LMP3825EX7F 30V P-Channel MOSFET

Features

- -30V/-0.27A, $R_{DS(ON)}$<2500mΩ@V_{GS}=-4.5V
- -30V/-0.27A, $R_{DS(ON)}$<2900mΩ@V_{GS}=-2.5V
- -30V/-0.27A, $R_{DS(ON)}$<5000mΩ@V_{GS}=-1.8V
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-523 package design

Product Description

LMP3825EX7F, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

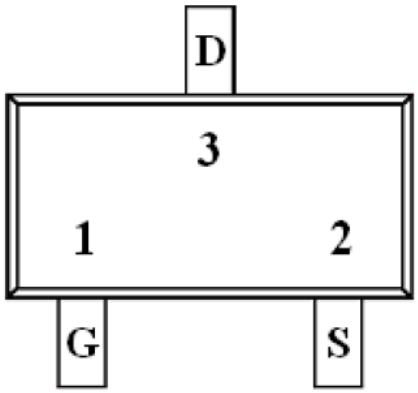
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

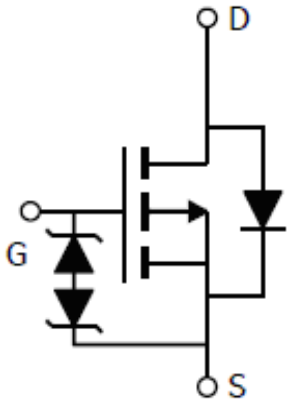
- Drivers, Relays, Solenoids, Lamps, Hammers
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Configuration

LMP3825EX7F (SOT-523)



PIN	Description
1	Gate
2	Source
3	Drain



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Ordering Information

Ordering Information					
Part Number	P/N	PKG code	Pb Free code	Package	Quantity
LMP3825EX7F	LMP3825E	X7	F	SOT-523	3000

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
5WM	5	WM

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[2]	T_A=25℃	-0.27	A
		T_A=70℃	-0.22	
I_{DM}	Pulsed Drain Current		-1.2	A
P_D	Power Dissipation[2]	T_A=25℃	0.28	W
		T_A=70℃	0.18	
$R_{\theta JA}$	Thermal Resistance Junction to ambient[1]		530	ºC/W
$R_{\theta JA}$	Thermal Resistance Junction to ambient[2]		450	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.

Note2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper plate.

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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		1.45	2.5	Ω
		V_{GS}=-2.5V, I_D=-0.2A		1.85	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		

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Typical Performance Characteristics

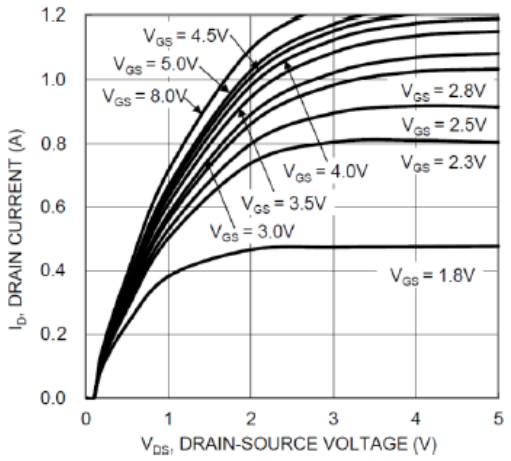

Fig. 1 Typical Output Characteristics

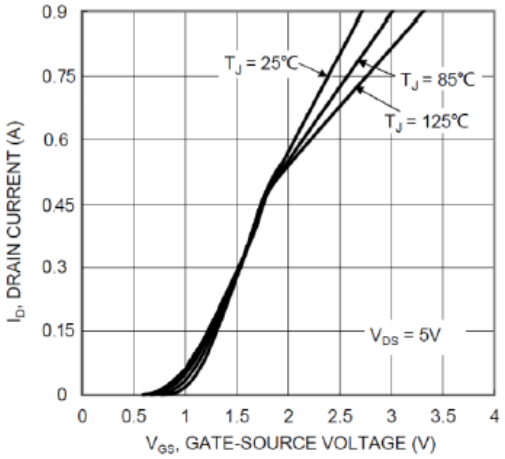

Fig. 2 Typical Transfer Characteristics

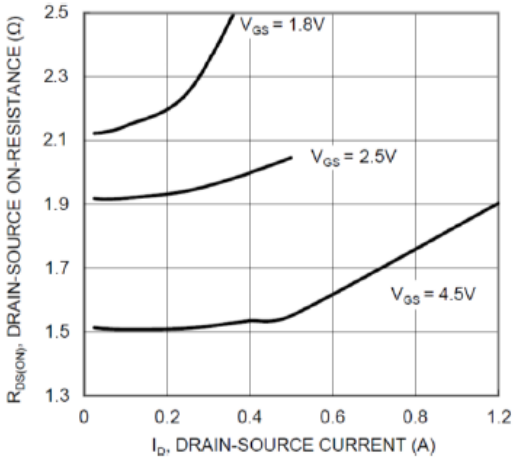

Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

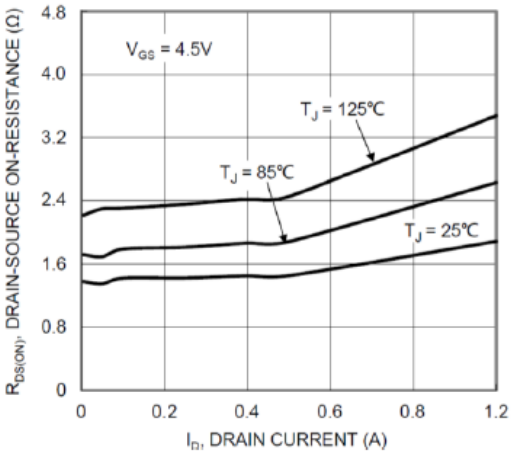

Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

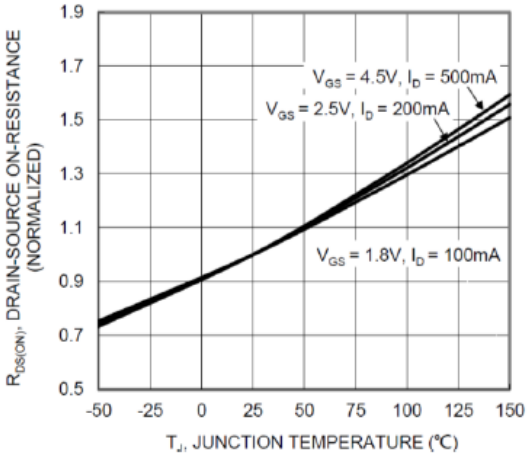

Fig. 5 On-Resistance Variation with T_J

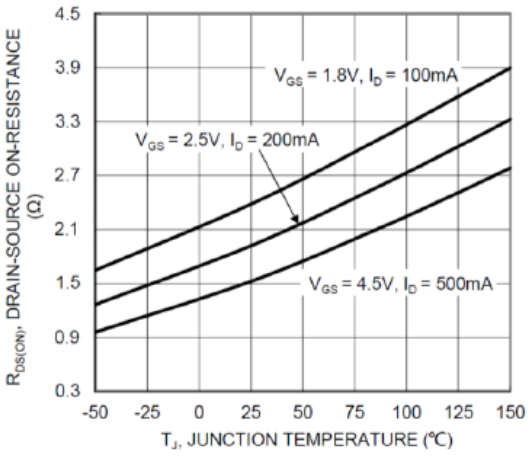

Fig. 6 On-Resistance Variation with T_J

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Typical Performance Characteristics(continue)

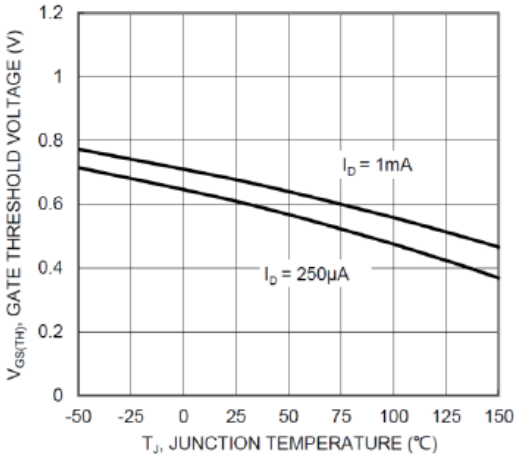

Fig. 7 Gate Threshold Variation vs. T_A

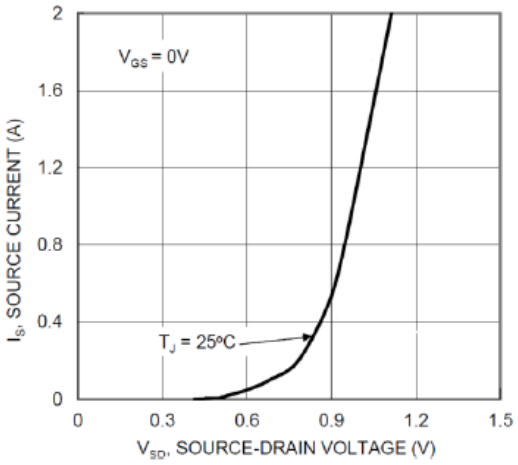

Fig. 8 Diode Forward Voltage vs. Current

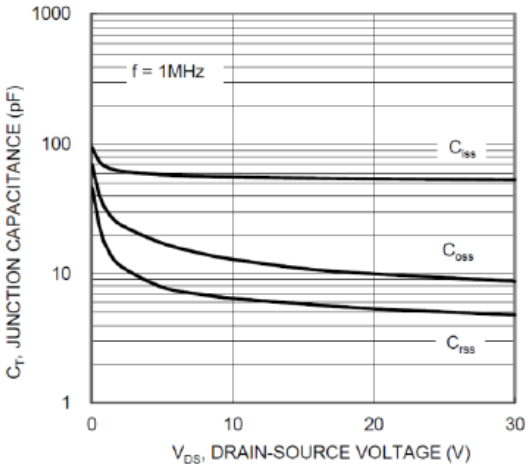

Fig. 9 Typical Capacitance

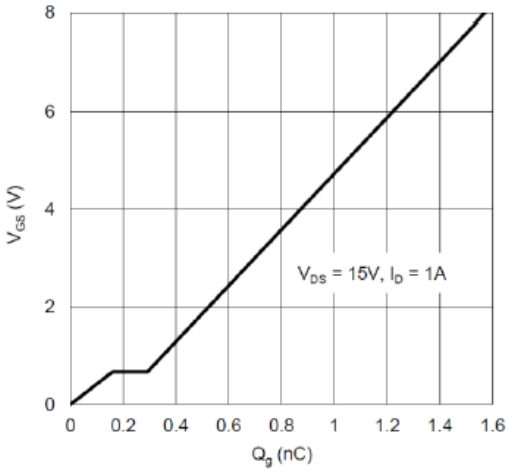

Fig. 10 Gate Charge

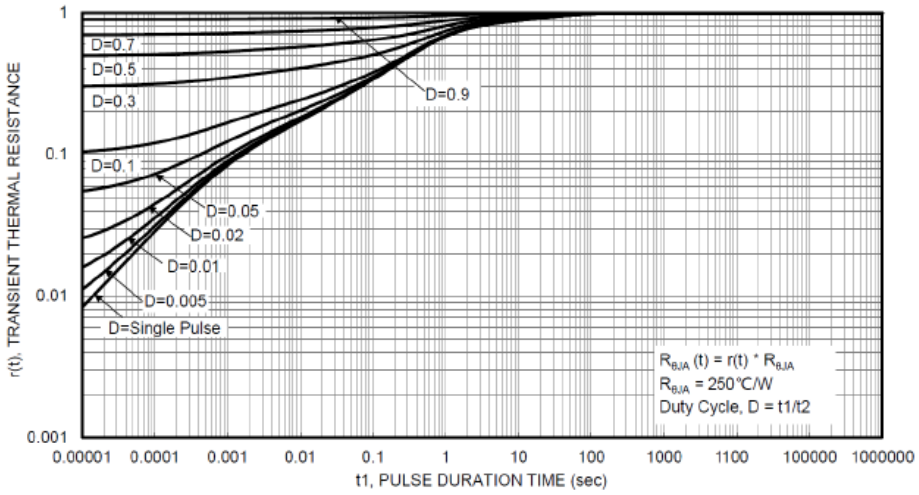

Fig. 11 Transient Thermal Response

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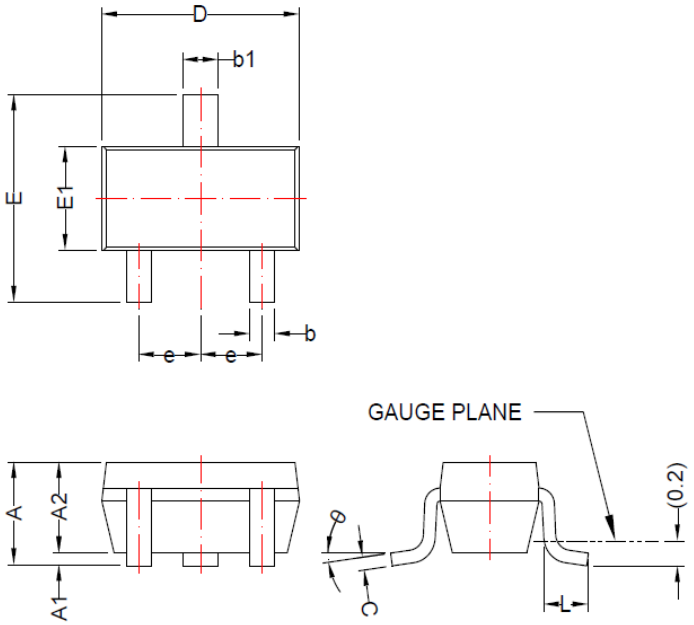
Package Dimension:

SOT-523



DIMENSION D AND E1 DO NOT INCLUDE MOLD FLASH,TIE BAR BURRS，GATE BURRS，AND INTERLEAD FLASH,NOT INCLUDING ANY MISMATCH BETWEEN THE TOP AND BOTTOM OF THE PLASTIC BODY.

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.60	0.95	0.024	0.037
A1	0.00	0.10	0.000	0.004
A2	0.60	0.85	0.024	0.033
b	0.15	0.30	0.006	0.012
b1	0.25	0.40	0.010	0.016
c	0.08	0.25	0.003	0.010
D	1.40	1.80	0.055	0.071
E	1.40	1.80	0.055	0.071
E1	0.70	0.90	0.028	0.035
e	0.50 BSC		0.020 BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°

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