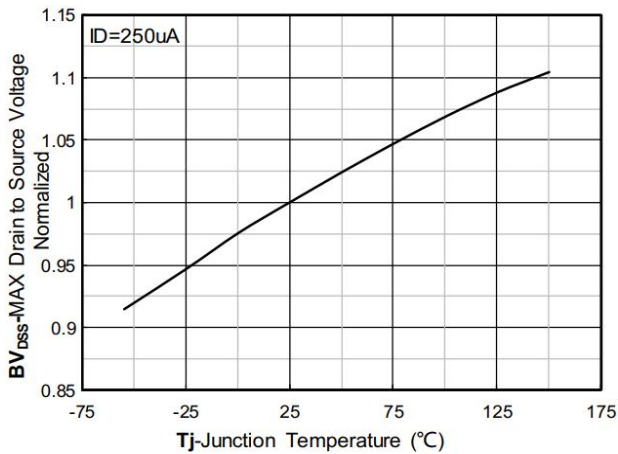


Figure 9. Normalized breakdown voltage

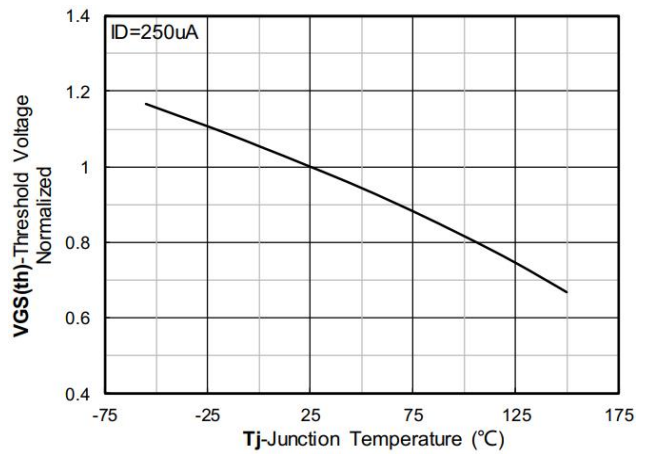


Figure 10. Normalized Threshold voltage

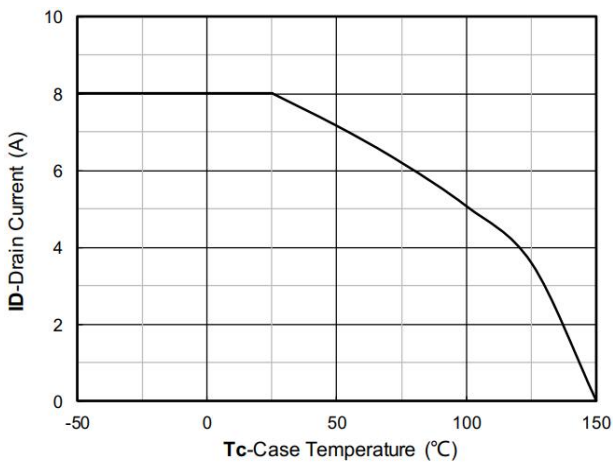


Figure 11. Current dissipation

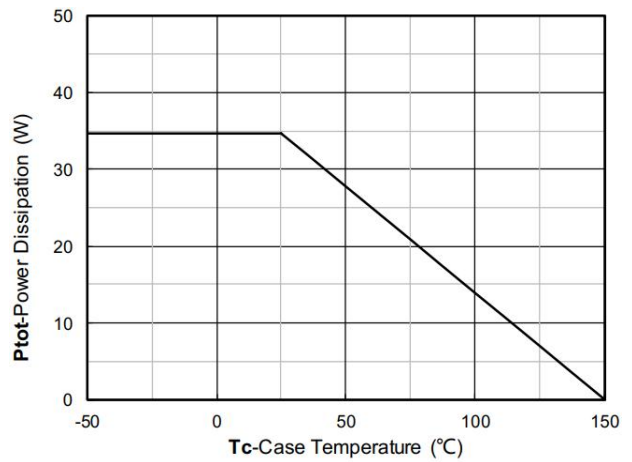


Figure 12. Power dissipation

Typical Characteristics

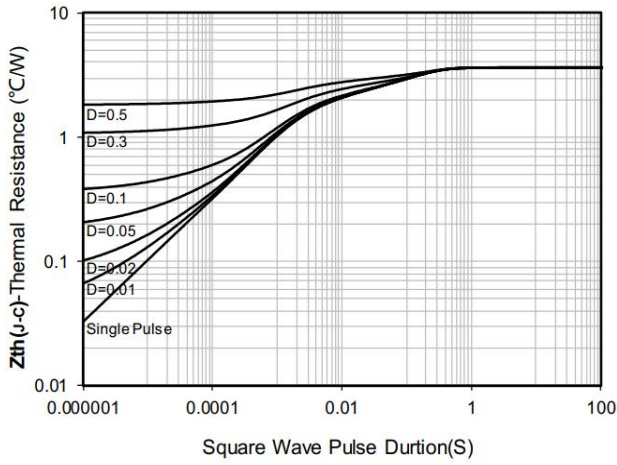


Figure 13. Maximum Transient Thermal Impedance

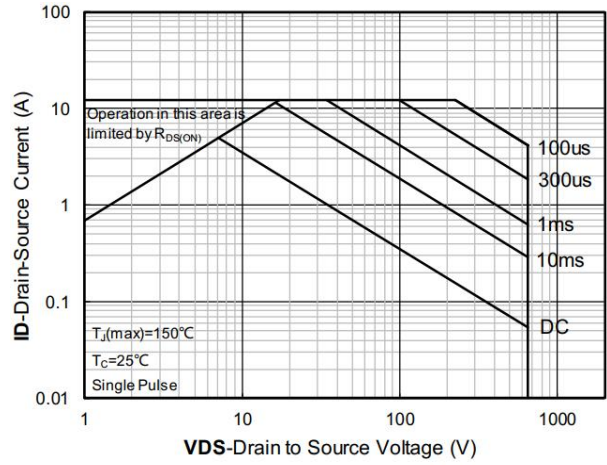
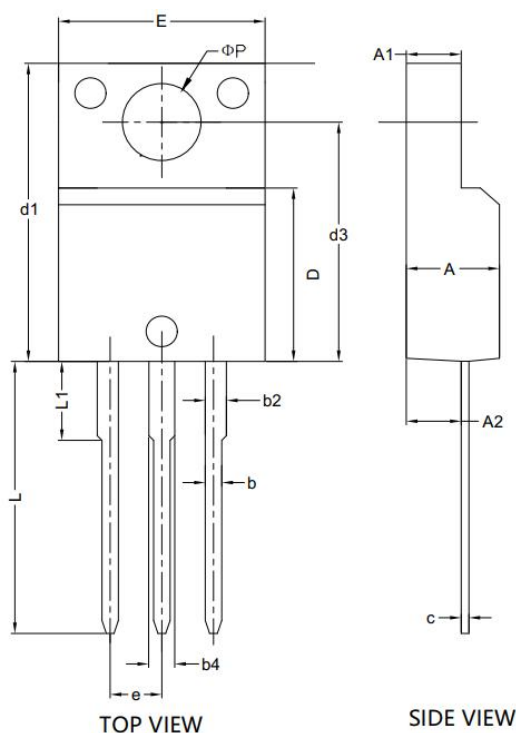


Figure 14. Safe Operation Area

ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.570	4.830	0.180	0.190
A1	2.570	2.830	0.101	0.111
A2	2.510	2.930	0.099	0.115
b	0.610	0.940	0.024	0.037
b2	0.760	1.270	0.030	0.050
b3	1.020	1.520	0.040	0.060
c	0.330	0.630	0.013	0.025
D	8.660	9.800	0.341	0.386
d1	15.800	16.130	0.622	0.635
d3	12.300	12.930	0.484	0.509
E	9.630	10.750	0.379	0.423
e	2.540 BSC.		0.100 BSC.	
L	13.200	13.720	0.520	0.540
L1	3.370	3.670	0.122	0.145
ΦP	3.050	3.450	0.120	0.136