

## 100V N-channel Power MOSFET

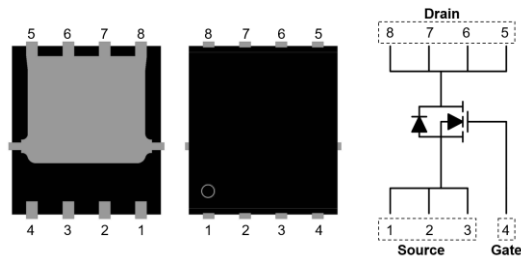
### General Features

- Proprietary New Trench Technology
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode
- RoHS Compliant
- Halogen-free available

<b>BV<sub>DSS</sub></b>	<b>R<sub>DS(ON)</sub>, TYP (10V)</b>	<b>I<sub>D</sub></b>
<b>100V</b>	<b>8.0mΩ</b>	<b>57A</b>

### Applications

- Synchronous Rectification
- Power Management
- Load Switch

**PDFN5x6**


### Ordering Information

Part Number	Package	Marking	Remark
FTF100N10GX	PDFN5x6	100N10GX	Halogen Free

### Absolute Maximum Ratings

*TA = 25°C unless otherwise specified*

Symbol	Parameter	FTF100N10GX	Unit
V <sub>DSS</sub>	Drain-to-Source Voltage <sup>[1]</sup>	100	V
V <sub>GSS</sub>	Gate-to-Source Voltage	±20	V
I <sub>D</sub>	Continuous Drain Current	57	A
	Continuous Drain Current at T <sub>C</sub> =100°C	36	
I <sub>DM</sub>	Pulsed Drain Current at V <sub>GS</sub> =10V <sup>[2]</sup>	228	
E <sub>AS</sub>	Single Pulse Avalanche Energy (V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω, L=1mH)	66	mJ
P <sub>D</sub>	Power Dissipation	68	W
	Derating Factor above 25°C	0.55	W/°C
T <sub>J</sub> and T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to 150	°C

*Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.*

### Thermal Characteristics

Symbol	Parameter	FTF100N10GX	Unit
R <sub>θJC</sub>	Thermal Resistance, Junction-to-Case	1.8	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	63	

## Electrical Characteristics

### OFF Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{DSS}$	Drain-to-Source Breakdown Voltage	100	--	--	V	$V_{GS} = 0V, I_D = 250\mu A$
$I_{DSS}$	Drain-to-Source Leakage Current	--	--	1	$\mu A$	$V_{DS} = 100V, V_{GS} = 0V$
$I_{GSS}$	Gate-to-Source Leakage Current	--	--	$\pm 100$	nA	$V_{GS} = \pm 20V, V_{DS} = 0V$

### ON Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance [3]	--	8.0	10	m $\Omega$	$V_{GS} = 10V, I_D = 20A$
		--	11	15		$V_{GS} = 4.5V, I_D = 20A$
$V_{GS(TH)}$	Gate Threshold Voltage	1.0	--	3.0	V	$V_{DS} = V_{GS}, I_D = 250\mu A$

### Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$C_{iss}$	Input Capacitance	--	2819	--	pF	$V_{GS} = 0V,$ $V_{DS} = 30V,$ $f = 1.0MHz$
$C_{rss}$	Reverse Transfer Capacitance	--	55	--		
$C_{oss}$	Output Capacitance	--	868	--		
$Q_g$	Total Gate Charge	--	27	--	nC	$V_{DD} = 50V,$ $I_D = 20A, V_{GS} = 4.5V$
		--	49	--		
$Q_{gs}$	Gate-to-Source Charge	--	16	--		$V_{DD} = 50V,$ $I_D = 20A, V_{GS} = 10V$
$Q_{gd}$	Gate-to-Drain (Miller) Charge	--	10	--		

### Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$t_{d(on)}$	Turn-on Delay Time	--	26	--	ns	$V_{DD} = 50V$ $I_D = 20A$ $V_{GS} = 10V$ $R_G = 6.0\Omega$ $R_L = 2.5\Omega$
$t_{rise}$	Rise Time	--	70	--		
$t_{d(off)}$	Turn-off Delay Time	--	57	--		
$t_{fall}$	Fall Time	--	24	--		

### Source-Drain Diode Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
$I_{SD}$	Continuous Source Current	--	--	57	A	Maximum Ratings
$V_{SD}$	Diode Forward Voltage	--	--	1.0	V	$I_S = 1.0A, V_{GS} = 0V$
$t_{rr}$	Reverse Recovery Time	--	51	--	ns	$V_{GS} = 0V$ $I_F = 50A, di/dt = 150A/\mu s$
$Q_{rr}$	Reverse Recovery Charge	--	113	--	nC	

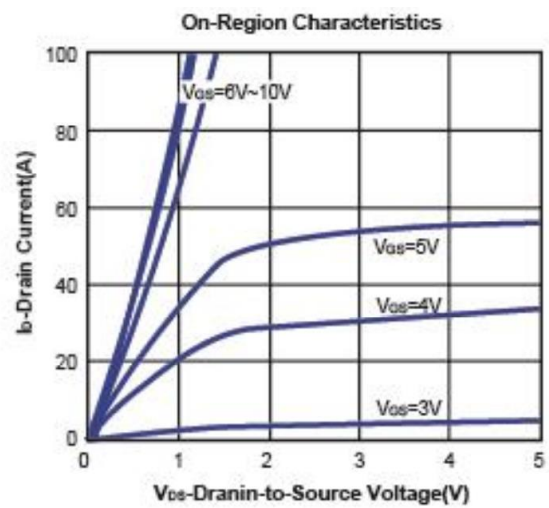
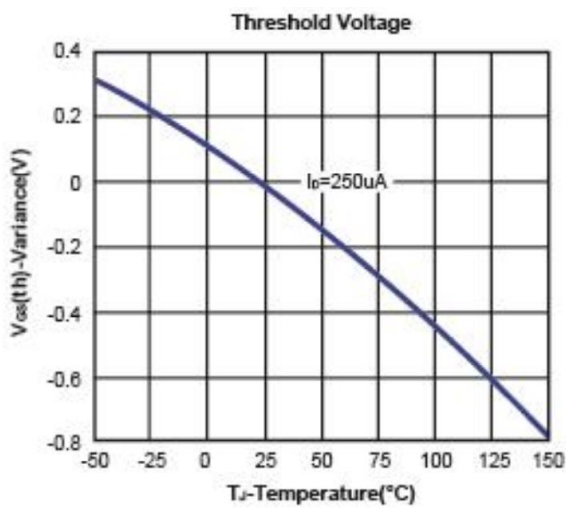
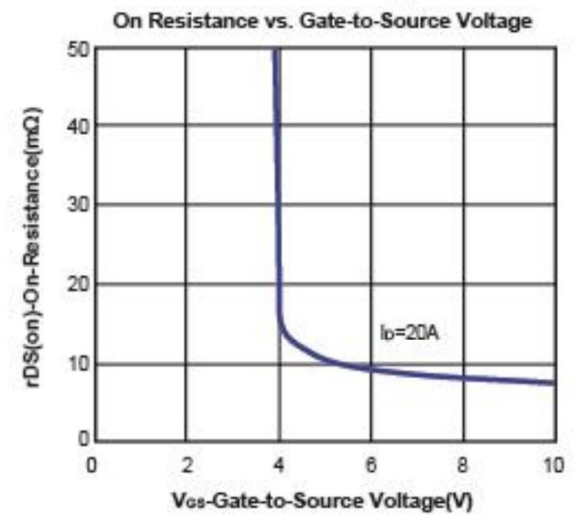
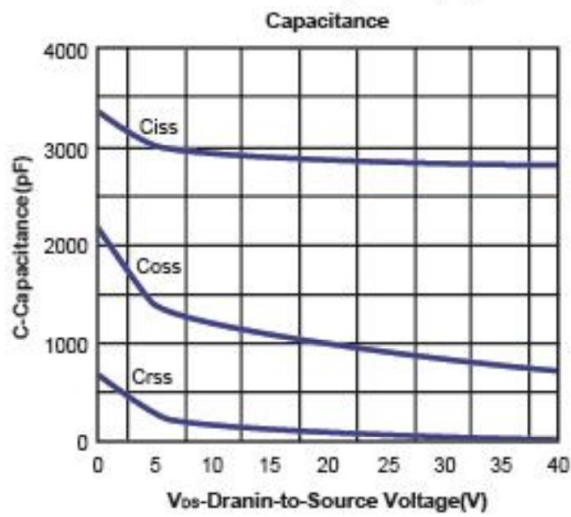
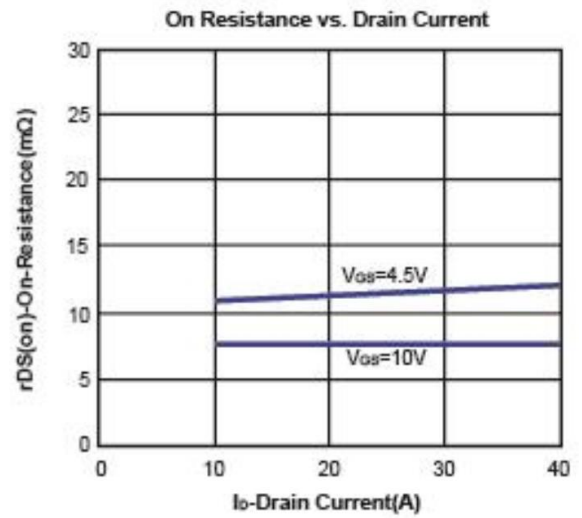
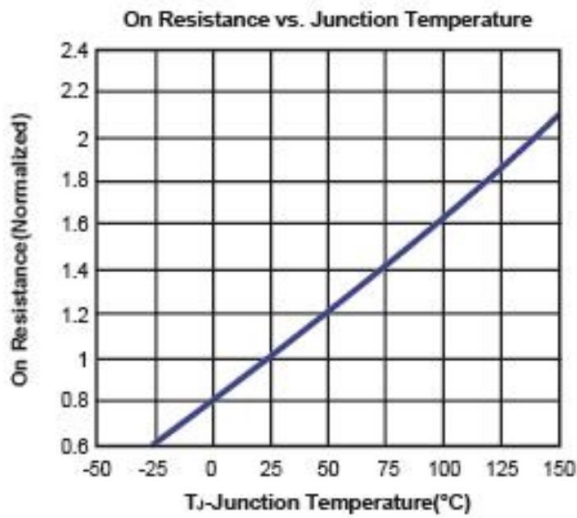
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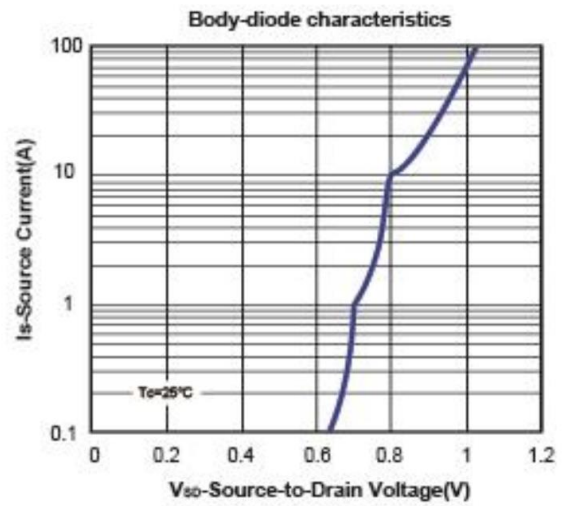
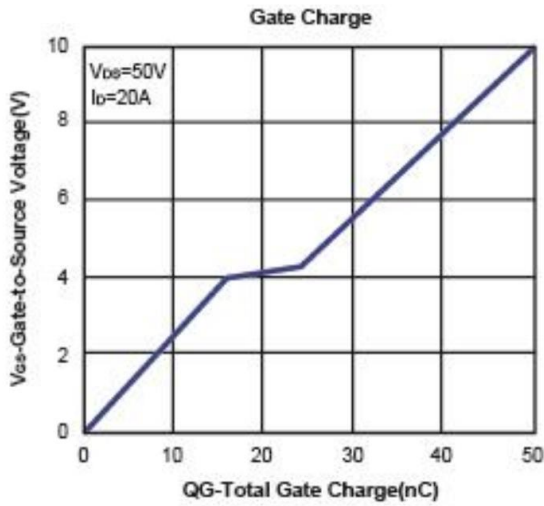
 [1]  $T_J = 25^\circ\text{C}$  to  $150^\circ\text{C}$ 

[2] Repetitive rating, pulse width limited by maximum junction temperature

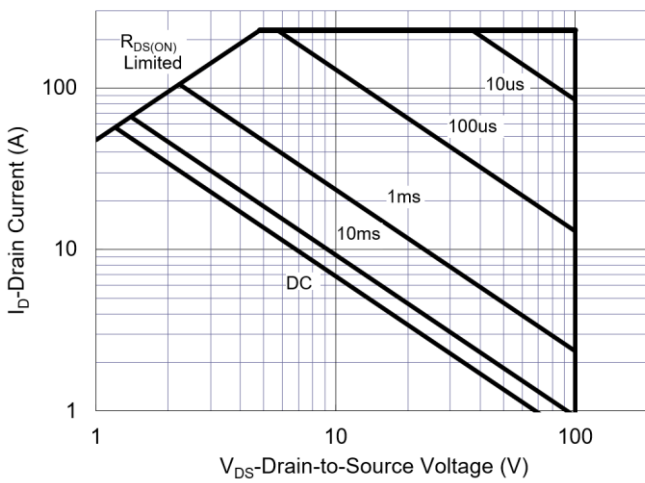
 [3] Pulse width  $\leq 380\mu s$ ; duty cycle  $\leq 2\%$

## Typical Characteristics

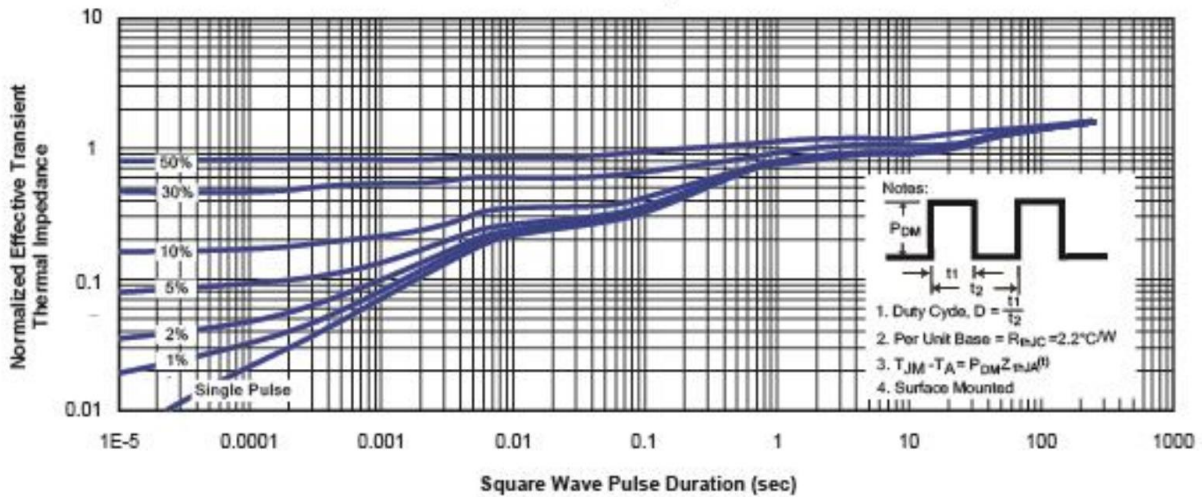


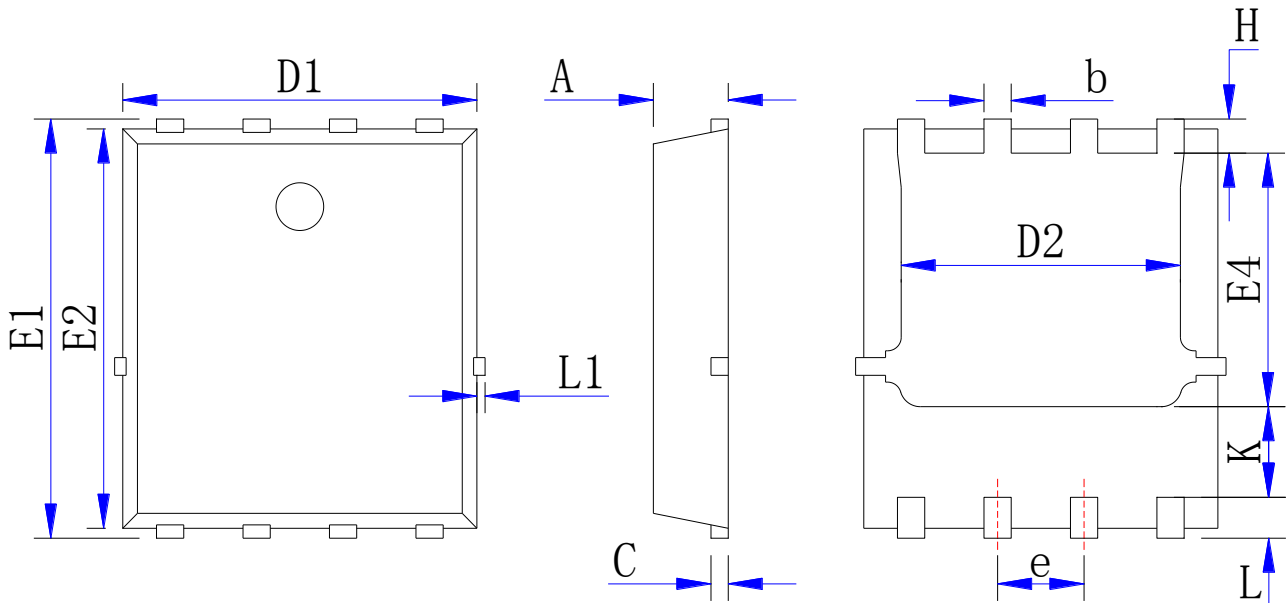


Maximum Forward Safe Operation Area



Normalized Thermal Transient Impedance, Junction-to-Case



**Package Dimensions**
**PDFN5x6**


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	1.00	1.10	1.20	0.039	0.043	0.047
b	0.30	0.40	0.50	0.012	0.016	0.020
C	0.154	0.254	0.354	0.006	0.010	0.014
D1	5.00	5.20	5.40	0.197	0.205	0.213
D2	3.80	4.10	4.25	0.150	0.161	0.167
E1	5.95	6.15	6.35	0.234	0.242	0.250
E2	5.66	5.86	6.06	0.223	0.231	0.239
E4	3.52	3.72	3.92	0.139	0.146	0.154
e	1.17	1.27	1.37	0.046	0.050	0.054
H	0.40	0.50	0.60	0.016	0.020	0.024
K	1.15	1.30	1.45	0.045	0.051	0.057
L	0.30	0.60	0.70	0.012	0.024	0.028
L1	—	—	0.12	—	—	0.005

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