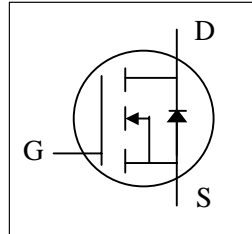
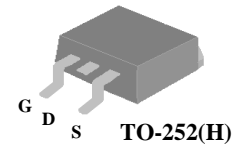


- ▼ 100% R<sub>g</sub> & UIS Test
- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ RoHS Compliant & Halogen-Free



BV <sub>DSS</sub>	100V
R <sub>DS(ON)</sub>	11mΩ
I <sub>D</sub>	48.5A



## Description

XP10NA011 series are innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

TO-252 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance.

## Absolute Maximum Ratings @T<sub>j</sub>=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	100	V
V <sub>GS</sub>	Gate-Source Voltage	+20	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Drain Current, V <sub>GS</sub> @ 10V	48.5	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Drain Current, V <sub>GS</sub> @ 10V	30.6	A
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	160	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	50	W
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>4</sup>	2	W
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>3</sup>	24.5	mJ
T <sub>STG</sub>	Storage Temperature Range	-55 to 150	°C
T <sub>J</sub>	Operating Junction Temperature Range	-55 to 150	°C

## Thermal Data

Symbol	Parameter	Value	Units
R <sub>thj-c</sub>	Maximum Thermal Resistance, Junction-case	2.5	°C/W
R <sub>thj-a</sub>	Maximum Thermal Resistance, Junction-ambient <sup>4</sup>	62.5	°C/W

**Electrical Characteristics @ $T_j=25^{\circ}\text{C}$  (unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$BV_{DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance <sup>2</sup>	$V_{GS}=10V, I_D=30A$	-	-	11	m $\Omega$
		$V_{GS}=6V, I_D=10A$	-	-	18.2	m $\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	-	4	V
$g_{fs}$	Forward Transconductance	$V_{DS}=5V, I_D=30A$	-	43	-	S
$I_{DSS}$	Drain-Source Leakage Current	$V_{DS}=80V, V_{GS}=0V$	-	-	25	$\mu A$
$I_{GSS}$	Gate-Source Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 0.1$	$\mu A$
$Q_g$	Total Gate Charge	$I_D=30A$	-	35	56	nC
$Q_{gs}$	Gate-Source Charge	$V_{DS}=50V$	-	8	-	nC
$Q_{gd}$	Gate-Drain ("Miller") Charge	$V_{GS}=10V$	-	15	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=50V$	-	11	-	ns
$t_r$	Rise Time	$I_D=30A$	-	65	-	ns
$t_{d(off)}$	Turn-off Delay Time	$R_G=7.5\ \Omega$	-	30	-	ns
$t_f$	Fall Time	$V_{GS}=10V$	-	80	-	ns
$C_{iss}$	Input Capacitance	$V_{GS}=0V$	-	1430	2288	pF
$C_{oss}$	Output Capacitance	$V_{DS}=80V$	-	230	-	pF
$C_{rss}$	Reverse Transfer Capacitance	$f=1.0\text{MHz}$	-	15	-	pF
$R_g$	Gate Resistance	$f=1.0\text{MHz}$	-	1.3	2.6	$\Omega$

**Source-Drain Diode**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$V_{SD}$	Forward On Voltage <sup>2</sup>	$I_S=30A, V_{GS}=0V$	-	-	1.3	V
$t_{rr}$	Reverse Recovery Time	$I_S=30A, V_{GS}=0V$	-	50	-	ns
$Q_{rr}$	Reverse Recovery Charge	$dI/dt=100A/\mu s$	-	60	-	nC

**Notes:**

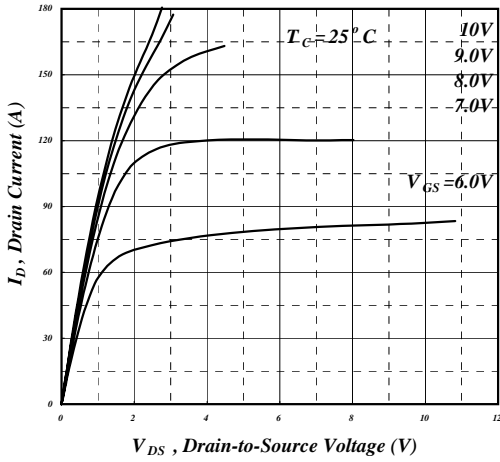
1. Pulse width limited by Max. junction temperature.
2. Pulse test
3. Starting  $T_j=25^{\circ}\text{C}$ ,  $V_{DD}=50V$ ,  $L=1\text{mH}$ ,  $R_G=25\ \Omega$ ,  $V_{GS}=10V$
4. Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board

THIS PRODUCT IS SENSITIVE TO ELECTROSTATIC DISCHARGE, PLEASE HANDLE WITH CAUTION.

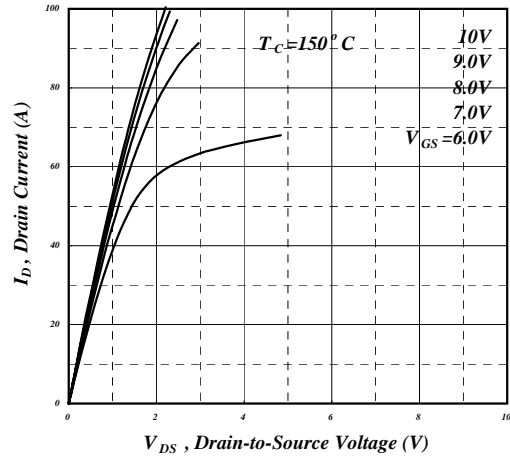
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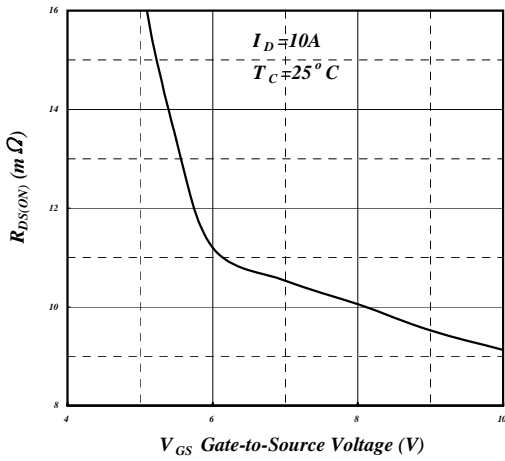
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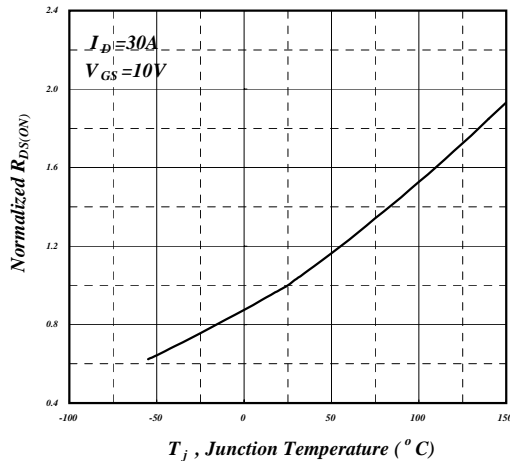
**Fig 1. Typical Output Characteristics**



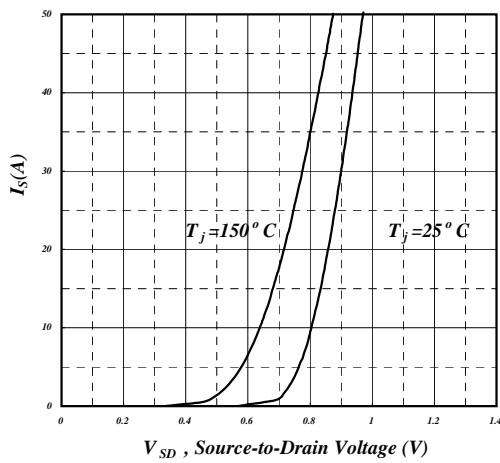
**Fig 2. Typical Output Characteristics**



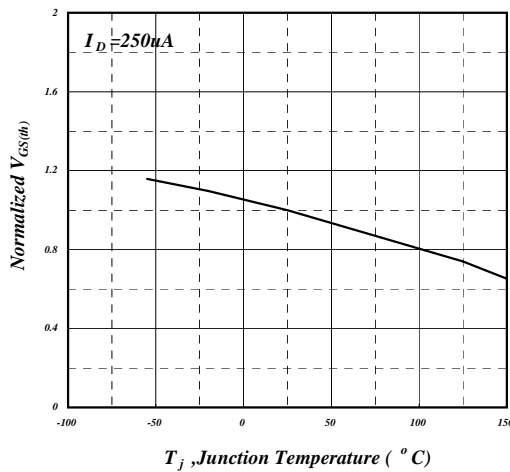
**Fig 3. On-Resistance v.s. Gate Voltage**



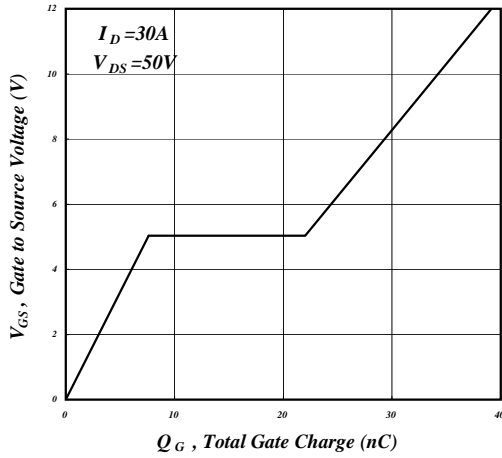
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



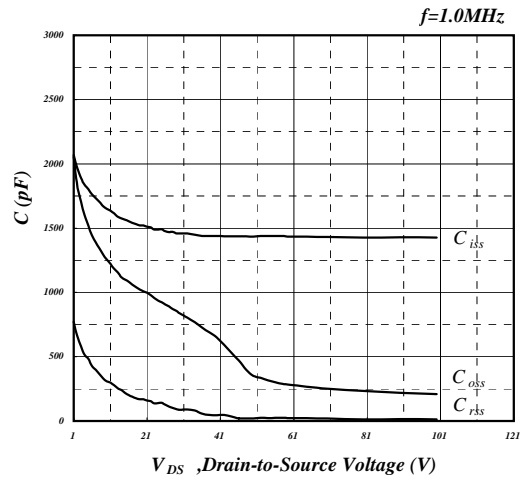
**Fig 5. Forward Characteristic of Reverse Diode**



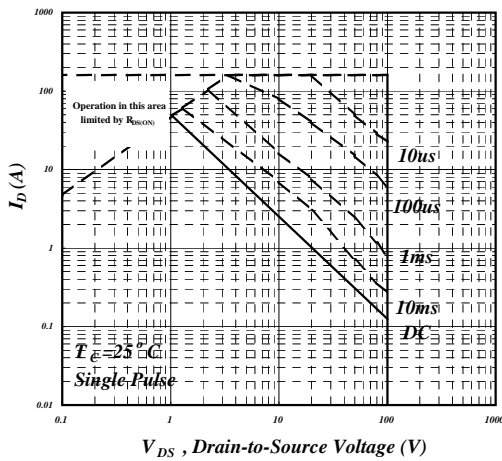
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



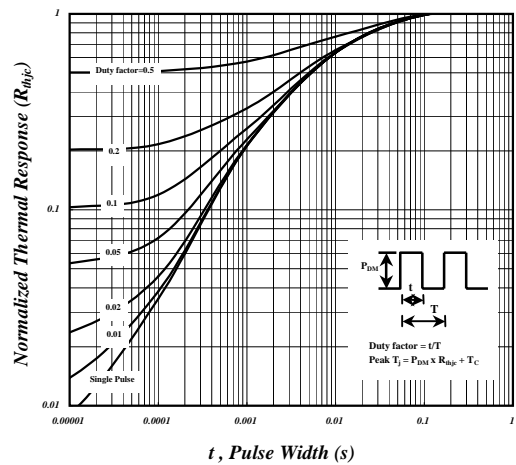
**Fig 7. Gate Charge Characteristics**



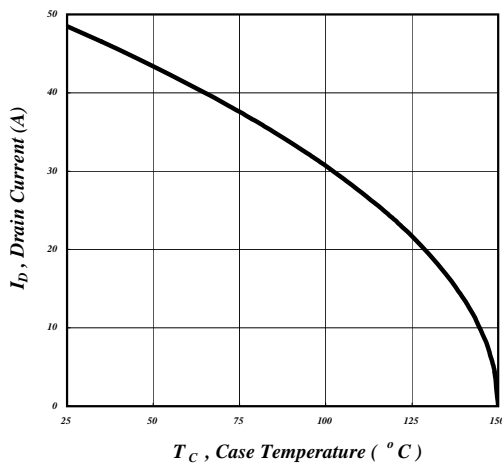
**Fig 8. Typical Capacitance Characteristics**



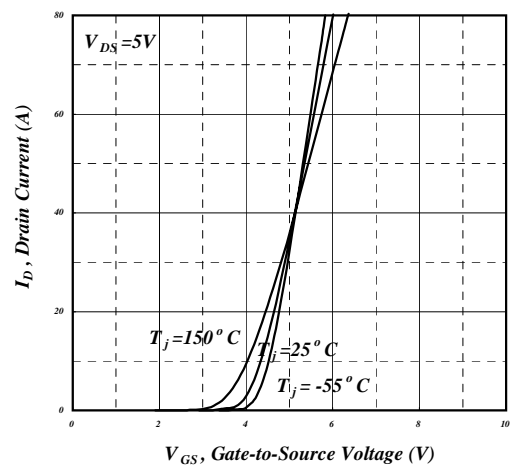
**Fig 9. Maximum Safe Operating Area**



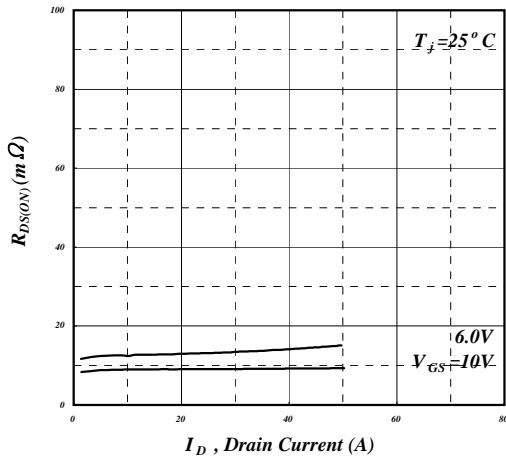
**Fig 10. Effective Transient Thermal Impedance**



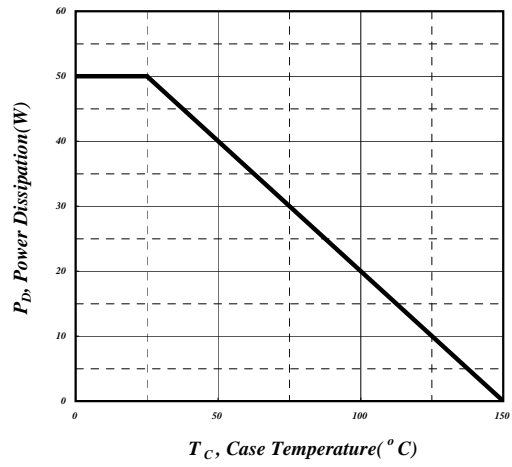
**Fig 11. Drain Current v.s. Case Temperature**



**Fig 12. Transfer Characteristics**



**Fig 13. Typ. Drain-Source on State Resistance**



**Fig 14. Total Power Dissipation**

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**MARKING INFORMATION**

