

# GSM8931

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM8931, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

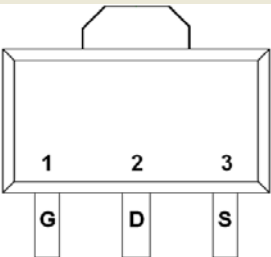
### Features

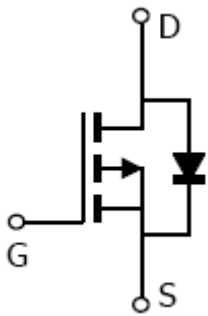
- -30V/-4.6A,  $R_{DS(ON)}=36m\Omega@V_{GS}=-10V$
- -30V/-3.6A,  $R_{DS(ON)}=46m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-89-3L package design

### Applications

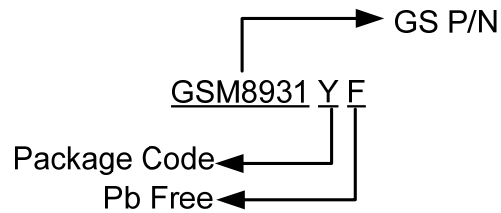
- Motor and Load Control
- LCD TV Inverter & AD/DC Inverter Systems.
- Backlight Inverter for LCD Display
- Load Switch
- CCFL Inverter

### Packages & Pin Assignments

GSM8931YF(SOT-89-3L)	
	
Pin	Description
1	Gate
2	Drain
3	Source

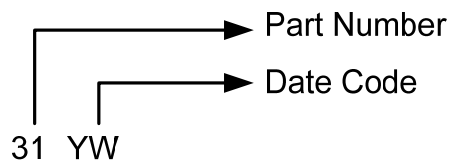


## Ordering Information



Part Number	Package	Quantity Reel
GSM8931YF	SOT-89-3L	1000 PCS

## Marking Information



## Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  Unless otherwise noted

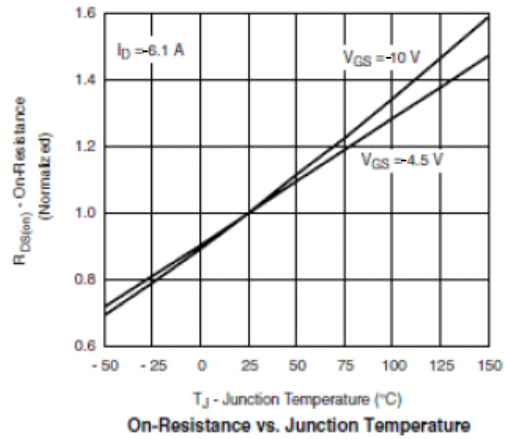
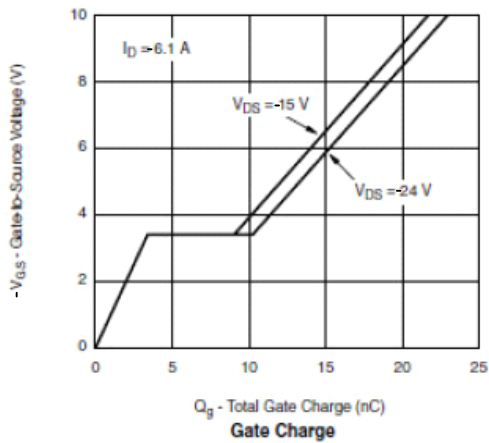
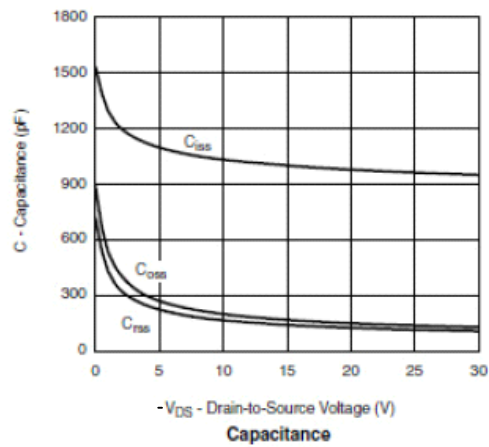
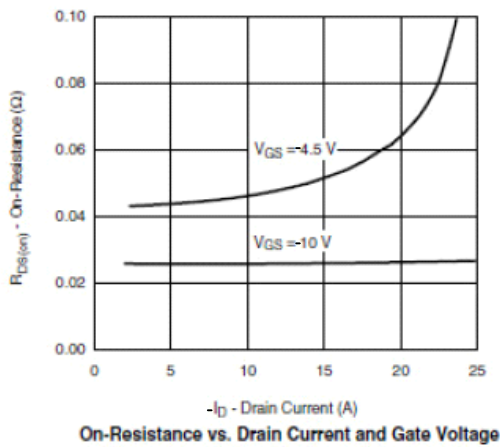
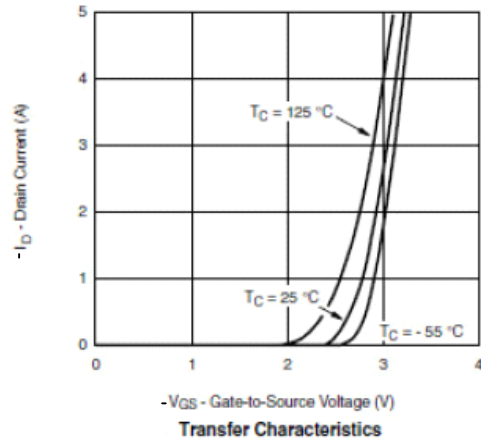
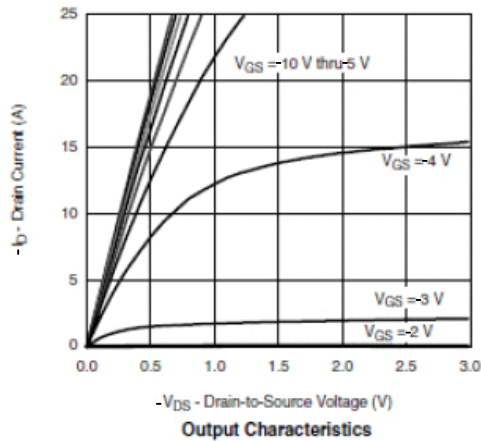
Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	-30	V	
$V_{GSS}$	Gate -Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$T_A = 25^{\circ}\text{C}$	-4.6	A
		$T_A = 70^{\circ}\text{C}$	-3.6	A
$I_{DM}$	Pulsed Drain Current	-10	A	
$I_S$	Continuous Source Current(Diode Conduction)	-1.6	A	
$P_D$	Power Dissipation	$T_A = 25^{\circ}\text{C}$	1.45	W
		$T_A = 70^{\circ}\text{C}$	0.6	W
$T_J$	Operating Junction Temperature	150	$^{\circ}\text{C}$	
$T_{STG}$	Storage Temperature Range	-55 to 150	$^{\circ}\text{C}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	120	$^{\circ}\text{C}/\text{W}$	

## Electrical Characteristics

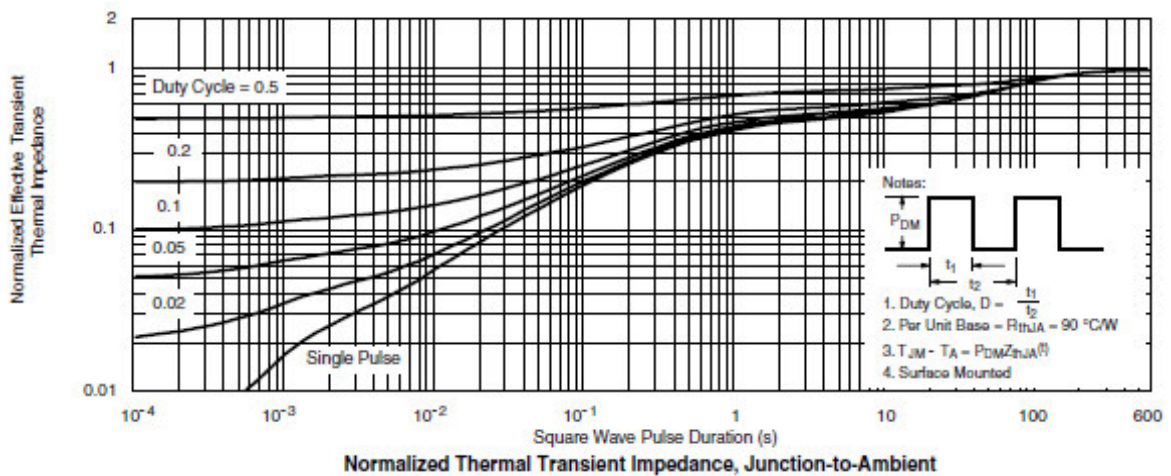
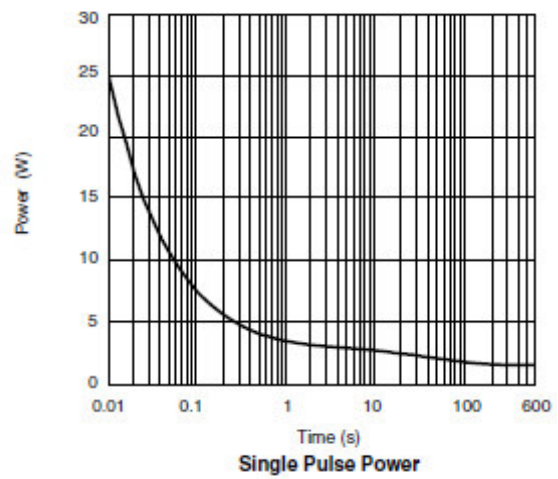
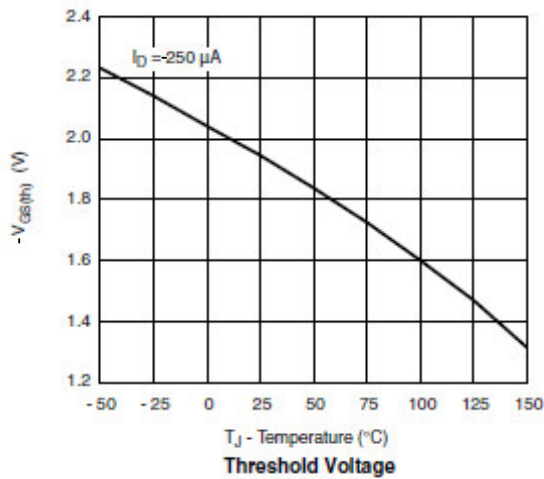
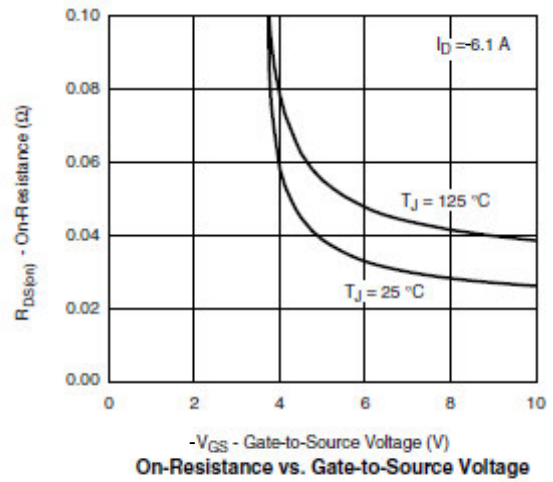
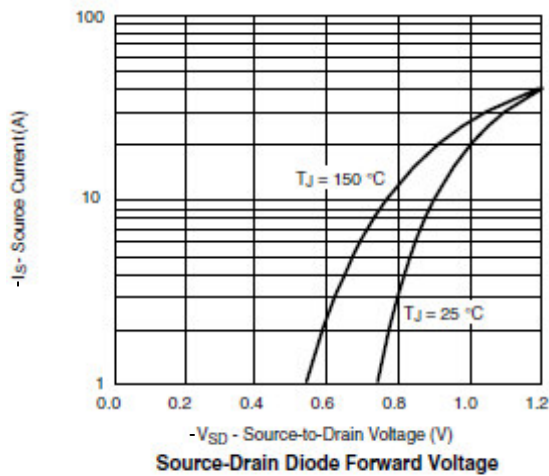
T<sub>A</sub>=25°C Unless otherwise noted

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> = -250μA	-30			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> = -250μA	-0.5		-1.8	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±12V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> = -24V, V <sub>GS</sub> =0V			-1	μA
		V <sub>DS</sub> =-24V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			-30	
I <sub>D(on)</sub>	On-State Drain Current	V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> = -10V	-10			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> = -10V, I <sub>D</sub> = -4.6A		32	36	mΩ
		V <sub>GS</sub> = -4.5V, I <sub>D</sub> = -3.6A		38	46	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> = -5V, I <sub>D</sub> = -4.0A		10		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> = -1.7A, V <sub>GS</sub> =0V		-0.7	-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> =-3.6A		10	18	nC
Q <sub>gs</sub>	Gate-Source Charge			1.6		
Q <sub>gd</sub>	Gate-Drain Charge			3.0		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz		900		pF
C <sub>oss</sub>	Output Capacitance			150		
C <sub>rss</sub>	Reverse Transfer Capacitance			120		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =-15V, R <sub>L</sub> =15Ω, I <sub>D</sub> =-3.6A, V <sub>GEN</sub> =-10V, R <sub>G</sub> =6Ω		8	18	ns
t <sub>r</sub>				8	18	
t <sub>d(off)</sub>	Turn-Off Time			25	50	
t <sub>f</sub>				25	35	

## Typical Performance Characteristics

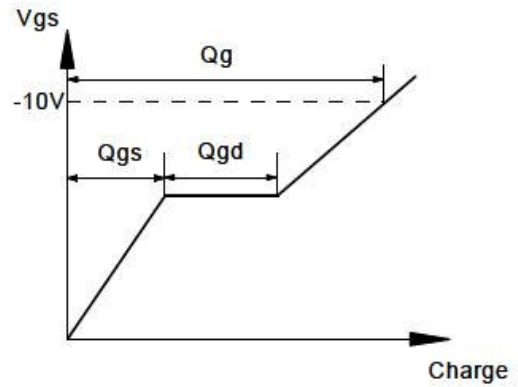
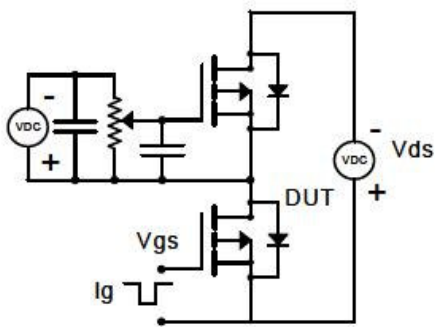


## Typical Performance Characteristics (continue)

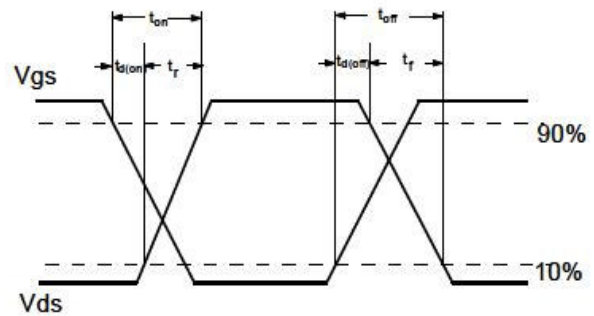
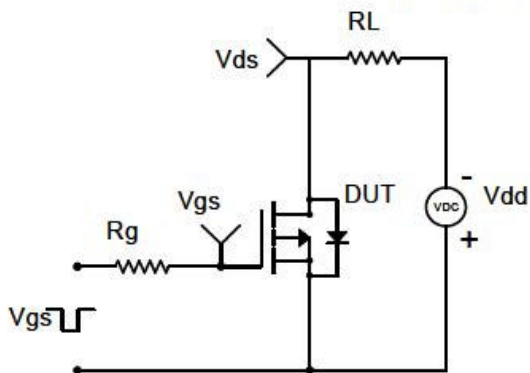


## Typical Performance Characteristics (continue)

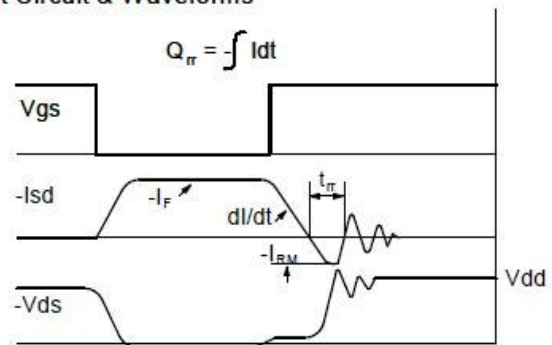
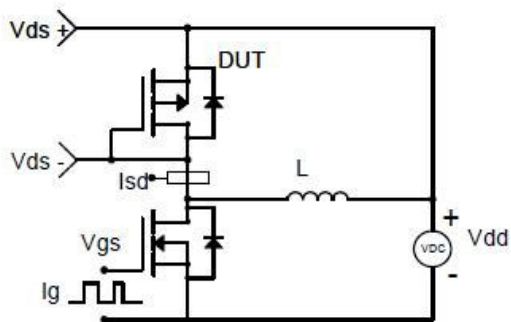
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

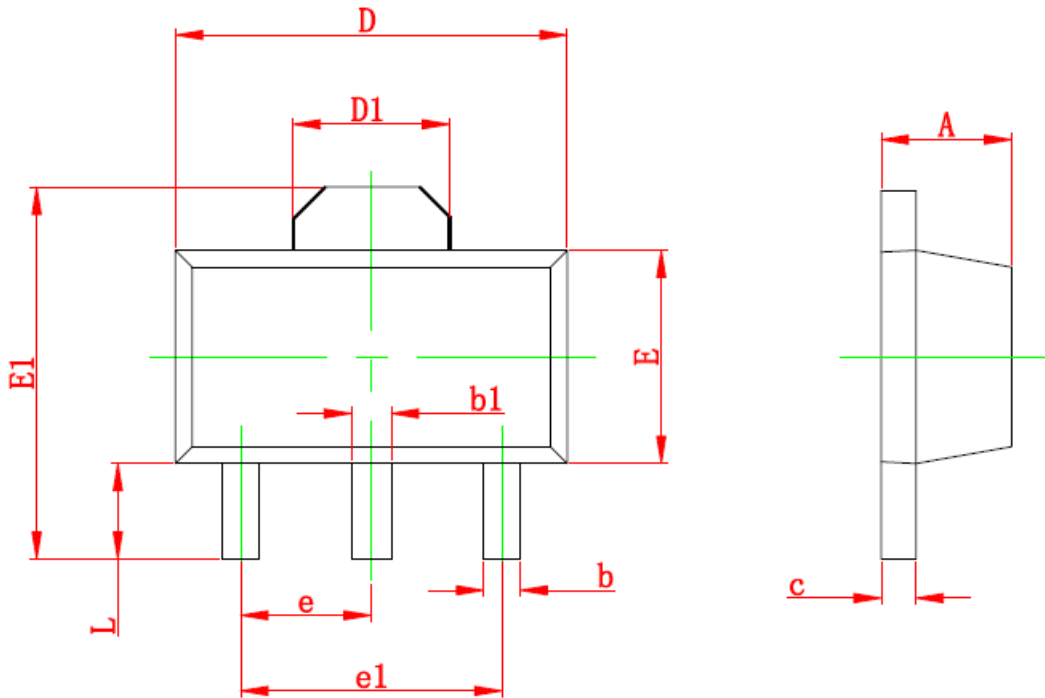


### Diode Recovery Test Circuit & Waveforms



Package Dimension

SOT-89-3L



Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 (REF)		0.061 (REF)	
E	2.30	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.50 (TYP)		0.060 (TYP)	
e1	3.00 (TYP)		0.118 (TYP)	
L	0.900 (TYP)	1.200	0.035	0.047

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