

# GSM3925EX6F

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM3925EX6F, 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.

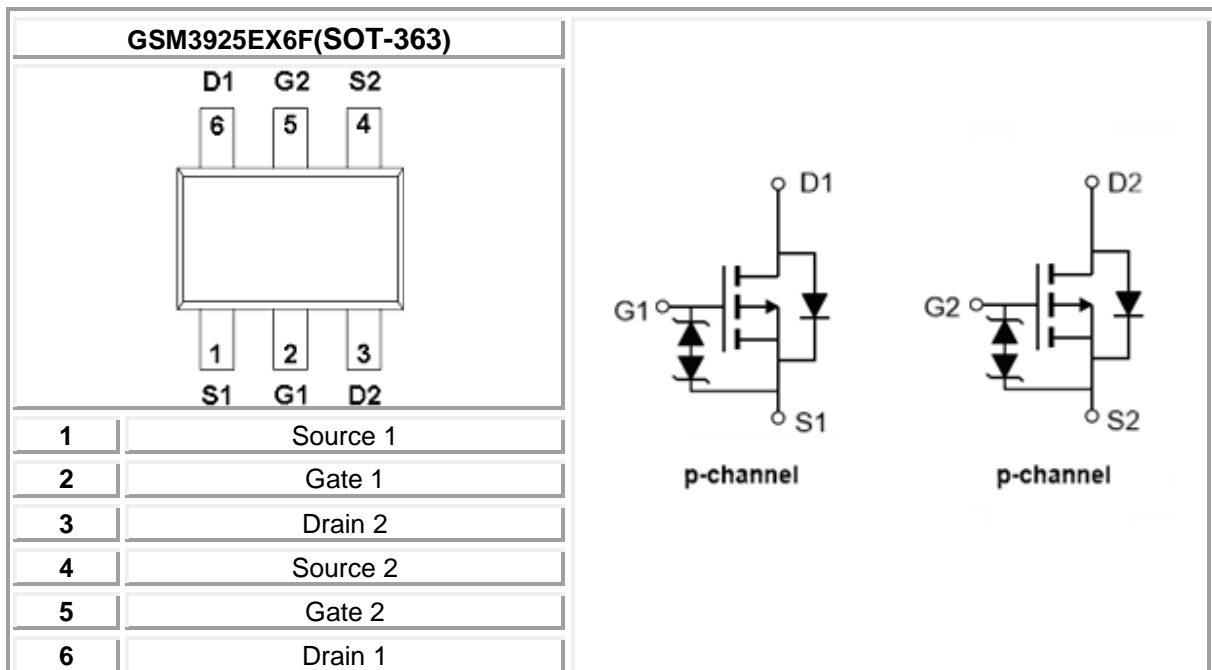
### Features

- -30V/-0.3A,  $R_{DS(ON)}=2500m\Omega@V_{GS}=-4.5V$   
 $R_{DS(ON)}=2900m\Omega@V_{GS}=-2.5V$   
 $R_{DS(ON)}=5000m\Omega@V_{GS}=-1.8V$
- Low-Voltage Operation
- High-Speed Circuits
- ESD Protection
- SOT-363 package design

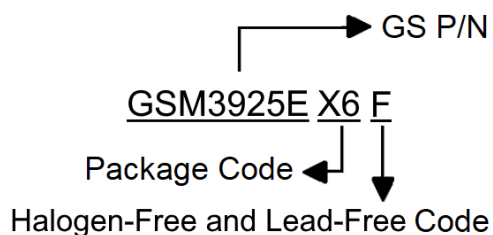
### Applications

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

### Packages & Pin Assignments

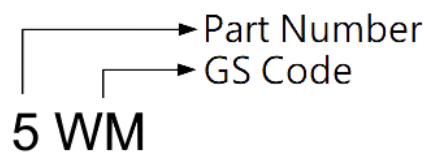


## Ordering Information



Part Number	Package	Quantity Reel
GSM3925EX6F	SOT-363	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(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	-0.3
		T <sub>A</sub> =70°C	-0.24
I <sub>DM</sub>	Pulsed Drain Current	-1.2	A
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	0.31
		T <sub>A</sub> =70°C	0.2
R <sub>θJA</sub>	Thermal Resistance Junction to ambient	400	°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.

## 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> =±8V			±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		550		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		1.0		nC
Q <sub>gs</sub>	Gate-Source Charge	V <sub>DS</sub> =-15V, V <sub>GS</sub> =-8V, I <sub>D</sub> =-1A		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

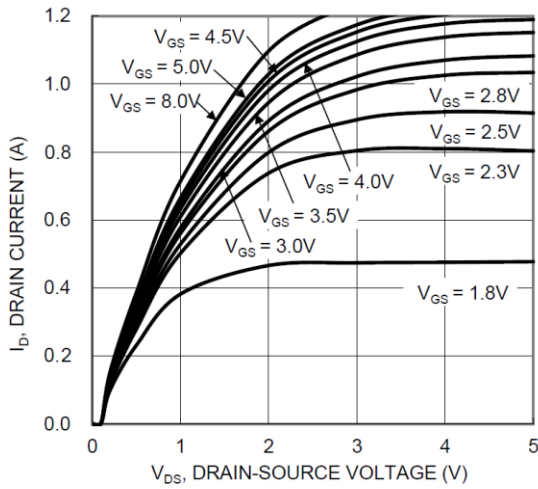


Fig. 1 Typical Output Characteristics

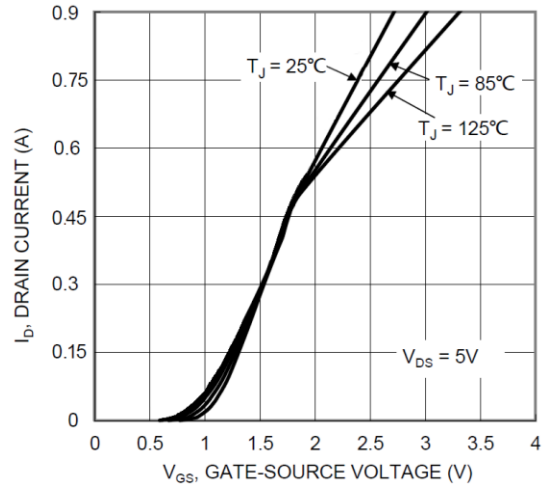


Fig. 2 Typical Transfer Characteristics

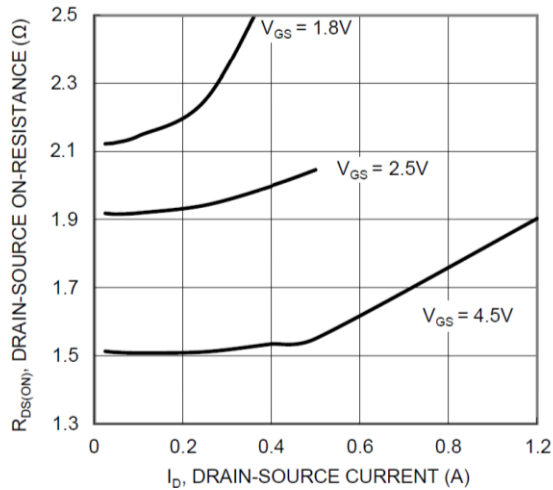


Fig. 3 Typical On-Resistance vs.  $I_D$  and  $V_{GS}$

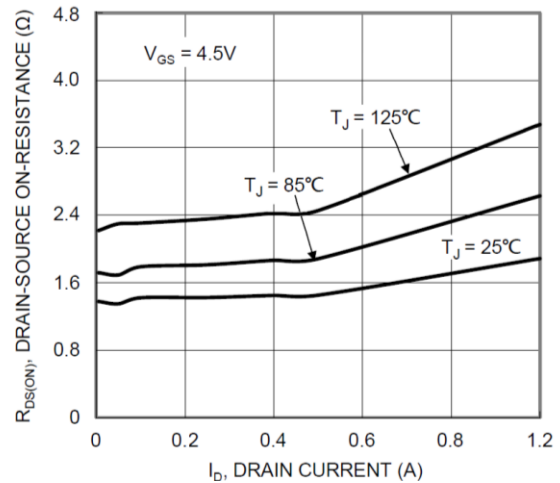


Fig. 4 Typical Drain-Source On-Resistance vs.  $I_D$  and  $T_J$

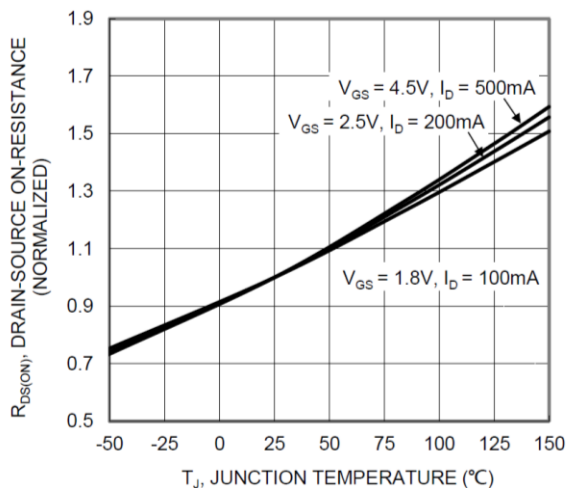


Fig. 5 On-Resistance Variation with  $T_J$

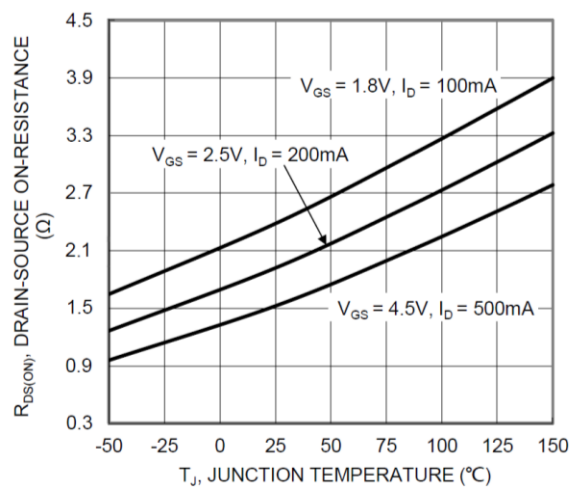


Fig. 6 On-Resistance Variation with  $T_J$

## Typical Performance Characteristics (continue)

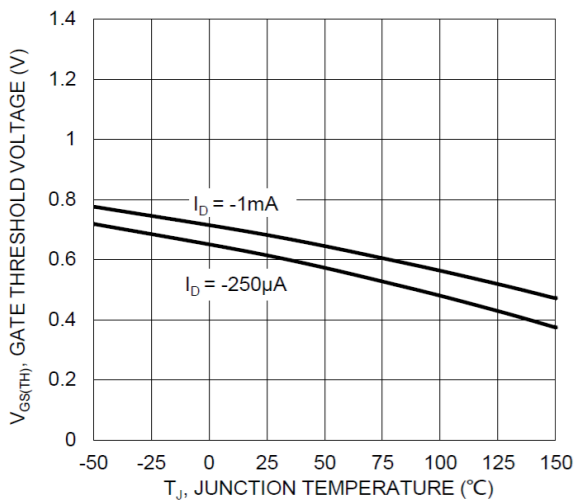


Fig. 7 Gate Threshold Variation vs.  $T_A$

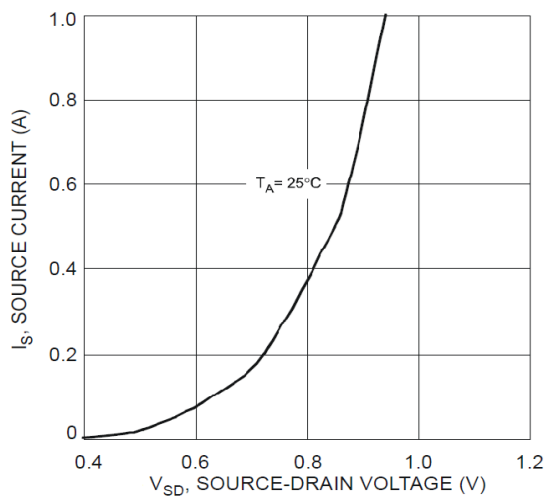


Fig. 8 Diode Forward Voltage vs. Current

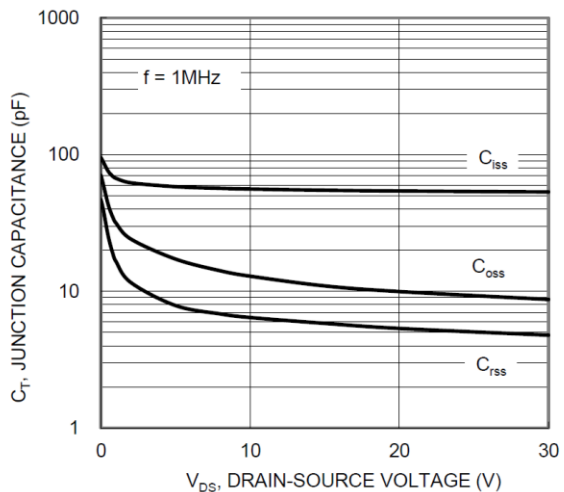


Fig. 9 Typical Capacitance

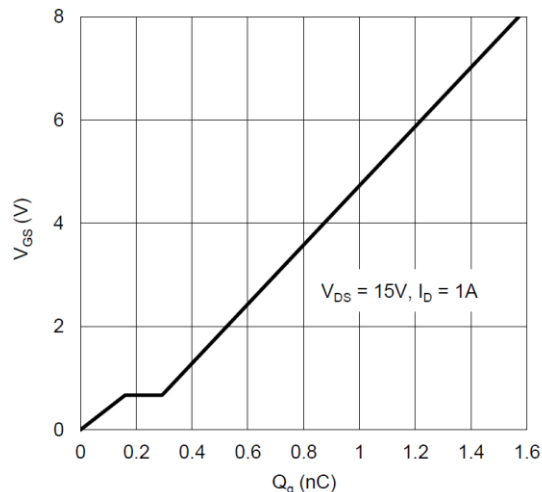


Fig. 10 Gate Charge

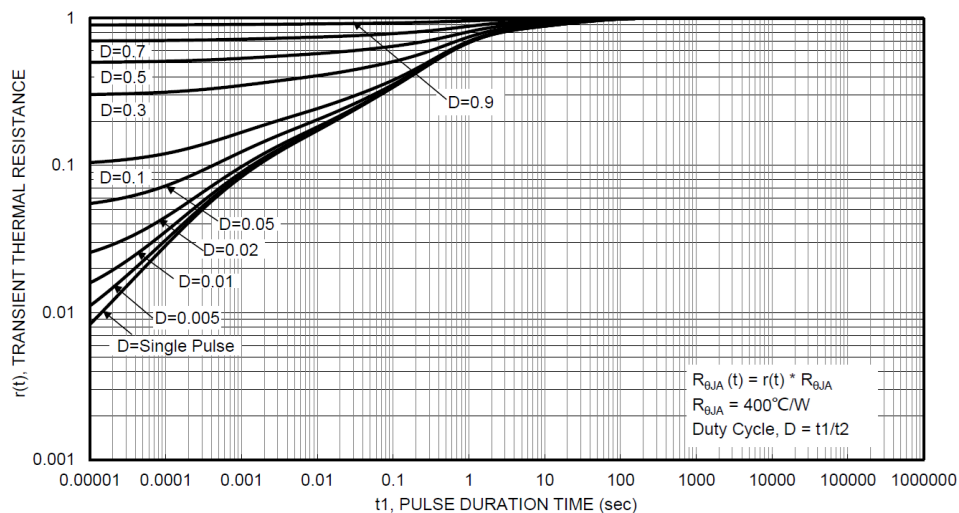
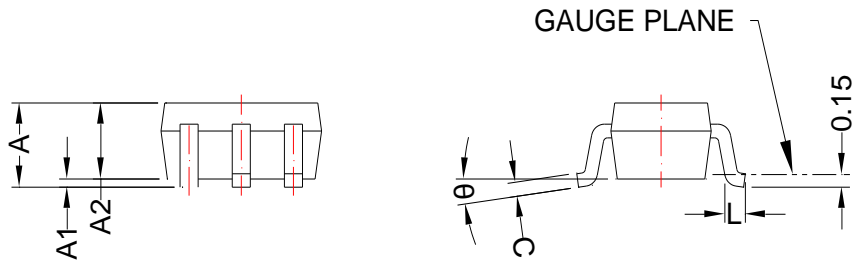
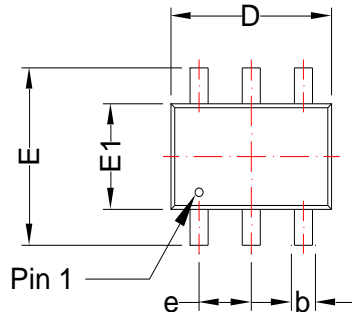


Fig. 11 Transient Thermal Response

## Package Dimension

### SOT-363



THE D DIMENSION DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS, MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.2mm END. THE E1 DIMENSION DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSION, INTERLEAD FLASH OR PROTRUSION SHALL NOT 0.20mm PER SIDE.

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	0.70	1.00	0.028	0.039
b	0.15	0.30	0.006	0.012
c	0.08	0.25	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	0°	8°	0°	8°





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