LMP3825EX5F 30V P-Channel MOSFET

Features

- -30V/-0.5A, $R_{DS(ON)}$<2500mΩ@V_{GS}=-4.5V
- -30V/-0.2A, $R_{DS(ON)}$<2900mΩ@V_{GS}=-2.5V
- -30V/-0.1A, $R_{DS(ON)}$<5000mΩ@V_{GS}=-1.8V
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-323 package design

Product Description

LMP3825EX5F, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

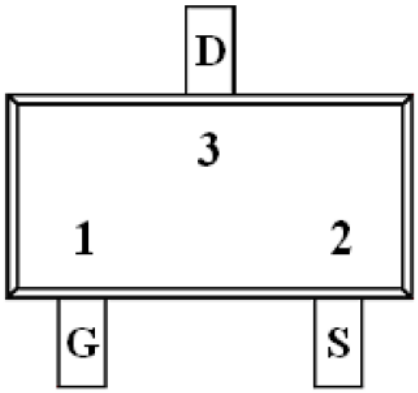
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

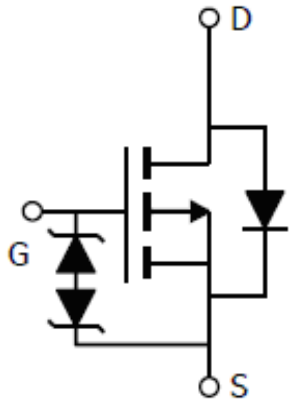
- Drivers, Relays, Solenoids, Lamps, Hammers
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Configuration

LMP3825EX5F (SOT-323)



PIN	Description
1	Gate
2	Source
3	Drain



Notice: The information in this document is subject to change without notice.

Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMP3825EX5F	LMP3825E	X5	F	SOT-323	3000

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
5XWMM	5	XWMM

Absolute Maximum Ratings

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-30	V
V_{GSS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (T_J=150℃)	T_A=25℃	-0.37	A
		T_A=70℃	-0.29	
I_{DM}	Pulsed Drain Current		-1.4	A
P_D	Power Dissipation	T_A=25℃	0.5	W
		T_A=70℃	0.32	
$R_{\theta JA}$	Thermal Resistance Junction to ambient		250	ºC/W
T_J	Operating Junction Temperature Range		-55 to +150	ºC
T_{STG}	Storage Temperature Range		-55 to +150	ºC

Note1. Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.

Notice: The information in this document is subject to change without notice.

Electrical Characteristics

(T_C=25ºC Unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ.	Max	Unit
Static						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=-250uA	-0.4		-1.0	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±8V			±10	uA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V			-1	uA
$R_{DS(on)}$	Drain-Source On-Resistance	V_{GS}=-4.5V, I_D=-0.5A		1.5	2.5	Ω
		V_{GS}=-2.5V, I_D=-0.2A		1.9	2.9	
		V_{GS}=-1.8V, I_D=-0.1A		2.4	5.0	
g_{FS}	Forward Transconductance	V_{DS}=-10V, I_D=-0.25A		610		mS
V_{SD}	Diode Forward Voltage	I_S=-0.5A, V_{GS}=0V			1.3	V
Dynamic						
Q_g	Total Gate Charge	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-1A		1.0		nC
Q_{gs}	Gate-Source Charge	V_{DS}=-15V, V_{GS}=-8V, I_D=-1A		0.2		
Q_{gd}	Gate-Drain Charge			0.1		
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V f=1MHz		54		pF
C_{oss}	Output Capacitance			10.9		
C_{rss}	Reverse Transfer Capacitance			5.8		
$t_{d(on)}$	Turn-On Time	V_{DD}=-10V, R_L=47Ω, I_D=-0.2A V_{GEN}=-4.5V, R_G=10Ω		3.8		ns
t_r				11		
$t_{d(off)}$	Turn-Off Time			45		
t_f				20		

Notice: The information in this document is subject to change without notice.

Typical Performance Characteristics

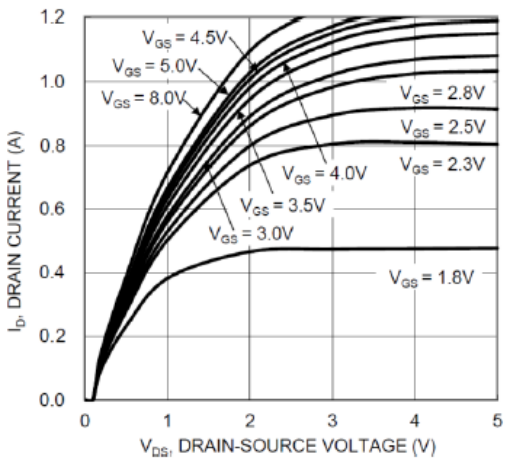


Fig. 1 Typical Output Characteristics

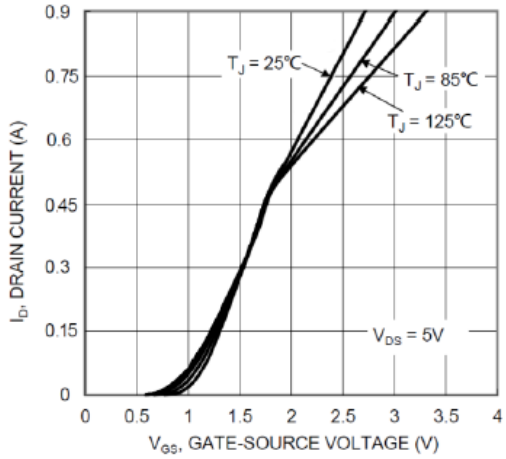


Fig. 2 Typical Transfer Characteristics

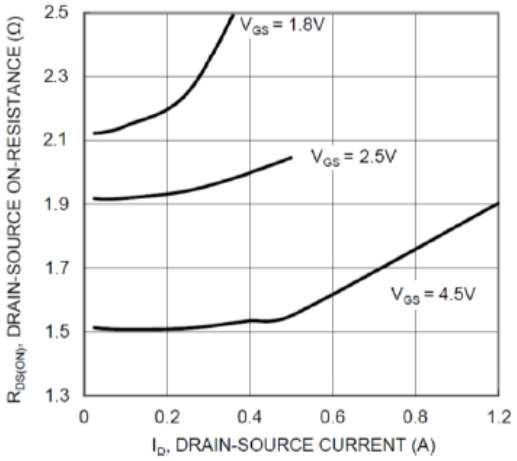


Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

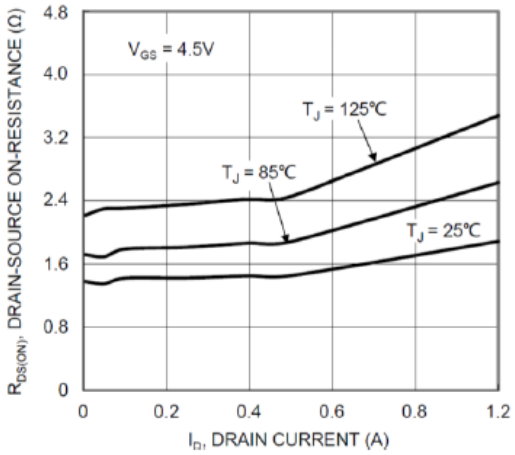


Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

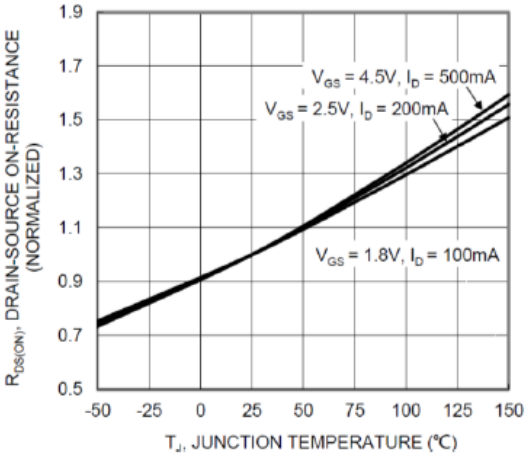


Fig. 5 On-Resistance Variation with T_J

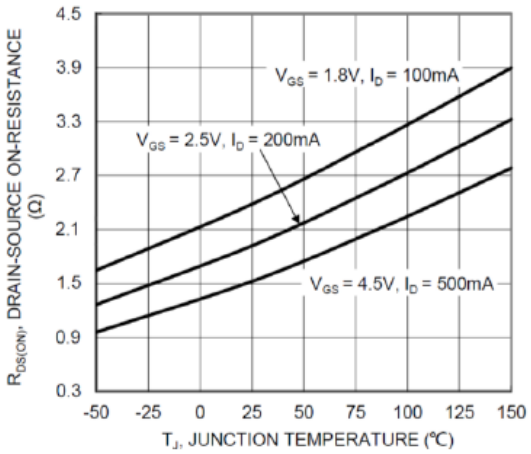


Fig. 6 On-Resistance Variation with T_J

Notice: The information in this document is subject to change without notice.

Typical Performance Characteristics(continue)

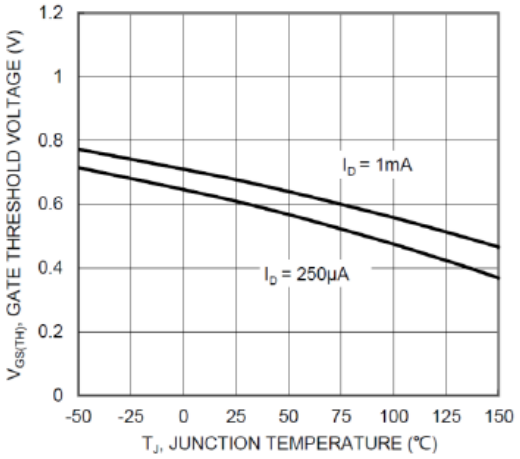


Fig. 7 Gate Threshold Variation vs. T_A

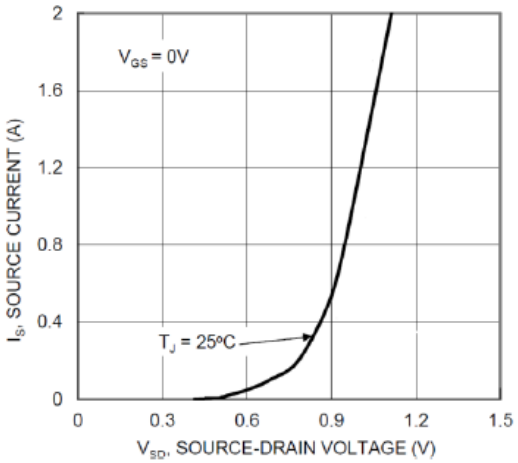


Fig. 8 Diode Forward Voltage vs. Current

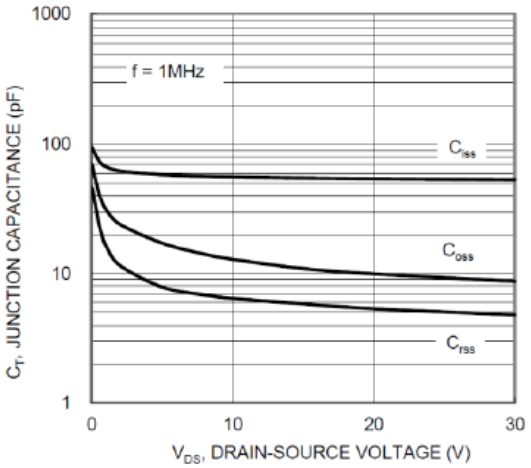


Fig. 9 Typical Capacitance

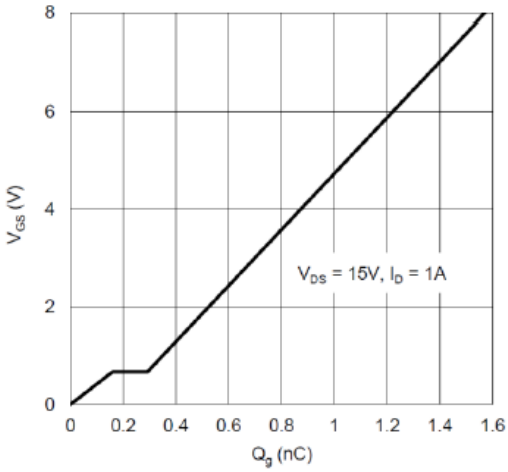


Fig. 10 Gate Charge

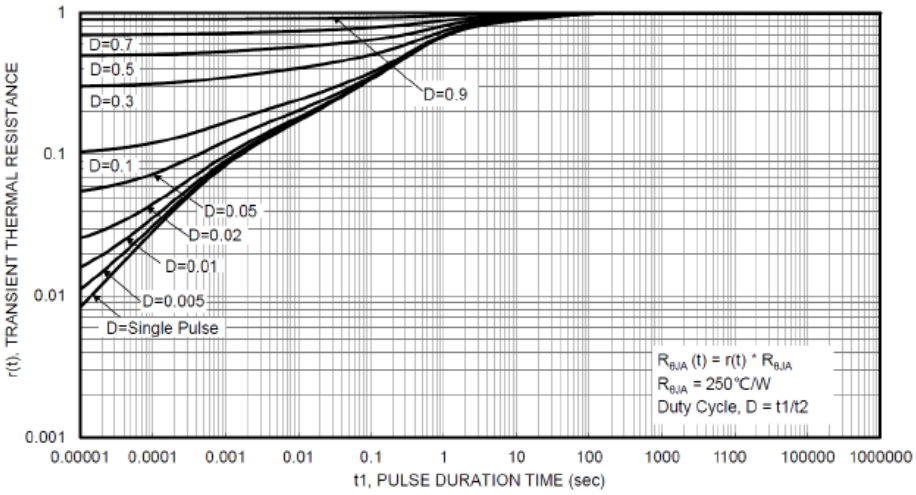
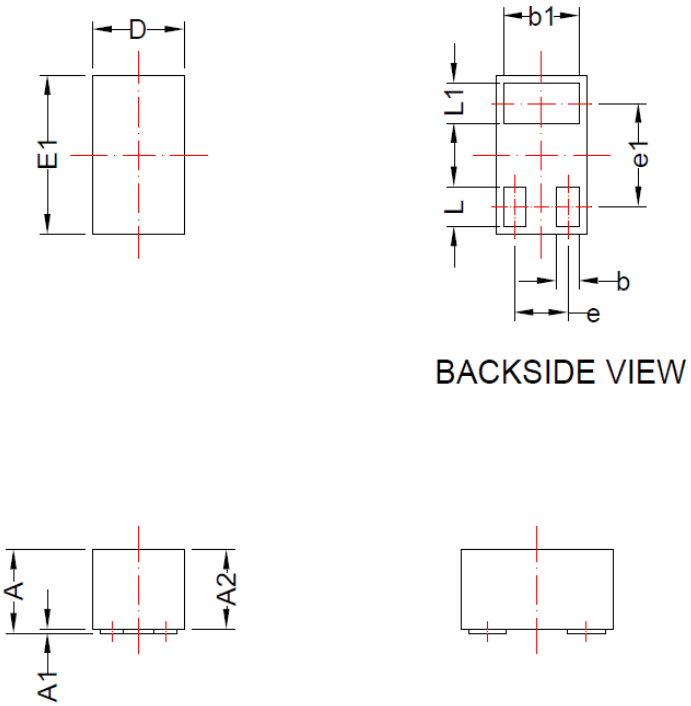


Fig. 11 Transient Thermal Response

Notice: The information in this document is subject to change without notice.

Package Dimension:

DFN1006-3L



DIMENSION D DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 mm PER END. DIMENSION E1 DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION. INTERLEAD FLASH OR PROTRUSION SHALL INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.25 mm PER SIDE FOR VARIATIONS WITH BODY SIZES =3x3mm.INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.15 mm FOR VARIATIONS WHERE EITHER D OR E1 IS <3mm.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.80	1.00	0.031	0.039
b	0.20	0.40	0.008	0.016
c	0.08	0.26	0.003	0.010
D	1.80	2.20	0.071	0.087
E	1.80	2.40	0.071	0.094
E1	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
L	0.26	0.45	0.010	0.018
θ	0º	8º	0º	8º

Notice: The information in this document is subject to change without notice.

NOTICE:

LFC Semiconductor assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all LFC Semiconductor products described or contained herein. LFC Semiconductor products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner.

Applications shown on the herein document are examples of standard use and operation. Customers are responsible in comprehending the suitable use in particular applications. LFC Semiconductor makes no representation or warranty that such applications will be suitable for the specified use without further testing or modification.

Information furnished is believed to be accurate and reliable. However LFC Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of LFC Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of LFC Semiconductor.

Notice: The information in this document is subject to change without notice.