

# GSM3405

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM3405, 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.

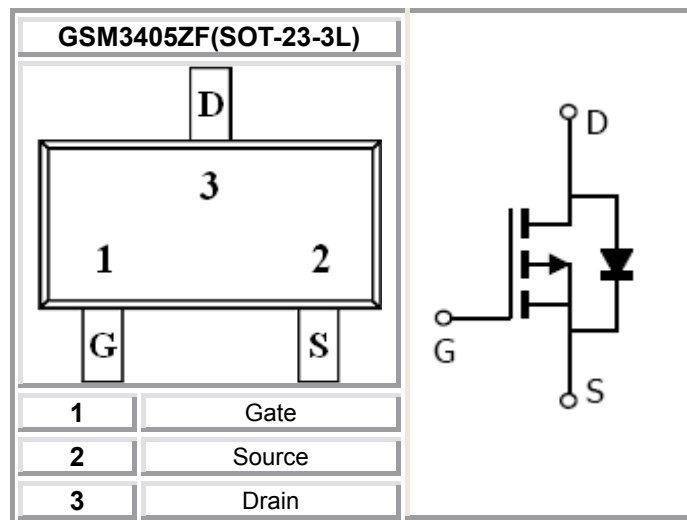
### Features

- -30V/-4.0A,  $R_{DS(ON)}=40m\Omega@V_{GS}=-10V$
- -30V/-2.8A,  $R_{DS(ON)}=50m\Omega@V_{GS}=-4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-23-3L package design

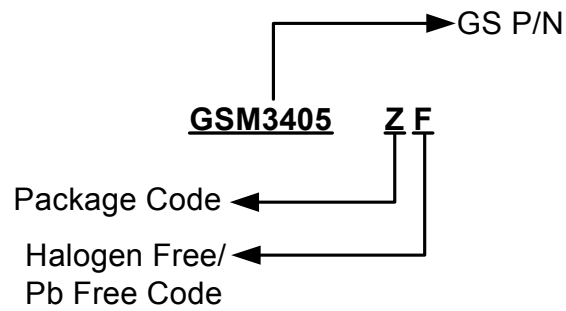
### Applications

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

### Packages & Pin Assignments

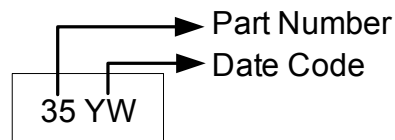


## Ordering Information



Part Number	Package	Quantity Reel
GSM3405ZF	SOT-23-3L	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

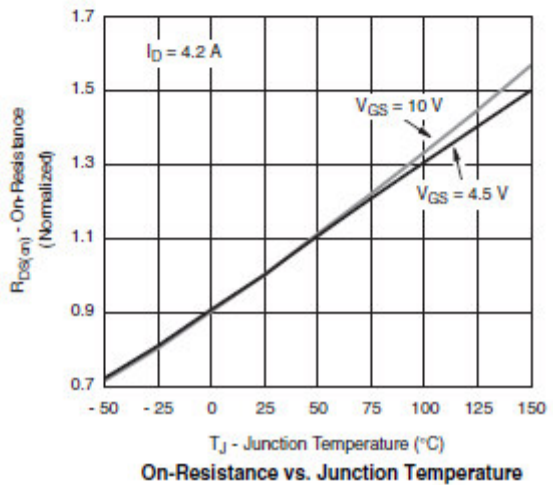
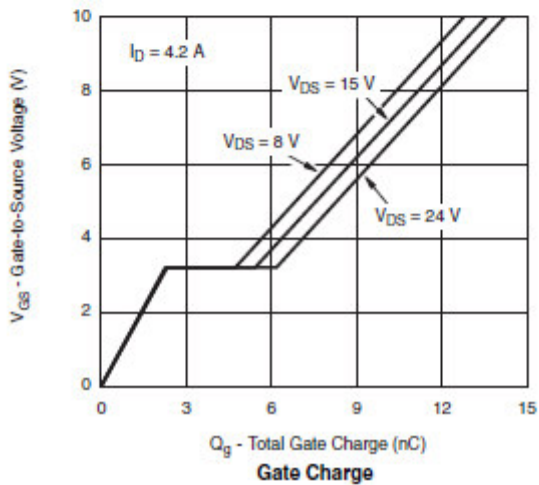
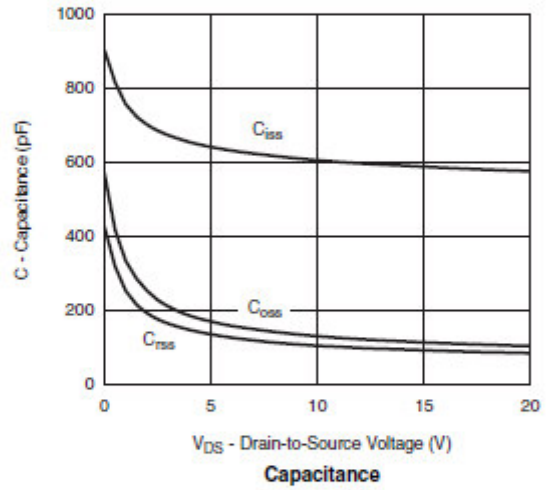
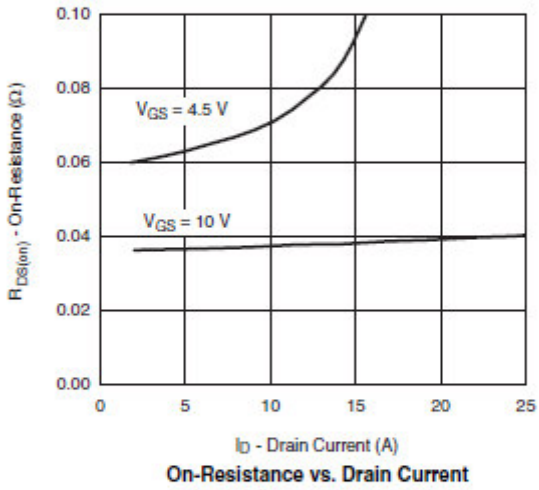
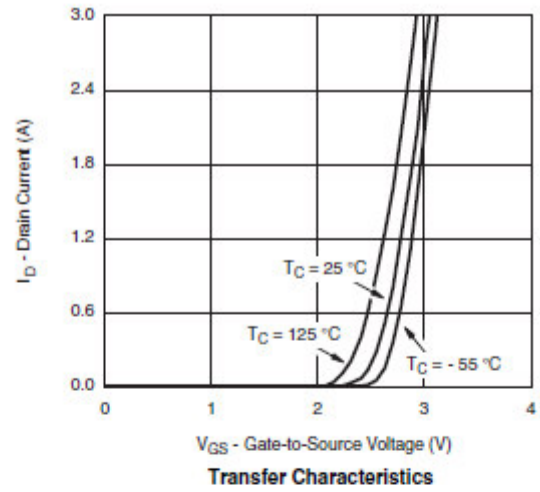
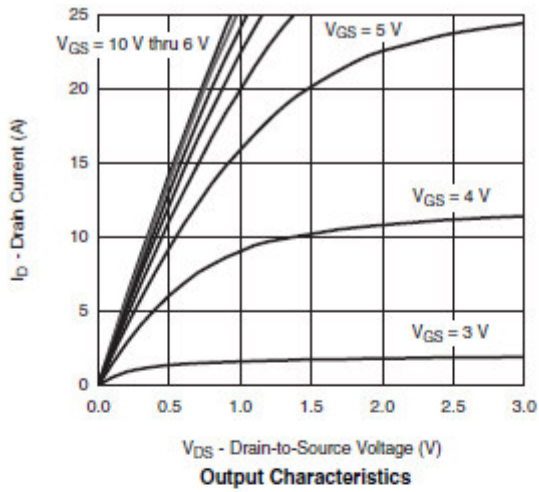
Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	-30	V	
$V_{GSS}$	Gate -Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$T_A=25^\circ\text{C}$	-4.0	A
		$T_A=70^\circ\text{C}$	-2.8	
$I_{DM}$	Pulsed Drain Current	-15	A	
$I_S$	Continuous Source Current(Diode Conduction)	-1.5	A	
$P_D$	Power Dissipation	$T_A=25^\circ\text{C}$	1.25	W
		$T_A=70^\circ\text{C}$	0.8	
$T_J$	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	$^\circ\text{C/W}$	

## Electrical Characteristics

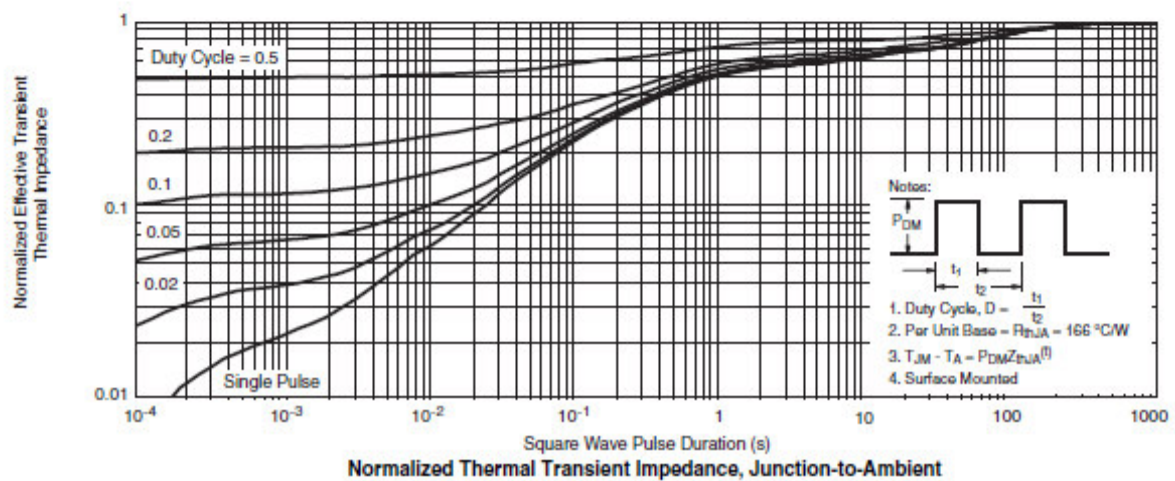
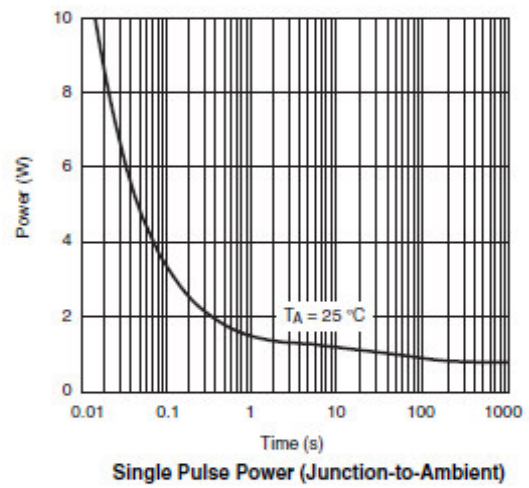
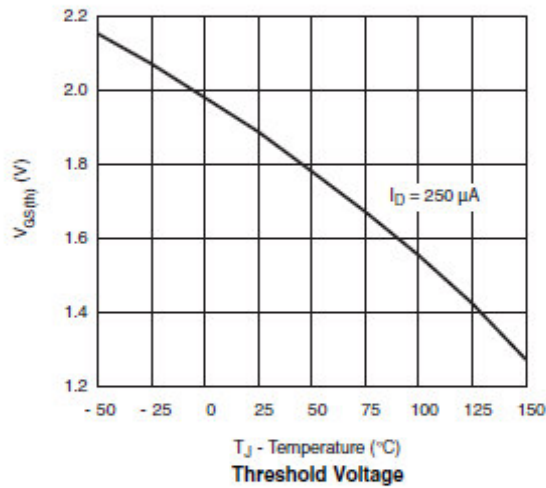
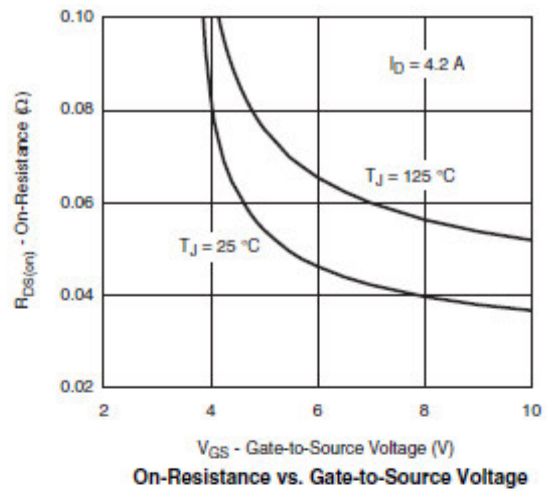
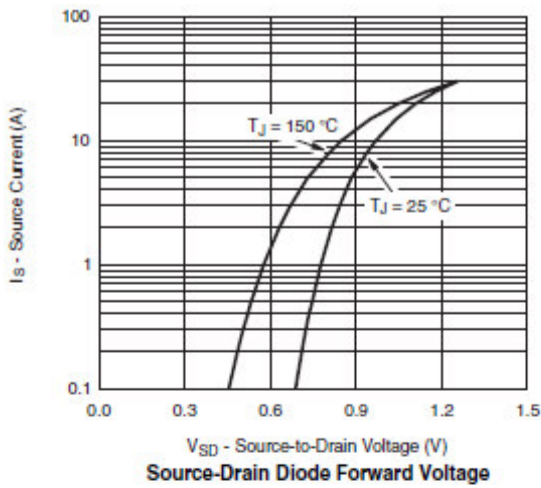
( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

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	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5		-1.8	
$I_{GSS}$	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
		$V_{DS}=-24V, V_{GS}=0V, T_J=85^{\circ}\text{C}$			-30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-10V$	-10			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-10V, I_D=-4.0A$		33	40	m $\Omega$
		$V_{GS}=-4.5V, I_D=-2.8A$		39	50	
$g_{fs}$	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	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$		800		pF
$C_{oss}$	Output Capacitance			135		
$C_{riss}$	Reverse Transfer Capacitance			105		
$Q_g$	Total Gate Charge	$V_{DS}=-15V, V_{GS}=-4.5V, I_D=-4.0A$		9	15	nC
$Q_{gs}$	Gate-Source Charge			2.8		
$Q_{gd}$	Gate-Drain Charge			4.5		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-15V, R_L=4.5\Omega, I_D=-3.3A, V_{GEN}=-4.5V, R_G=1\Omega$		30	40	ns
$T_r$				25	36	
$t_{d(off)}$	Turn-Off Time			24	32	
$T_f$				20	30	

## Typical Performance Characteristics

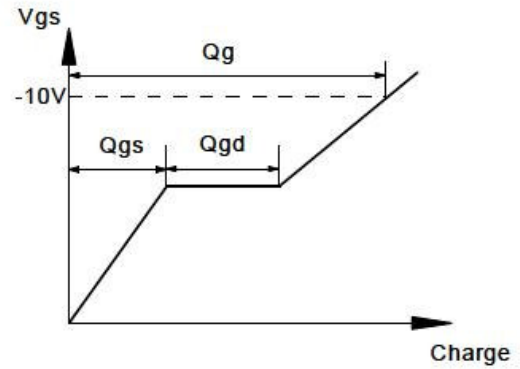
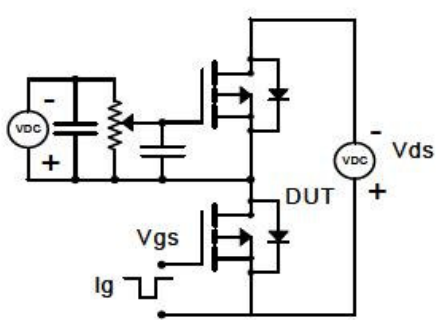


## Typical Performance Characteristics (continue)

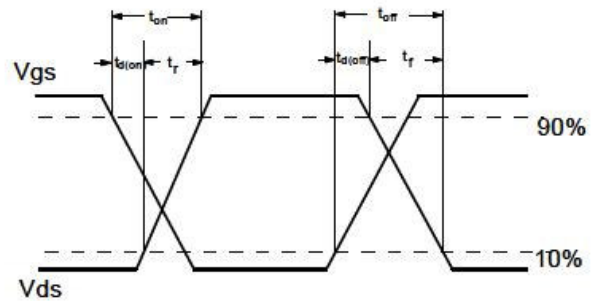
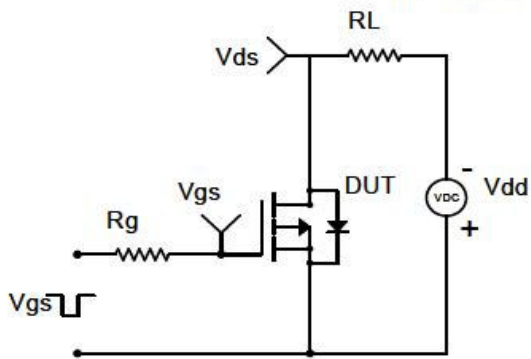


## Typical Characteristics

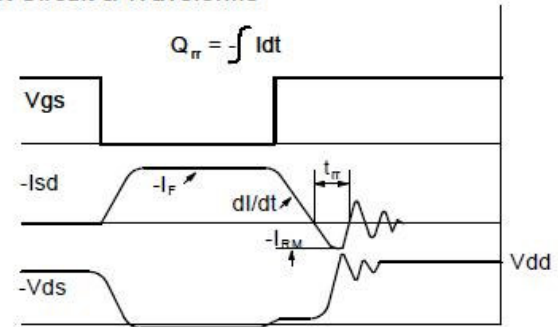
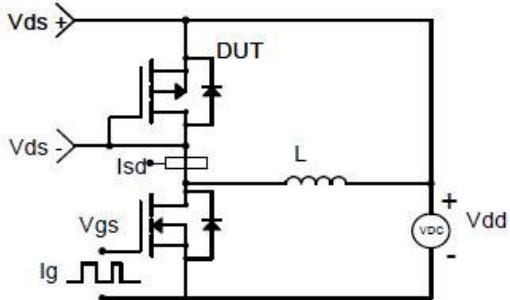
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

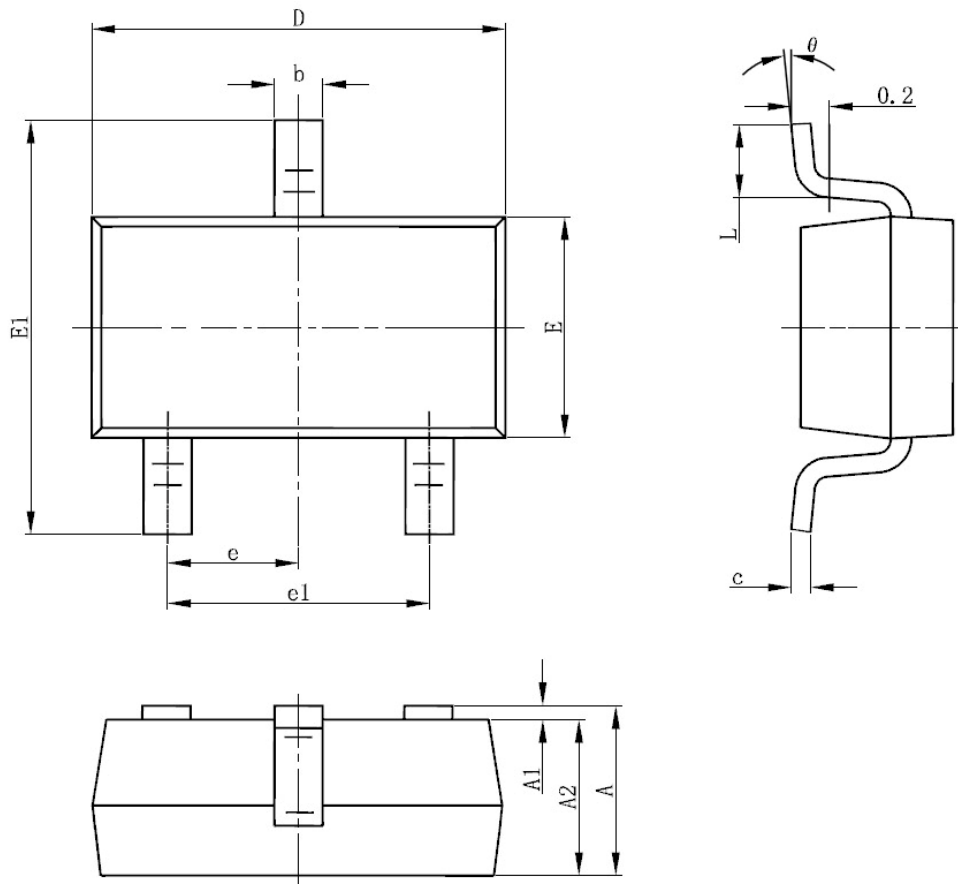


### Diode Recovery Test Circuit & Waveforms



## Package Dimension

### SOT-23-3L







Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
<b>A</b>	1.05	1.25	0.041	0.049
<b>A1</b>	0	0.1	0	0.004
<b>A2</b>	1.05	1.15	0.041	0.045
<b>b</b>	0.3	0.4	0.012	0.016
<b>c</b>	0.1	0.2	0.004	0.008
<b>D</b>	2.82	3.02	0.111	0.119
<b>E</b>	1.5	1.7	0.059	0.067
<b>E1</b>	2.65	2.95	0.104	0.116
<b>e</b>	0.950 TYP		0.037 TYP	
<b>e1</b>	1.8	2	0.071	0.079
<b>L</b>	0.700 REF		0.028 REF	
<b>L1</b>	0.3	0.6	0.012	0.024
<b>θ</b>	0°	8°	0°	8°


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