

# GSM6561

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM6561, N-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.

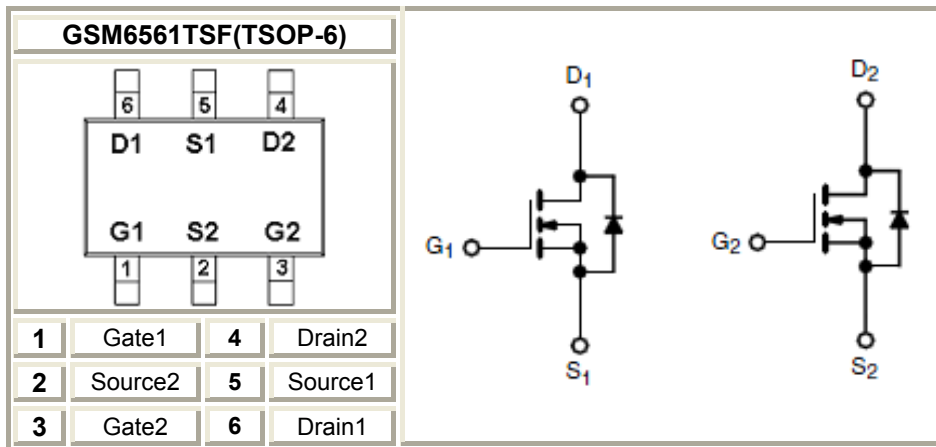
### Features

- 30V/3.6A,  $R_{DS(ON)}=75m\Omega@V_{GS}=10V$
- 30V/3.0A,  $R_{DS(ON)}=102m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- TSOP-6 package design

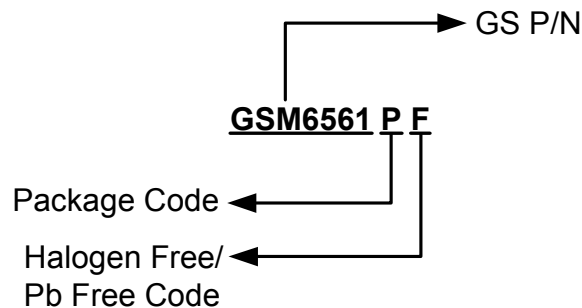
### Applications

- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

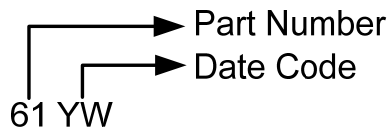
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM6561TSF	TSOP-6	61YW

## Absolute Maximum Ratings

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

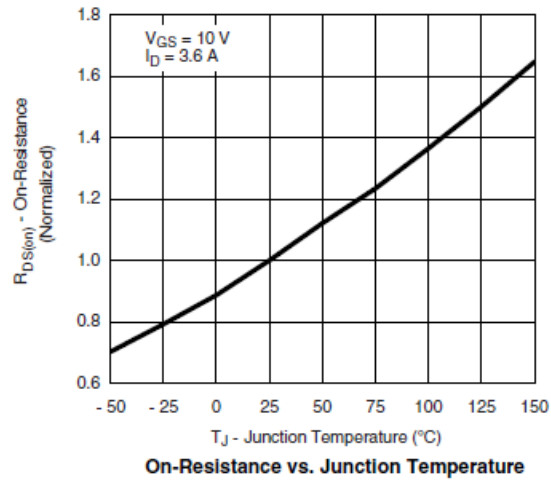
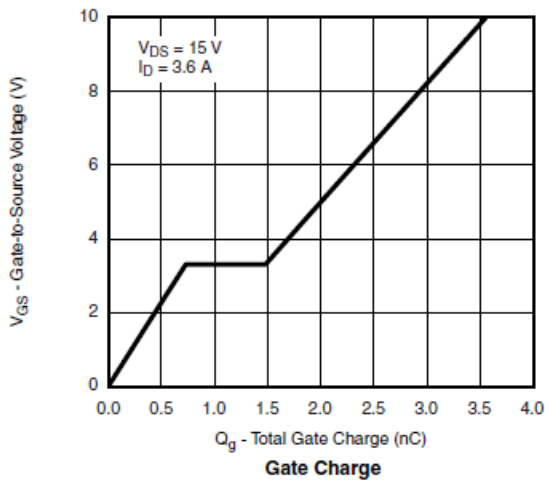
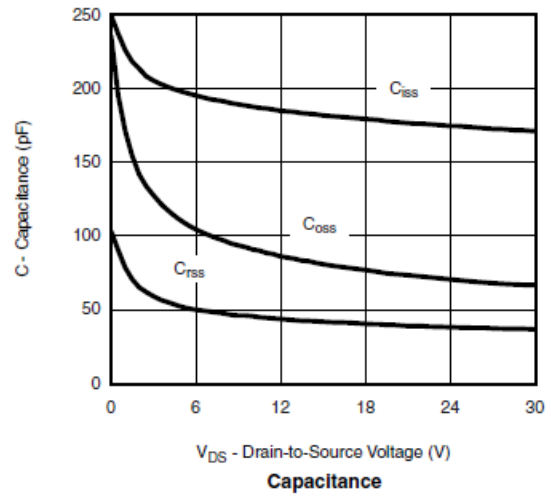
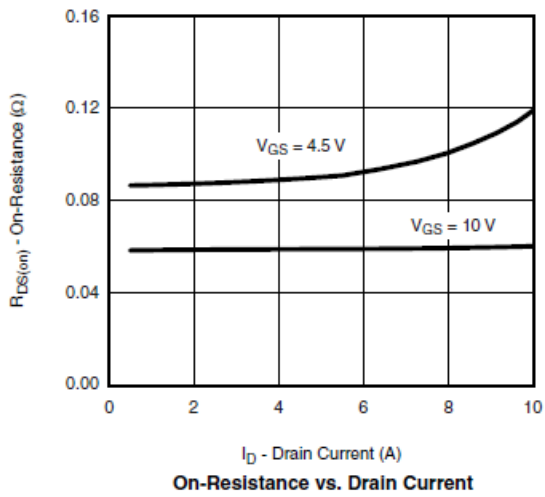
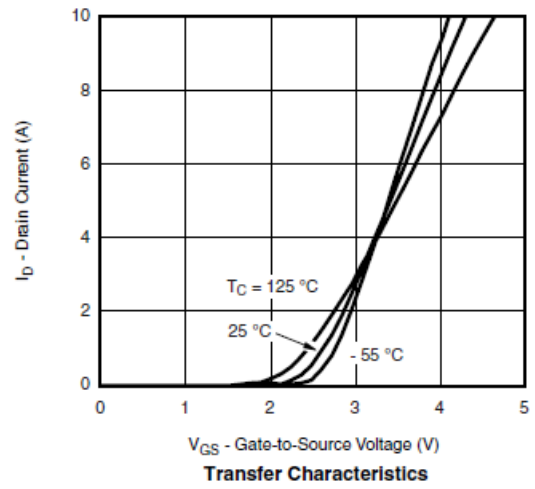
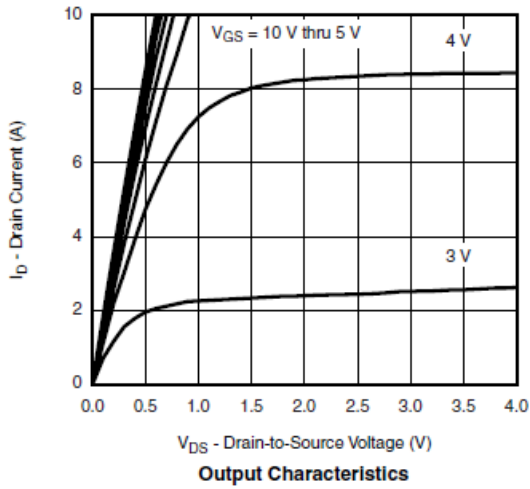
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	30	V	
V <sub>GSS</sub>	Gate -Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	TA=25°C	3.6	A
		TA=70°C	2.2	
I <sub>DM</sub>	Pulsed Drain Current	20	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	1.7	A	
P <sub>D</sub>	Power Dissipation	TA=25°C	2.0	W
		TA=70°C	1.3	
T <sub>J</sub>	Operating Junction Temperature	150	°C	
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C	
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	120	°C/W	

## Electrical Characteristics

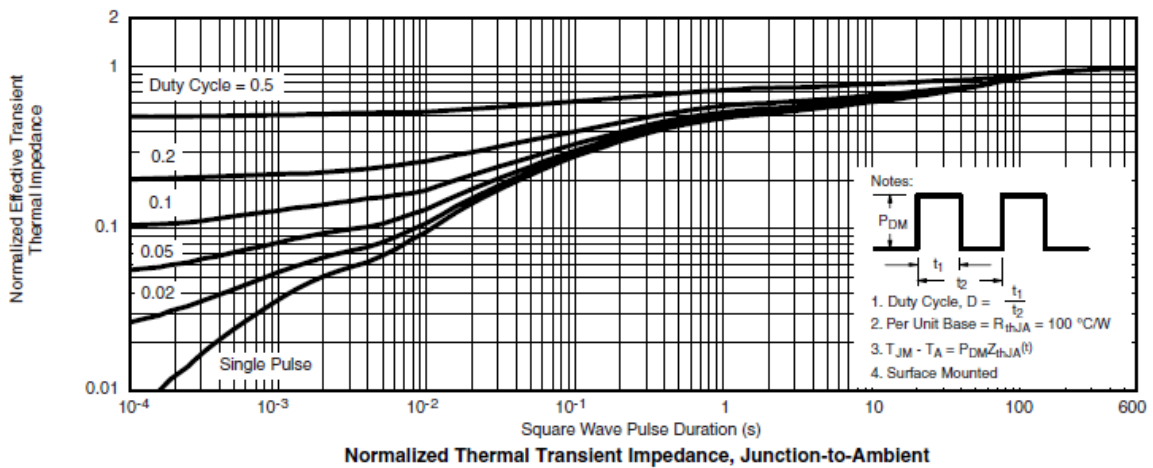
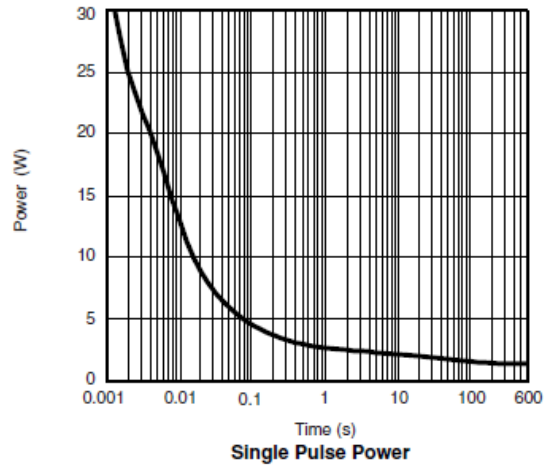
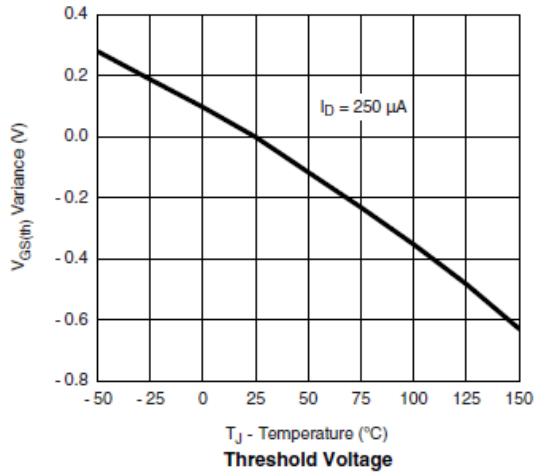
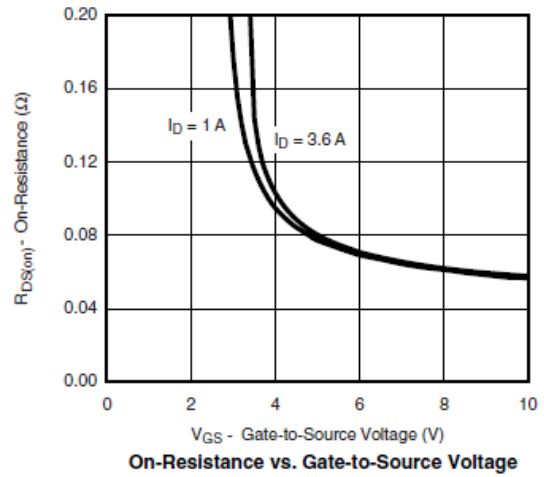
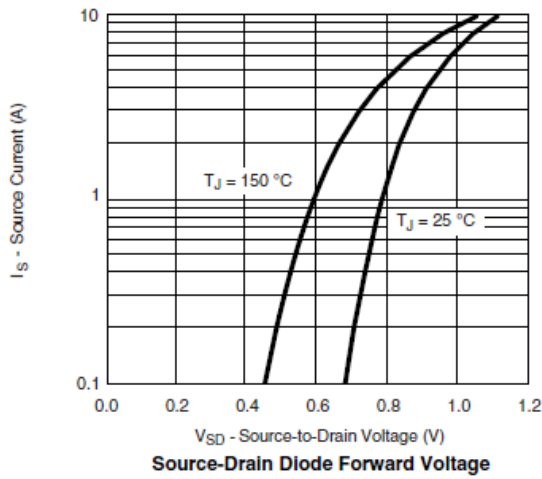
( $T_A=25^\circ\text{C}$  unless otherwise noted)

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	$V_{DS}=V_{GS}, I_D=250\mu A$	1.0		2.5	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	uA
		$V_{DS}=30V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			30	
$I_{D(on)}$	On-State Drain Current	$V_{DS} \geq 5V, V_{GS}=4.5V$	30			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=10V, I_D=3.6A$		68	75	m $\Omega$
		$V_{GS}=4.5V, I_D=3.0A$		92	102	
$g_{fs}$	Forward Transconductance	$V_{DS}=10V, I_D=6.1A$		20		S
$V_{SD}$	Diode Forward Voltage	$I_S=1.7A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V$ $f=1\text{MHz}$		280		pF
$C_{oss}$	Output Capacitance			40		
$C_{rss}$	Reverse Transfer Capacitance			20		
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=4.5V$ $I_D \approx 3.6A$		2.3	3	nC
$Q_{gs}$	Gate-Source Charge			1.0		
$Q_{gd}$	Gate-Drain Charge			0.6		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=15\Omega$ $I_D \approx 1.0A, V_{GEN}=10V$ $R_G=6\Omega$		10	15	ns
$T_r$				12	20	
$t_{d(off)}$	Turn-Off Time			15	25	
$T_f$				10	15	

## Typical Performance Characteristics

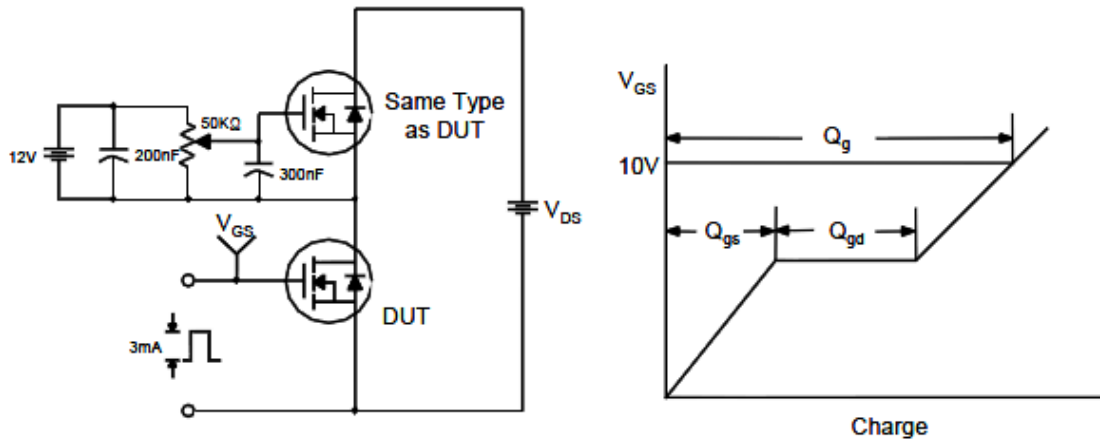


## Typical Performance Characteristics (continue)

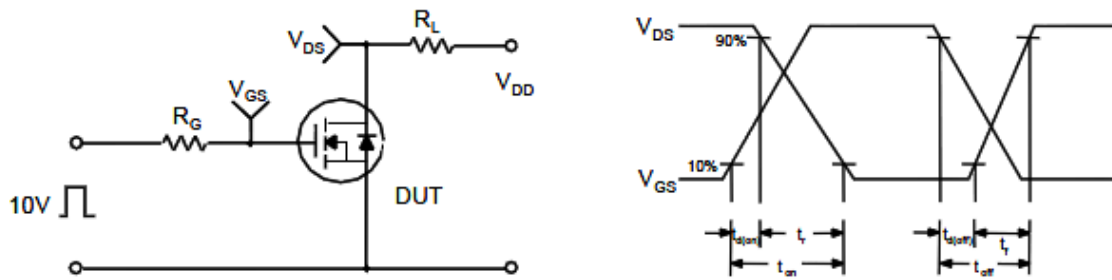


## Typical Characteristics

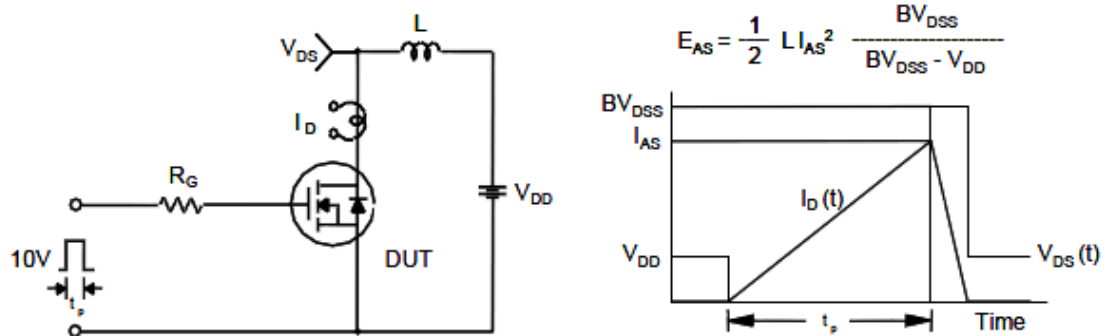
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

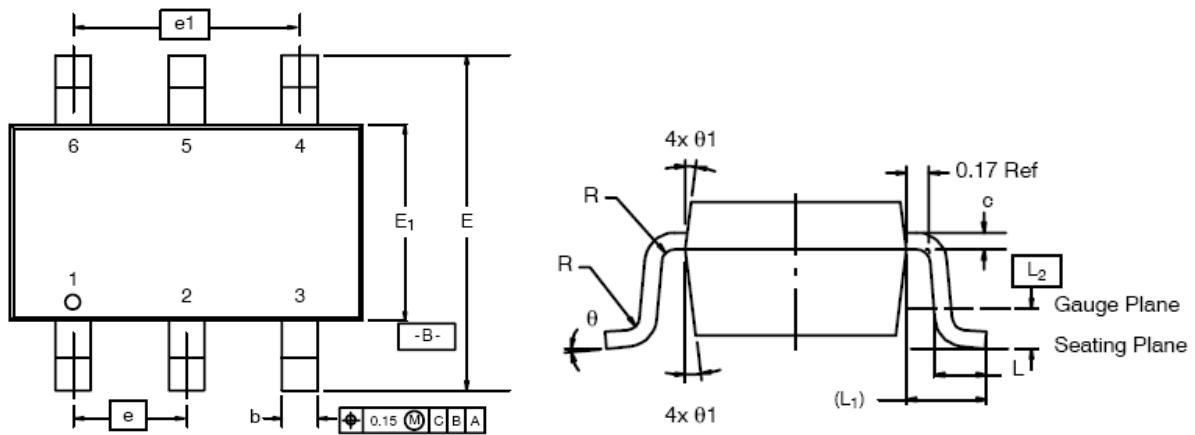


Unclamped Inductive Switching Test Circuit & Waveforms



## 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	-	-
θ	0°	4°	8°	0°	4°	8°
θ <sub>1</sub>	7° Nom			7° Nom		





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