

# GSM8205

## 20V N-Channel Enhancement Mode MOSFET

### Product Description

GSM8205, 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, 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.

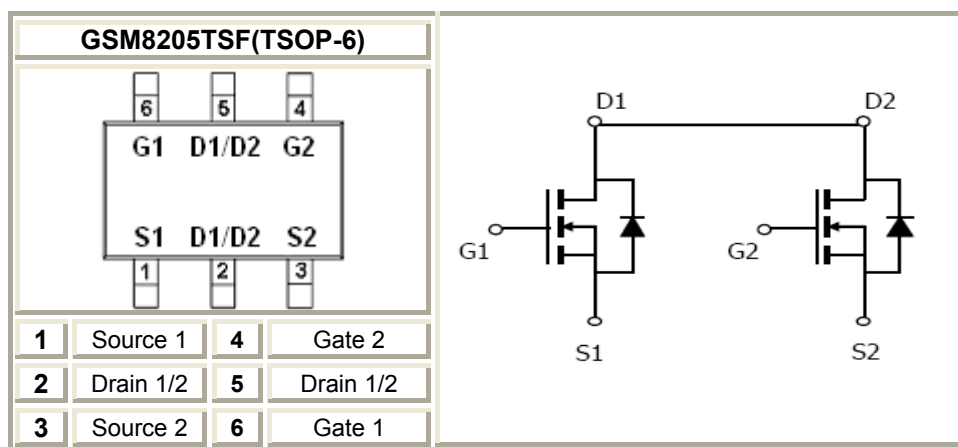
### Features

- 20V/5A,  $R_{DS(ON)}=29m\Omega@V_{GS}=4.5V$
- 20V/3.2A,  $R_{DS(ON)}=37m\Omega@V_{GS}=2.5V$
- 20V/2.4A,  $R_{DS(ON)}=50m\Omega@V_{GS}=1.8V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- TSOP-6 package design

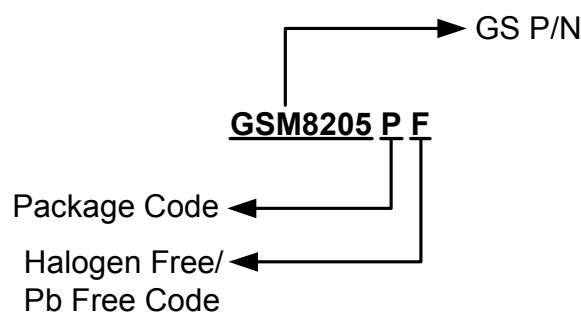
### Applications

- Load Switch
- Portable Equipment
- Battery Powered System

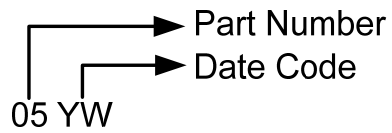
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM8205TSF	TSOP-6	05YW

## Absolute Maximum Ratings

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

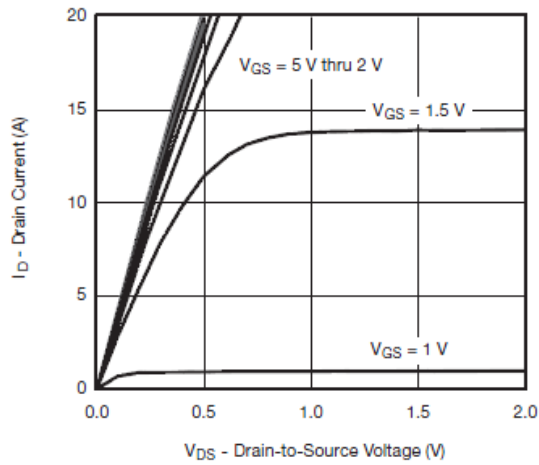
Symbol	Parameter	Typical	Unit	
$V_{DSS}$	Drain-Source Voltage	20	V	
$V_{GSS}$	Gate -Source Voltage	$\pm 12$	V	
$I_D$	Continuous Drain Current( $T_J=150^\circ\text{C}$ )	$T_A=25^\circ\text{C}$	5	A
		$T_A=70^\circ\text{C}$	3.2	
$I_{DM}$	Pulsed Drain Current	20	A	
$I_S$	Continuous Source Current(Diode Conduction)	1.6	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

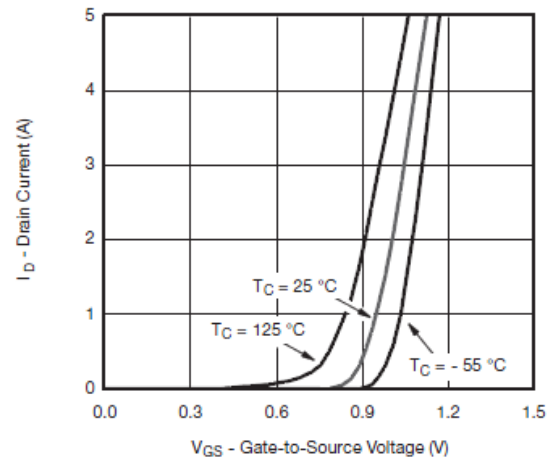
( $T_A=25^\circ\text{C}$  unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	0.4		0.8	V
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=16V, V_{GS}=0V$			1	uA
		$V_{DS}=16V, V_{GS}=0V$ $T_J=85^\circ\text{C}$			10	
$I_{D(on)}$	On-State Drain Current	$V_{DS} \geq 5V, V_{GS}=4.5V$	6			A
		$V_{DS} \geq 5V, V_{GS}=2.5V$	4			
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=4.5V, I_D=5A$		25	29	m $\Omega$
		$V_{GS}=2.5V, I_D=3.2A$		30	37	
		$V_{GS}=1.8V, I_D=2.4A$		45	50	
$g_{FS}$	Forward Transconductance	$V_{DS}=5V, I_D=3.6A$		10		S
$V_{SD}$	Diode Forward Voltage	$I_S=1.6A, V_{GS}=0V$		0.85	1.2	V
<b>Dynamic</b>						
$Q_g$	Total Gate Charge	$V_{DS}=10V, V_{GS}=4.5V$ $I_D=4.0A$		8.2	14	nC
$Q_{gs}$	Gate-Source Charge			1.2		
$Q_{gd}$	Gate-Drain Charge			1.0		
$C_{iss}$	Input Capacitance	$V_{DS}=10V, V_{GS}=0V$ $f=1\text{MHz}$		850		pF
$C_{oss}$	Output Capacitance			120		
$C_{riss}$	Reverse Transfer Capacitance			60		
$t_{d(on)}$	Turn-On Time	$V_{DD}=10V, R_L=2.2\Omega$ $I_D=4.0A, V_{GEN}=4.5V$ $R_G=1\Omega$		10	16	ns
$t_r$				16	25	
$t_{d(off)}$	Turn-Off Time			31	45	
$t_f$				10	16	

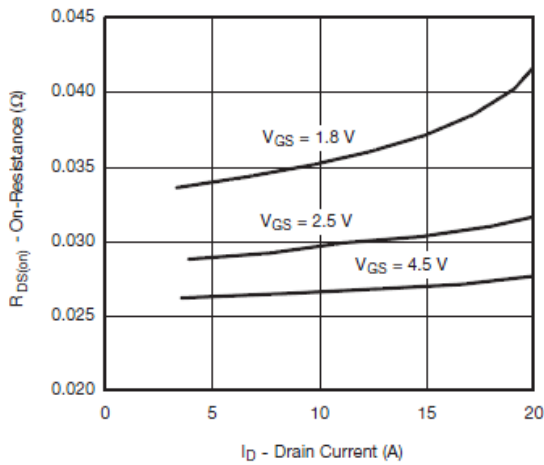
## Typical Performance Characteristics



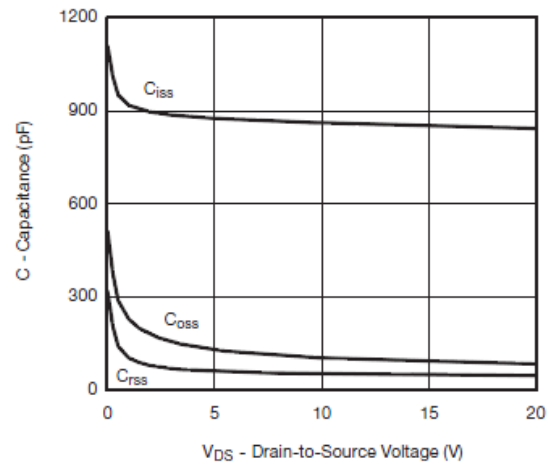
**Output Characteristics**



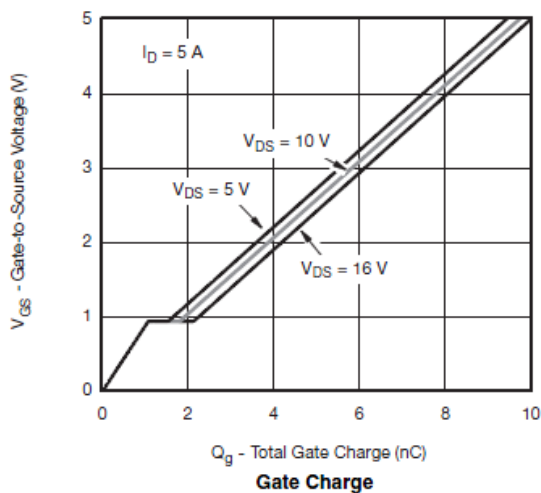
**Transfer Characteristics**



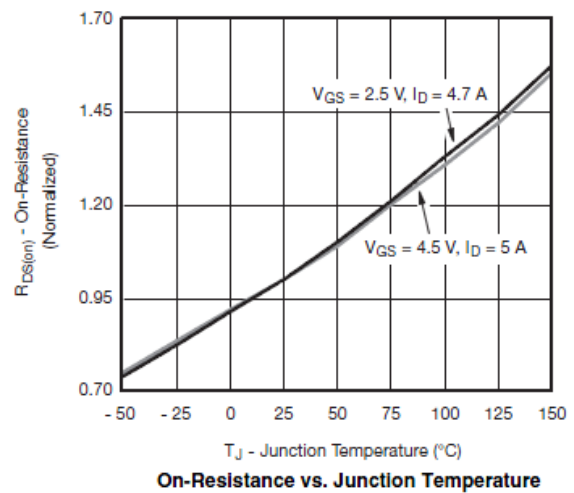
**On-Resistance vs. Drain Current and Gate Voltage**



**Capacitance**

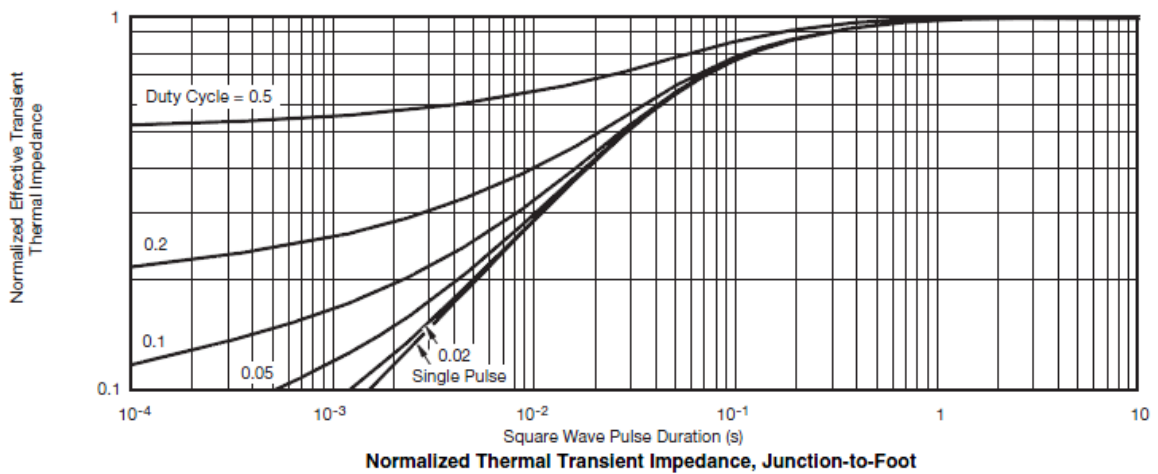
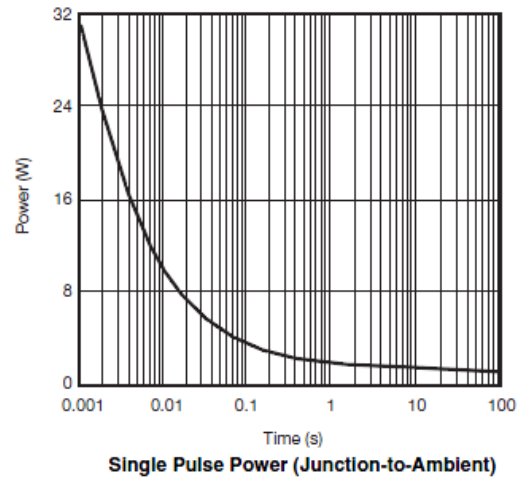
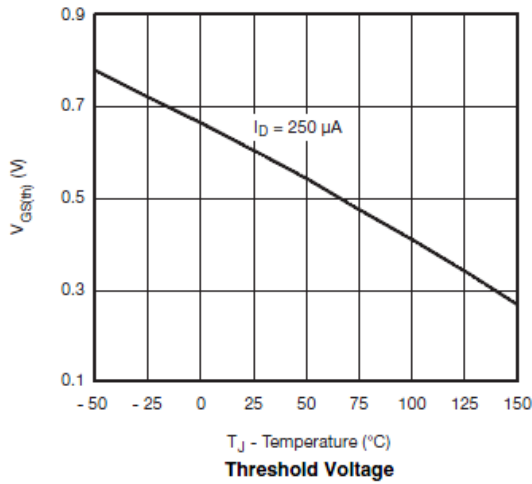
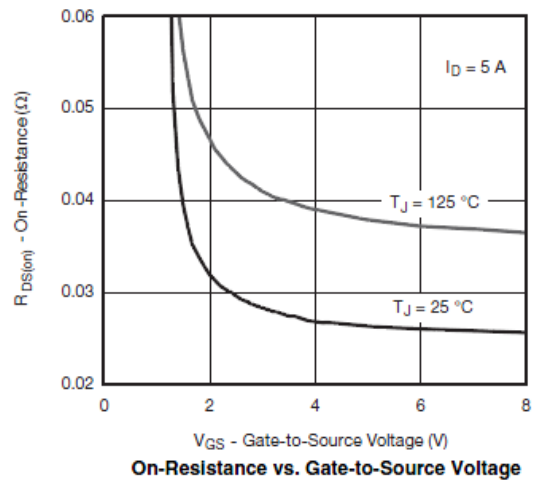
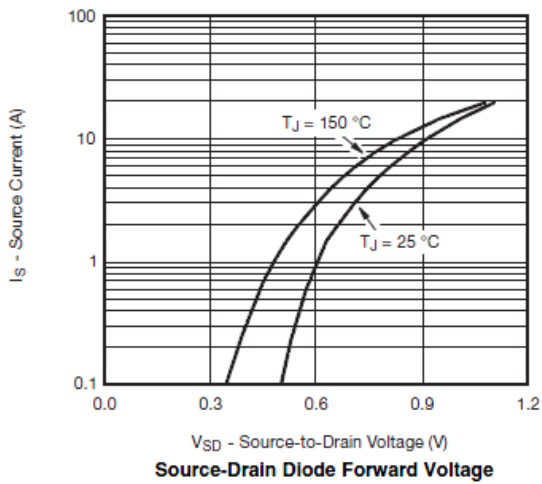


**Gate Charge**



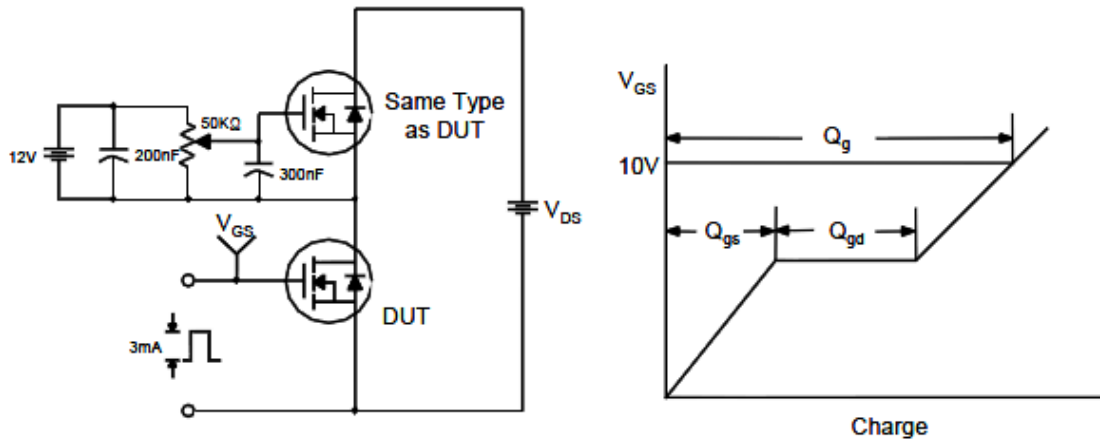
**On-Resistance vs. Junction Temperature**

## Typical Performance Characteristics (continue)

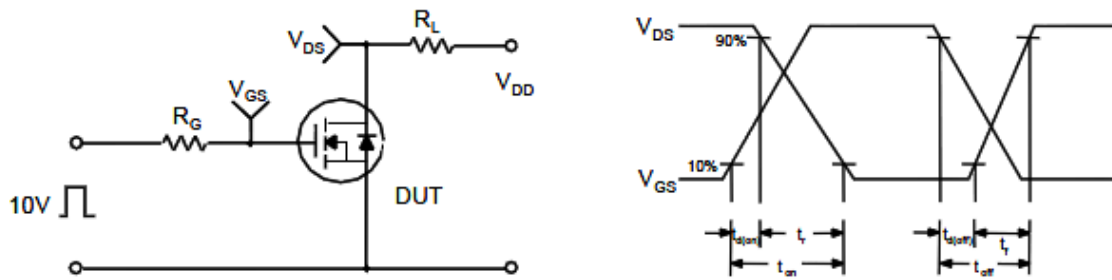


## Typical Characteristics

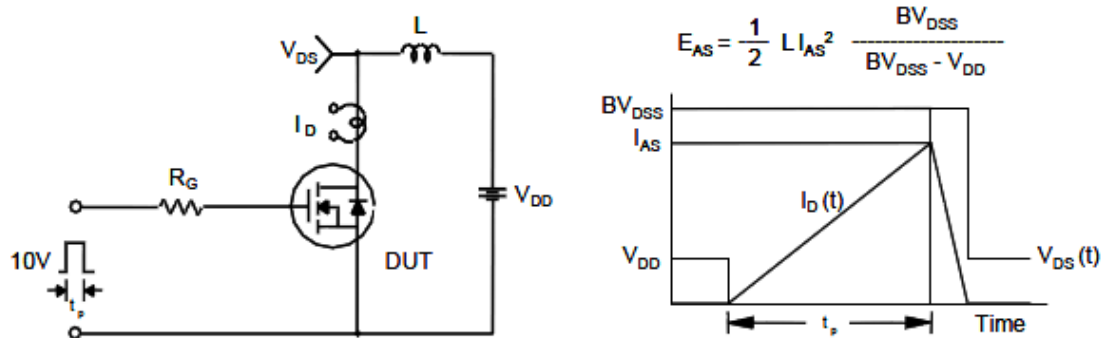
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

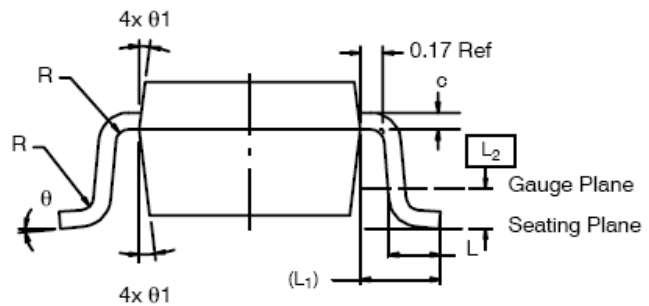
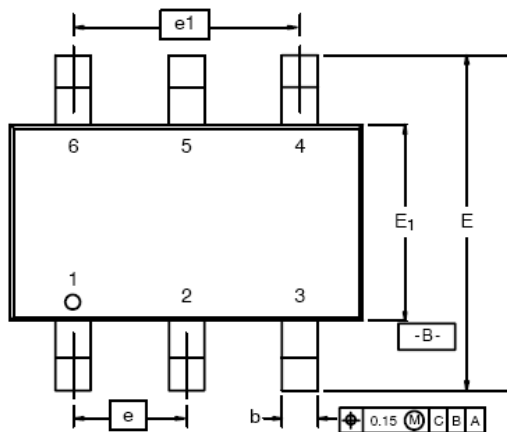


Unclamped Inductive Switching Test Circuit & Waveforms



## Package Dimension

# TSOP-6 PLASTIC PACKAGE







## Dimensions

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





## NOTICE

Information furnished is believed to be accurate and reliable. However Globaltech Semiconductor assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties, which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Globaltech Semiconductor. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information without express written approval of Globaltech Semiconductor.



## 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