



# SPN4946W

## N-Channel Enhancement Mode MOSFET

### DESCRIPTION

The SPN4946W is the Dual N-Channel logic enhancement mode power field effect transistors are produced using high cell density , DMOS trench technology.

This high density process is especially tailored to minimize on-state resistance.

These devices are particularly suited for low voltage application , notebook computer power management and other battery powered circuits where high-side switching .

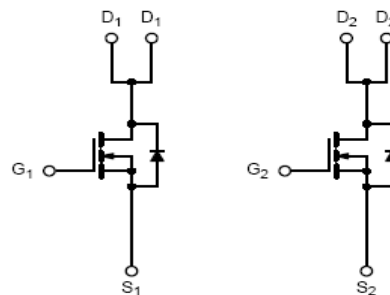
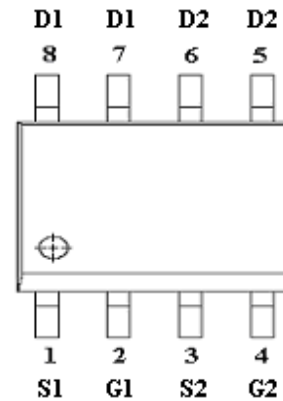
### FEATURES

- ◆ 60V/ 10A, $R_{DS(ON)}=42m\Omega@V_{GS}=10V$
- ◆ 60V/ 6A, $R_{DS(ON)}=48m\Omega@V_{GS}=4.5V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOP-8 package design

### APPLICATIONS

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

### PIN CONFIGURATION(SOP-8)



### PART MARKING



A : Lot Code  
B : Date Code



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### PIN DESCRIPTION

Pin	Symbol	Description
1	S1	Source 1
2	G1	Gate 1
3	S2	Source 2
4	G2	Gate 2
5	D2	Drain 2
6	D2	Drain 2
7	D1	Drain 1
8	D1	Drain 1

### ORDERING INFORMATION

Part Number	Package	Part Marking
SPN4946WS8RGB	SOP-8	SPN4946W

※ SPN4946WS8RGB 13" Tape Reel ; Pb – Free ; Halogen – Free

### ABSOLUTE MAXIMUM RATINGS

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

Parameter	Symbol	Typical	Unit	
Drain-Source Voltage	$V_{DSS}$	60	V	
Gate –Source Voltage	$V_{GSS}$	$\pm 20$	V	
Continuous Drain Current( $T_J=150^{\circ}\text{C}$ )	$I_D$	$T_A=25^{\circ}\text{C}$	8.0	A
		$T_A=70^{\circ}\text{C}$	6.0	
Pulsed Drain Current	$I_{DM}$	30	A	
Avalanche Current	$I_{AS}$	11	A	
Power Dissipation	$P_D$	$T_A=25^{\circ}\text{C}$	2.5	W
		$T_A=70^{\circ}\text{C}$	1.6	
Operating Junction Temperature	$T_J$	-55/150	$^{\circ}\text{C}$	
Storage Temperature Range	$T_{STG}$	-55/150	$^{\circ}\text{C}$	
Thermal Resistance-Junction to Ambient	$R_{\theta JA}$	80	$^{\circ}\text{C}/\text{W}$	



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### ELECTRICAL CHARACTERISTICS

(TA=25°C Unless otherwise noted)

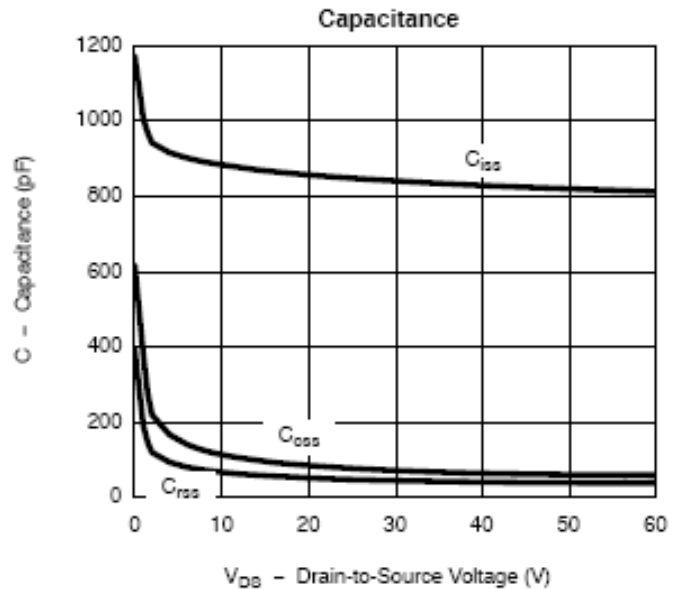
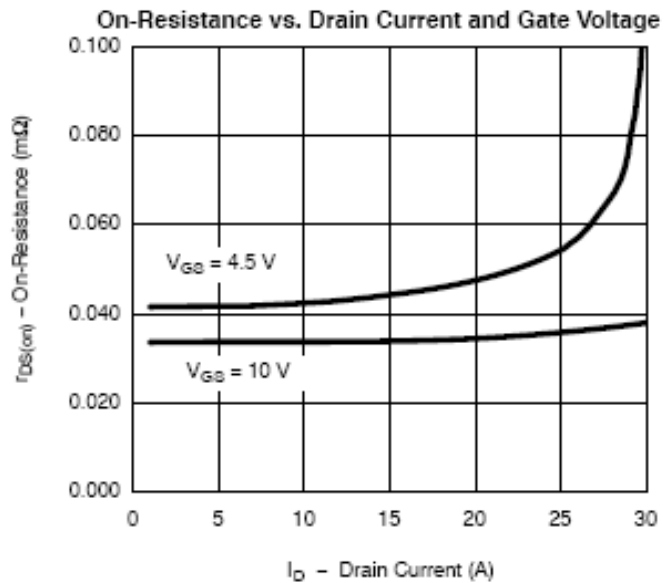
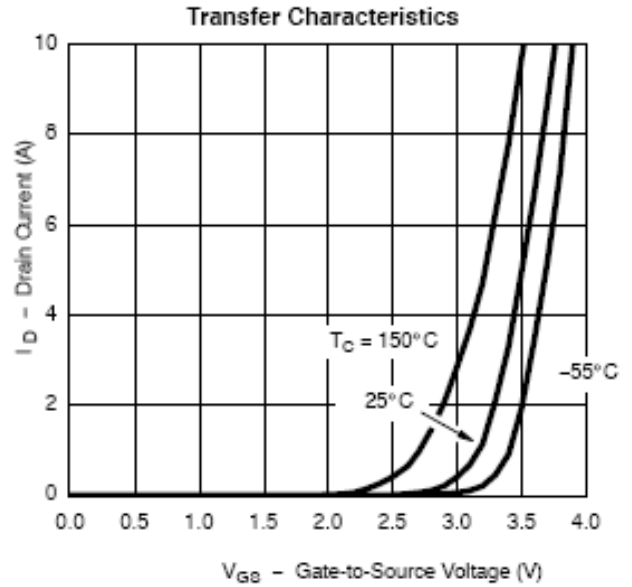
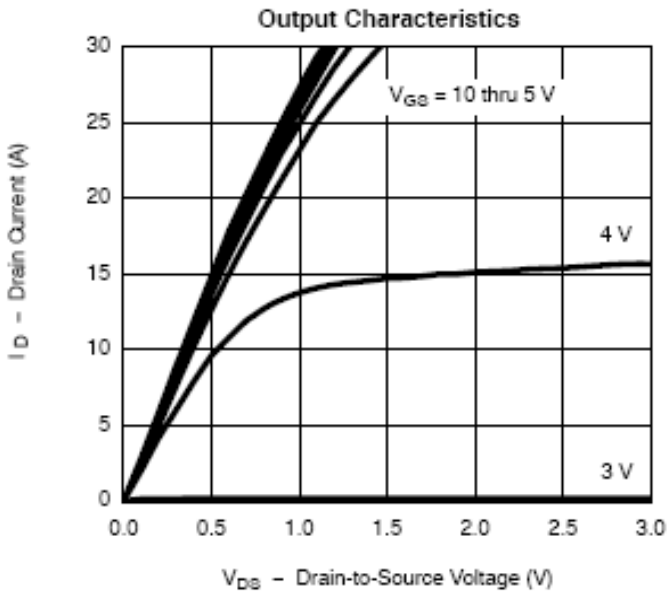
Parameter	Symbol	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.8		2.0	V
Gate Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	uA
		$V_{DS}=60V, V_{GS}=0V$ $T_J=85^\circ C$			5	
On-State Drain Current	$I_{D(on)}$	$V_{DS}\geq 5V, V_{GS}=10V$	30			A
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=10A$		0.033	0.042	$\Omega$
		$V_{GS}=4.5V, I_D=6A$		0.038	0.048	
Forward Transconductance	$g_{fs}$	$V_{DS}=15V, I_D=5.3A$		24		S
Diode Forward Voltage	$V_{SD}$	$I_S=2.0A, V_{GS}=0V$		0.8	1.2	V
<b>Dynamic</b>						
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=5V$ $I_D=5.3A$		10	15	nC
Gate-Source Charge	$Q_{gs}$			3.5		
Gate-Drain Charge	$Q_{gd}$			3.6		
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V$ $f=1MHz$		890		pF
Output Capacitance	$C_{oss}$			85		
Reverse Transfer Capacitance	$C_{rss}$			48		
Turn-On Time	$t_{d(on)}$	$V_{DD}=30V, R_L=6.8\Omega$ $I_D=4.4A, V_{GEN}=10V$ $R_G=1\Omega$		10	15	nS
	$t_r$			12	20	
Turn-Off Time	$t_{d(off)}$			25	35	
	$t_f$			10	15	



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### TYPICAL CHARACTERISTICS

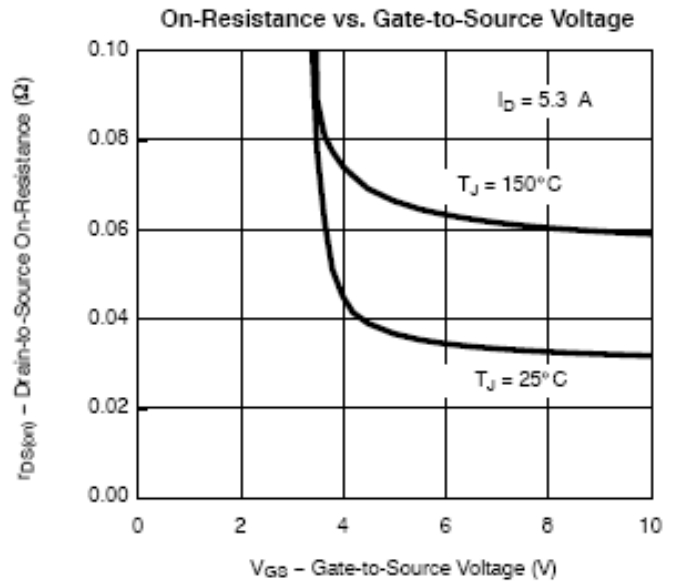
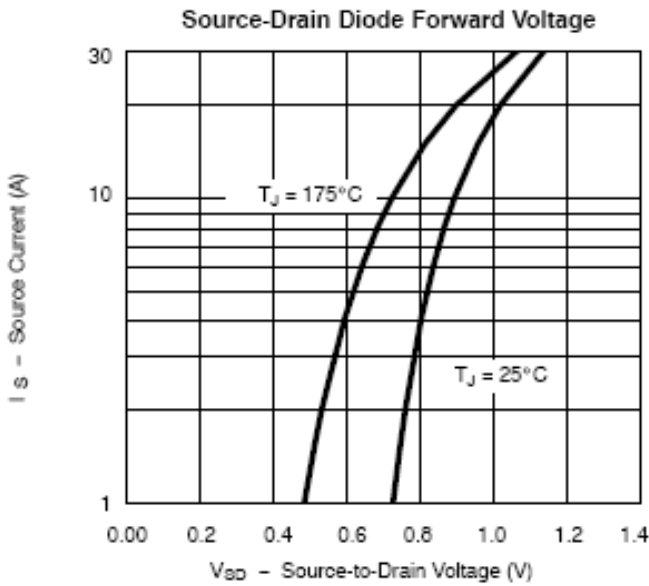
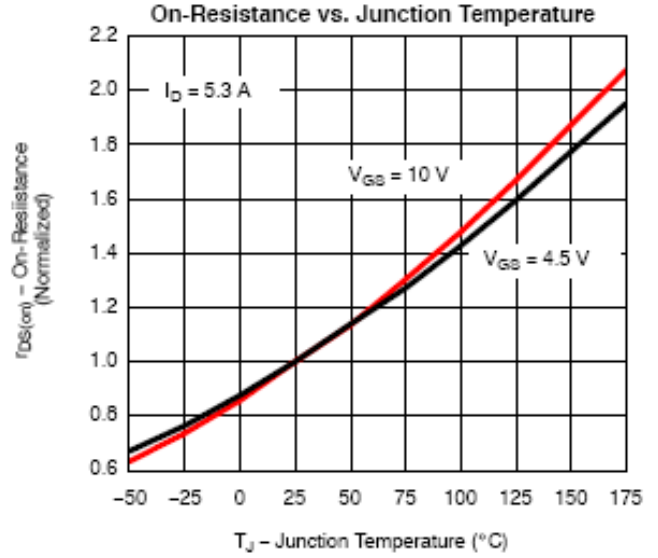
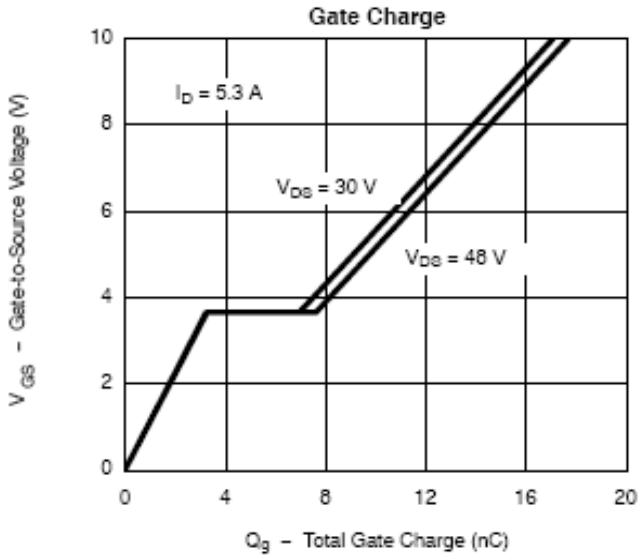




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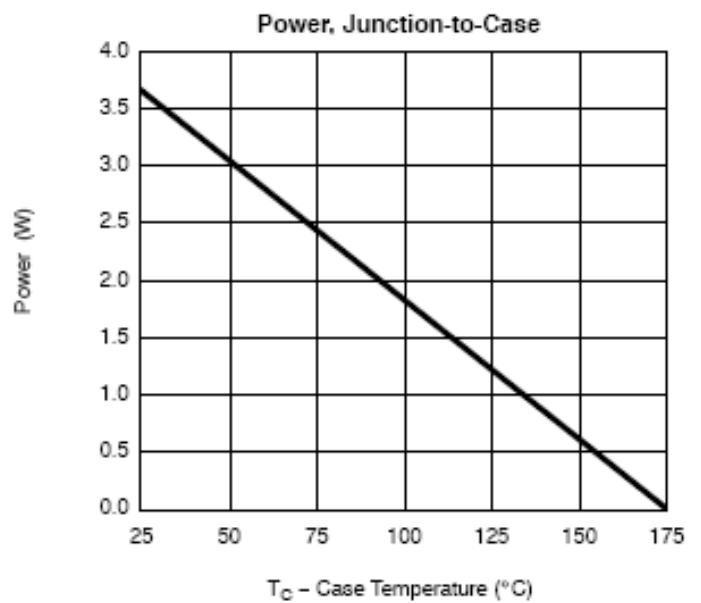
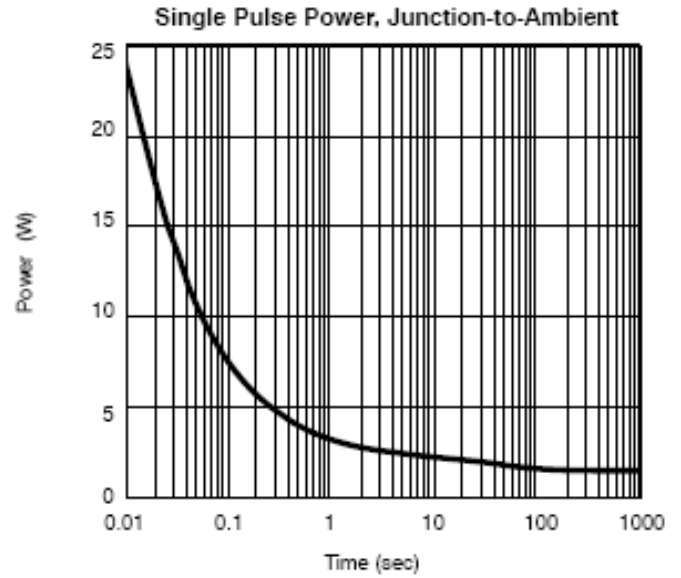
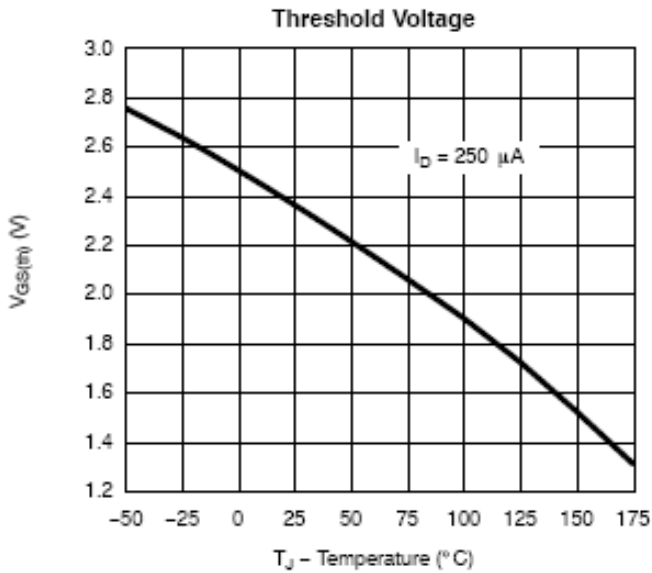




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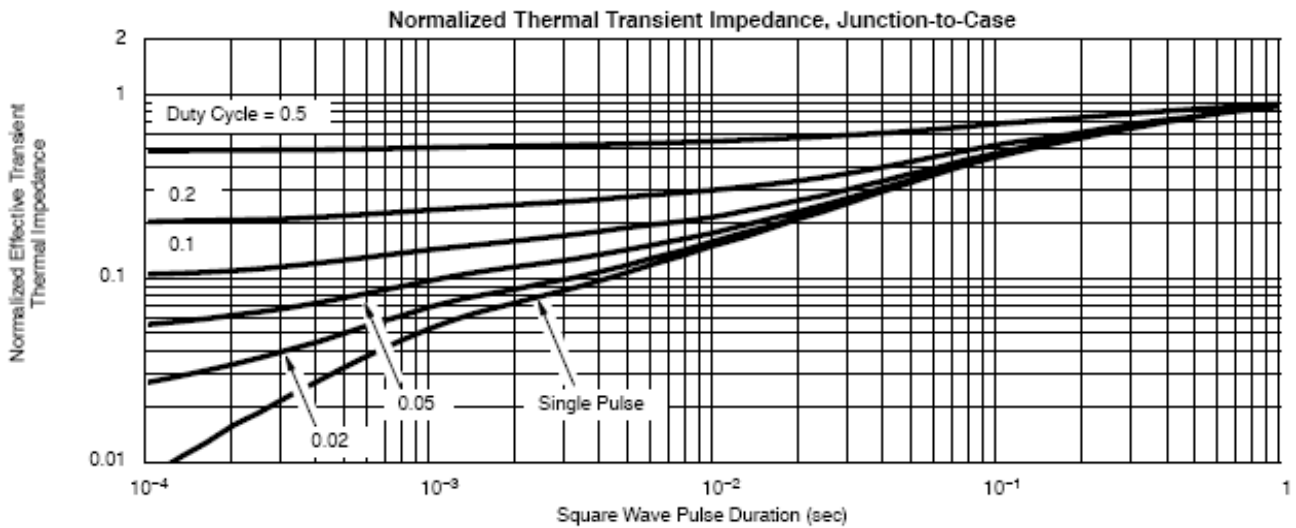
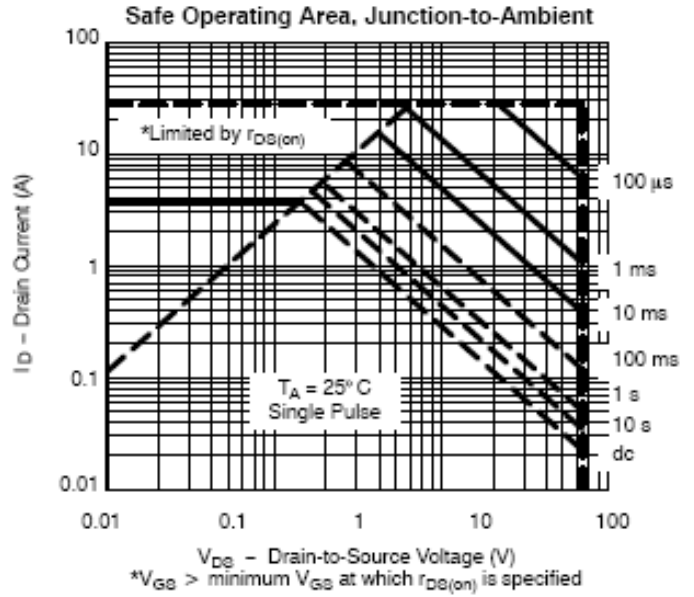
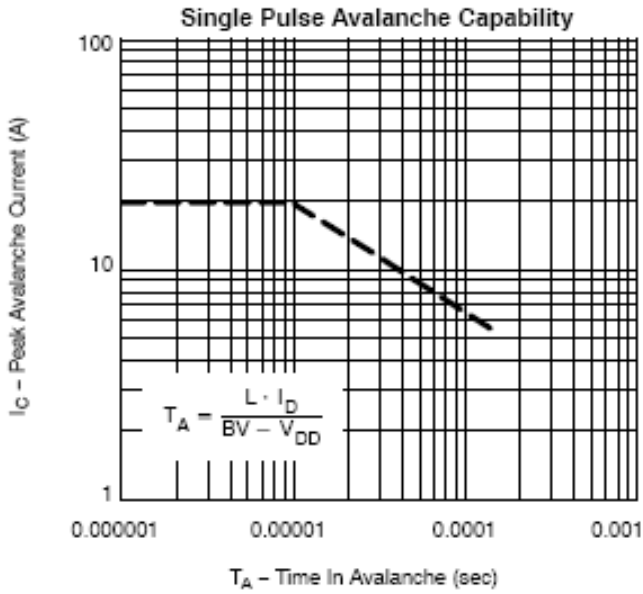




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### TYPICAL CHARACTERISTICS





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SYNC Power Corporation

7F-2, No.3-1, Park Street

NanKang District (NKSP), Taipei, Taiwan, 115, R.O.C

Phone: 886-2-2655-8178

Fax: 886-2-2655-8468

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