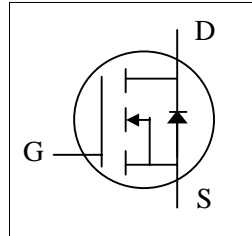


- ▼ 100% R<sub>g</sub> & UIS Test
- ▼ Simple Drive Requirement
- ▼ Low On-resistance
- ▼ RoHS Compliant & Halogen-Free

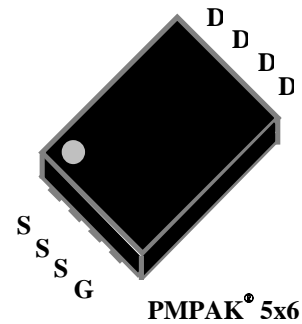


$BV_{DSS}$	30V
$R_{DS(ON)}$	5.5m $\Omega$

### Description

XP4072C 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.

The PMPAK<sup>®</sup> 5x6 package is special for DC-DC converters application and the foot print is compatible with SO-8 with backside heat sink and lower profile.



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

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	30	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	52	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Drain Current, V <sub>GS</sub> @ 10V	33	A
I <sub>D</sub> @T <sub>A</sub> =25°C	Drain Current, V <sub>GS</sub> @ 10V <sup>3</sup>	23.4	A
I <sub>D</sub> @T <sub>A</sub> =70°C	Drain Current, V <sub>GS</sub> @ 10V <sup>3</sup>	18.7	A
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>	120	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	25	W
P <sub>D</sub> @T <sub>A</sub> =25°C	Total Power Dissipation <sup>3</sup>	5	W
E <sub>AS</sub>	Single Pulse Avalanche Energy <sup>4</sup>	20	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	Unit
R <sub>thj-c</sub>	Maximum Thermal Resistance, Junction-case	5	°C/W
R <sub>thj-a</sub>	Maximum Thermal Resistance, Junction-ambient <sup>3</sup>	25	°C/W

**Electrical Characteristics @T<sub>j</sub>=25°C(unless otherwise specified)**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250uA	30	-	-	V
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance <sup>2</sup>	V <sub>GS</sub> =10V, I <sub>D</sub> =20A	-	4.5	5.5	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =10A	-	7.7	9.5	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA	1.3	1.7	3	V
g <sub>fs</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =20A	-	45	-	S
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =24V, V <sub>GS</sub> =0V	-	-	10	uA
I <sub>GSS</sub>	Gate-Source Leakage	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	-	-	±0.1	uA
Q <sub>g</sub>	Total Gate Charge <sup>5</sup>	I <sub>D</sub> =20A	-	16	25.6	nC
Q <sub>gs</sub>	Gate-Source Charge <sup>5</sup>	V <sub>DS</sub> =15V	-	3.3	-	nC
Q <sub>gd</sub>	Gate-Drain ("Miller") Charge <sup>5</sup>	V <sub>GS</sub> =10V	-	3.5	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time <sup>5</sup>	V <sub>DS</sub> =15V	-	7.5	-	ns
t <sub>r</sub>	Rise Time <sup>5</sup>	I <sub>D</sub> =20A	-	60	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time <sup>5</sup>	R <sub>G</sub> =3.3Ω	-	17	-	ns
t <sub>f</sub>	Fall Time <sup>5</sup>	V <sub>GS</sub> =10V	-	4	-	ns
C <sub>iss</sub>	Input Capacitance <sup>5</sup>	V <sub>GS</sub> =0V	-	770	1232	pF
C <sub>oss</sub>	Output Capacitance <sup>5</sup>	V <sub>DS</sub> =25V	-	300	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance <sup>5</sup>	f=1.0MHz	-	30	-	pF
R <sub>g</sub>	Gate Resistance	f=1.0MHz	-	2.5	5	Ω

**Source-Drain Diode**

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V <sub>SD</sub>	Forward On Voltage <sup>2</sup>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V	-	-	1.2	V
t <sub>rr</sub>	Reverse Recovery Time <sup>5</sup>	I <sub>S</sub> =20A, V <sub>GS</sub> =0V,	-	20	-	ns
Q <sub>rr</sub>	Reverse Recovery Charge <sup>5</sup>	di/dt=100A/μs	-	8	-	nC

**Notes:**

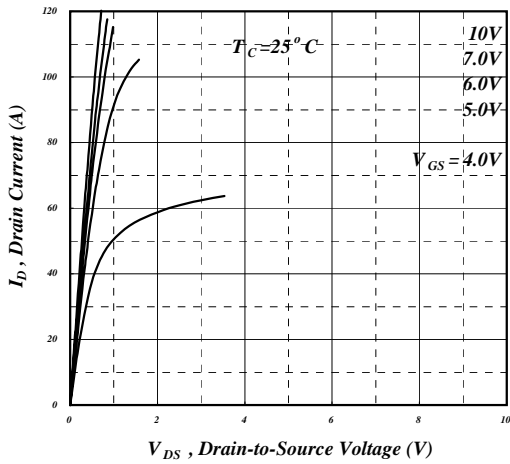
- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in<sup>2</sup> copper pad of FR4 board, t ≤10sec; 60°C/W at steady state.
- 4.Starting T<sub>j</sub>=25°C , V<sub>DD</sub>=30V , L=0.1mH , R<sub>G</sub>=25Ω , V<sub>GS</sub>=10V
- 5.Guaranteed by design.

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

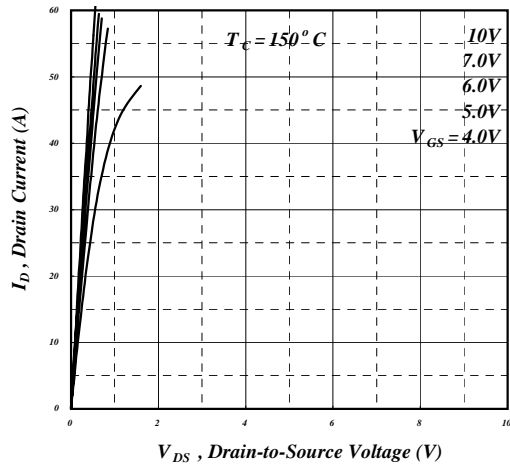
USE OF THIS PRODUCT AS A CRITICAL COMPONENT IN LIFE SUPPORT, AUTOMOTIVE OR OTHER SIMILAR SYSTEMS IS NOT AUTHORIZED.

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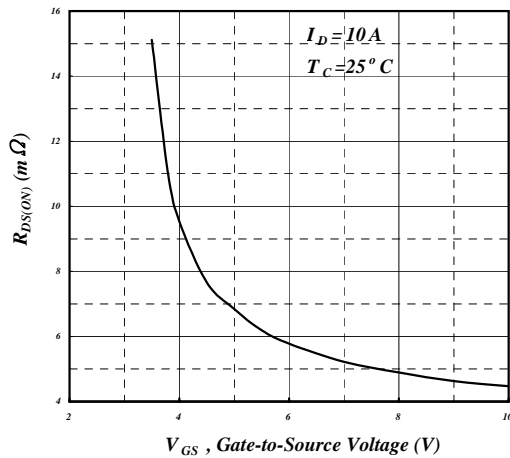
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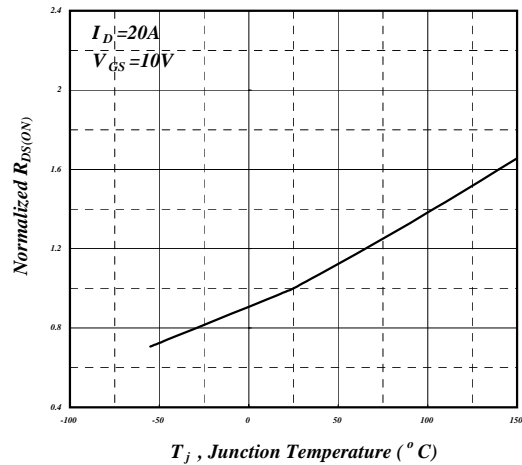
**Fig 1. Typical Output Characteristics**



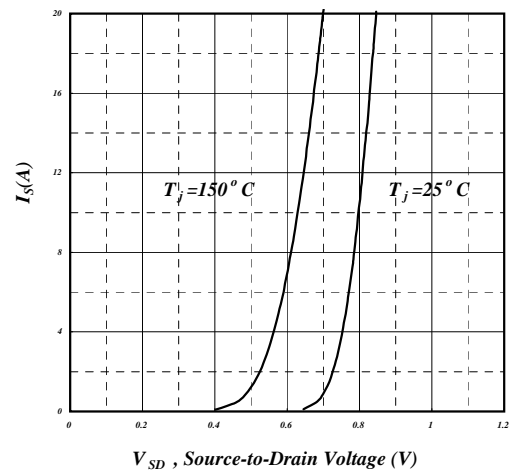
**Fig 2. Typical Output Characteristics**



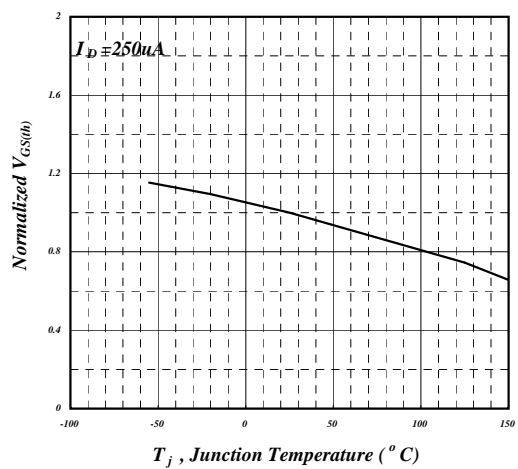
**Fig 3. On-Resistance v.s. Gate Voltage**



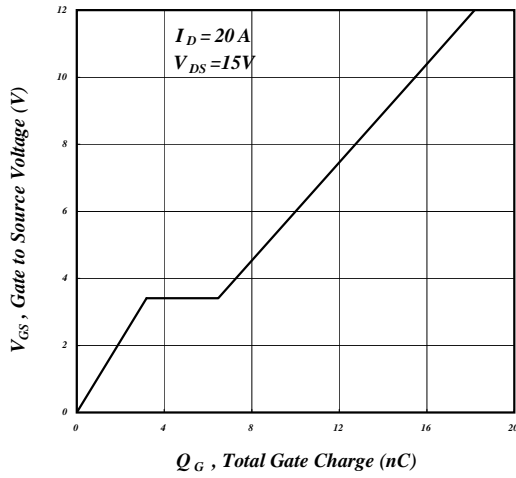
**Fig 4. Normalized On-Resistance v.s. Junction Temperature**



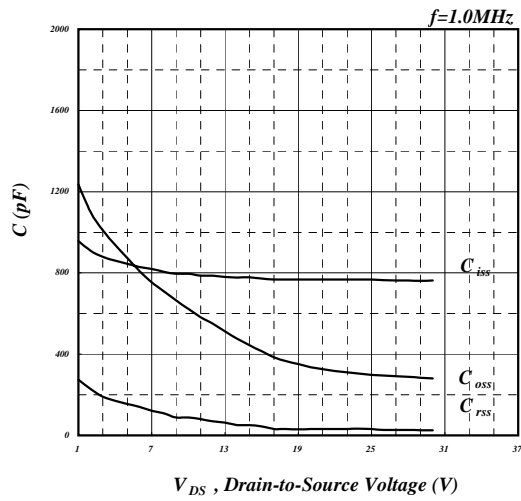
**Fig 5. Forward Characteristic of Reverse Diode**



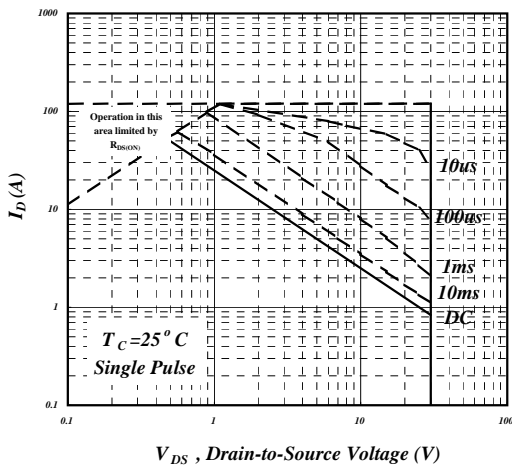
**Fig 6. Gate Threshold Voltage v.s. Junction Temperature**



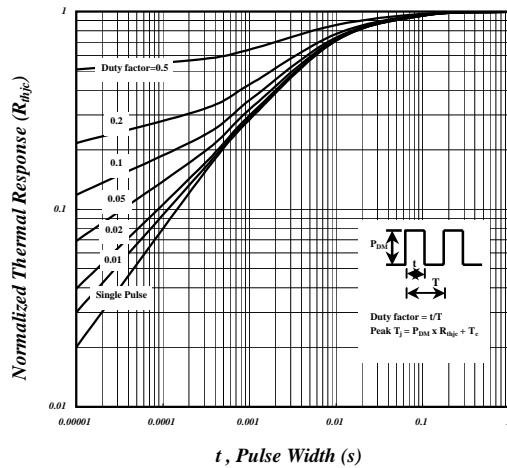
**Fig 7. Gate Charge Characteristics**



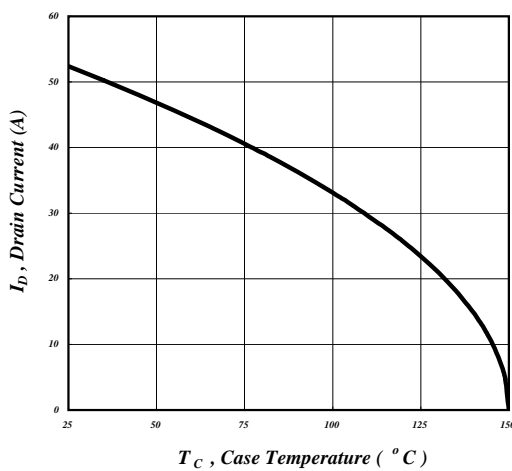
**Fig 8. Typical Capacitance Characteristics**



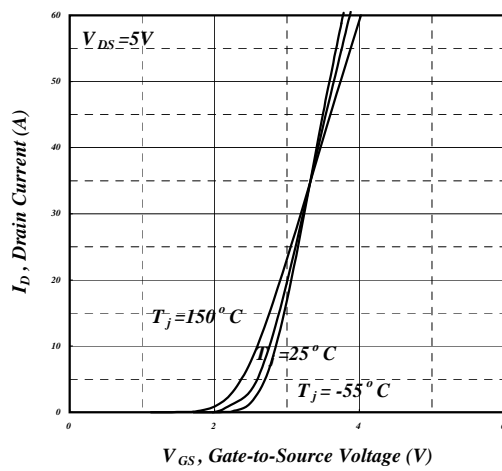
**Fig 9. Maximum Safe Operating Area**



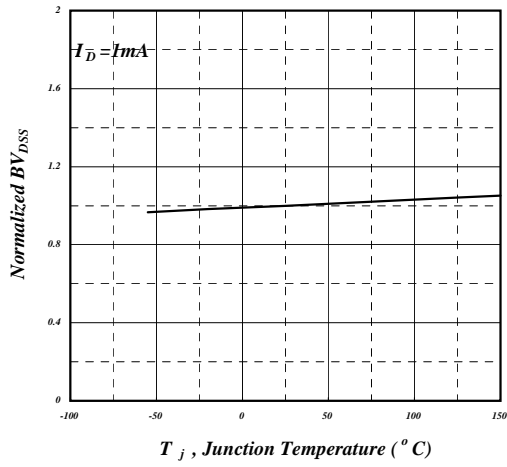
**Fig 10. Effective Transient Thermal Impedance**



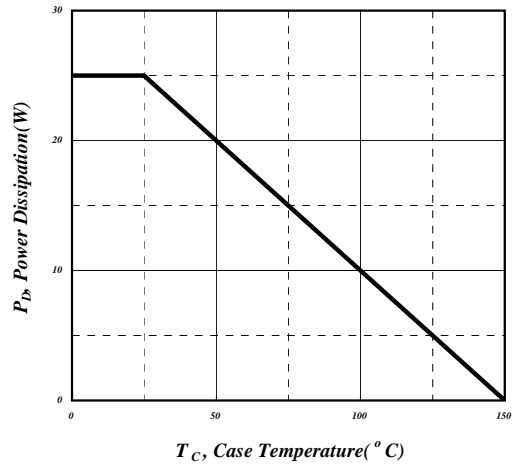
**Fig 11. Drain Current v.s. Case Temperature**



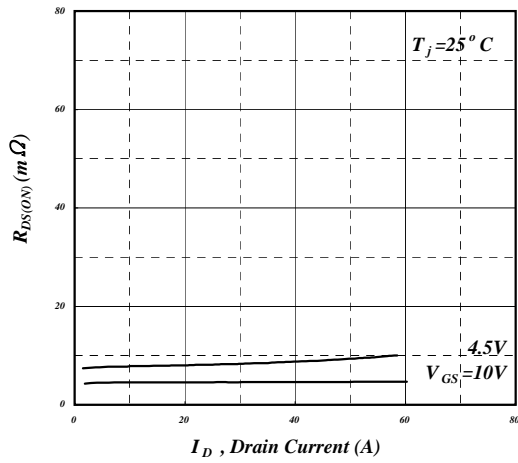
**Fig 12. Transfer Characteristics**



**Fig 13. Normalized  $BV_{DSS}$  v.s. Junction Temperature**



**Fig 14. Total Power Dissipation**



**Fig 15. Typ. Drain-Source on State Resistance**

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**MARKING INFORMATION**

