

# GSM6801

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM6801, 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 other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

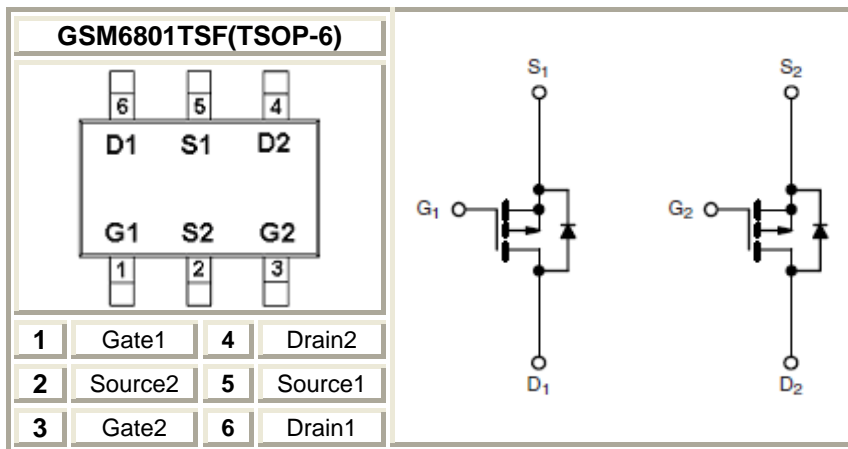
### Features

- $-30V/-3.8A, R_{DS(ON)}=135m\Omega @ V_{GS}=-10.0V$
- $-30V/-2.8A, R_{DS(ON)}=175m\Omega @ V_{GS}=-4.5V$
- $-30V/-1.8A, R_{DS(ON)}=245m\Omega @ V_{GS}=-2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

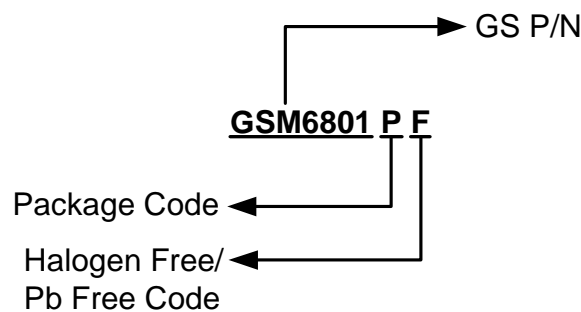
### Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- Net Working System

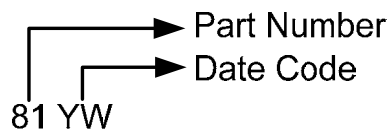
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM6801TSF	TSOP-6	81YW

## Absolute Maximum Ratings

( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

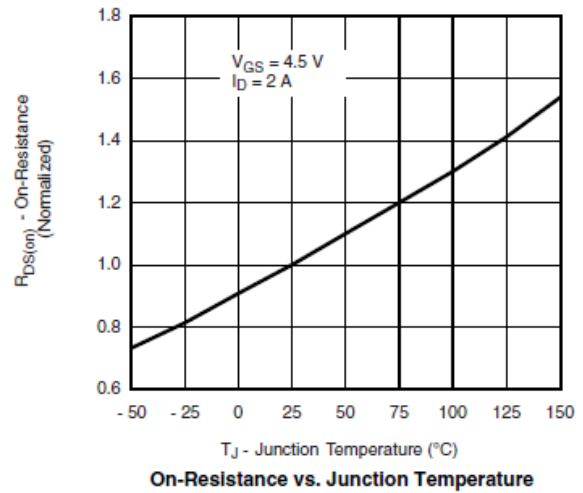
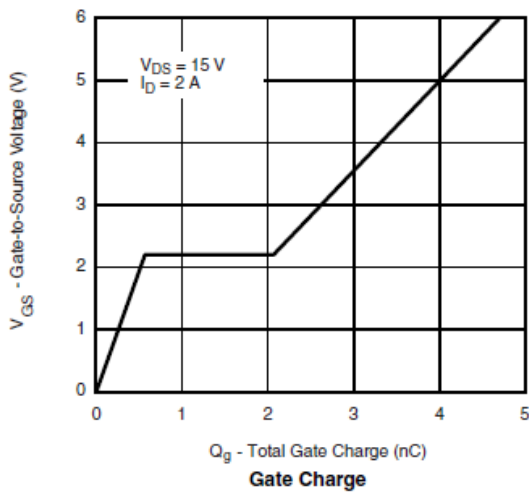
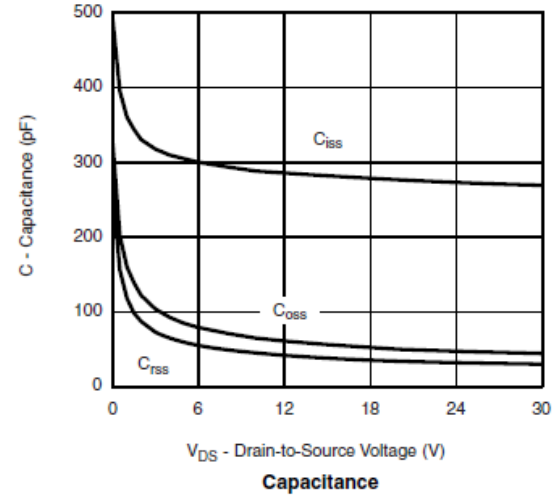
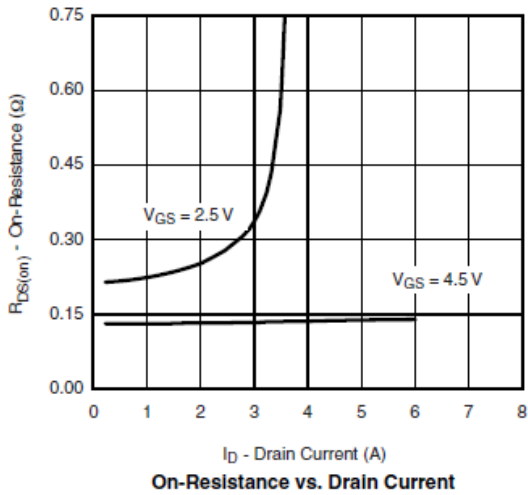
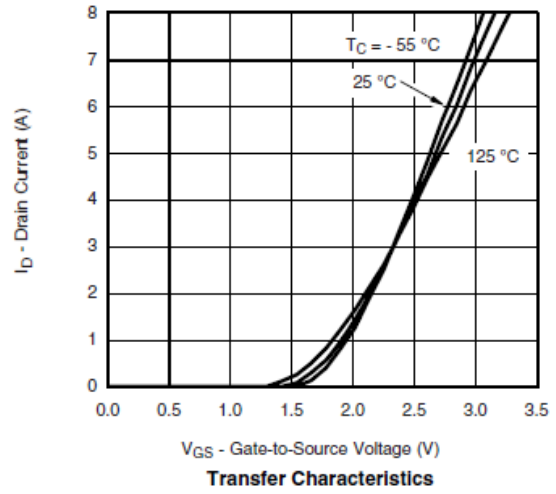
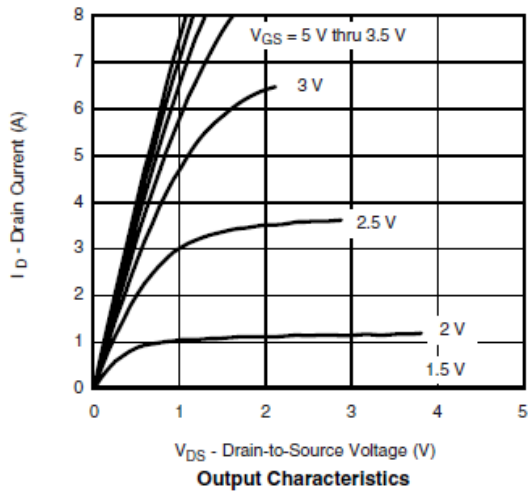
Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	-30	V	
$V_{GSS}$	Gate -Source Voltage	$\pm 12$	V	
$I_D$	Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$T_A=25^{\circ}\text{C}$	-3.8	A
		$T_A=70^{\circ}\text{C}$	-1.8	
$I_{DM}$	Pulsed Drain Current	-20	A	
$I_S$	Continuous Source Current(Diode Conduction)	-1.7	A	
$P_D$	Power Dissipation	$T_A=25^{\circ}\text{C}$	2.0	W
		$T_A=70^{\circ}\text{C}$	1.3	
$T_J$	Operating Junction Temperature	150	$^{\circ}\text{C}$	
$T_{STG}$	Storage Temperature Range	-55/150	$^{\circ}\text{C}$	
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	120	$^{\circ}\text{C}/\text{W}$	

## Electrical Characteristics

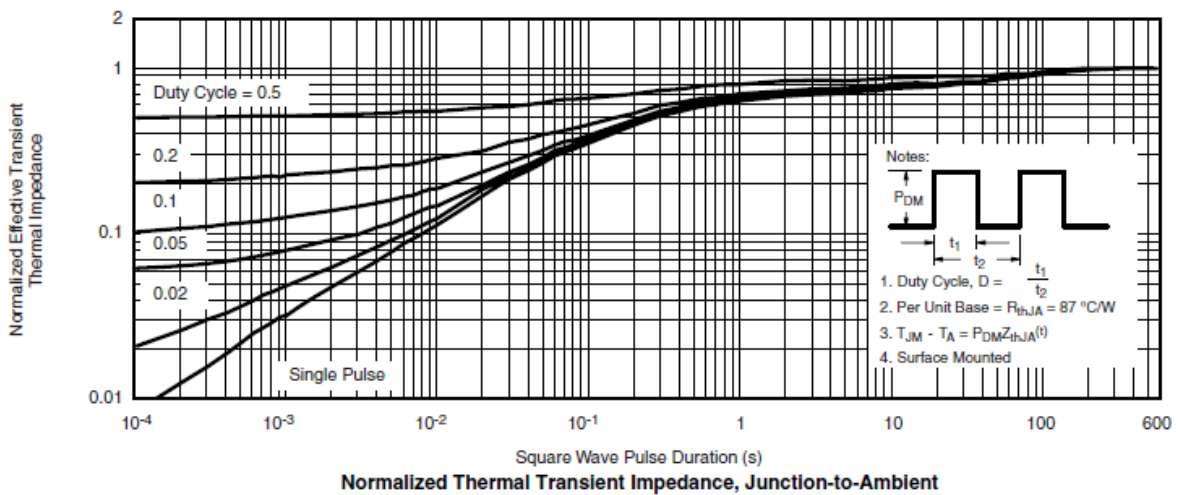
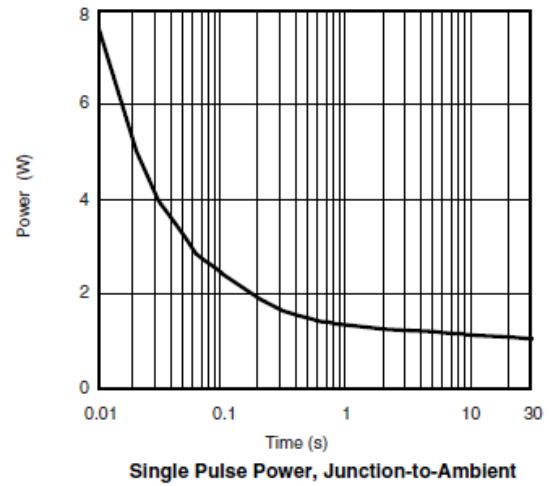
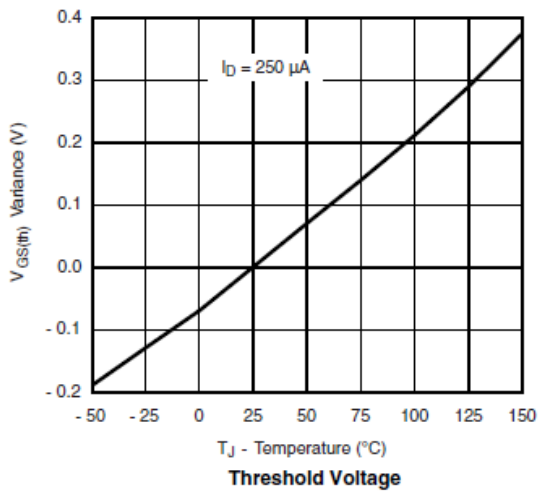
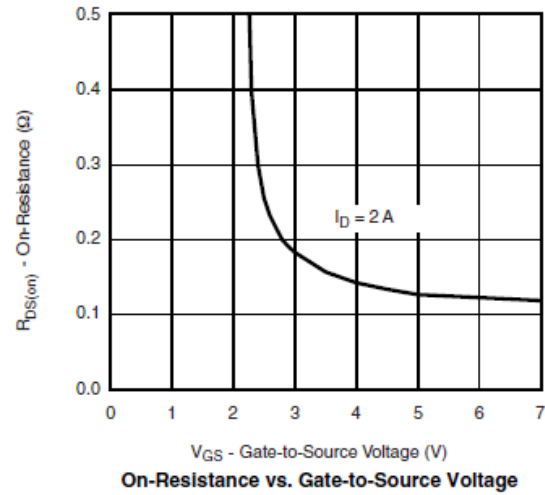
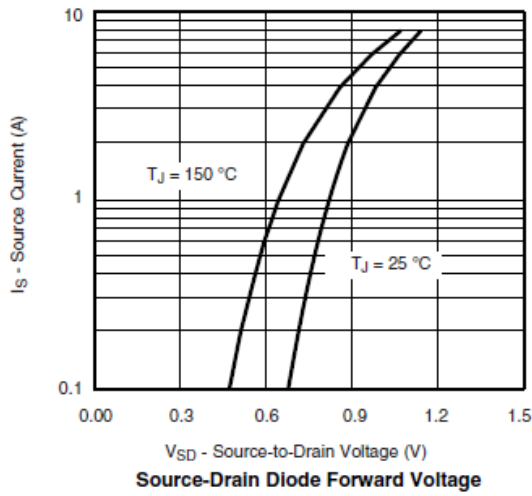
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6		-1.4	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V$ $T_A=85^\circ\text{C}$			-30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-10V$	-10			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-3.8A$		104	135	m $\Omega$
		$V_{GS}=-4.5V, I_D=-2.8A$		132	175	
		$V_{GS}=-2.5V, I_D=-1.8A$		190	245	
$g_{fs}$	Forward Transconductance	$V_{DS}=-5V, I_D=-4.0A$		10		S
$V_{SD}$	Diode Forward Voltage	$I_S=-1.7A, V_{GS}=0V$		-0.7	-1.3	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V$ $f=1\text{MHz}$		230		pF
$C_{oss}$	Output Capacitance			40		
$C_{rss}$	Reverse Transfer Capacitance			25		
$Q_g$	Total Gate Charge	$V_{DS}=-15V, V_{GS}=-4.5V$ $I_D=-2.0A$		4	6	nC
$Q_{gs}$	Gate-Source Charge			0.6		
$Q_{gd}$	Gate-Drain Charge			1.5		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-15V, R_L=15\Omega$ $I_D=-1.0A, V_{GEN}=-10V$ $R_G=6\Omega$		5	10	ns
$T_r$				8	15	
$t_{d(off)}$	Turn-Off Time			15	30	
$T_f$				15	30	

## Typical Performance Characteristics

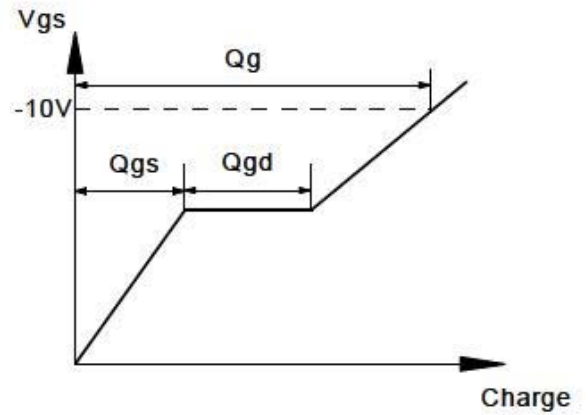
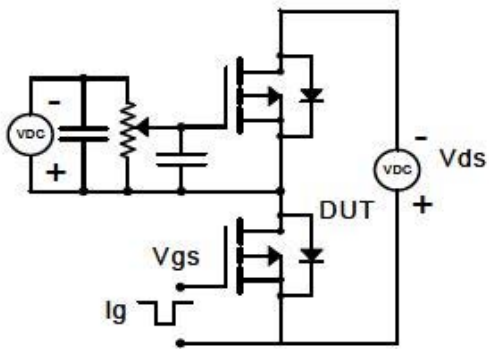


## Typical Performance Characteristics (continue)

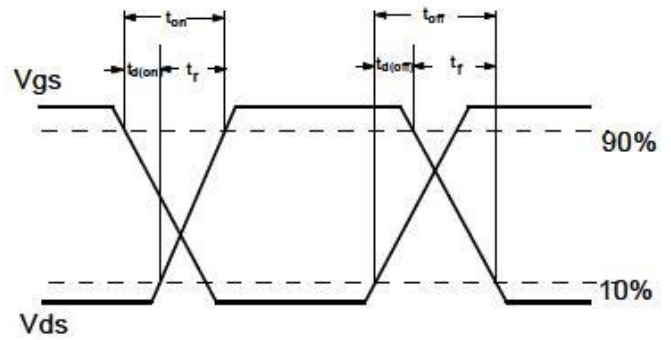
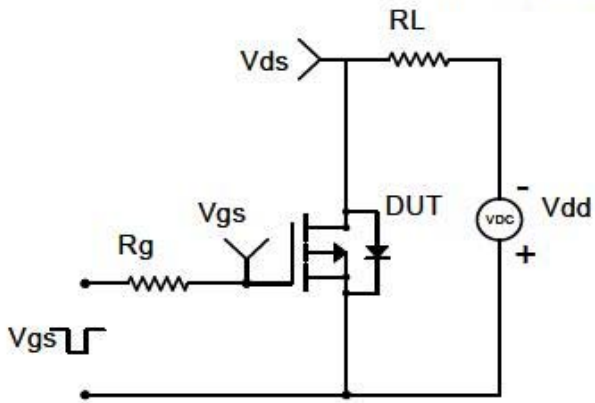


## Typical Characteristics

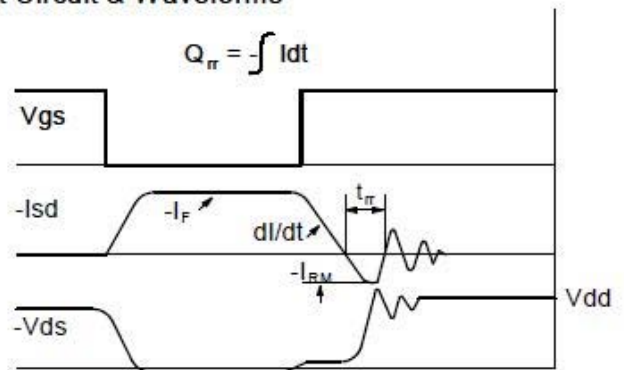
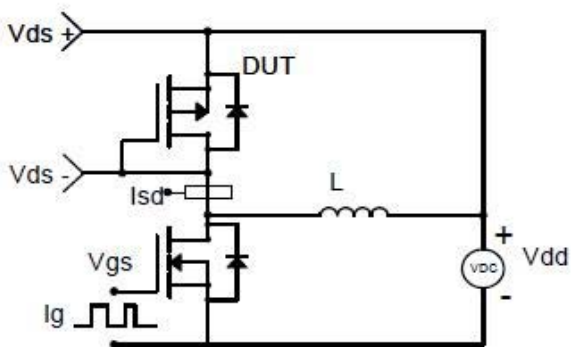
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

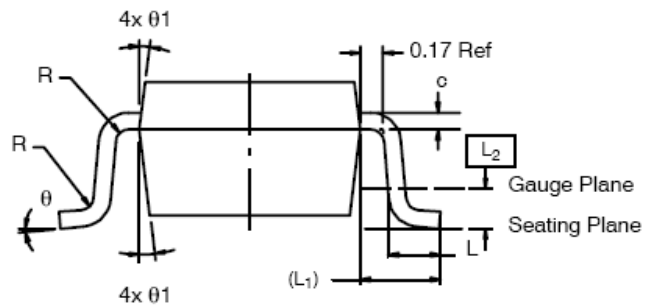
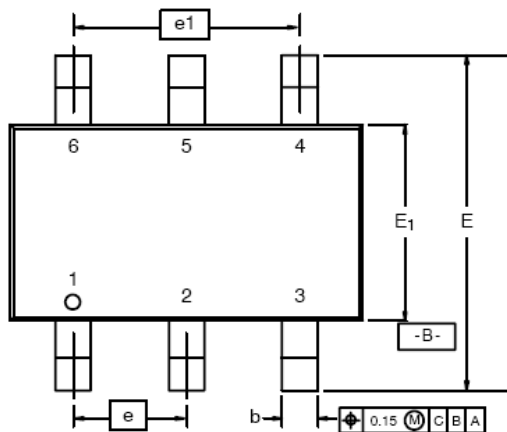


### Diode Recovery Test Circuit & Waveforms



## Package Dimension

# TSOP-6 PLASTIC PACKAGE







## Dimensions

SYMBOL	Millimeters			Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.91	-	1.10	0.036	-	0.043
A <sub>1</sub>	0.01	-	0.10	0.0004	-	0.004
A <sub>2</sub>	0.90	-	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E <sub>1</sub>	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e <sub>1</sub>	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L <sub>1</sub>	0.60 Ref			0.024 Ref		
L <sub>2</sub>	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
$\theta$	0°	4°	8°	0°	4°	8°
$\theta_1$	7° Nom			7° Nom		





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