

# GSM3456S

## 30V N-Channel Enhancement Mode MOSFET

### Product Description

GSM3456S, 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.

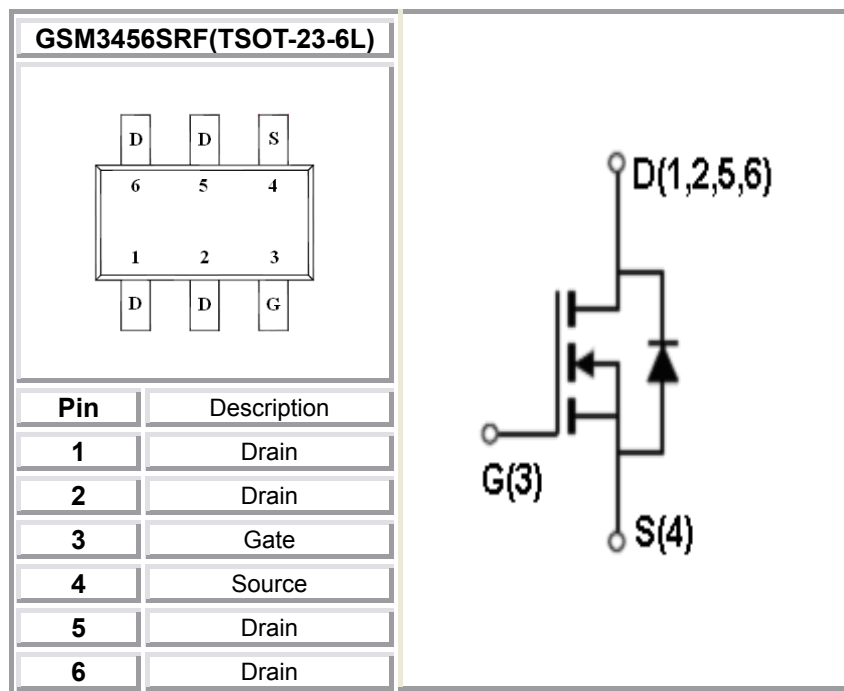
### Features

- 30V/5.4A,  $R_{DS(ON)}=40m\Omega@V_{GS}=10.0V$
- 30V/4.8A,  $R_{DS(ON)}=50m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- TSOT-23-6L package design

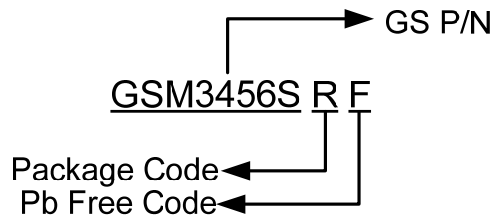
### Applications

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

### Packages & Pin Assignments

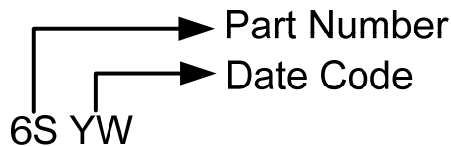


## Ordering Information



Part Number	Package	Quantity Reel
GSM3456SRF	TSOT-23-6L	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

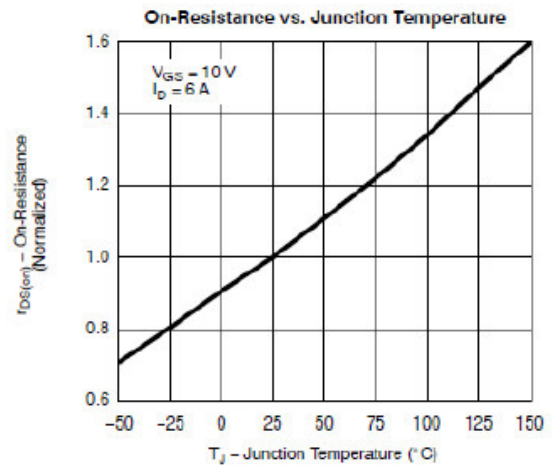
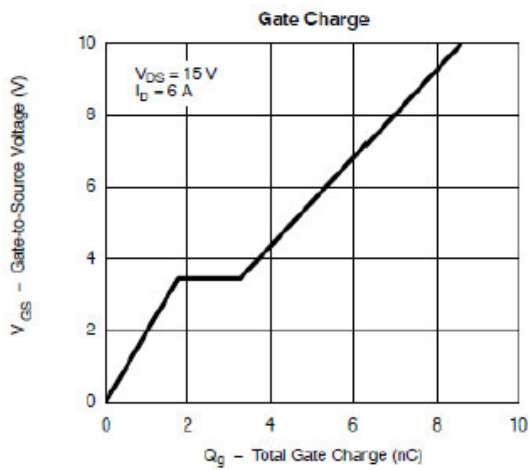
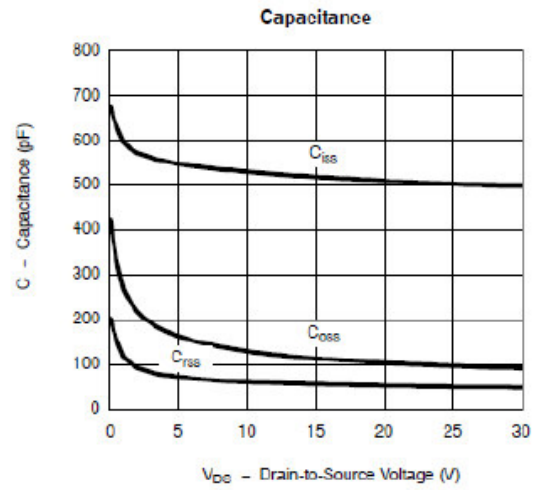
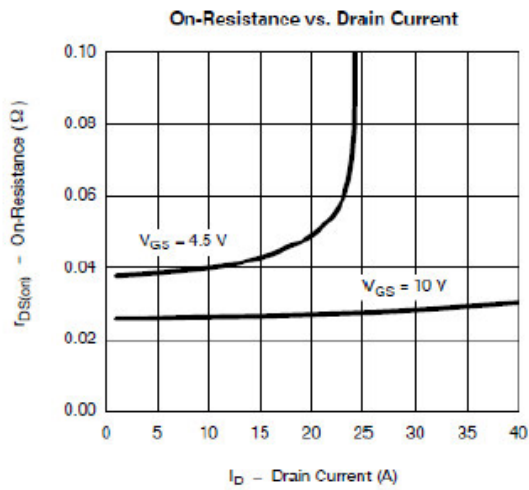
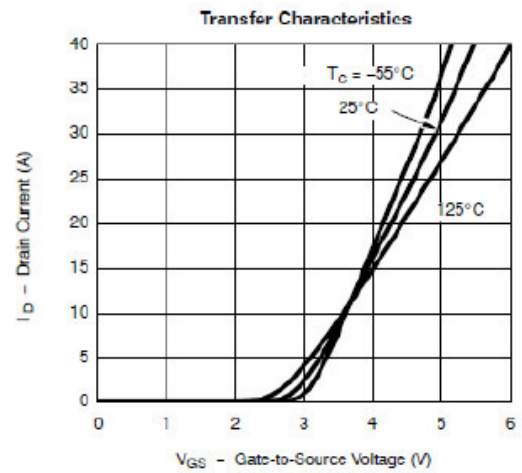
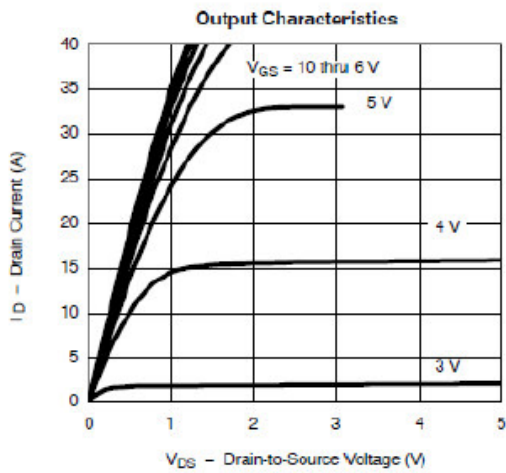
Symbol	Parameter	Typical	Unit	
V <sub>DSS</sub>	Drain-Source Voltage	30	V	
V <sub>GSS</sub>	Gate –Source Voltage	±20	V	
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	5.4	A
		T <sub>A</sub> =70°C	4.8	
I <sub>DM</sub>	Pulsed Drain Current	30	A	
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	1.7	A	
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	2.0	W
		T <sub>A</sub> =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

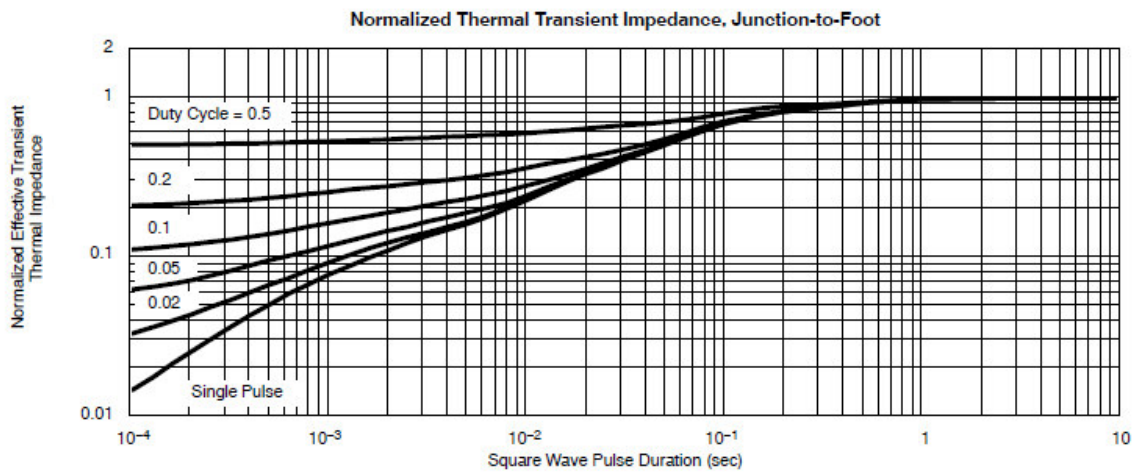
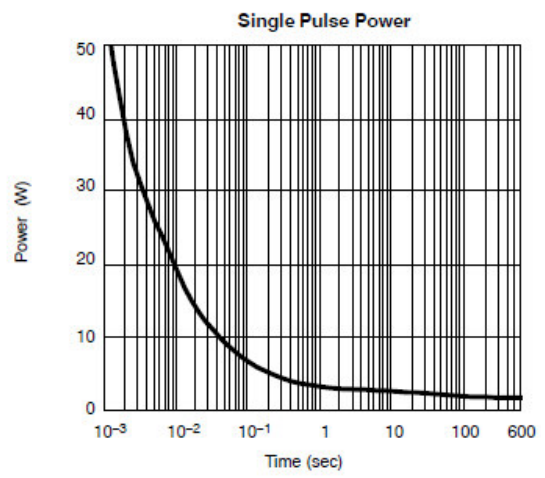
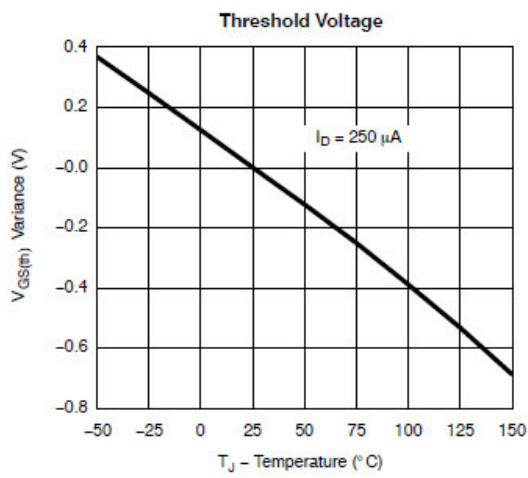
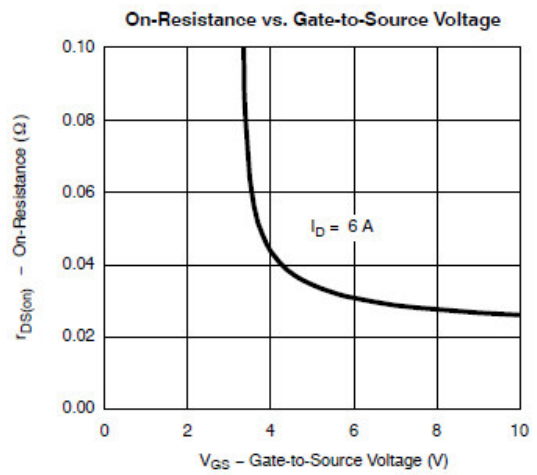
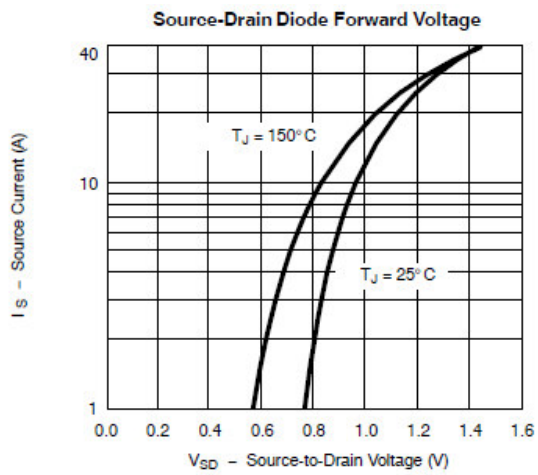
( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

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	$V_{DS}=V_{GS}, I_D=250\mu A$	1.3		2.1	V
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	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	$V_{DS} \geq 4.5V, V_{GS}=10V$	6			A
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS} = 10.0V, I_D=5.4A$		32	40	m $\Omega$
		$V_{GS} = 4.5V, I_D=4.8A$		42	50	
$g_{FS}$	Forward Transconductance	$V_{DS}=4.5V, I_D=2.5A$		8		S
$V_{SD}$	Diode Forward Voltage	$I_S=1.6A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
$Q_g$	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V,$ $I_D=2.6A$		3.0	4.5	nC
$Q_{gs}$	Gate-Source Charge			1.6		
$Q_{gd}$	Gate-Drain Charge			0.6		
$C_{iss}$	Input Capacitance	$V_{DS}=15V, V_{GS}=0V,$ $f=1\text{MHz}$		320		pF
$C_{oss}$	Output Capacitance			70		
$C_{rss}$	Reverse Transfer Capacitance			30		
$t_{d(on)}$	Turn-On Time	$V_{DD}=15V, R_L=15\Omega,$ $I_D=1.0A, V_{GEN}=10V,$ $R_G=6\Omega$		8	12	ns
$t_r$				12	18	
$t_{d(off)}$	Turn-Off Time			15	30	
$t_f$				8	15	

## Typical Performance Characteristics

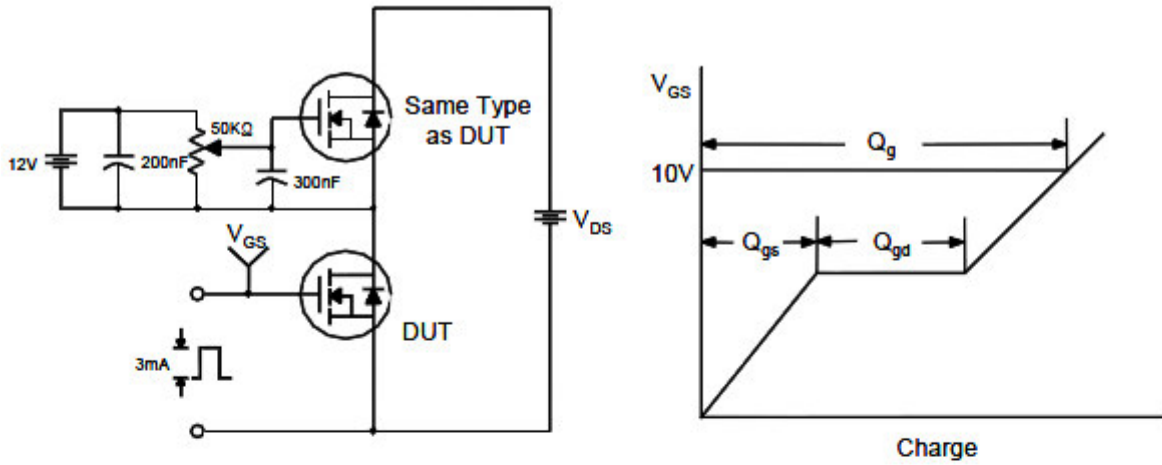


## Typical Performance Characteristics (continue)

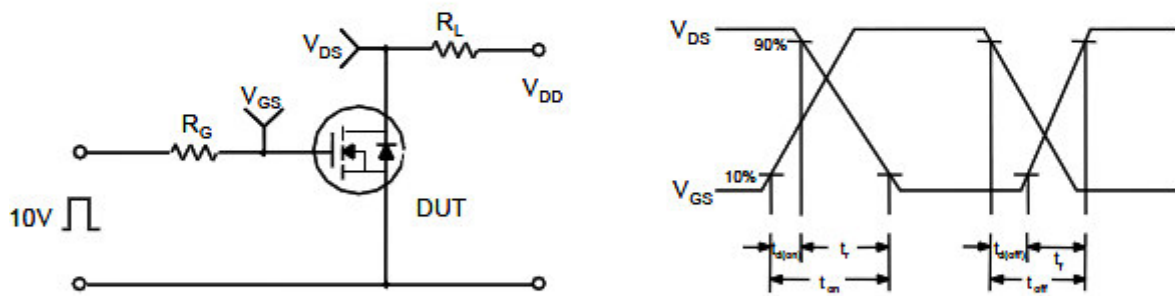


## Typical Performance Characteristics (continue)

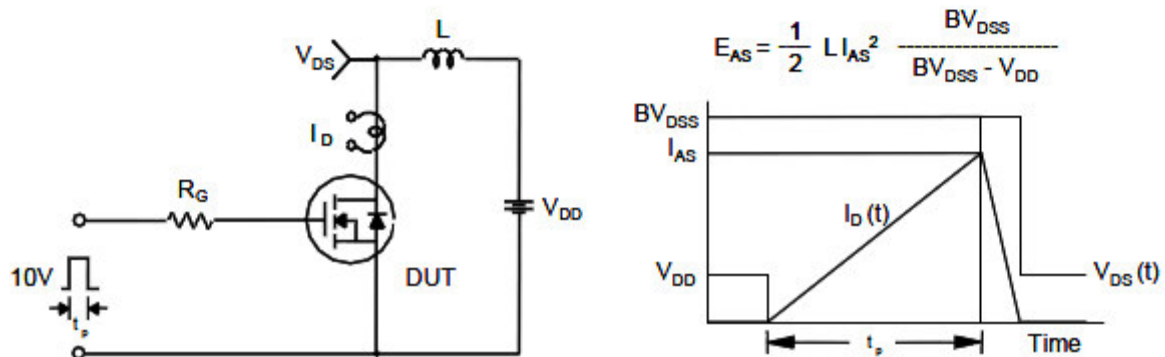
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

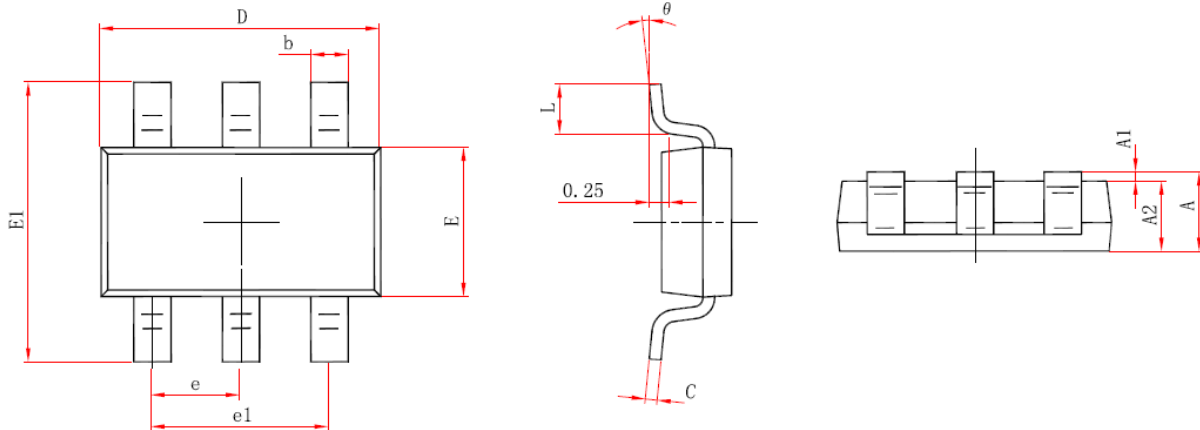


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### TSOT-23-6L






Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
<b>A</b>	0.700	0.900	0.028	0.035
<b>A1</b>	0.000	0.100	0.000	0.004
<b>A2</b>	0.700	0.800	0.028	0.031
<b>b</b>	0.350	0.500	0.014	0.020
<b>c</b>	0.080	0.200	0.003	0.008
<b>D</b>	2.820	3.020	0.111	0.119
<b>E</b>	1.600	1.700	0.063	0.067
<b>E1</b>	2.650	2.950	0.104	0.116
<b>e</b>	0.950 (BSC)		0.037 (TYP)	
<b>e1</b>	1.900 (BSC)		0.075 (TYP)	
<b>L</b>	0.300	0.600	0.012	0.024
<b><math>\theta</math></b>	0°	8°	0°	8°



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