

## 60V N-Channel MOSFET

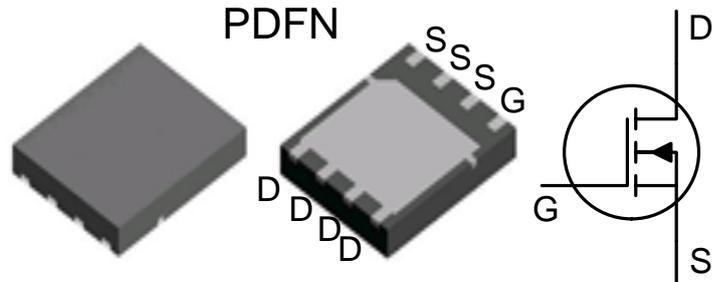
### General Features

- Fast Switching Speed
- RoHS Compliant
- Halogen-free available

<b>BV<sub>DSS</sub></b>	<b>R<sub>DS(ON)</sub> (Typ.)</b>	<b>I<sub>D</sub></b>
<b>60V</b>	<b>12m Ω</b>	<b>40A</b>

### Applications

- Power Management in Inverter System
- Synchronous Rectification



### Ordering Information

Part Number	Package	Marking	Remark
FTF16N06G	PDFN5×6-8L	16N06G	Halogen Free

### Absolute Maximum Ratings

T<sub>A</sub>=25°C unless otherwise specified

Symbol	Parameter	FTF16N06G	Unit	
V <sub>DSS</sub>	Drain-Source Voltage <sup>[1]</sup>	60	V	
V <sub>GS</sub>	Gate –Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> =25 °C	40	A
		T <sub>C</sub> =100 °C	28	A
I <sub>DP</sub>	300us Pulsed Drain Current Tested <sup>[2]</sup>	100	A	
P <sub>D</sub>	Power Dissipation	70	W	
	Derating Factor above 25 °C	0.56	W/°C	
T <sub>J</sub> and T <sub>STG</sub>	Operating and Storage Temperature Range	-55 ~ 155	°C	

\*Drain Current limited by Maximum Junction Temperature.

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

### Thermal Characteristics

Symbol	Parameter	FTF16N06G	Unit
R <sub>θJC</sub>	Thermal Resistance, Junction-to-Case	1.8	°C/W
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	62	

## Electrical Characteristics

### OFF Characteristics

(TA=25 °C unless otherwise noted)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	60	--	--	V	V <sub>GS</sub> =0V, I <sub>D</sub> =250 μA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	--	--	1	μA	V <sub>DS</sub> =-48V, V <sub>GS</sub> =0V,
I <sub>GSS</sub>	Gate Leakage Current	--	--	100	nA	V <sub>GS</sub> = 20 V, V <sub>DS</sub> = 0 V
		--	--	-100	nA	V <sub>GS</sub> = -20 V, V <sub>DS</sub> = 0 V

### On Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
R <sub>DS(ON)</sub>	Drain-Source On-Resistance	--	12	16	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =15A <sup>[3]</sup>
V <sub>GS(TH)</sub>	Gate Threshold Voltage	2	--	4	V	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250 μA
GFS	Forward Transconductance	--	--	--	S	V <sub>DS</sub> =30V, I <sub>D</sub> =40A

### Dynamic Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
R <sub>G</sub>	Gate Resistance	--	1.6	--	Ω	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz
C <sub>iss</sub>	Input Capacitance	--	2670	--	pF	V <sub>GS</sub> =0V, V <sub>DS</sub> =30V, f=1MHz
C <sub>oss</sub>	Output Capacitance	--	252	--		
C <sub>rss</sub>	Reverse Transfer Capacitance	--	160	--		
Q <sub>g</sub>	Total Gate Charge	--	55	--	nC	V <sub>DS</sub> =30V, V <sub>GS</sub> =10V, I <sub>D</sub> =15A
Q <sub>gs</sub>	Gate-Source Charge	--	10	--		
Q <sub>gd</sub>	Gate-Drain Charge	--	15	--		

### Resistive Switch Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
t <sub>d(on)</sub>	Turn-On Delay Time	--	25	--	ns	V <sub>DD</sub> =30V, R <sub>L</sub> =30Ω I <sub>D</sub> =1.0A, V <sub>GS</sub> =10V R <sub>G</sub> =6Ω
t <sub>r</sub>	Turn-On Rise Time	--	18	--		
t <sub>d(off)</sub>	Turn-Off Delay Time	--	60	--		
t <sub>f</sub>	Turn-Off Fall Time	--	78	--		

**Source-Drain Diode Characteristics**

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$I_{SD}$	Continuous Source Current(Body Diode)	--	--	40	A	Integral P-N diode in MOSFET
$I_{SM}$	Maximum Pulsed Current(Body Diode)	--	--	100	A	
$V_{SD}$	Diode Forward Voltage	--	--	1.3	V	$I_{SD}=15A, V_{GS}=0V$
$t_{rr}$	Reverse Recovery Time	--	60	--	ns	$I_{SD}=15A,$ $dI_{SD}/dt=100A/\mu A$
$Q_{rr}$	Reverse Recovery Charge	--	90	--	nC	

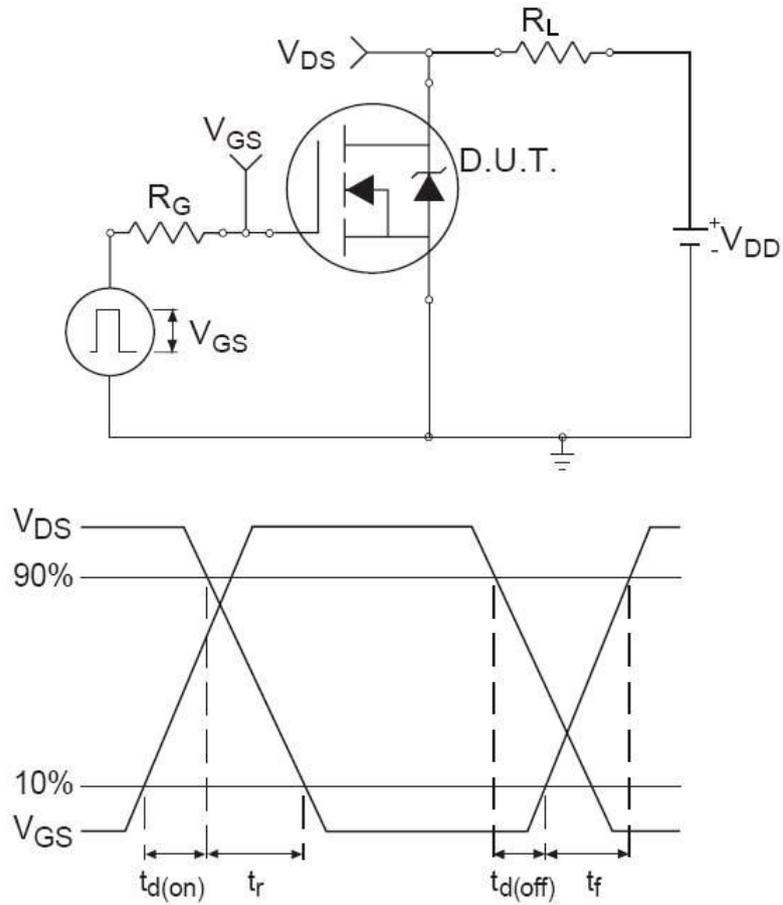
**NOTE:**

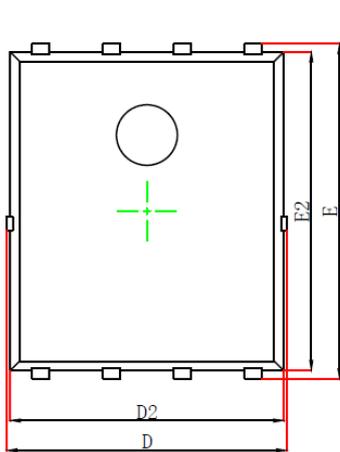
[1]  $T_j=+25^{\circ}C$  to  $+150^{\circ}C$

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

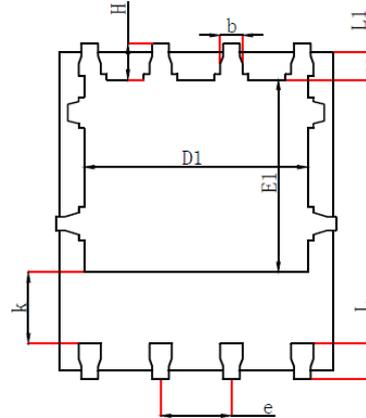
[3] Pulse width $\leq 380\mu s$ ; duty cycle $\leq 2\%$ .

## Switching Time Test Circuit and Waveforms

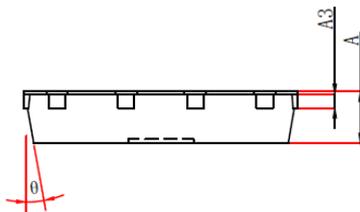


**Package Dimensions**


Top View  
[顶视图]



Bottom View  
[背视图]



Side View  
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.254REF.		0.010REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	3.910	4.110	0.154	0.162
E1	3.375	3.575	0.133	0.141
D2	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
$\theta$	10°	12°	10°	12°



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