LMP3825EJZF 30V P-Channel MOSFET

Features

- -20V/-0.5A, $R_{DS(ON)}$<2500mΩ@V_{GS}=-4.5V
- -20V/-0.2A, $R_{DS(ON)}$<2900mΩ@V_{GS}=-2.5V
- -20V/-0.1A, $R_{DS(ON)}$<5000mΩ@V_{GS}=-1.8V
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-23 package design

Product Description

LMP3825EJZF, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

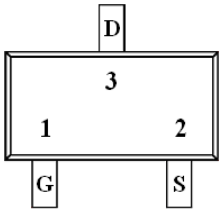
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Applications

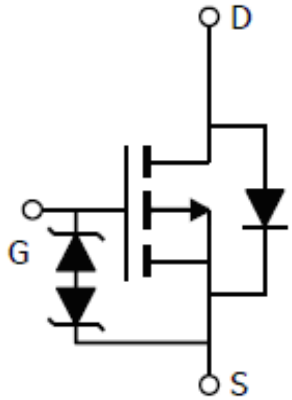
- Drivers, Relays, Solenoids, Lamps, Hammers
- Battery Operated Systems
- Power Supply Converter Circuits
- Load/Power Switching Smart Phones, Pagers

Pin Configuration

LMP3825EJZF (SOT-23)



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
LMP3825EJZF	LMP3825E	JZ	F	SOT-23	3000

Marking Information

Marking Information		
Part Marking	Part Number	LFC code
5XM	5	XM

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℃	-0.41	A
		T_A=70℃	-0.32	
I_{DM}	Pulsed Drain Current		-1.7	A
P_D	Power Dissipation[2]	T_A=25℃	0.63	W
$R_{\theta JA}$	Thermal Resistance Junction to ambient[1]		348	ºC/W
$R_{\theta JA}$	Thermal Resistance Junction to ambient[2]		200	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}=±10V			±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		600		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 V_{DS}=-15V, V_{GS}=-8V, I_D=-1A		1.0		nC
Q_{gs}	Gate-Source Charge			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

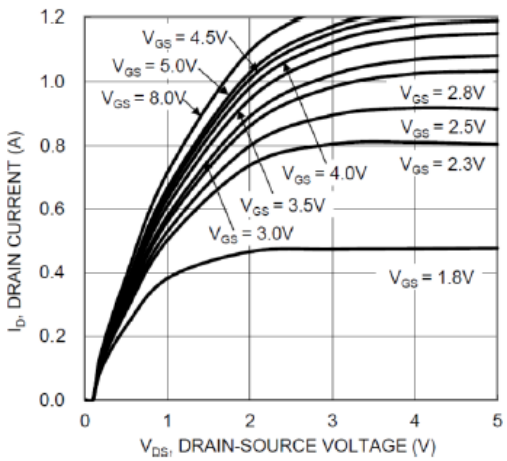

Fig. 1 Typical Output Characteristics

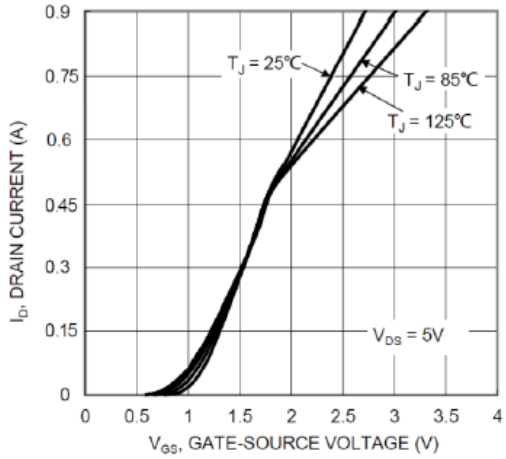

Fig. 2 Typical Transfer Characteristics

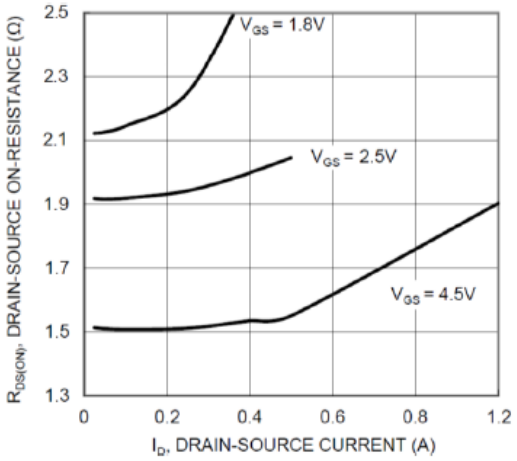

Fig. 3 Typical On-Resistance vs. I_D and V_{GS}

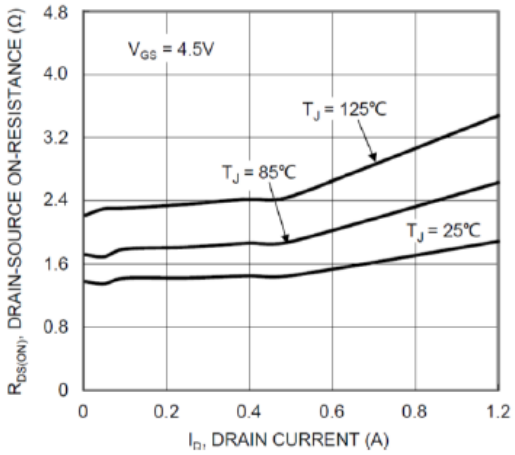

Fig. 4 Typical Drain-Source On-Resistance vs. I_D and T_J

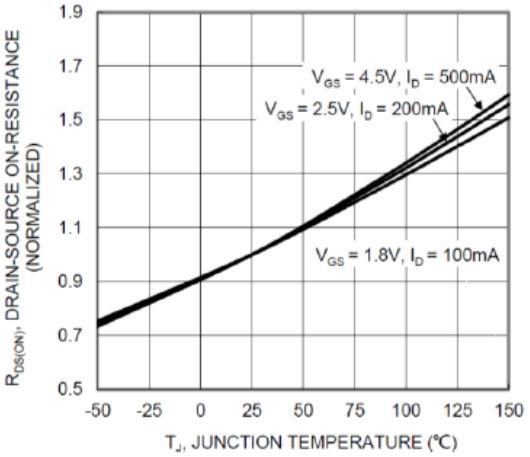

Fig. 5 On-Resistance Variation with T_J

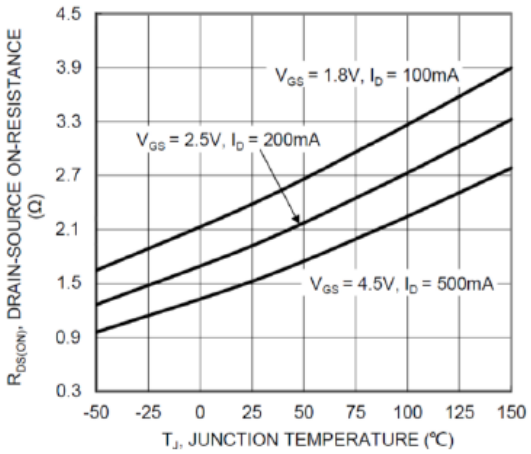

Fig. 6 On-Resistance Variation with T_J

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Typical Performance Characteristics(continue)

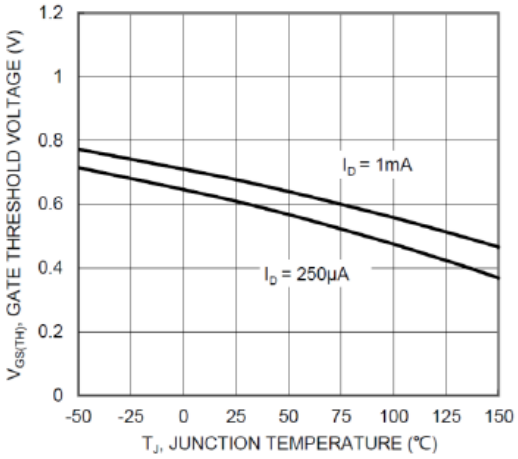

Fig. 7 Gate Threshold Variation vs. T_A

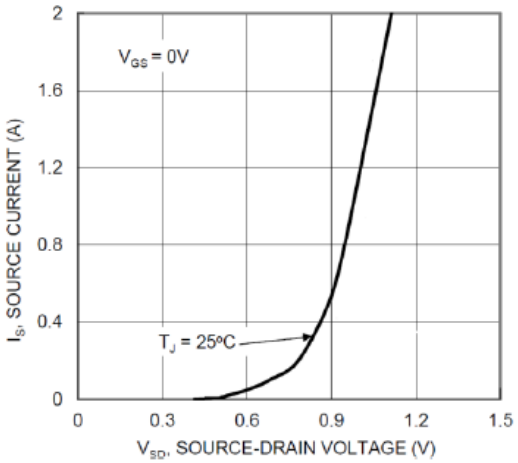

Fig. 8 Diode Forward Voltage vs. Current

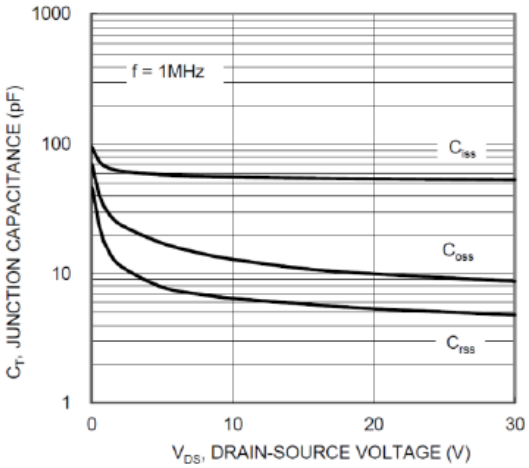

Fig. 9 Typical Capacitance

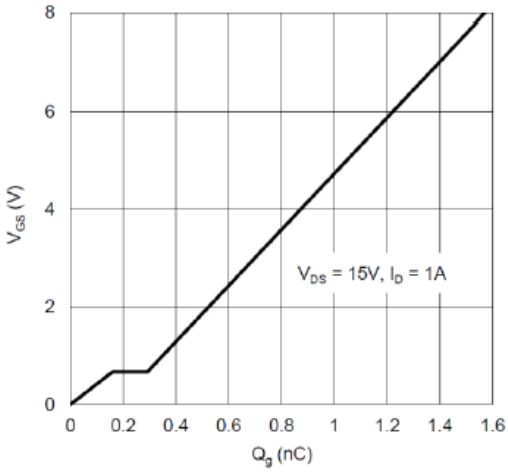

Fig. 10 Gate Charge

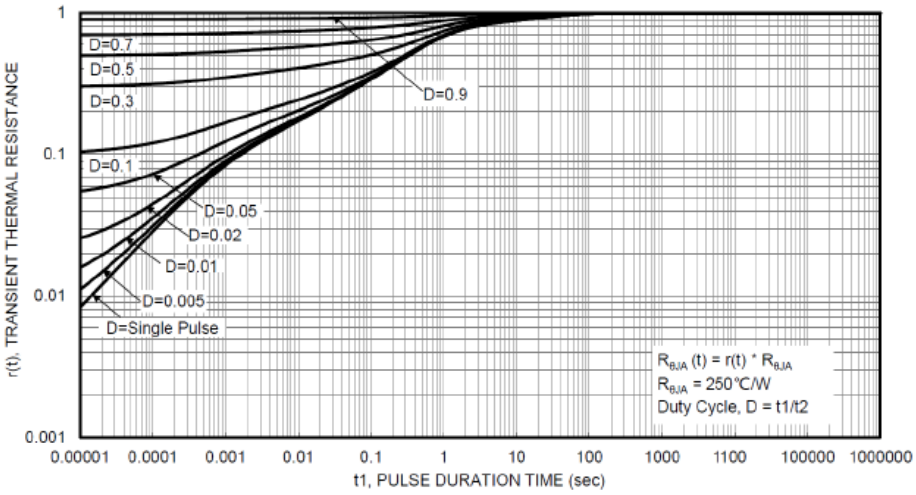

Fig. 11 Transient Thermal Response

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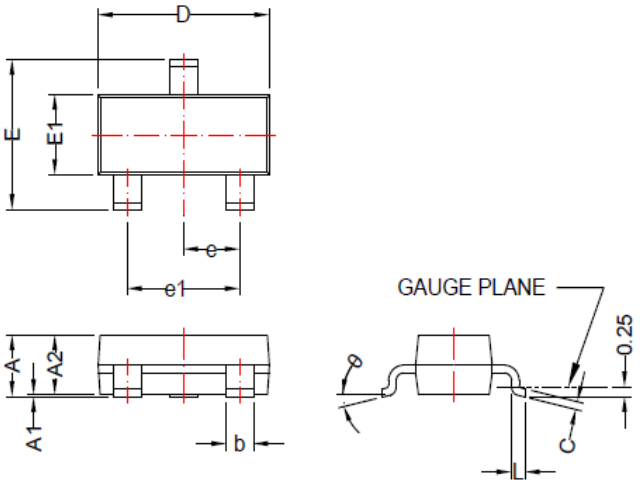
Package Dimension:

SOT-23



Dimensions				
	Millimeters		Inches	
Symbol	Min	Max	Min	Max
A	0.75	1.17	0.030	0.046
A1	0.01	0.15	0.000	0.006
A2	0.70	1.02	0.028	0.040
b	0.30	0.50	0.012	0.020
c	0.08	0.20	0.003	0.008
D	2.80	3.04	0.110	0.120
E	2.10	2.64	0.083	0.104
E1	1.20	1.40	0.047	0.055
e	0.95 BSC		0.037 BSC	
e1	1.90 BSC		0.075 BSC	
L	0.3	0.6	0.012	0.024
θ	0°	8°	0°	8°

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