

## 30V Dual N-Channel Enhancement Mode MOSFET

### Description

The NP4836SR uses advanced trench technology to provide excellent  $R_{DS(ON)}$  with low gate charge.

This device is suitable for high side switch in SMPS and general purpose applications.

### General Features

- ◆  $V_{DS} = 30V$ ,  $I_D = 8A$   
 $R_{DS(ON)} = 15.8m\Omega$  (typical) @  $V_{GS} = 10V$   
 $R_{DS(ON)} = 19.8m\Omega$  (typical) @  $V_{GS} = 4.5V$
- ◆ Excellent gate charge x  $R_{DS(ON)}$  product(FOM)
- ◆ Very low on-resistance  $R_{DS(ON)}$
- ◆ 150 °C operating temperature
- ◆ Pb-free lead plating
- ◆ 100% UIS tested

### Application

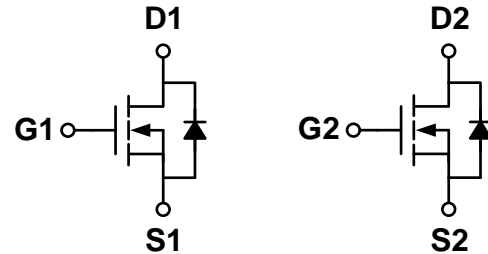
- ◆ DC/DC Converter
- ◆ Ideal for high-frequency switching and synchronous rectification

### Package

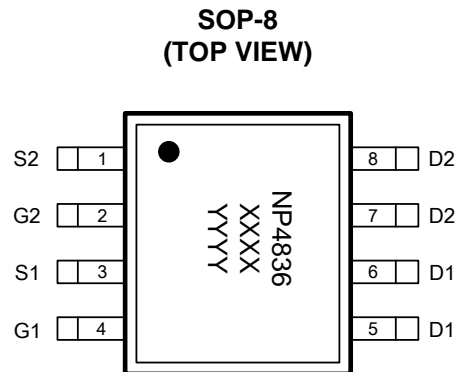
- ◆ SOP-8



### Schematic diagram



### Marking and pin assignment



XXXX—Wafer Information

YYYY—Quality Code

### Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
NP4836SR-G	-55°C to +150°C	SOP-8	4000

### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

parameter	symbol	limit	unit	
Drain-source voltage	$V_{DS}$	30	V	
Gate-source voltage	$V_{GS}$	±20	V	
Drain Current-Continuous (Silicon Limited)	$I_D$	$T_A = 25^\circ C$	8	A
		$T_A = 75^\circ C$	6.5	
Pulsed Drain Current (Package Limited)	$I_{DM}$	35	A	
Single pulse avalanche energy	$E_{AS}$	30	mJ	
Maximum power dissipation	$P_D$	$T_A = 25^\circ C$	2	W
		$T_A = 75^\circ C$	1.3	

Operating junction Temperature range	T <sub>j</sub>	-55—150	°C
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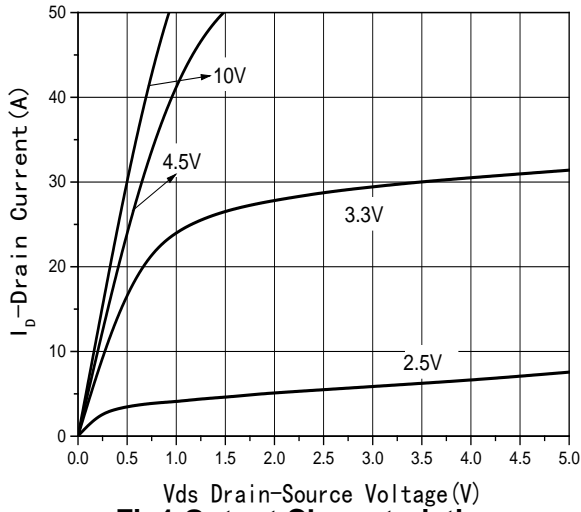
**Electrical Characteristics** (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>OFF Characteristics</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	30	-		V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V	-	-	1	μA
Gate-body leakage	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
<b>ON Characteristics</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	3.0	V
Drain-source on-state resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =8A	-	15.8	20	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =7A	-	19.8	28	
Forward transconductance	g <sub>fs</sub>	V <sub>DS</sub> =5V, I <sub>D</sub> =8A	-	43	-	S
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>ISS</sub>	V <sub>DS</sub> =15V, V <sub>GS</sub> =0V f=1.0MHz	-	531	-	pF
Output capacitance	C <sub>OSS</sub>		-	74	-	
Reverse transfer capacitance	C <sub>RSS</sub>		-	59	-	
Gate resistance	R <sub>g</sub>	f=1.0MHz	-	2.1	4.9	Ω
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>D(ON)</sub>	V <sub>DS</sub> =15V V <sub>GS</sub> =10V R <sub>L</sub> =1.5Ω R <sub>GEN</sub> =3Ω	-	4.4	-	ns
Rise time	t <sub>r</sub>		-	9	-	
Turn-off delay time	t <sub>D(OFF)</sub>		-	17	-	
Fall time	t <sub>f</sub>		-	6	-	
Total gate charge	Q <sub>g</sub>	V <sub>DS</sub> =15V, I <sub>D</sub> =8A V <sub>GS</sub> =10V	-	12.6	-	nC
Gate-source charge	Q <sub>gs</sub>		-	1.6	-	
Gate-drain charge	Q <sub>gd</sub>		-	2.6	-	

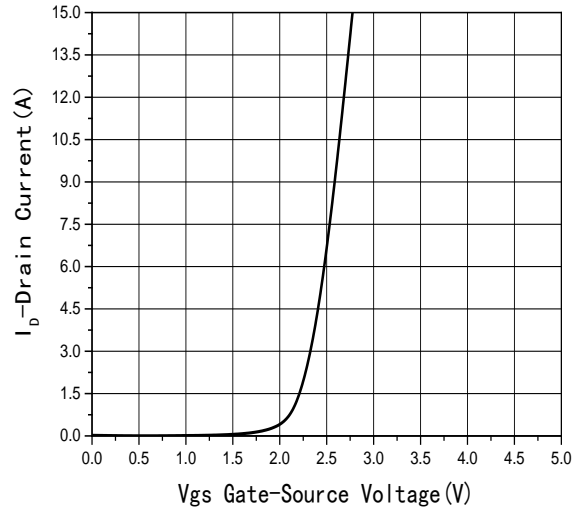
**Thermal Characteristics**

Thermal Resistance junction-to ambient	R <sub>th JA</sub>	100	°C/W
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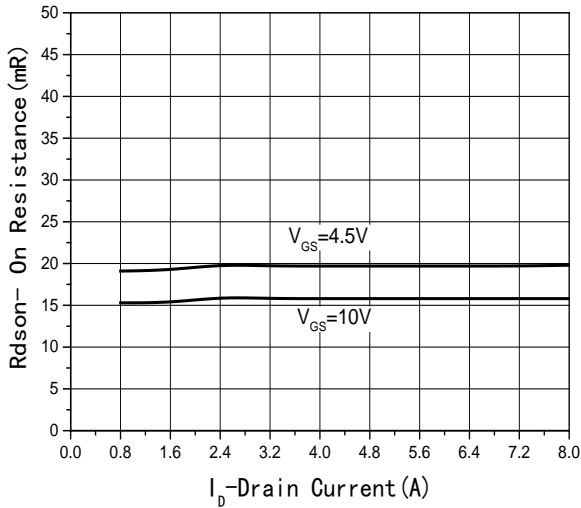
## Typical Performance Characteristics



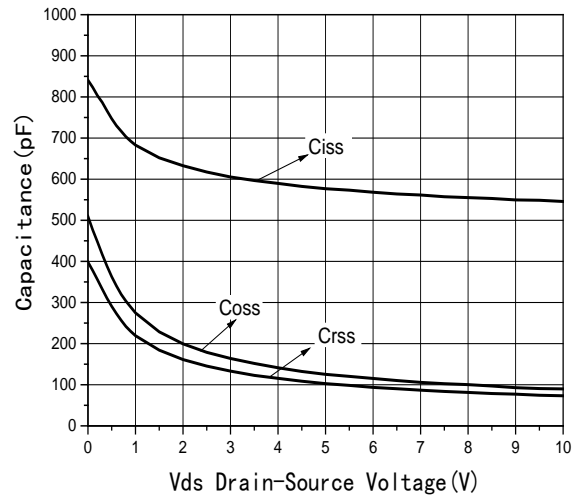
**Fig1 Output Characteristics**



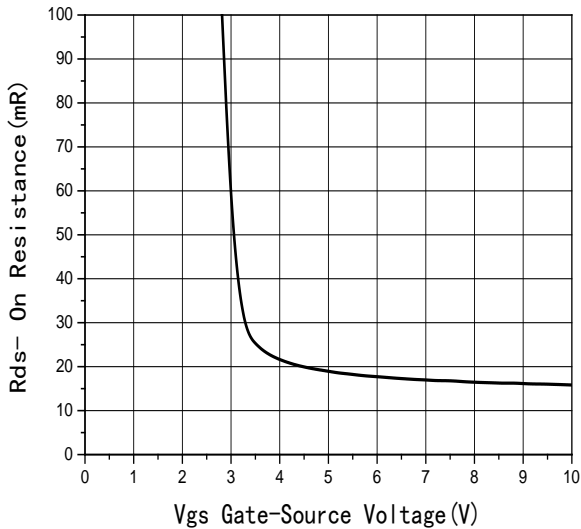
**Fig2 Transfer Characteristics**



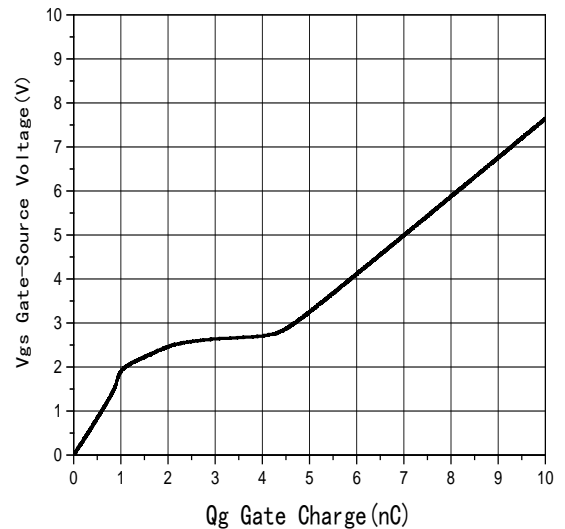
**Fig3  $R_{DS(on)}$ -Drain current**



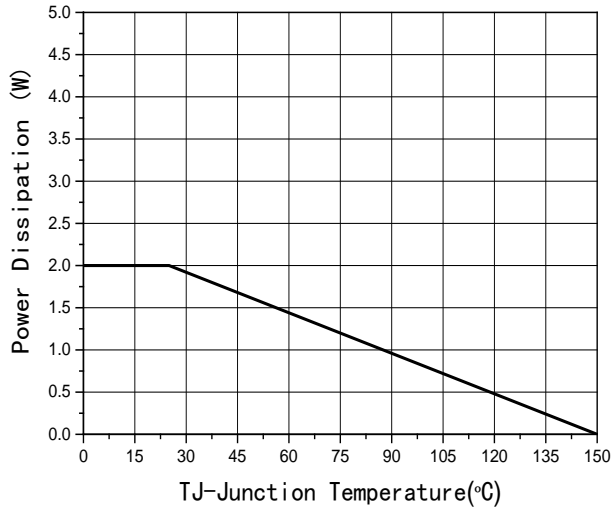
**Fig4 Capacitance vs  $V_{DS}$**



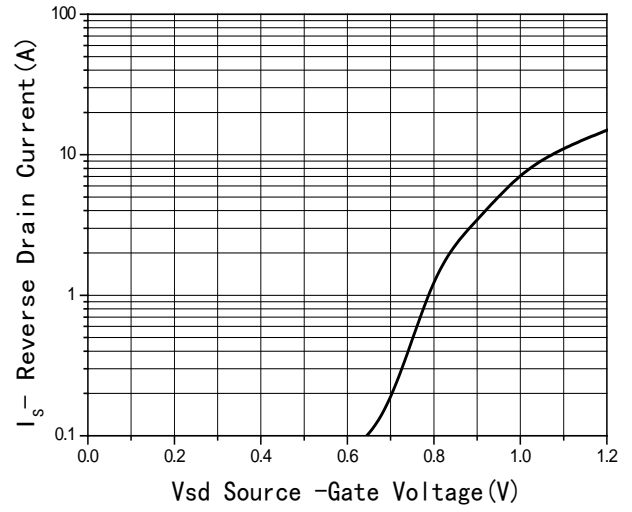
**Fig5  $R_{DS(on)}$ -Gate Drain voltage**



**Fig6 Gate Charge**



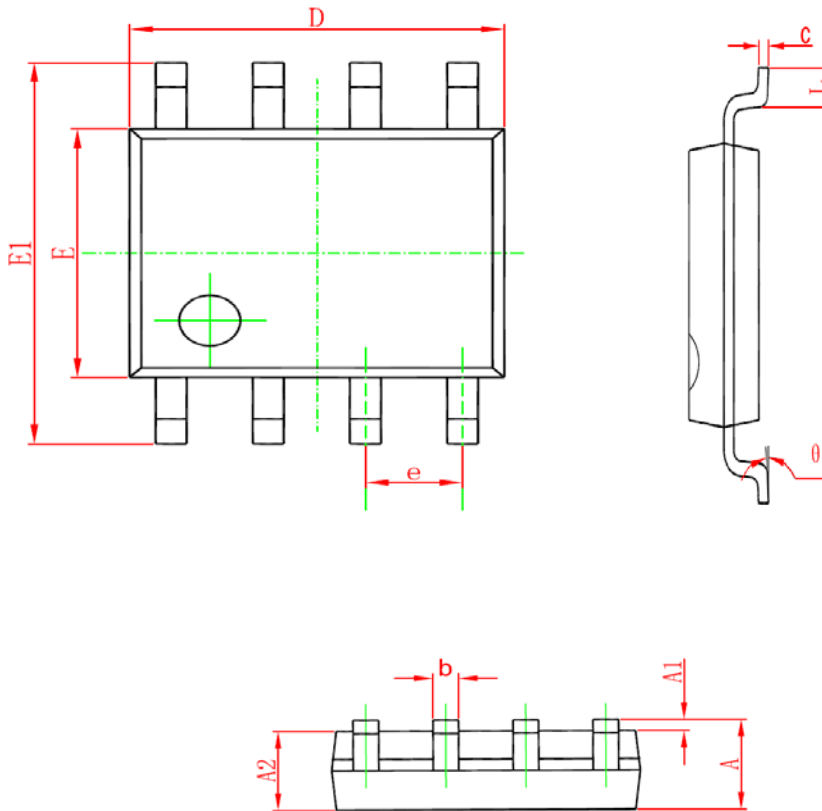
**Fig7 Power De-rating**



**Fig8 Source-Drain Diode Forward**

## Package Information

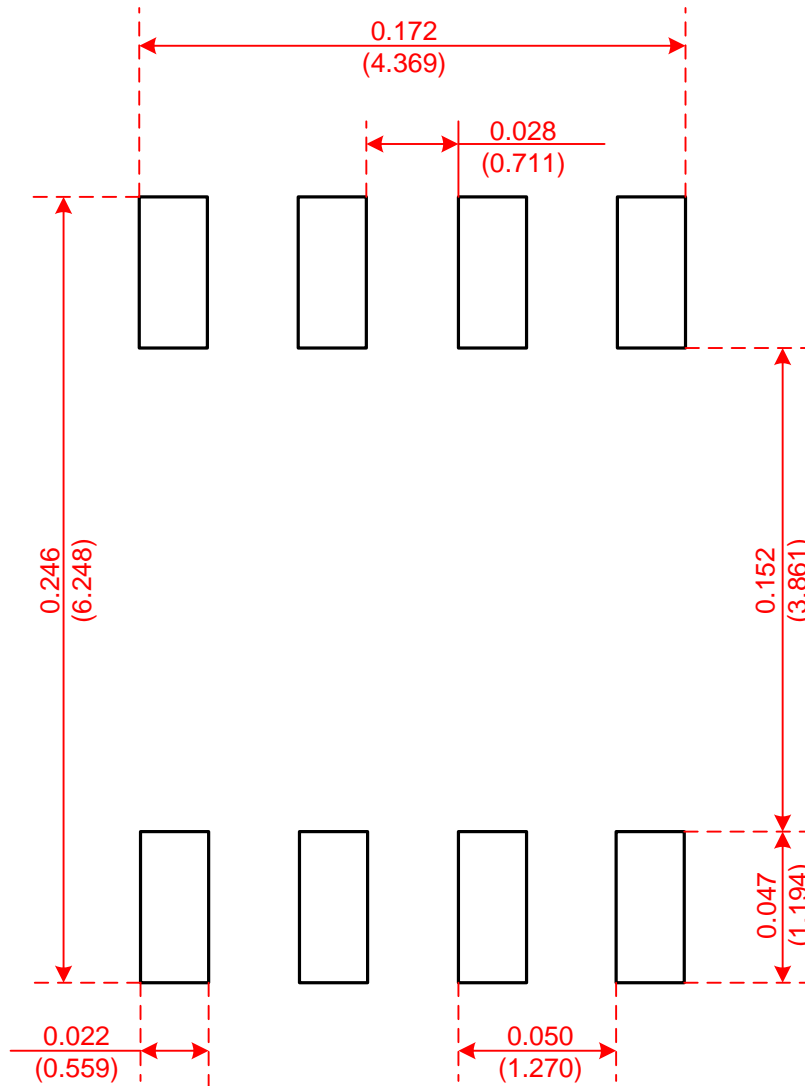
- SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

## Recommended Minimum Pads

- SOP-8



Recommended Minimum Pads  
Dimensions in Inches/(mm)