

# GSM4996

## 90V N-Channel Enhancement Mode MOSFET

### Product Description

GSM4996, 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.

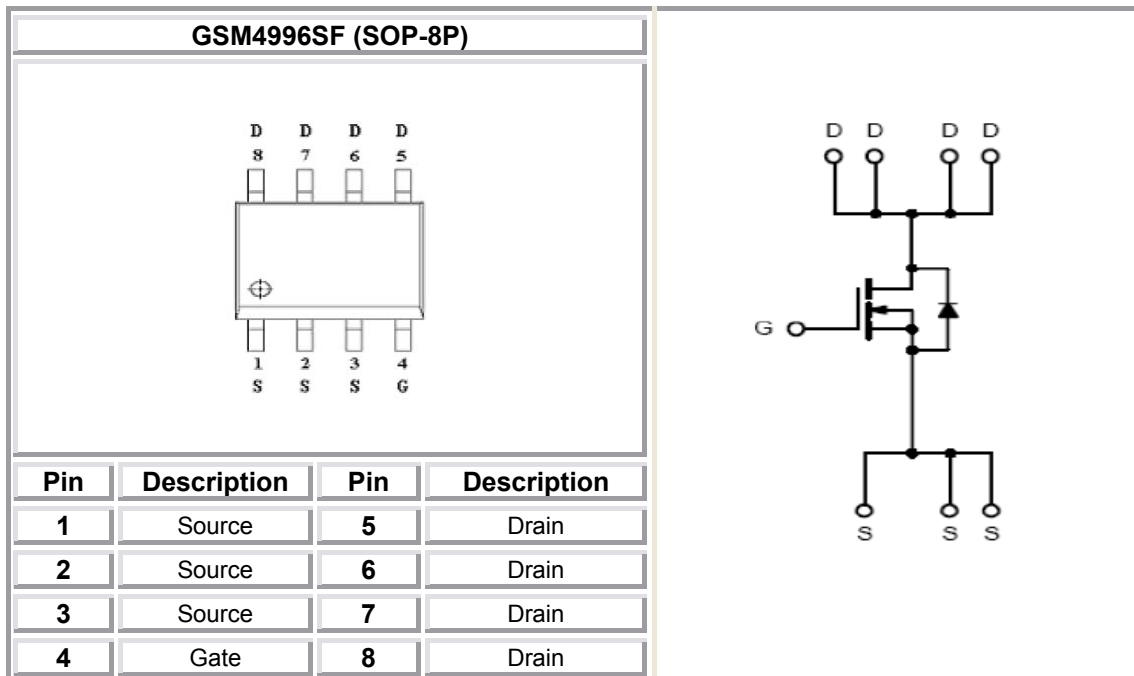
### Features

- 90V/7.6A,  $R_{DS(ON)}=68m\Omega@V_{GS}=10V$
- 90V/6.8A,  $R_{DS(ON)}=75m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOP-8P package design

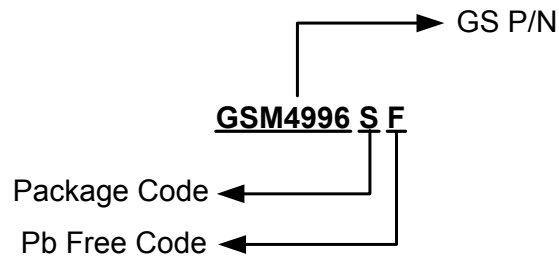
### Applications

- Motor and Load Control
- AD/DC Inverter Systems.
- Power Management in White LED System

### Packages & Pin Assignments

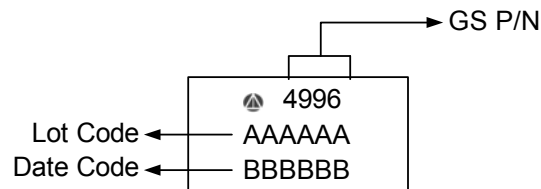


## Ordering Information



Part Number	Package	Quantity Reel
GSM4996SF	SOP-8P	3000 PCS

## Marking Information



## Absolute Maximum Ratings

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

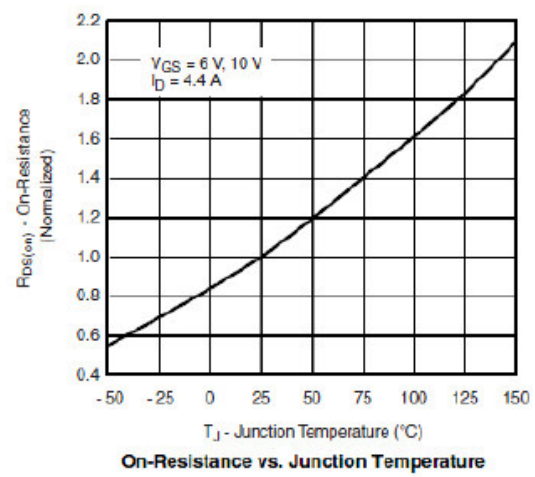
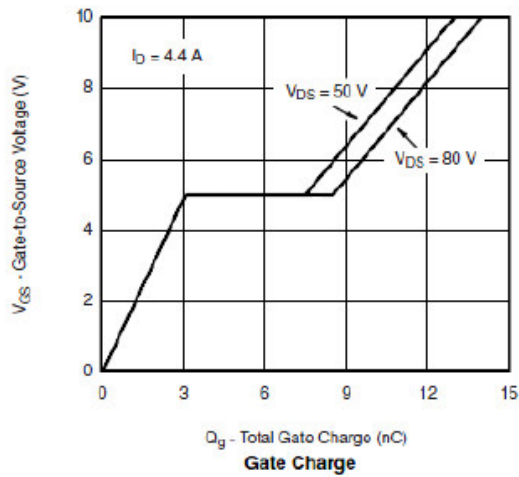
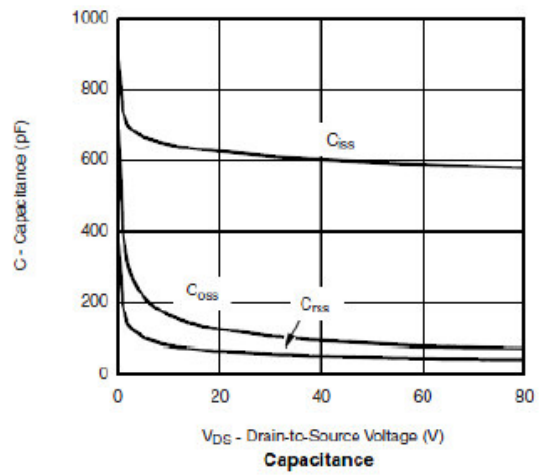
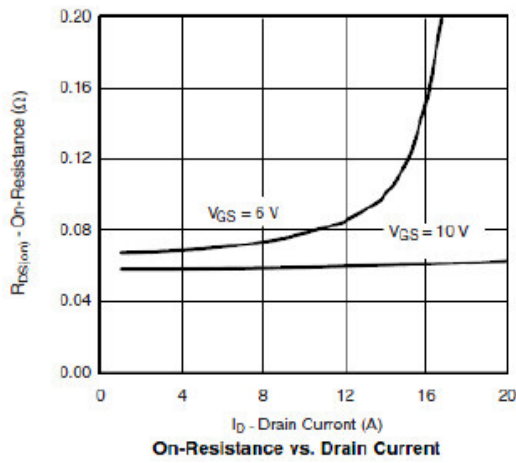
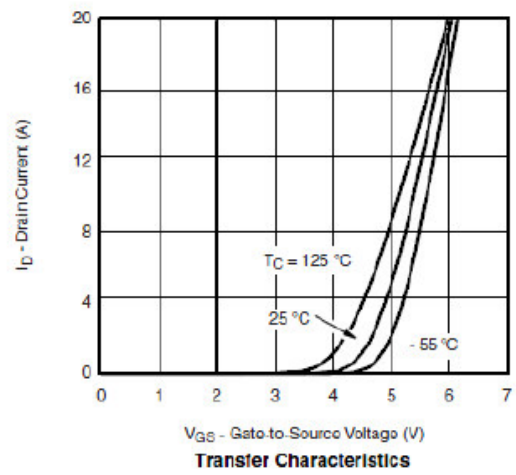
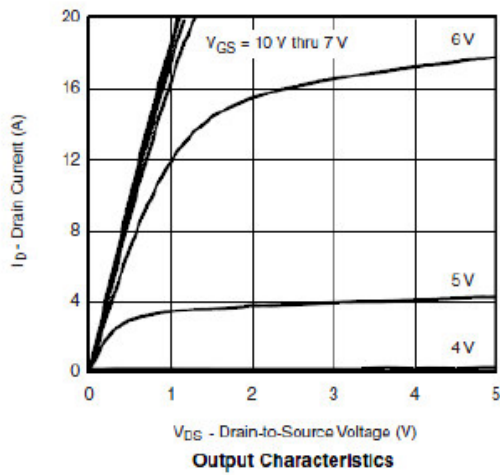
Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	90	V	
$V_{GSS}$	Gate -Source Voltage	$\pm 20$	V	
$I_D$	Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$T_A=25^{\circ}\text{C}$	7.6	A
		$T_A=70^{\circ}\text{C}$	6.8	
$I_{DM}$	Pulsed Drain Current	30	A	
$I_S$	Continuous Source Current(Diode Conduction)	1.5	A	
$P_D$	Power Dissipation	$T_A=25^{\circ}\text{C}$	2.8	W
		$T_A=70^{\circ}\text{C}$	1.8	
$T_J$	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	62.5	$^{\circ}\text{C}/\text{W}$	

## Electrical Characteristics

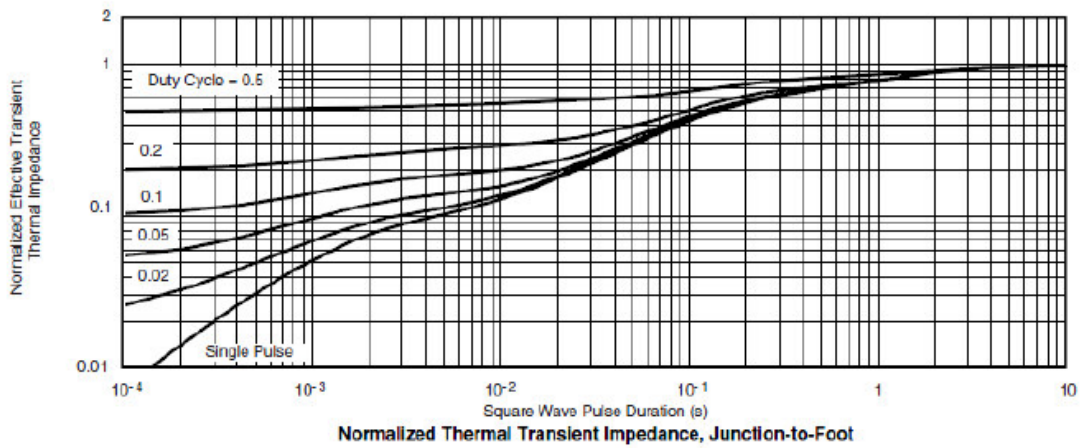
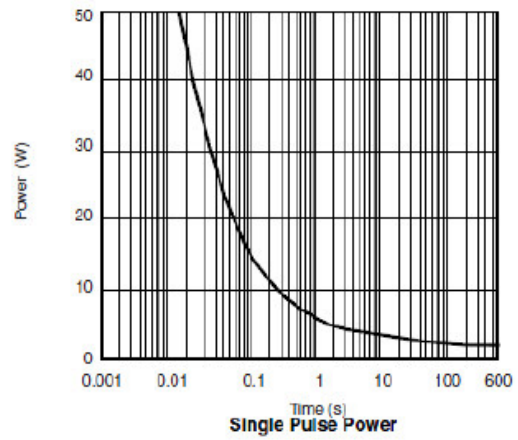
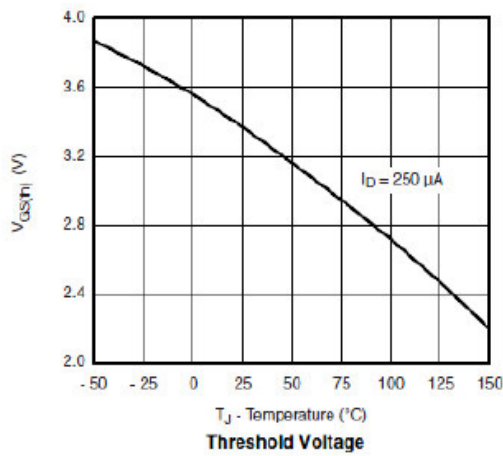
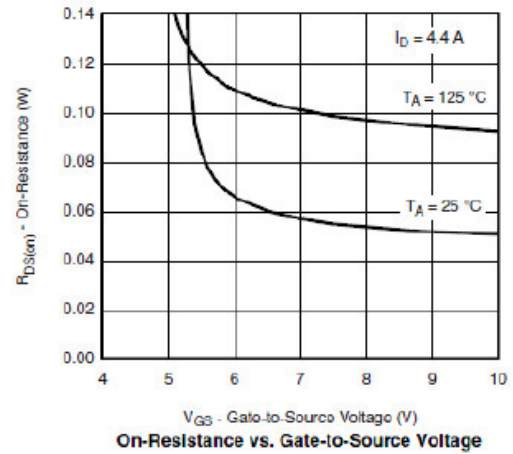
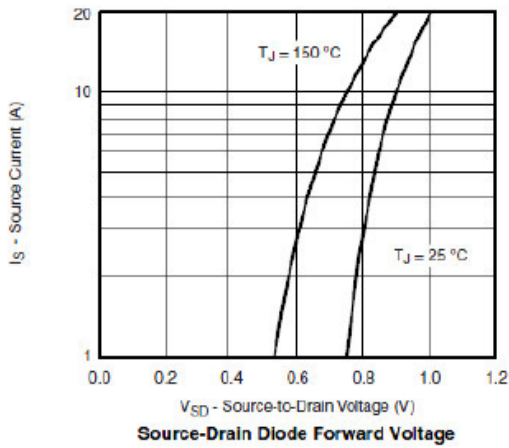
T<sub>A</sub>=25°C unless otherwise noted

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	90			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0		2.5	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V			1	μA
		V <sub>DS</sub> =90V, V <sub>GS</sub> =0V, T <sub>J</sub> =85°C			5	
I <sub>D(on)</sub>	On-State Drain Current	V <sub>DS</sub> ≥5V, V <sub>GS</sub> =4.5V	30			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =7.6A		53	68	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =6.8A		60	75	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =15V, I <sub>D</sub> =5.3A		24		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =2.0A, V <sub>GS</sub> =0V		0.8	1.2	V
<b>Dynamic</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz		550		pF
C <sub>oss</sub>	Output Capacitance			80		
C <sub>rss</sub>	Reverse Transfer Capacitance			50		
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, V <sub>GS</sub> =5V, I <sub>D</sub> =5A		10	15	nC
Q <sub>gs</sub>	Gate-Source Charge			4.0		
Q <sub>gd</sub>	Gate-Drain Charge			5.0		
t <sub>d(on)</sub>	Turn-On Time	V <sub>DD</sub> =50V, R <sub>L</sub> =12.5Ω, I <sub>D</sub> =5.0A, V <sub>GEN</sub> =10V, R <sub>G</sub> =1.0Ω		10	20	ns
t <sub>r</sub>				10	20	
t <sub>d(off)</sub>	Turn-Off Time			15	25	
t <sub>f</sub>				10	25	

## Typical Performance Characteristics

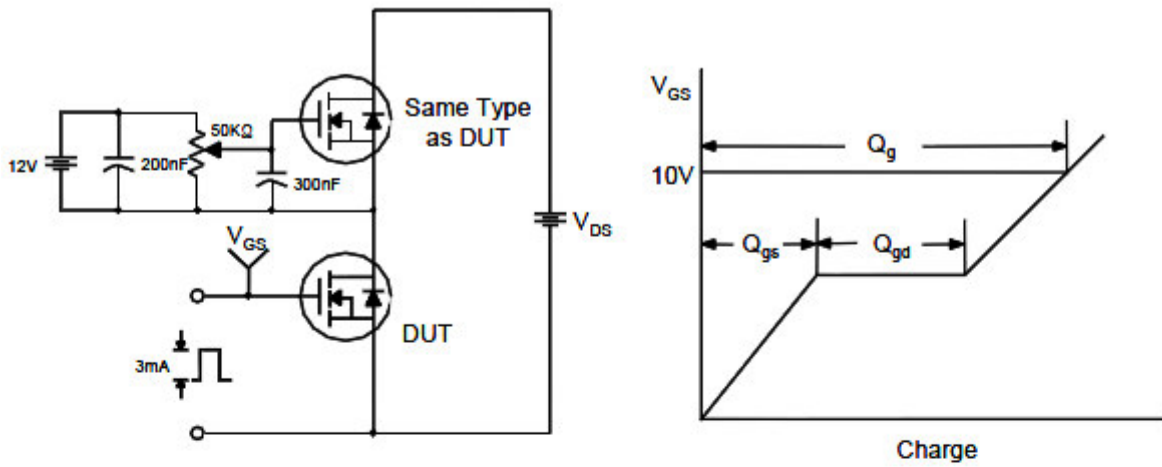


## Typical Performance Characteristics (continue)

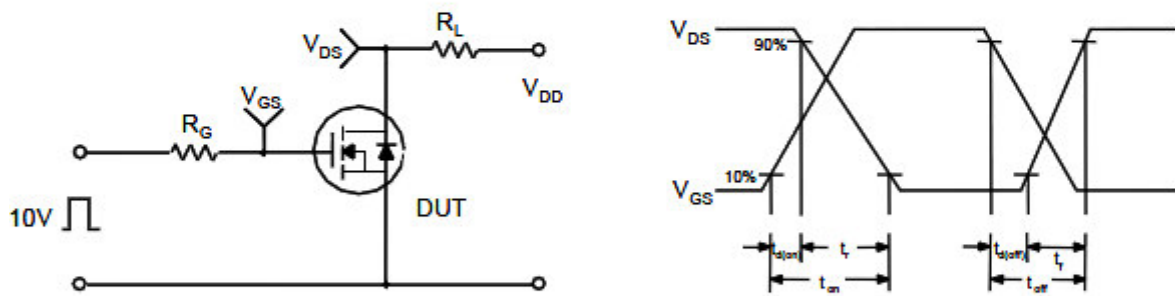


## Typical Performance Characteristics (continue)

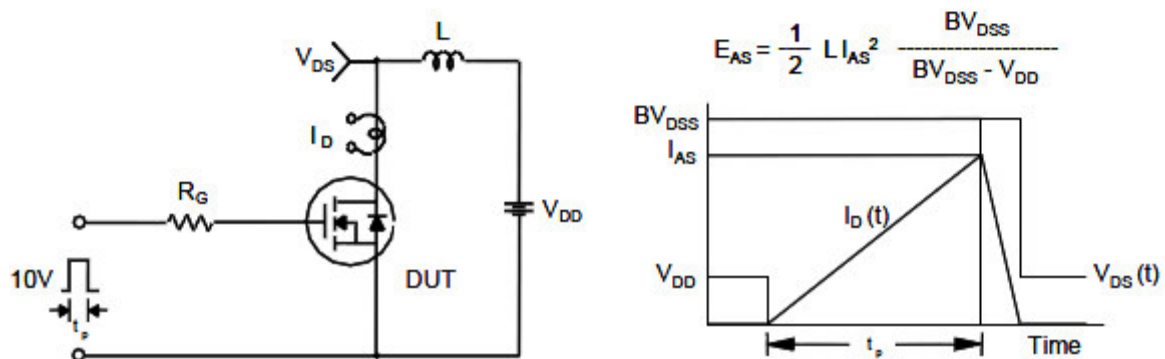
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

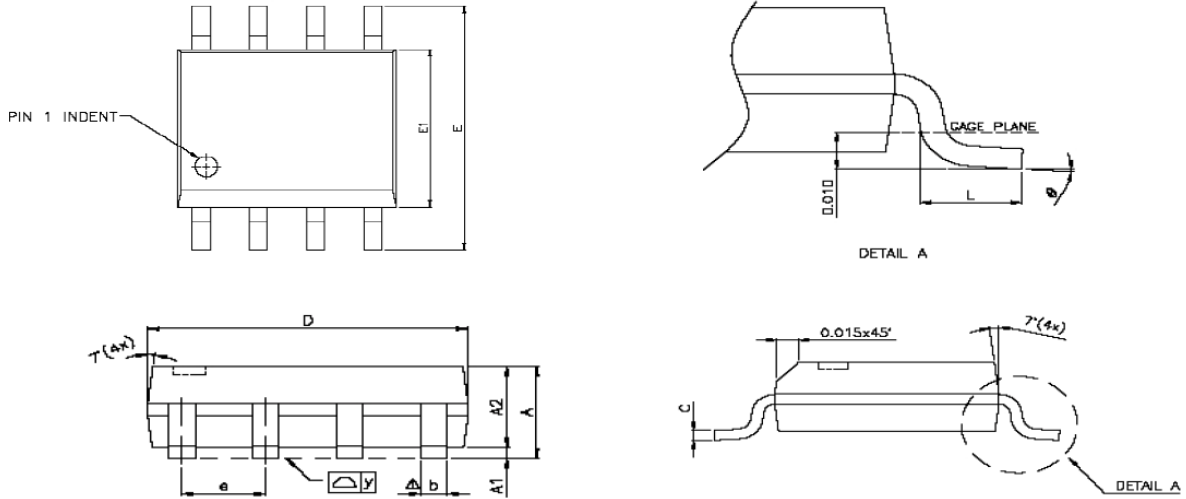


### Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

### SOP-8P







### Dimensions

Symbol	Millimeters			Inches		
	Min	Nom	Max	Min	Nom	Max
<b>A</b>	1.47	1.60	1.73	0.058	0.063	0.068
<b>A1</b>	0.10	-	0.25	0.004	-	0.010
<b>A2</b>	-	1.45	-	-	0.057	-
<b>b</b>	0.33	0.41	0.51	0.013	0.016	0.020
<b>C</b>	0.19	0.20	0.25	0.0075	0.008	0.0098
<b>D</b>	4.80	4.85	4.95	0.189	0.191	0.195
<b>E</b>	5.80	6.00	6.20	0.228	0.236	0.244
<b>E1</b>	3.80	3.90	4.00	0.150	0.154	0.157
<b>e</b>	-	1.27	-	-	0.050	-
<b>L</b>	0.38	0.71	1.27	0.015	0.028	0.050
<b>Δy</b>	-	-	0.076	-	-	0.003
<b>θ</b>	0°	-	8°	0°	-	8°





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## CONTACT US

GS Headquarter	
	4F.,No.43-1,Lane11,Sec.6,Minquan E.Rd Neihu District Taipei City 114, Taiwan (R.O.C)
	886-2-2657-9980
	886-2-2657-3630
	sales_twn@gs-power.com

Wu-Xi Branch	
	No.21 Changjiang Rd., WND, Wuxi, Jiangsu, China (INFO. &. TECH. Science Park Building A 210 Room)
	86-510-85217051
	86-510-85211238
	sales_cn@gs-power.com

RD Division	
	824 Bolton Drive Milpitas. CA. 95035
	1-408-457-0587