

LMP3825EJZF 30V P-Channel MOSFET
Features

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

Product Description

LMP3825EJZF, P-Channel enhancement mode

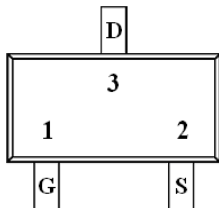
MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.

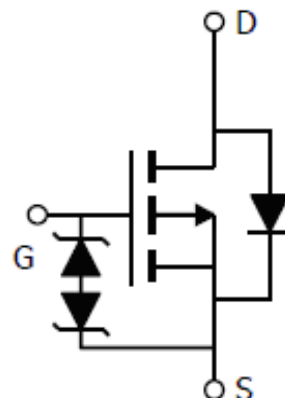
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

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



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=25°C 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°C	A
		T _A =70°C	
I _{DM}	Pulsed Drain Current	-1.7	A
P _D	Power Dissipation ²	T _A =25°C	W
R _{θJA}	Thermal Resistance Junction to ambient ¹	348	°C/W
R _{θJA}	Thermal Resistance Junction to ambient ²	200	°C/W
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

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.

Electrical Characteristics

(T_C=25°C 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		

Typical Performance Characteristics

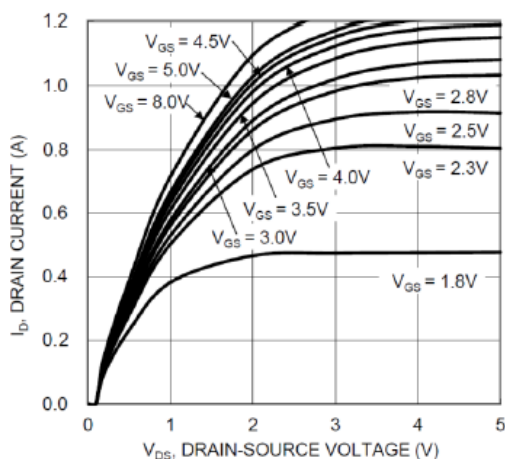


Fig. 1 Typical Output Characteristics

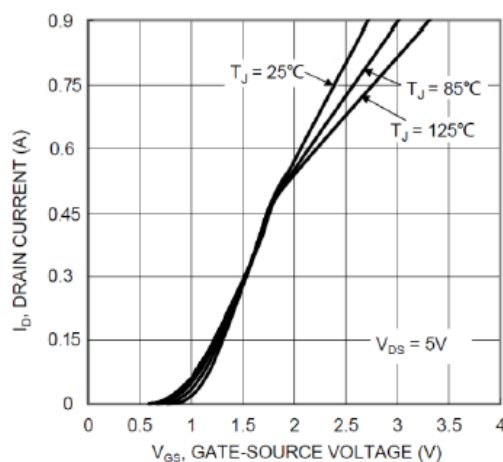
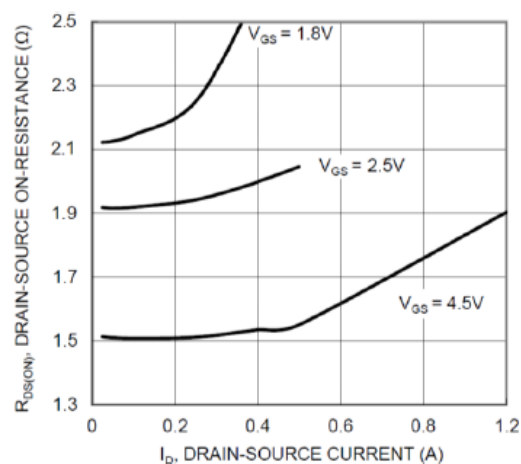
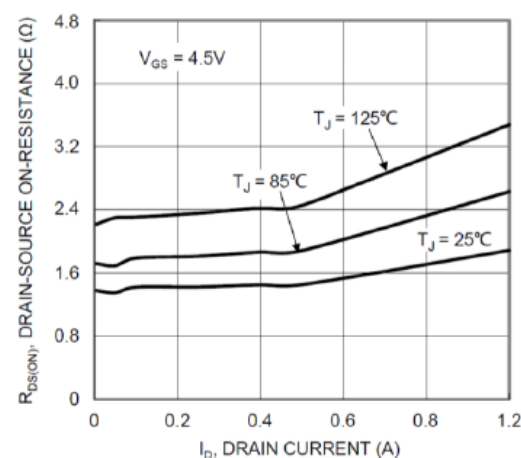
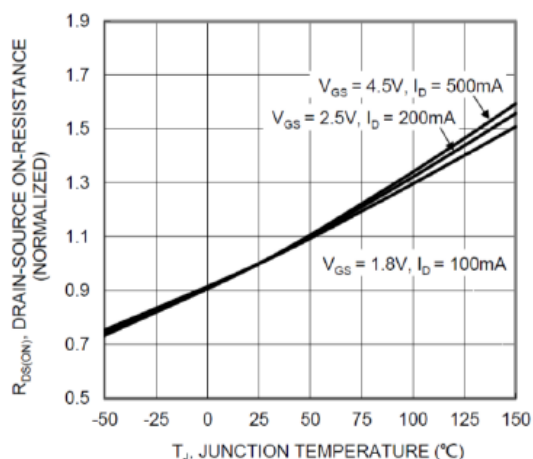
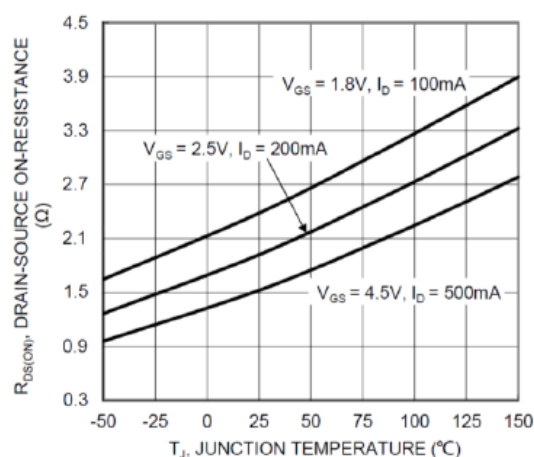


Fig. 2 Typical Transfer Characteristics


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

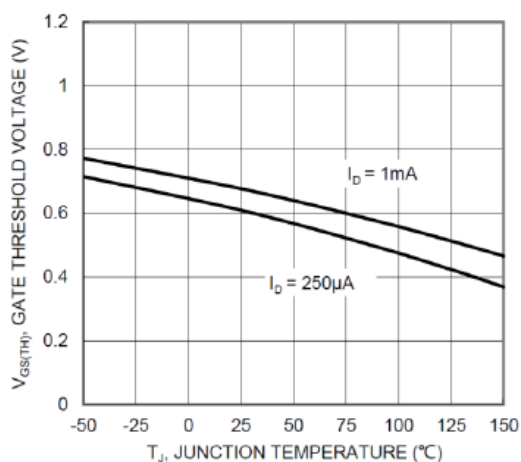
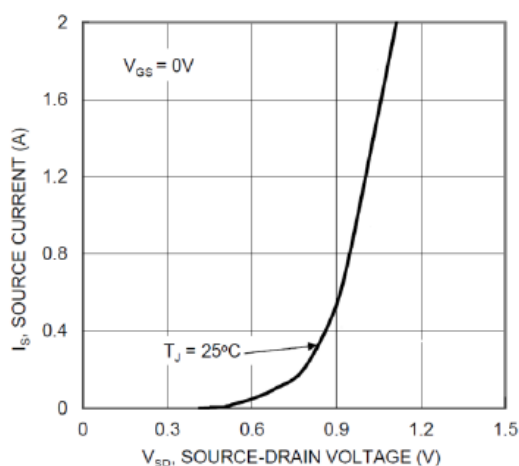
Typical Performance Characteristics(continue)

Fig. 7 Gate Threshold Variation vs. T_A


Fig. 8 Diode Forward Voltage vs. Current

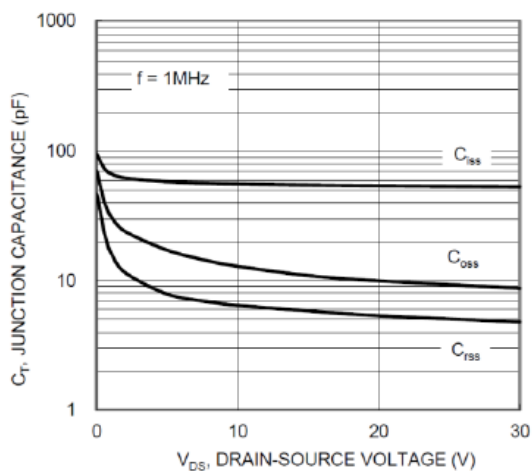


Fig. 9 Typical Capacitance

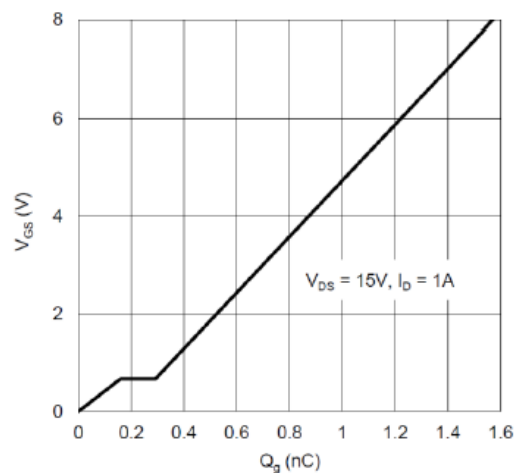


Fig. 10 Gate Charge

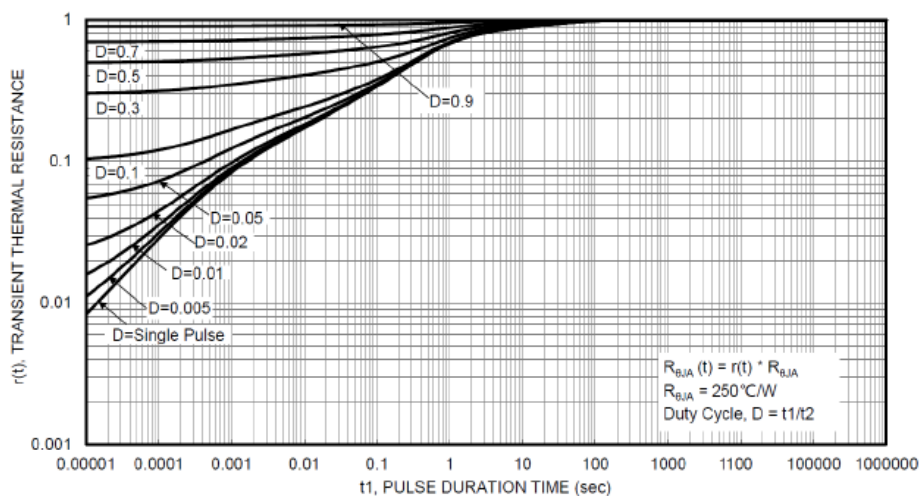
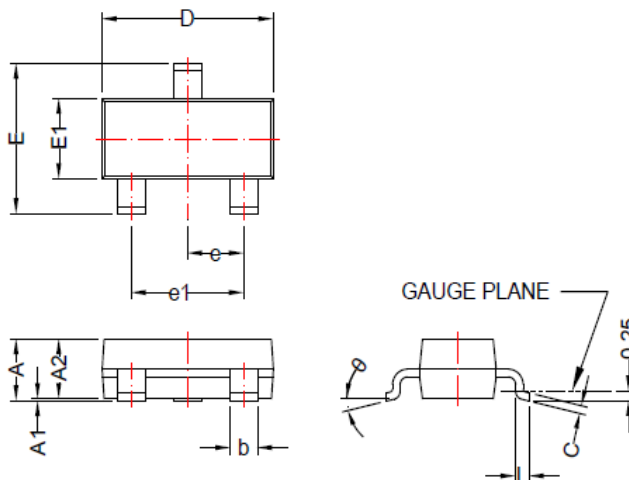


Fig. 11 Transient Thermal Response

Package Dimension:
SOT-23


Dimensions				
Symbol	Millimeters		Inches	
	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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