XPX150N15TU

150V N-Channel Enhancement Mode Power MOSFET

RoHS COMPLIANT

Features

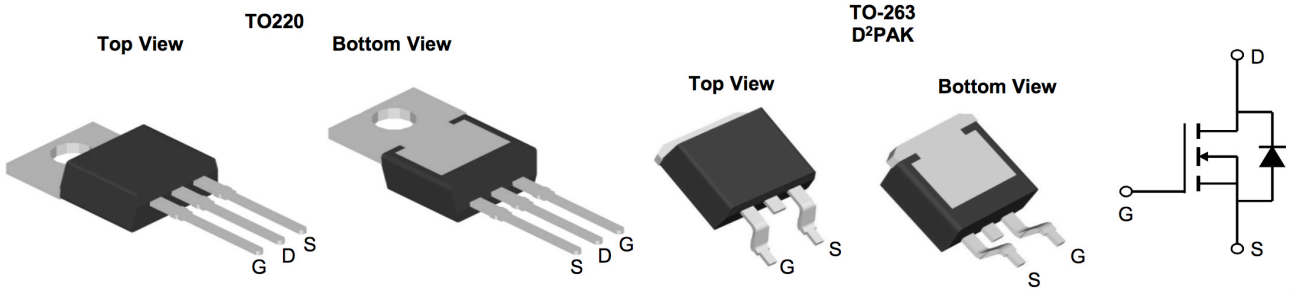
- 150V/150A
  $R_{DS\ (ON)}$ =7.0mΩ(Typ.)@V_{GS}=10V
- Advanced HEFE ® Technology
- Ultra Low On-Resistanc
- Excellent $_{g}xR_{DS(on)}$ Product
- 100% avalanche testedh t t d
- 175°C Operating Temperatur
- Lead Free and Green Devices Available (RoHS Compliant

Applications

- Motor Drive
- Uninterruptible Power Supplie
- DC/DC converte
- General Purpose Application

Pb-Free RoHS HF Halogen-Free

- **Pin Configurations**



Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	150	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	150	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	60	A
IDM	Pulsed Drain Current	520	A
EAS	Single Pulse Avalanche Energy	506	mJ
IAS	Avalanche Current	65	A
P_D@T_C=25℃	Total Power Dissipation[4]	179	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Thermal Resistance Junction-Ambient	25	℃/W
RθJC	Thermal Resistance Junction-Case	0.75	℃/W

Product ID	Pack	Marking	Qty(PCS)
XPX150N15TU	TO-220-3L	XPX150N15TU XXX YYYY	1000
XPX150N15TU	TO-263-3L	XPX150N15TU XXX YYYY	800

150V N-Channel Enhancement Mode MOSFET

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	150	172	-	V
IGSS	Gate-body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS@T_J=25°C	Zero Gate Voltage Drain Current	V_{DS} = 150V, V_{GS} = 0V			1	μA
IDSS@T_J=100°C					100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	3.2	4.5	V
RDS(on)	Drain-Source On-Resistance[4]	V_{GS} = 10V, I_D = 20A	-	7.0	9.0	mΩ
gfs	Forward Transconductance[4]	V_{DS} = 5V, I_D = 20A	-	60	-	S
Ciss	Input Capacitance	V_{DS} = 75V, V_{GS} =0V, f =1MHz	-	2181	-	pF
Coss	Output Capacitance		-	363	-	
Crss	Reverse Transfer Capacitance		-	7.9	-	
R_g	Gate Resistance	f = 1MHz	-	2.5	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 75V, I_D= 20A	-	30	-	nC
Qgs	Gate-Source Charge		-	7.5	-	
Qgd	Gate-Drain Charge		-	6.5	-	
td(on)	Turn-On Delay Time	V_{GS} =10V, V_{DD} = 75V, R_G = 3Ω, I_D= 20A	-	12.5	-	ns
t_r	Rise Time		-	24	-	
td(off)	Turn-Off Delay Time		-	30	-	
t_f	Fall Time		-	26	-	
trr	Body Diode Reverse Recovery Time	IF=20A, dI/dt=100A/μs	-	99	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	318	-	nC
VSD	Diode Forward Voltage[4]	I_F = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current	T_C=25°C	-	-	140	A

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 ≤ 300us , duty cycle ≤ 2%

3、The EAS data shows Max. rating . The test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=65A

4、The power dissipation is limited by 150°C junction temperature

5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

Typical Characteristics

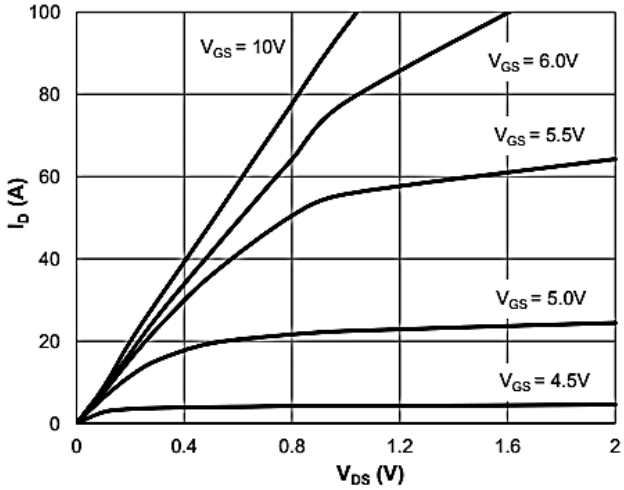


Figure 1: Saturation Characteristics

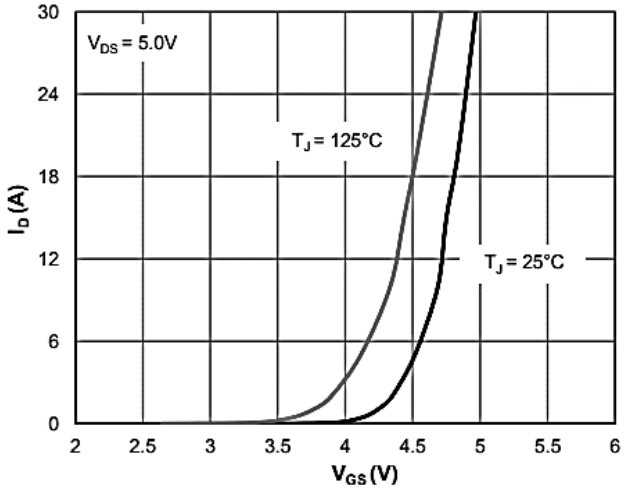


Figure 2: Transfer Characteristics

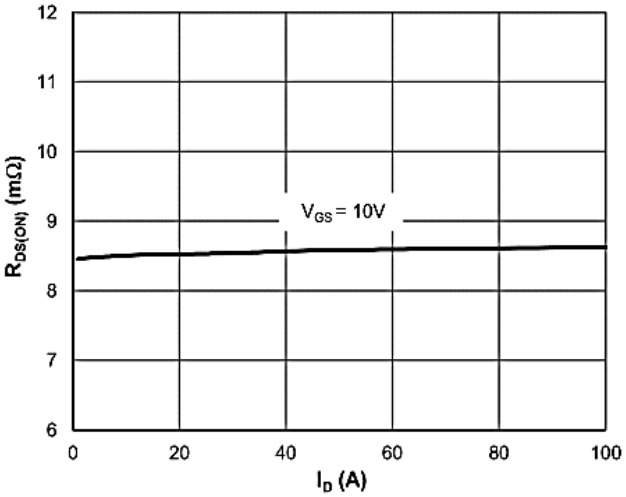


Figure 3: $R_{DS(ON)}$ vs. Drain Current

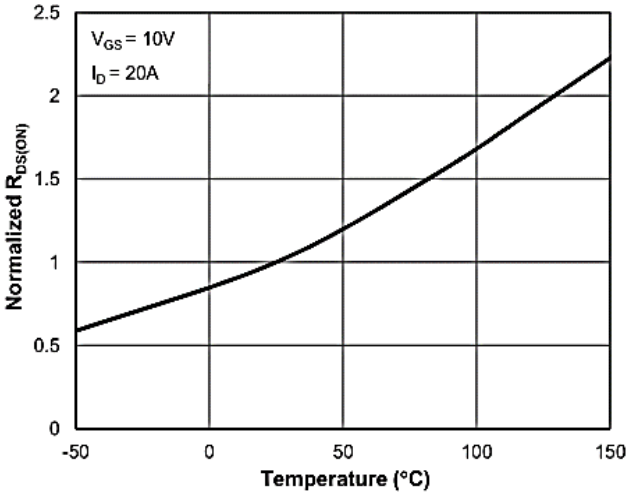


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

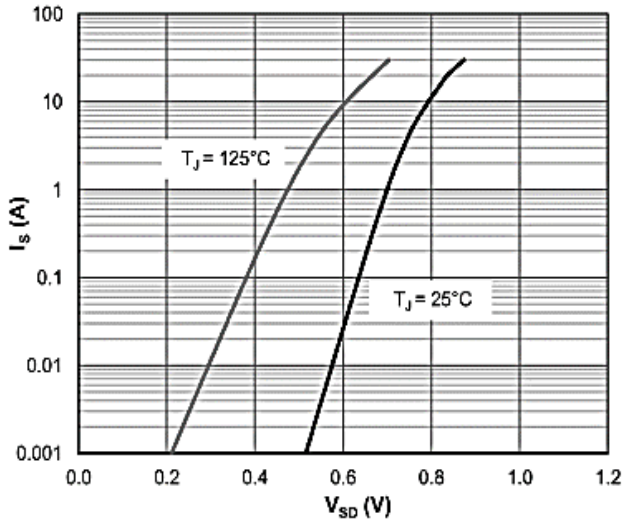


Figure 5: Body-Diode Characteristics

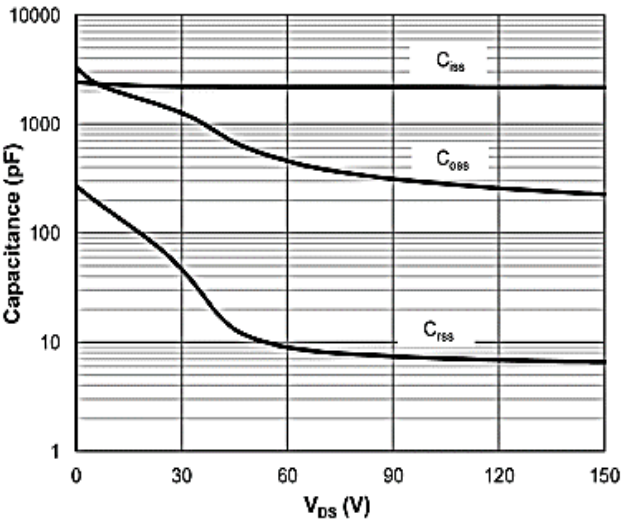


Figure 6: Capacitance Characteristics

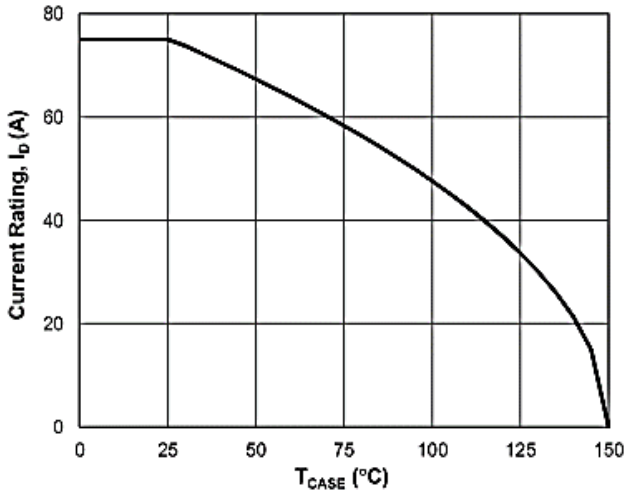


Figure 7: Current De-rating

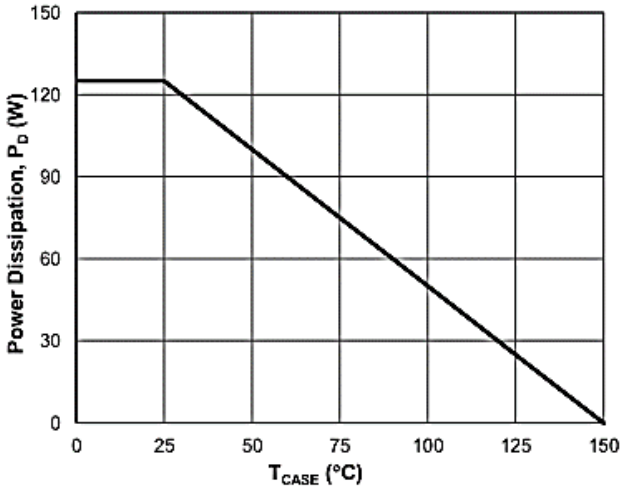


Figure 8: Power De-rating

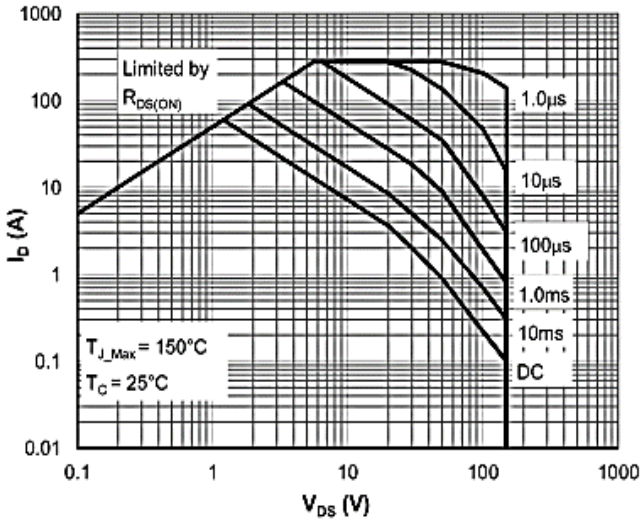


Figure 9: Maximum Safe Operating Area

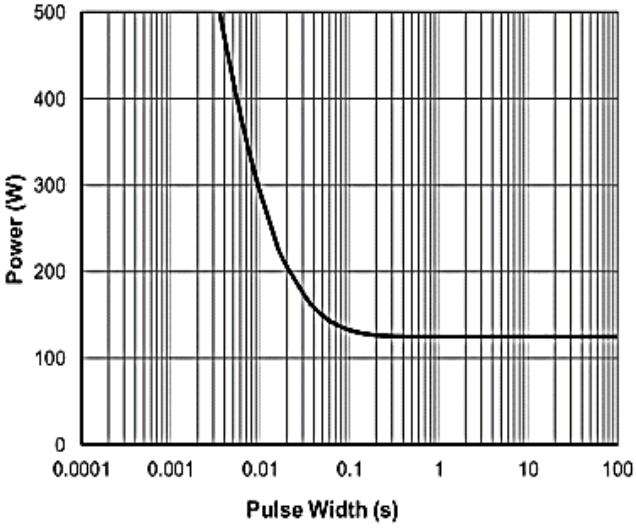


Figure 10: Single Pulse Power Rating, Junction-to-Case

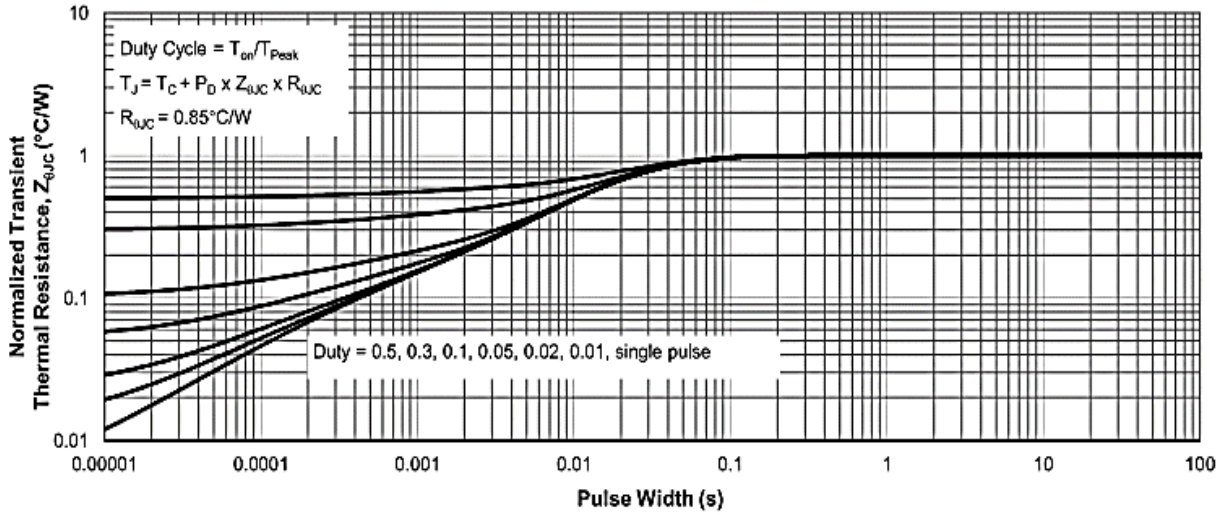
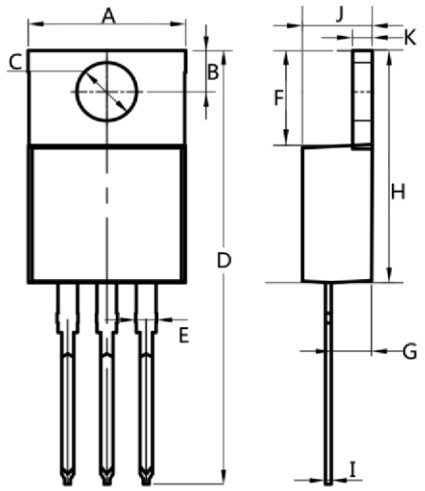


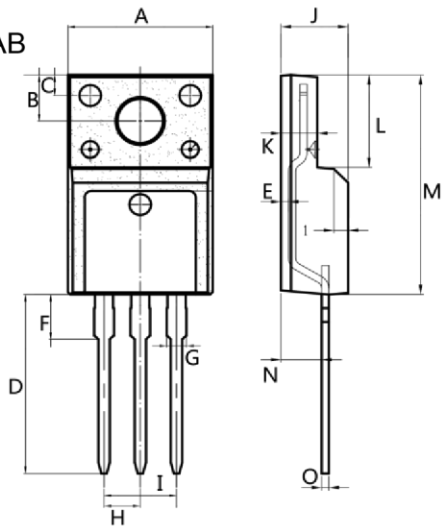
Figure 11: Normalized Maximum Transient Thermal Impedance

TO-220AB



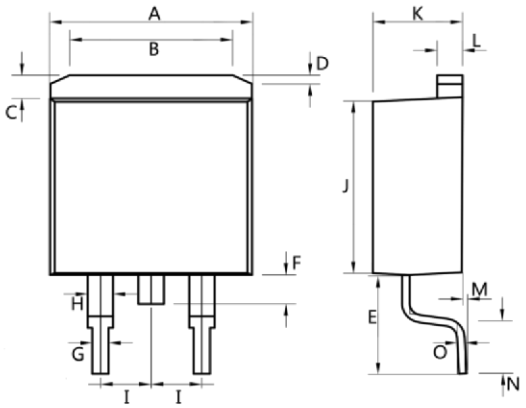
Dim.	Min.	Max.
A	10.0	10.4
B	2.5	3.0
C	3.5	4.0
D	28.0	30.0
E	1.1	1.5
F	6.2	6.6
G	2.9	3.3
H	15.0	16.0
I	0.35	0.45
J	4.3	4.7
K	1.2	1.4
All Dimensions in millimeter		

ITO-220AB



Dim.	Min.	Max.
A	9.9	10.3
B	2.9	3.5
C	1.15	1.45
D	12.75	13.25
E	0.55	0.75
F	3.1	3.5
G	1.25	1.45
H	Typ 2.54	
I	Typ 5.08	
J	4.55	4.75
K	2.4	2. 7
L	6.35	6.75
M	15.0	16.0
N	2.75	3.15
O	0.45	0.60
All Dimensions in millimeter		

TO-263



Dim.	Min.	Max.
A	10.0	10. 5
B	7.25	7.75
C	1.3	1.5
D	0.55	0.75
E	5.0	6.0
F	1.4	1.6
G	0.75	0.95
H	1.15	1.35
I	Typ 2.54	
J	8.4	8.6
K	4.4	4.6
L	1.25	1.45
M	0.02	0.1
N	2.4	2.8
O	0.35	0.45
All Dimensions in millimeter		

Flow (wave) soldering (solder dipping)

Product	Peak Temperature	Dipping Time
Pb device	245℃±5℃	5sec±1sec
Pb-Free device	260℃+0/-5℃	5sec±1sec

This integrated circuit can be damaged by ESD UniverChip Corporation recommends that all integrated circuits be handled with appropriate precautions. Failure to observe proper handling and installation procedure can cause damage. ESD damage can range from subtle performance degradation to complete device failure. Precision integrated circuits may be more susceptible to damage because very small parametric changes could cause the device not to meet its published specifications.

Attention:

- Any and all XPX power products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your XPX power representative nearest you before using any XPX power products described or contained herein in such applications.

- XPX power assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all XPX power products described or contained herein.

- Specifications of any and all XPX power products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.

- XPX power Semiconductor CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.

- In the event that any or all XPX power products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.

- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of XPX power Semiconductor CO.,LTD.

- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. XPX power believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.

- Any and all information described or contained herein are subject to change without notice due to product/ technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the XPX power product that you intend to use.

- This catalog provides information as of Sep.2019. Specifications and information herein are subject to change without notice.