

# GSM3825EJZF

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM3825EJZF, 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.

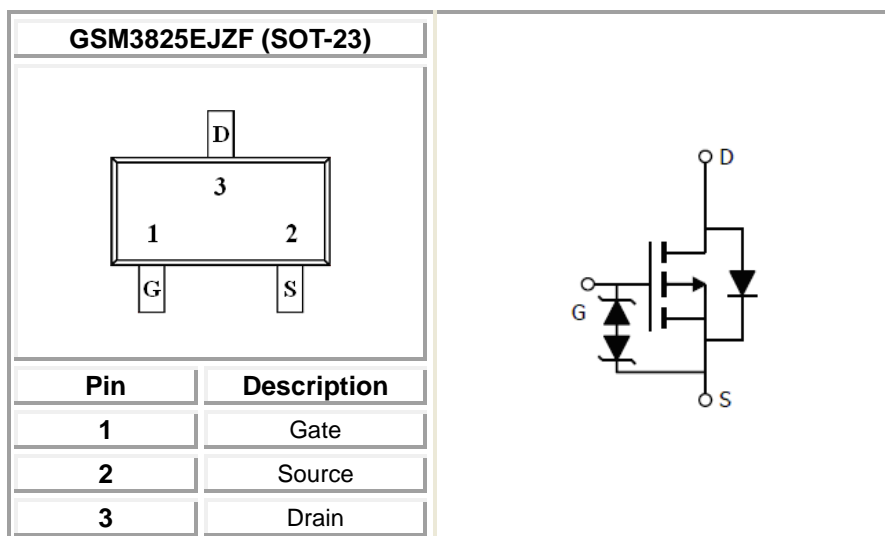
### Features

- -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

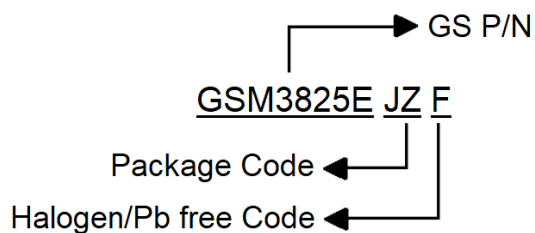
### Applications

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

### Packages & Pin Assignments

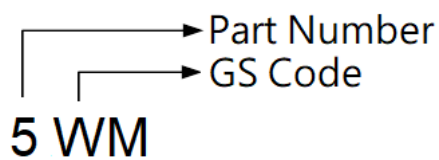


## Ordering Information



Part Number	Package	Quantity Reel
GSM3825EJZF	SOT-23	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	-30	V	
V <sub>GSS</sub>	Gate-Source Voltage	±10	V	
I <sub>D</sub>	Continuous Drain Current <sup>2</sup>	T <sub>A</sub> =25°C	-0.41	A
		T <sub>A</sub> =70°C	-0.32	
I <sub>DM</sub>	Pulsed Drain Current	-1.7	A	
P <sub>D</sub>	Power Dissipation <sup>2</sup>	T <sub>A</sub> =25°C	0.63	W
R <sub>θJA</sub>	Thermal Resistance Junction to ambient <sup>1</sup>	348	°C/W	
R <sub>θJA</sub>	Thermal Resistance Junction to ambient <sup>2</sup>	200	°C/W	
T <sub>J</sub>	Operating Junction Temperature Range	-55 to +150	°C	
T <sub>STG</sub>	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<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
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	-0.4		-1.0	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±10V			±10	uA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V			-1	uA
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-0.5A		1.5	2.5	Ω
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-0.2A		1.9	2.9	
		V <sub>GS</sub> =-1.8V, I <sub>D</sub> =-0.1A		2.4	5.0	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.25A		600		mS
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-0.5A, V <sub>GS</sub> =0V			1.3	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A V <sub>DS</sub> =-15V, V <sub>GS</sub> =-8V, I <sub>D</sub> =-1A		1.0		nC
Q <sub>gs</sub>	Gate-Source Charge			0.2		
Q <sub>gd</sub>	Gate-Drain Charge			0.1		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V f=1MHz		54		pF
C <sub>oss</sub>	Output Capacitance			10.9		
C <sub>rss</sub>	Reverse Transfer Capacitance			5.8		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-10V, R <sub>L</sub> =47Ω, I <sub>D</sub> =-0.2A V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =10Ω		3.8		ns
t <sub>r</sub>				11		
t <sub>d(off)</sub>	Turn-Off Time			45		
t <sub>f</sub>				20		

## Typical Performance Characteristics

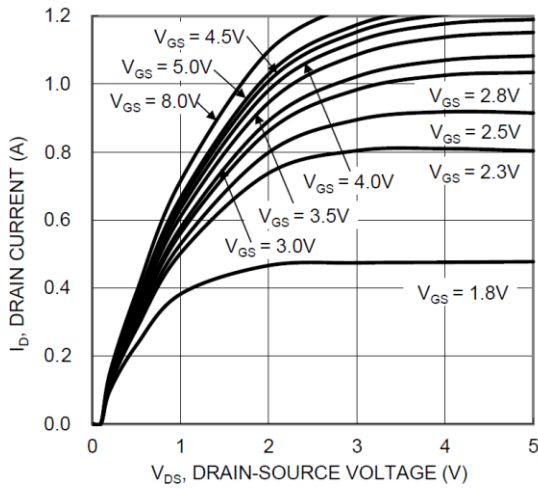


Fig. 1 Typical Output Characteristics

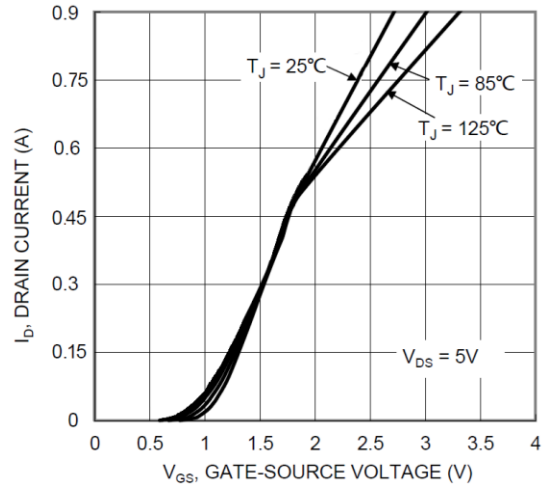


Fig. 2 Typical Transfer Characteristics

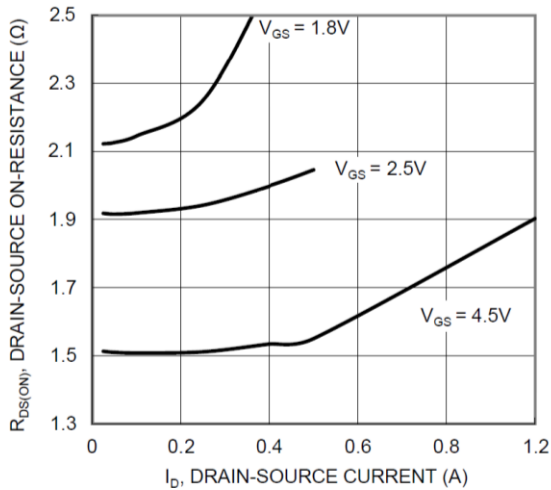


Fig. 3 Typical On-Resistance vs.  $I_D$  and  $V_{GS}$

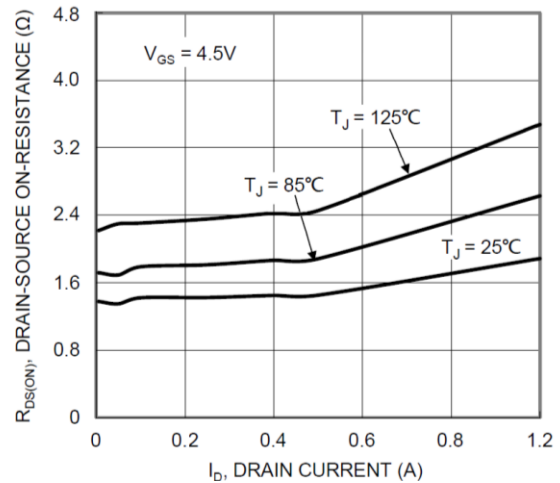


Fig. 4 Typical Drain-Source On-Resistance vs.  $I_D$  and  $T_J$

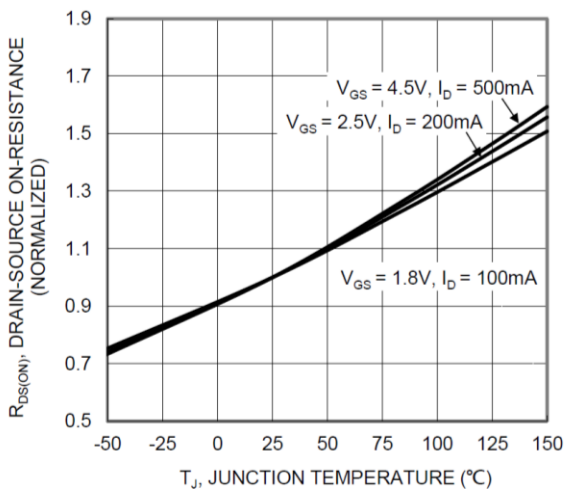


Fig. 5 On-Resistance Variation with  $T_J$

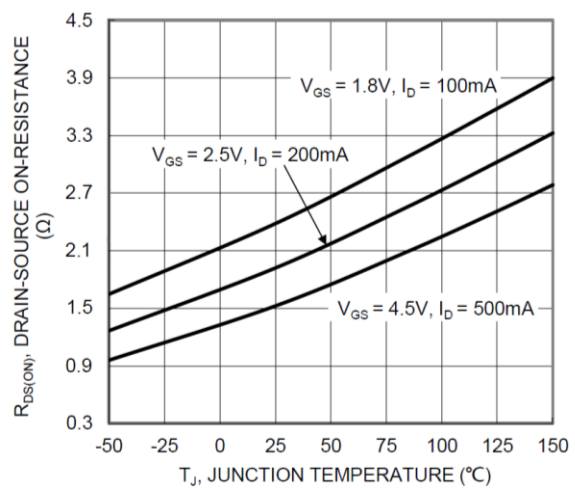
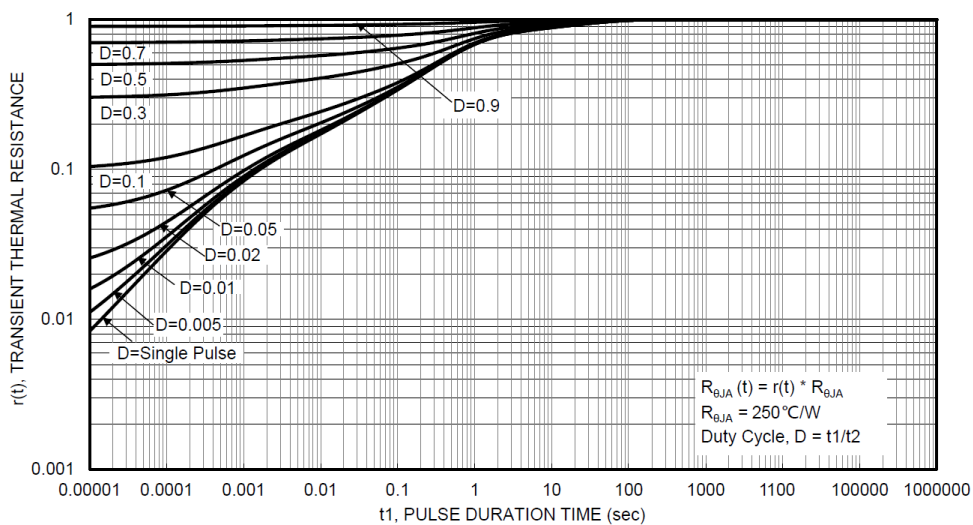
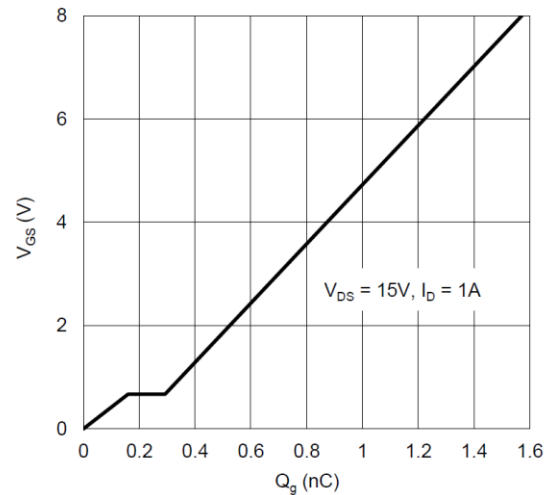
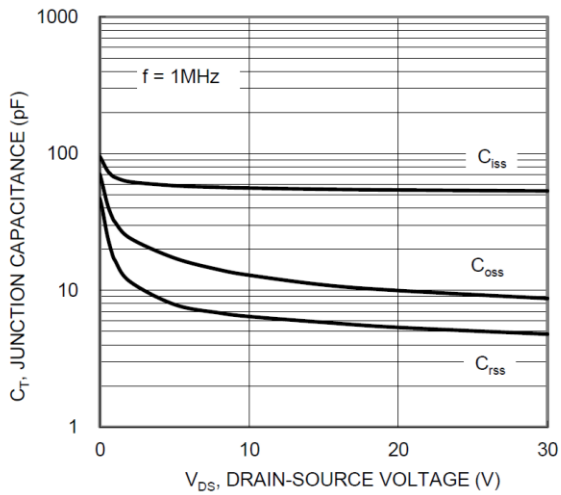
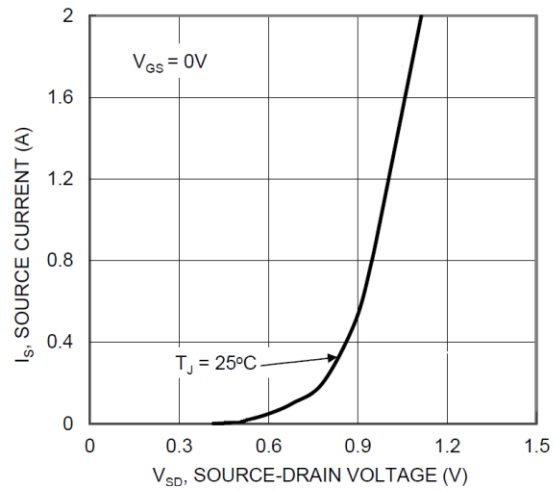
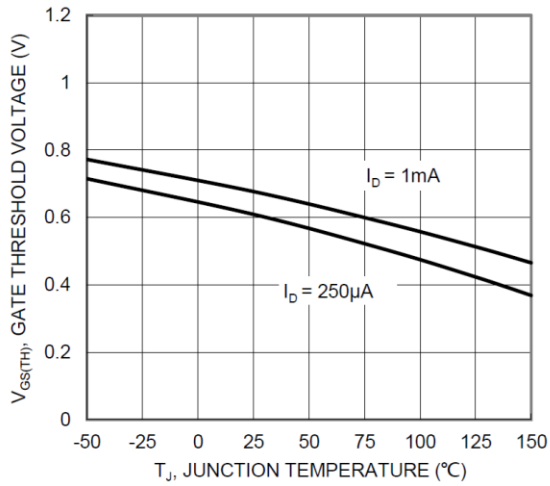


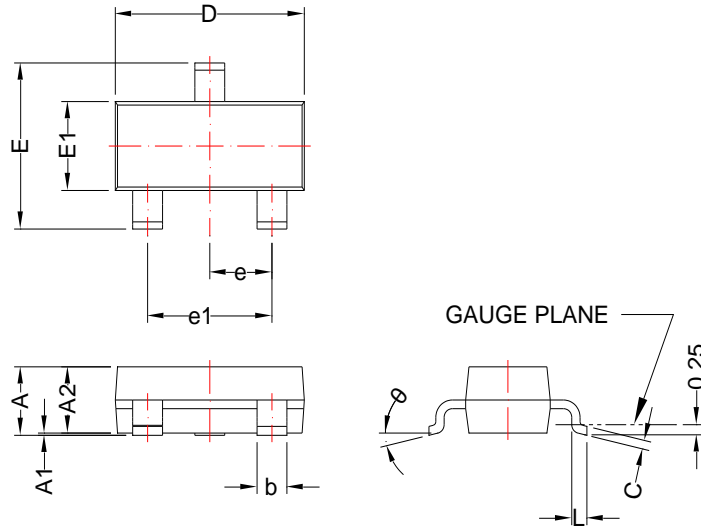
Fig. 6 On-Resistance Variation with  $T_J$

## Typical Performance Characteristics (continue)



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
$\theta$	0°	8°	0°	8°

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## CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587