

### Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
650V	$0.7\Omega@10V$	15A

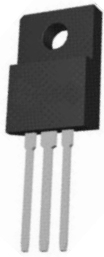
### Feature

- Fast Switching
- Low Gate Charge and Rds on

### Application

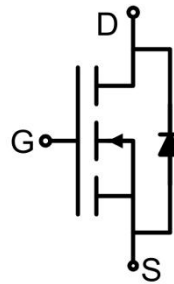
- DC-DC Converter
- Ideal for high-frequency switching and synchronous rectification

### Package

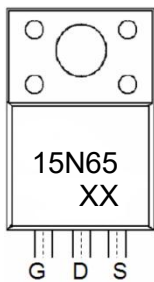


ITO-220AB

### Circuit diagram



### Marking



### Absolute maximum ratings (Ta=25°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( $T_C=25^\circ\text{C}$ )	$I_D$	15	A
Pulsed Drain Current <sup>2)</sup>	$I_{DM}$	60	A
Power Dissipation( $T_C=25^\circ\text{C}$ )	$P_D$	43	W
Thermal Resistance,Junction-to-Case <sup>1)</sup>	$R_{\theta JC}$	2.9	$^\circ\text{C/W}$
Single pulse avalanche energy <sup>3)</sup>	$E_{AS}$	640	mJ
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-55 ~ +150	$^\circ\text{C}$

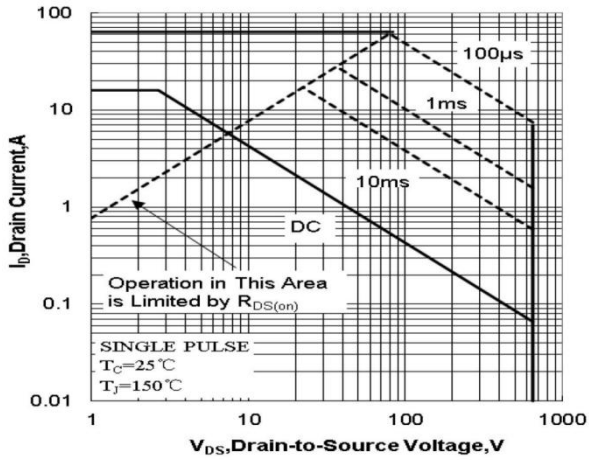
### Electrical characteristics (Ta=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	650			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 520V, V_{GS} = 0V$			1.0	$\mu\text{A}$
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 30V, V_{DS} = 0V$			±100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	3.0	4.0	5.0	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 7A$		0.55	0.7	$\Omega$
<b>Dynamic characteristics<sup>4)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1\text{MHz}$		2433		pF
Output Capacitance	$C_{oss}$			217		
Reverse Transfer Capacitance	$C_{rss}$			10		
Total Gate Charge	$Q_g$	$V_{DS} = 520V, V_{GS} = 10V, I_D = 15A$		50		nC
Gate-Source Charge	$Q_{gs}$			11		
Gate-Drain Charge	$Q_{gd}$			20		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 325V, V_{GS} = 10V, R_G = 10\Omega, I_D = 16A$		26		nS
Turn-on rise time	$t_r$			41		
Turn-off delay time	$t_{d(off)}$			65		
Turn-off fall time	$t_f$			42		

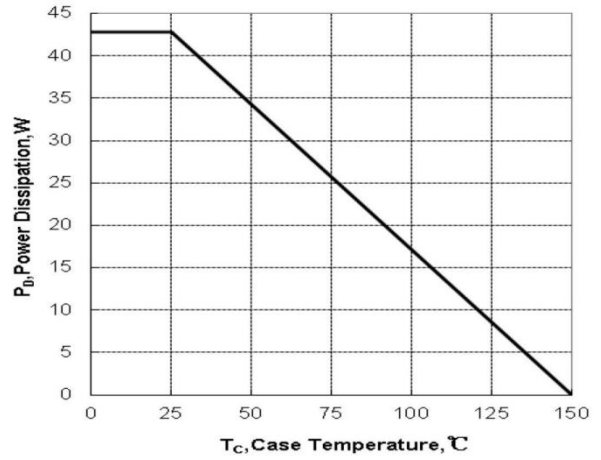
Notes:

- 1) The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2) The data tested by pulsed , pulse width  $\leq 300\mu\text{s}$  , duty cycle  $\leq 2\%$
- 3) The EAS data shows Max. rating . The test condition is  $R_G=30\Omega, L=60\text{mH}$
- 4) Guaranteed by design, not subject to production testing.

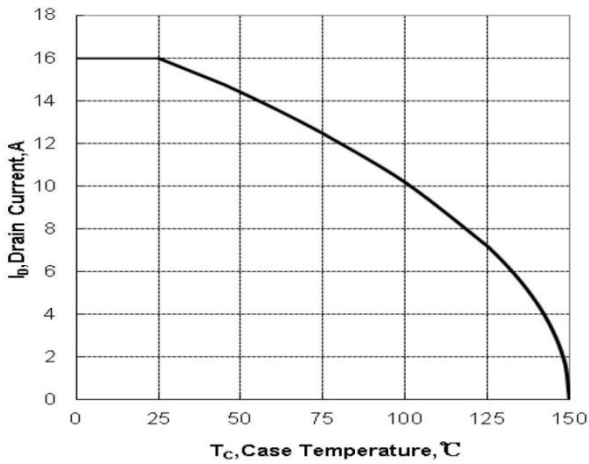
## Typical Characteristics



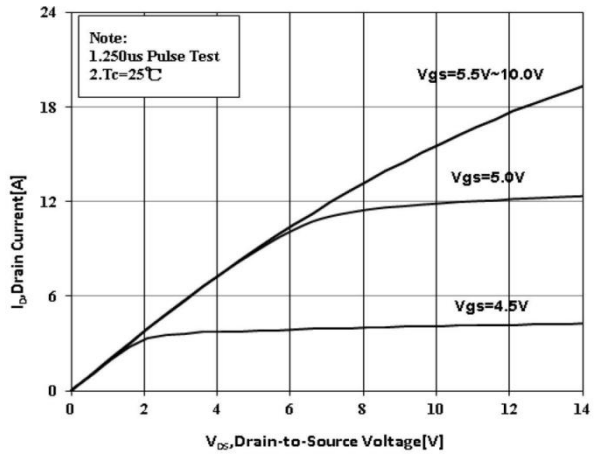
Maximum Forward Bias Safe Operating Area



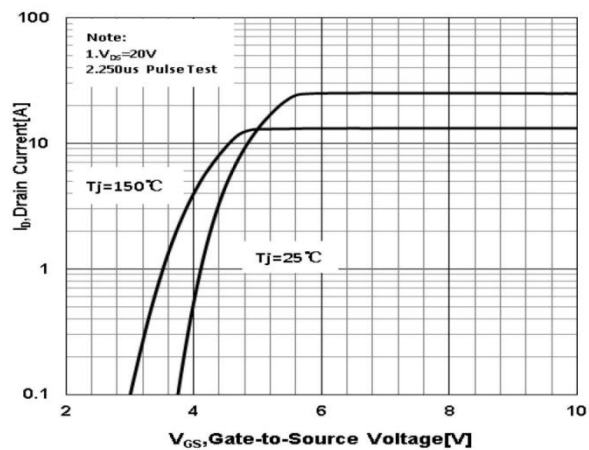
Maximum Power dissipation vs Case Temperature



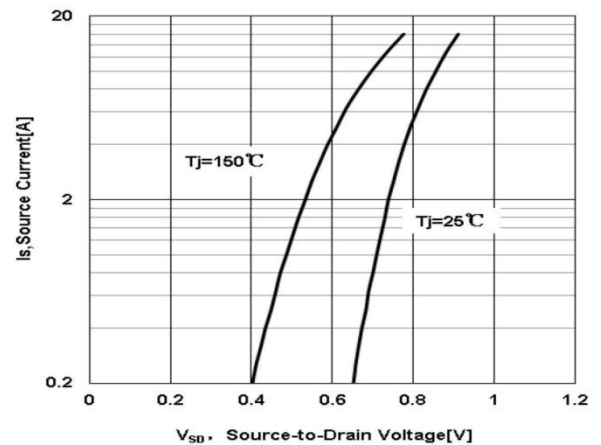
Maximum Continuous Drain Current vs Case Temperature



Typical Output Characteristics

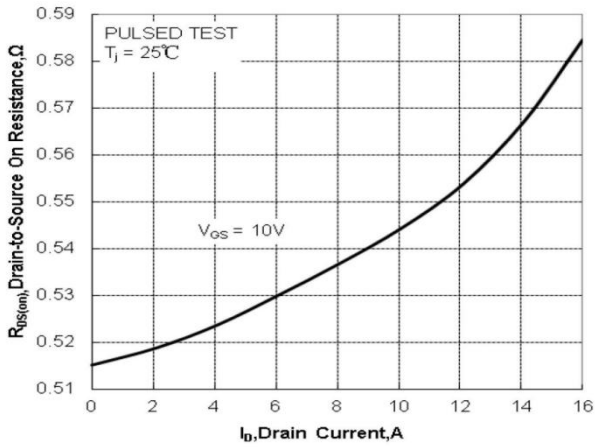


Typical Transfer Characteristics

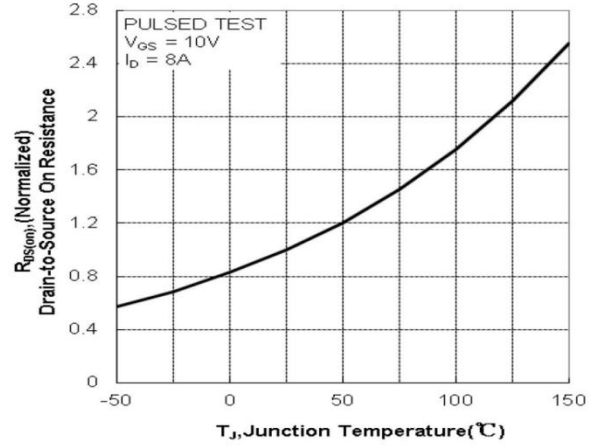


Typical Body Diode Transfer Characteristics

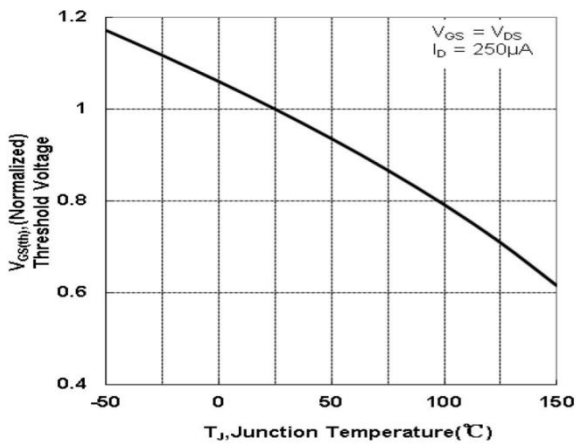
## Typical Characteristics



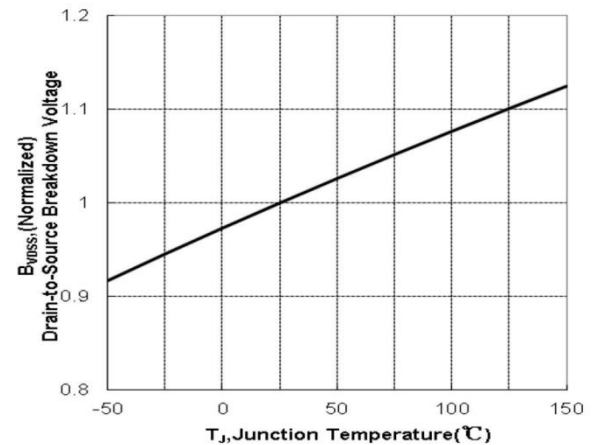
Typical Drain to Source ON Resistance vs Drain Current



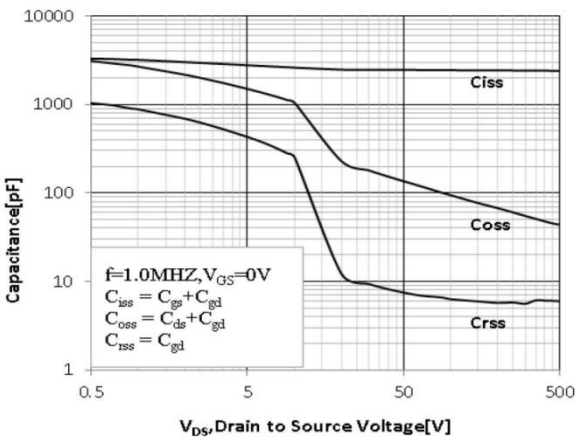
Typical Drian to Source on Resistance vs Junction Temperature



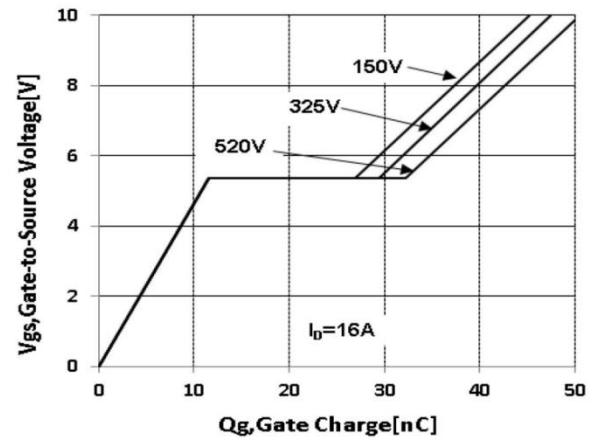
Typical Theshold Voltage vs Junction Temperature



Typical Breakdown Voltage vs Junction Temperature

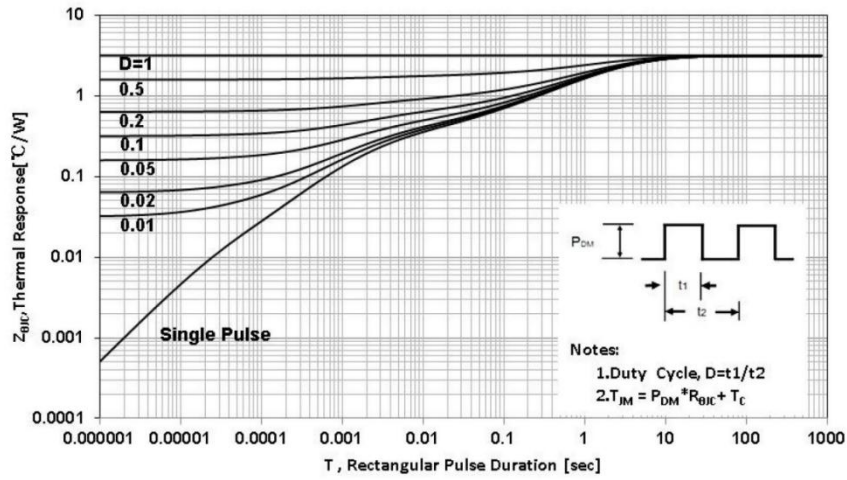


Typical Capacitance vs Drain to Source Voltage



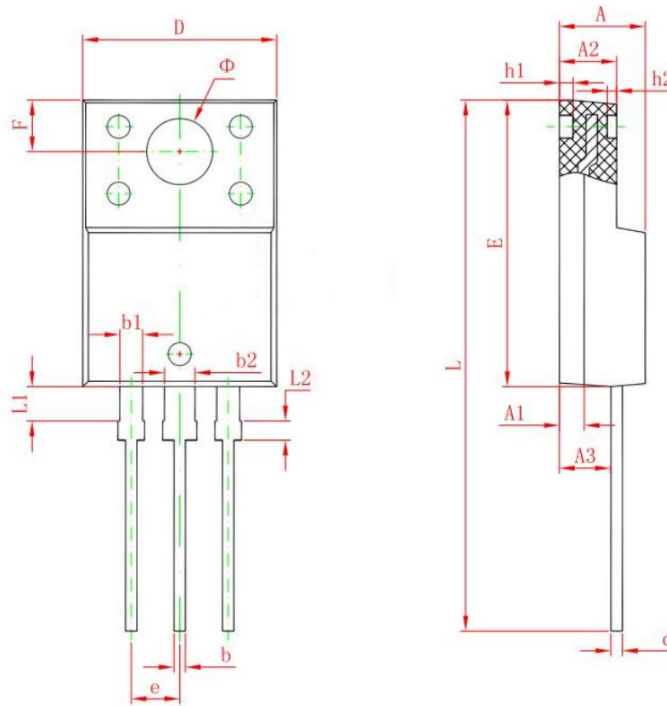
Typical Gate Charge vs Gate to Source Voltage

## Typical Characteristics



Maximum Effective Thermal Impedance , Junction to Case

### ITO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.300 REF		0.051 REF	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP		0.100 TYP	
F	2.700 REF		0.106 REF	
$\Phi$	3.500 REF		0.138 REF	
h1	0.800 REF		0.031 REF	
h2	0.500 REF		0.020 REF	
L	28.000	28.400	1.102	1.120
L1	1.700	1.900	0.067	0.075
L2	0.900	1.100	0.035	0.043