

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
800V	1.2Ω@10V	6A

### Feature

- Super Junction High Voltage MOSFET technology
- Low Power Loss by High Speed Switching and Low On-Resistance
- Epoxy Meets UL 94 V-0 Flammability Rating

### Application

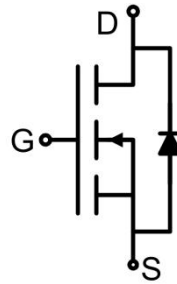
- Power switching application
- Adapter
- PFC Power Supply Stages

### Package

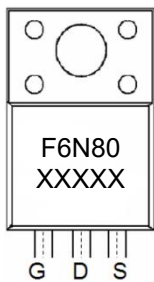


ITO-220AB

### Circuit diagram



### Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	800	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current( $T_C=25^\circ\text{C}$ )	$I_D$	6	A
Continuous Drain Current( $T_C=100^\circ\text{C}$ )	$I_D(100^\circ\text{C})$	3.8	A
Pulsed Drain Current <sup>1)</sup>	$I_{DM}$	12	A
Power Dissipation <sup>3)</sup> ( $T_C=25^\circ\text{C}$ )	$P_D$	50	W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy <sup>2)</sup>	$E_{AS}$	4.9	mJ
Junction Temperature	$T_J$	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
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	800			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 800V, V_{GS} = 0V$			1	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 10$	$\mu\text{A}$
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	2.5	3.5	4.5	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 2.5A$		0.95	1.2	$\Omega$
<b>Dynamic characteristics<sup>4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 100V, V_{GS} = 0V, f = 400\text{kHz}$		380		pF
Output Capacitance	$C_{oss}$			18		
Reverse Transfer Capacitance	$C_{rss}$			1.1		
Total Gate Charge	$Q_g$	$V_{DS} = 640V, V_{GS} = 10V, I_D = 4.5A$		11		nC
Gate-Source Charge	$Q_{gs}$			3.3		
Gate-Drain Charge	$Q_{gd}$			4.5		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 400V, V_{GS} = 10V, R_{GEN} = 25\Omega, I_D = 4.5A$		16		nS
Turn-on rise time	$t_r$			24		
Turn-off delay time	$t_{d(off)}$			59		
Turn-off fall time	$t_f$			19		
<b>Source-Drain Diode characteristics</b>						
Diode Forward Current	$I_S$				6	A
Diode Forward voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 4.5A$			1.2	V
Reverse Recovery Time	$t_{rr}$	$I_F = 6A, di/dt = 100A/\mu\text{s}$		380		nS
Reverse Recovery Charge	$Q_{rr}$			2		$\mu\text{C}$

Notes:

- 1) Repetitive rating; pulse width limited by max. junction temperature.
- 2)  $T_J=25^\circ\text{C}$ ,  $V_{DD}=50V$ ,  $V_G=10V$ ,  $L=5\text{mH}$ ,  $I_{AS}=1.4A$ .
- 3)  $P_d$  is based on max. junction temperature, using junction-case thermal resistance.
- 4) Guaranteed by design, not subject to production testing.

## Typical Characteristics

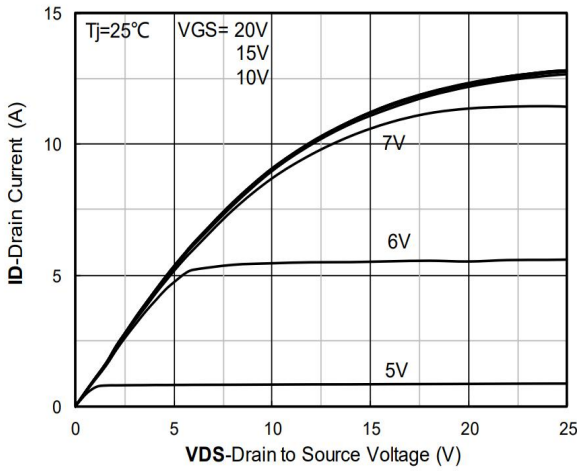


Figure 1. Output Characteristics

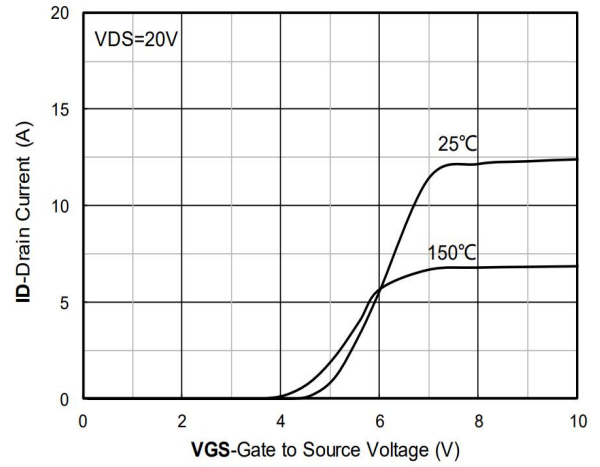


Figure 2. Transfer Characteristics

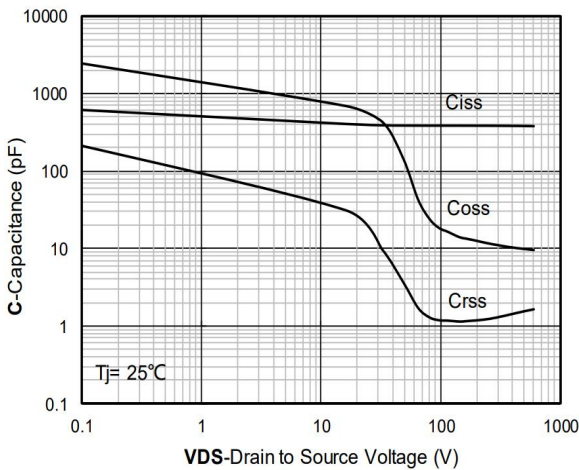


Figure 3. Capacitance Characteristics

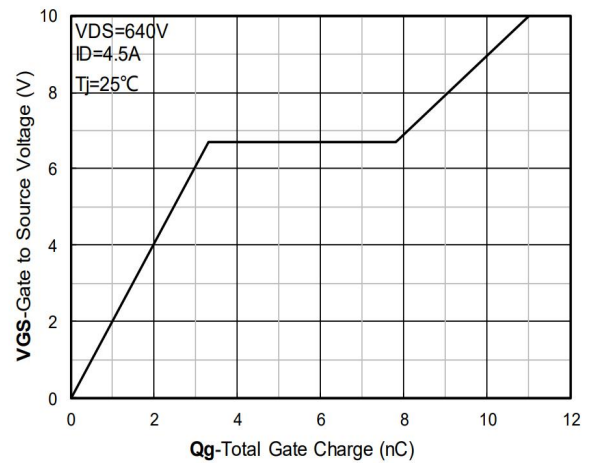


Figure 4. Gate Charge

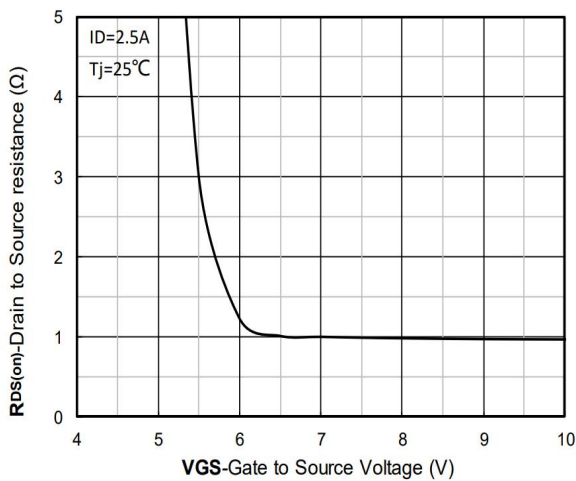


Figure 5. On-Resistance vs Gate to Source Voltage

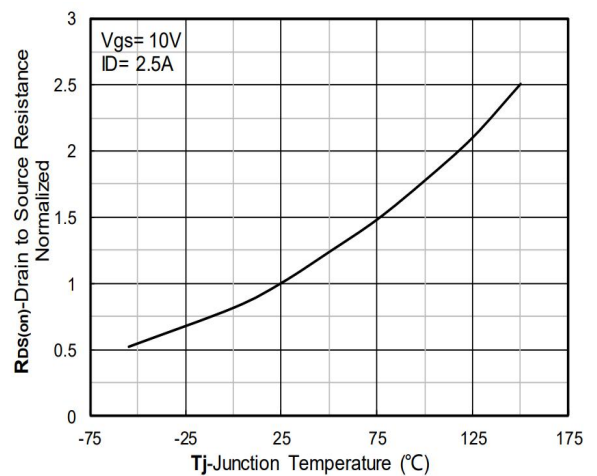


Figure 6. Normalized On-Resistance

## Typical Characteristics

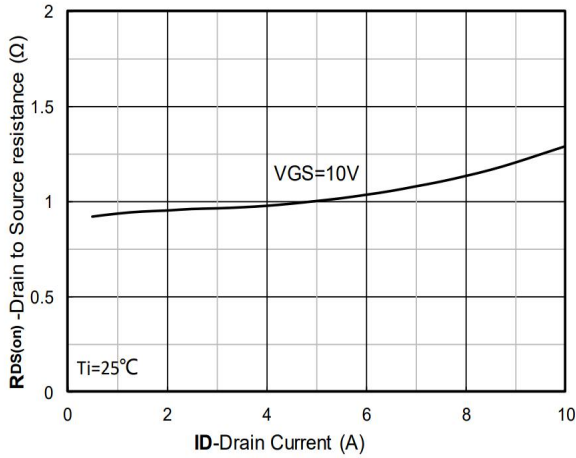


Figure 7.  $R_{DS(on)}$  VS Drain Current

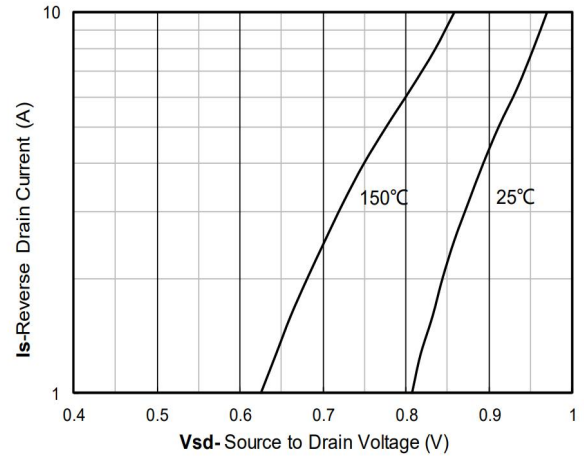


Figure 8. Forward characteristics of reverse diode

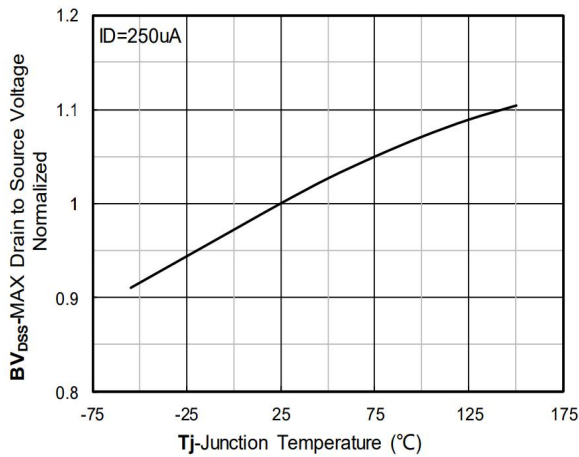


Figure 9. Normalized breakdown voltage

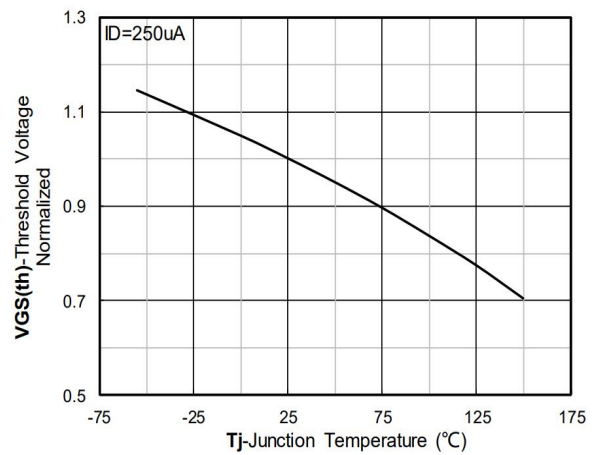


Figure 10. Normalized Threshold voltage

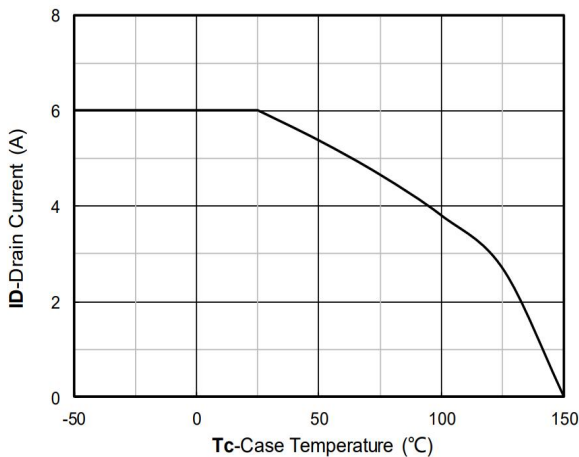


Figure 11. Current dissipation

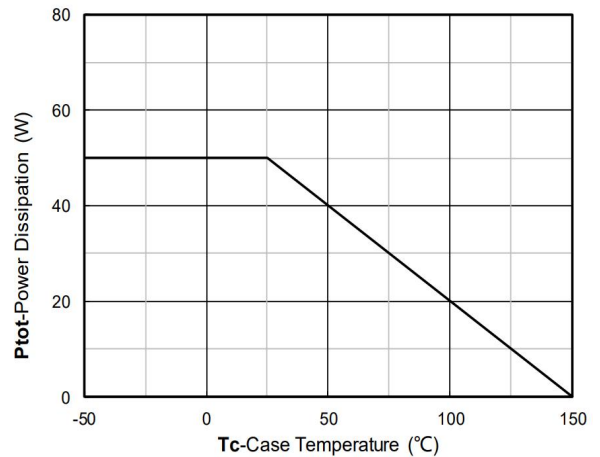


Figure 12. Power dissipation

## Typical Characteristics

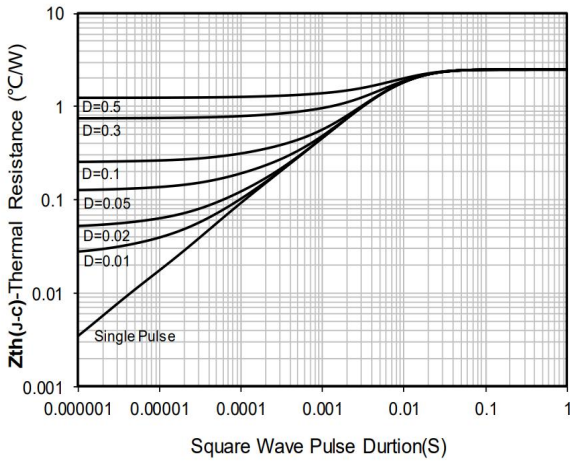


Figure 13. Maximum Transient Thermal Impedance

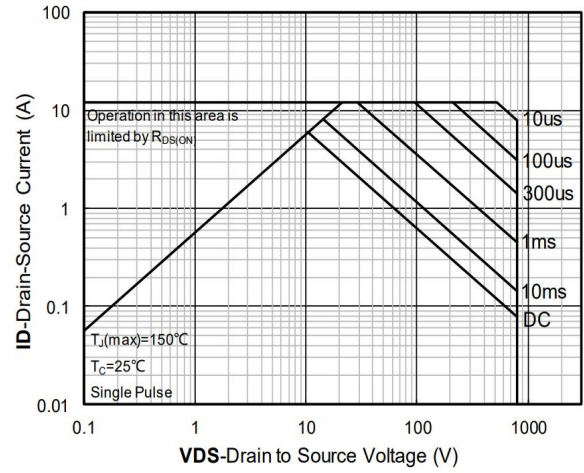
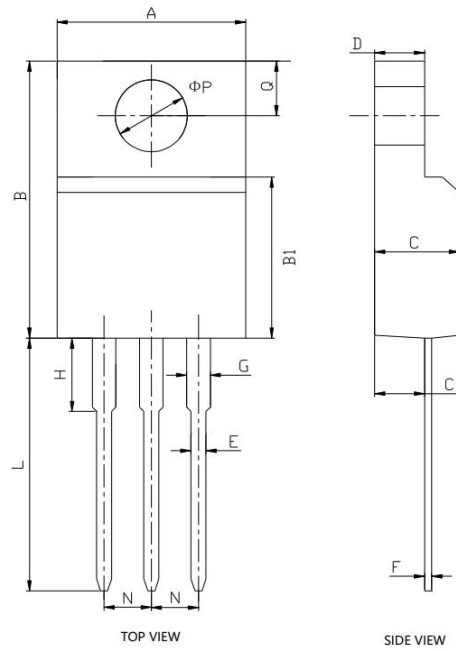


Figure 14. Safe Operation Area

### ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.700	10.300	0.382	0.406
B	15.500	16.100	0.610	0.634
B1	8.990	9.390	0.354	0.370
C	4.400	4.800	0.173	0.189
C1	2.150	2.550	0.085	0.100
D	2.500	2.900	0.098	0.114
E	0.700	0.900	0.028	0.035
F	0.400	0.600	0.016	0.024
G	1.120	1.420	0.044	0.056
H	3.400	3.800	0.134	0.150
L	12.600	13.600	0.496	0.535
N	2.340	2.740	0.092	0.108
Q	3.150	3.550	0.124	0.140
ΦP	3.000	3.300	0.118	0.130