

## LMP3385XF 30V P-Channel MOSFET

### Features

- -30V/-54A,  $R_{DS(ON)} < 8m\Omega @ V_{GS} = -10V$
- Fast switching
- Suit for -4.5V Gate Drive Applications
- Green Device Available
- DFN5X6-8L package design

### Product Description

These P-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance,

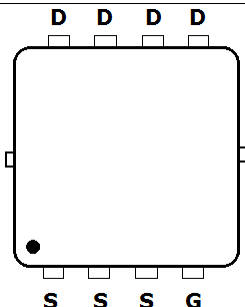
provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode.

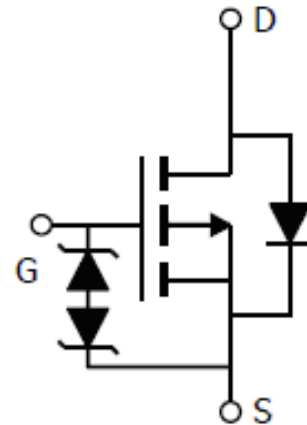
These devices are well suited for high efficiency fast switching applications.

### Applications

- Motor Driver Applications
- POL Applications
- Load Switch
- LED Application

### Pin Configuration

LMP3385XF (DNF5X6-8L)	
	
PIN	Description
1	Source
2	Source
3	Source
4	Gate
5	Drain
6	Drain
7	Drain
8	Drain



**Ordering Information**

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMP3385XF	LMP3385	X	F	DFN5X6-8L	3000

**Marking Information**

Marking Information		
Part Marking	Part Number	LFC code
3385XF XWMMMM	3385XF	XWMMMM

**Absolute Maximum Ratings**

(T<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V <sub>DS</sub>	Drain-Source Voltage		-30	V
V <sub>GS</sub>	Gate-Source Voltage		±25	V
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> =25°C	-54	A
		T <sub>C</sub> =100°C	-34	
I <sub>DM</sub>	Pulsed Drain Current <sup>1</sup>		-180	A
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> =25°C	37.9	W
		T <sub>C</sub> =100°C	15.2	
T <sub>J</sub>	Operating Junction Temperature Range		-55 to +150	°C
T <sub>STG</sub>	Storage Temperature Range		-55 to +150	°C
R <sub>θJC</sub>	Thermal Resistance-Junction to Case		3.3	°C/W

**Electrical Characteristics**

(T<sub>C</sub>=25°C Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static characteristics						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-1.2	-1.6	-2.5	V
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±25V			±100	nA
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V			-1	uA
V <sub>SD</sub>	Diode Forward Voltage <sup>3</sup>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A			-1	V
R <sub>DS(on)</sub>	Drain-Source On-Resistance <sup>3</sup>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-10A		6.9	7.8	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-6A		10.7	12.3	
Gate charge characteristics						
Q <sub>g</sub>	Total Gate Charge <sup>3,4</sup>	V <sub>DD</sub> =-15V, V <sub>GS</sub> =10V, I <sub>D</sub> =-15A		68		nC
Q <sub>gs</sub>	Gate-Source Charge <sup>3,4</sup>			10		
Q <sub>gd</sub>	Gate-Drain Charge <sup>3,4</sup>			12		
Dynamic characteristics						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1.0MHz		4319		pF
C <sub>oss</sub>	Output Capacitance			439		
C <sub>rss</sub>	Reverse Transfer Capacitance			299		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-15V, V <sub>GS</sub> =-10V, R <sub>g</sub> =3.3Ω, I <sub>D</sub> =-15A		12		ns
t <sub>r</sub>	Rise Time			11		
t <sub>d(off)</sub>	Turn-Off Time			105		
t <sub>f</sub>	Fall Time			21		

## Typical Performance Characteristics

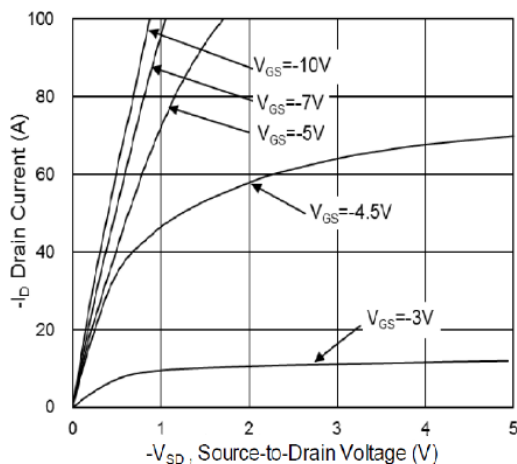


Figure 1. Output Characteristics

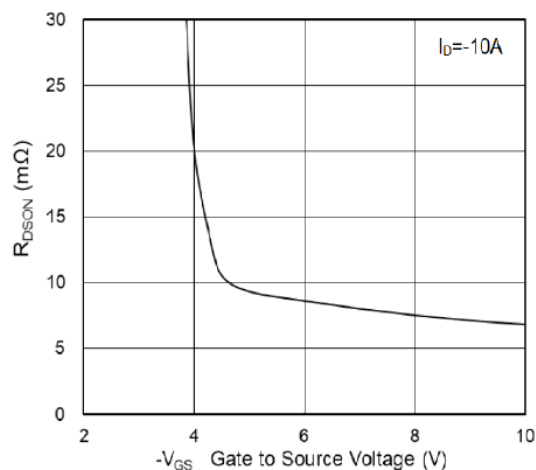


Figure 2. On-Resistance Variation with  $V_{GS}$

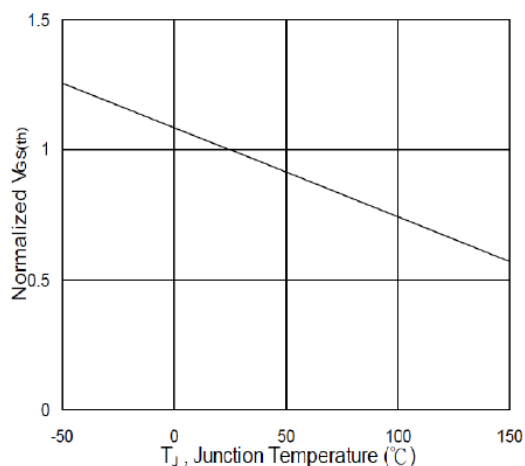


Figure 3. Normalized  $V_{GS(th)}$  vs.  $T_J$

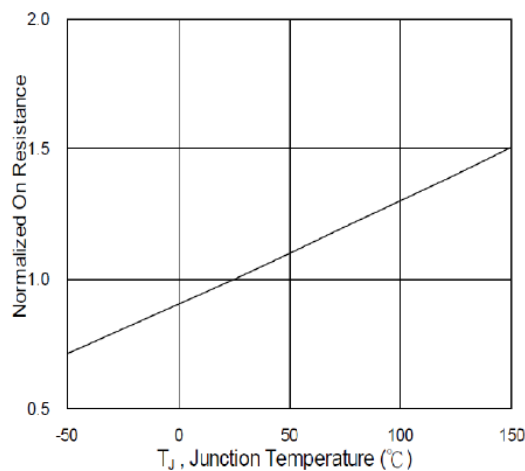


Figure 4. Normalized  $R_{DS(on)}$  vs.  $T_J$

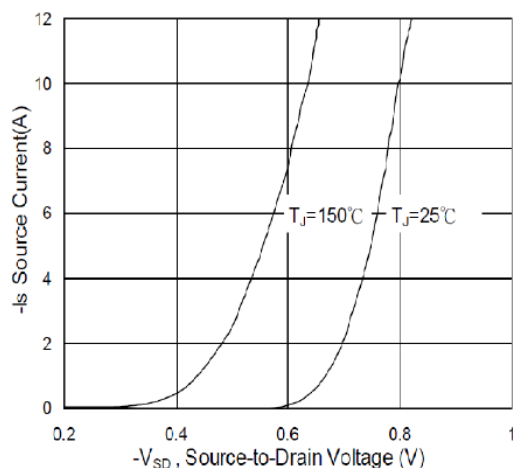


Figure 5. Diode Forward Voltage vs. Current

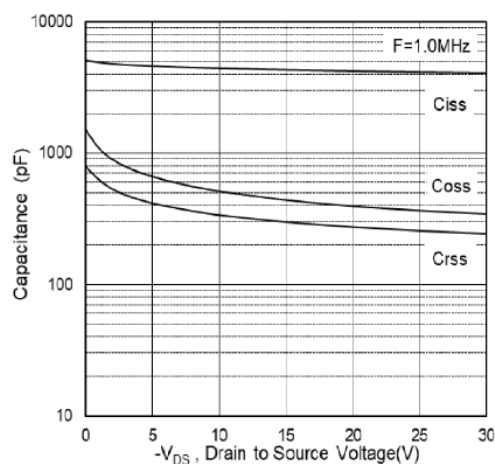


Figure 6. Capacitance

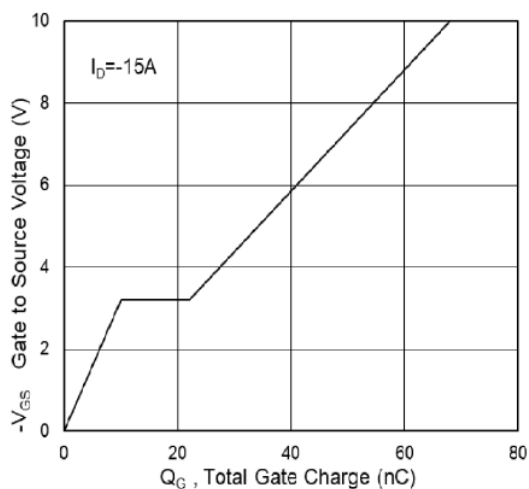
**Typical Performance Characteristics(continue)**


Figure 7. Gate Charge Waveform

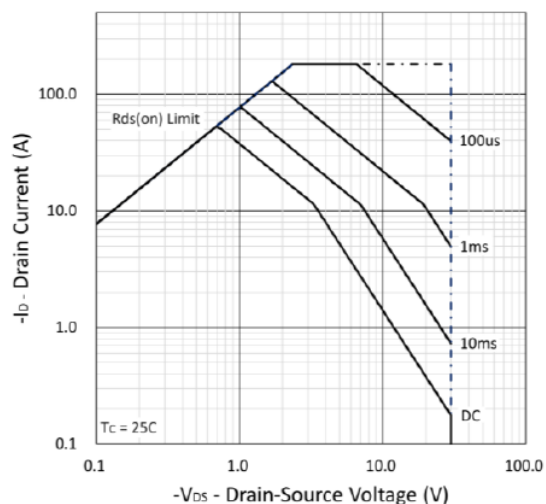


Figure 8. Maximum Safe Operating Area

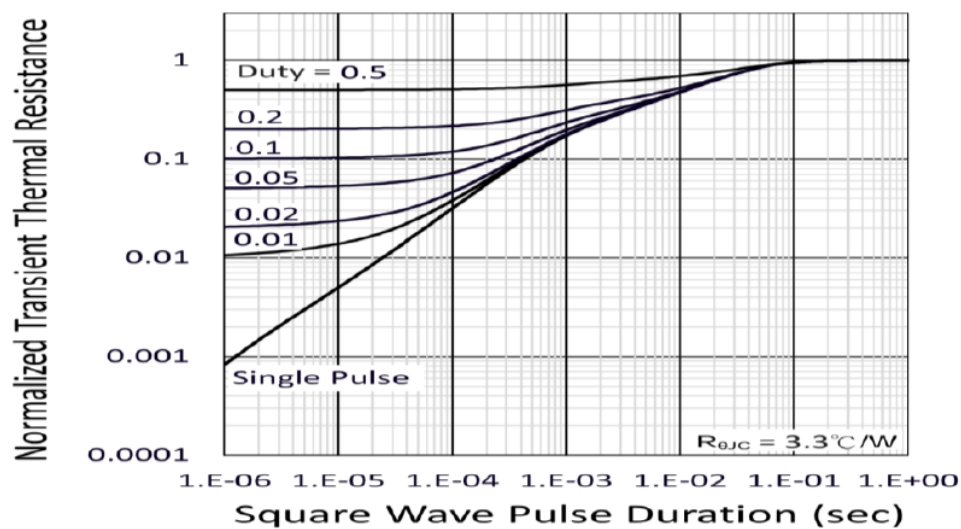
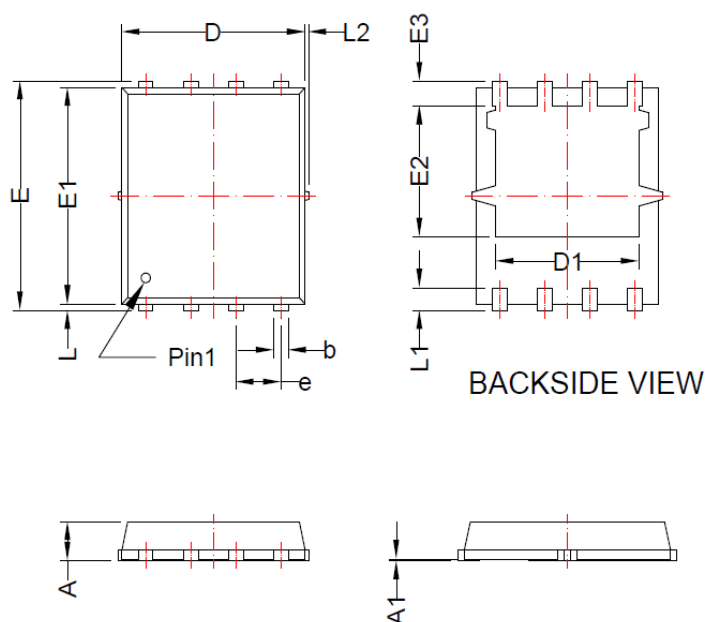


Figure 9. Normalized Transient Thermal Resistance

**Package Dimension:**
**DFN5X6-8L**


DIMENSION D AND E1 DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.5mm PER INTERLEAD FLASH OR PROTRUSION SHALL NOT EXCEED 0.5mm PER SIDE.

Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	0.80	1.20	0.031	0.047
A1	0.00	0.05	0.000	0.002
b	0.25	0.51	0.010	0.020
c	0.20	0.35	0.008	0.014
D	4.90	5.40	0.193	0.213
D1	3.40	4.60	0.134	0.181
E	5.90	6.20	0.232	0.244
E1	5.40	5.90	0.213	0.232
E2	3.20	3.80	0.126	0.150
E3	0.40	0.80	0.016	0.031
H1	1.27 BSC		0.050 BSC	
L	0.1	0.25	0.004	0.010
L1	0.45	0.75	0.018	0.030
L2	---	0.15	---	0.006

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