

30V Dual P-Channel Enhancement Mode MOSFET

Description

The NP4803SR uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in PWM applications.

General Features

- ◆ $V_{DS} = -30V$, $I_D = -5A$
 $R_{DS(ON)}(Typ.) = 38m\Omega$ @ $V_{GS} = -10V$
 $R_{DS(ON)}(Typ.) = 51m\Omega$ @ $V_{GS} = -4.5V$
- ◆ High power and current handling capability
- ◆ Lead free product is acquired
- ◆ Surface mount package

Application

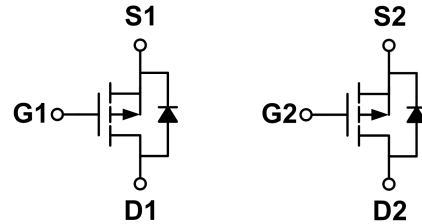
- ◆ PWM applications
- ◆ Load switch

Package

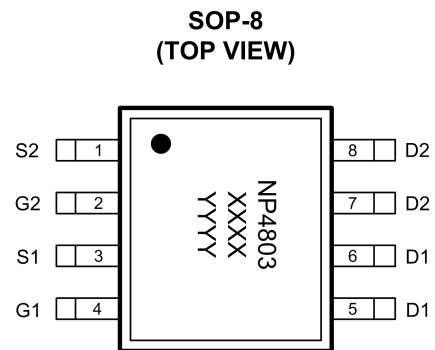
- ◆ SOP-8



Schematic diagram



Marking and pin assignment



XXXX—Wafer Information

YYYY—Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
NP4803SR-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	$T_A = 25^\circ C$	-5	A
		$T_A = 75^\circ C$	-4.2	A
Pulsed Drain Current (Package Limited)	I_{DM}	-20	A	
Maximum power dissipation	P_D	$T_A = 25^\circ C$	2	W
		$T_A = 75^\circ C$	1.3	W
Operating junction Temperature range	T_j	-55—150	°C	

Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-30	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=-30V, V_{GS}=0V$	-	-	1	μA
Gate-body leakage	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.97	-1.94	-2.91	V
Drain-source on-state resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-2.5A$	-	38	44	m Ω
		$V_{GS}=-4.5V, I_D=-2.5A$	-	51	59	
Forward transconductance	g_{fs}	$V_{GS}=-5V, I_D=-5A$	-	5	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	$V_{DS}=-15V, V_{GS}=0V$ $f=1.0MHz$	-	597	-	pF
Output capacitance	C_{OSS}		-	69	-	
Reverse transfer capacitance	C_{RSS}		-	57	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	$V_{DD}=-15V$ $I_D=-5A$ $V_{GEN}=-10V$ $R_L=3\Omega$ $R_{GEN}=3\Omega$	-	7.5	-	ns
Rise time	t_r		-	5.5	-	
Turn-off delay time	$t_{D(OFF)}$		-	19	-	
Fall time	t_f		-	7	-	
Total gate charge	Q_g	$V_{DS}=-15V, I_D=-5A$ $V_{GS}=-10V$	-	12.3	-	nC
Gate-source charge	Q_{gs}		-	1.8	-	
Gate-drain charge	Q_{gd}		-	1.9	-	

Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient	$t \leq 10s$	$R_{\theta JA}$	48	62.5	$^{\circ}C/W$
Maximum Junction-to-Ambient	Steady-State		74	110	
Maximum Junction-to-Lead	Steady-State	$R_{\theta JC}$	35	60	

Typical Performance Characteristics

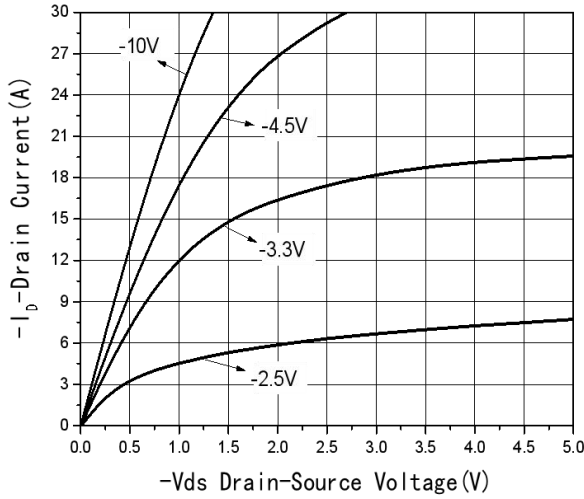


Fig1 Output Characteristics

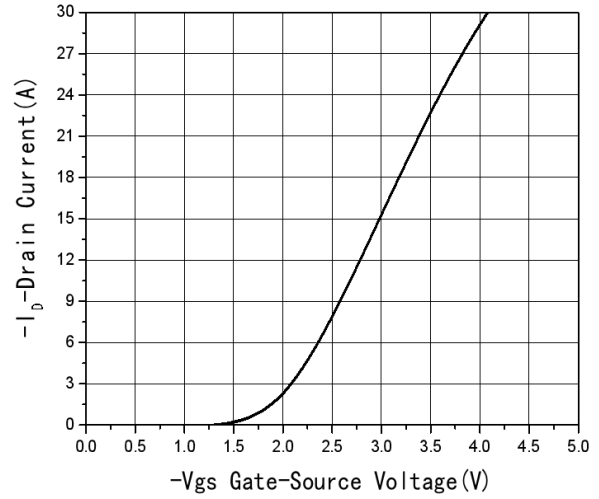


Fig2 Transfer Characteristics

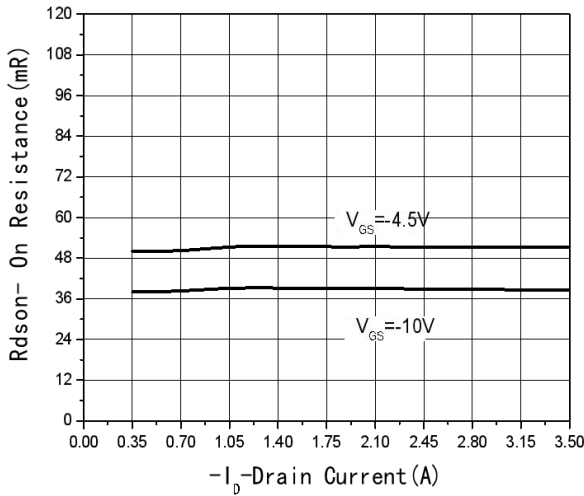


Fig3 $R_{DS(on)}$ -Drain current

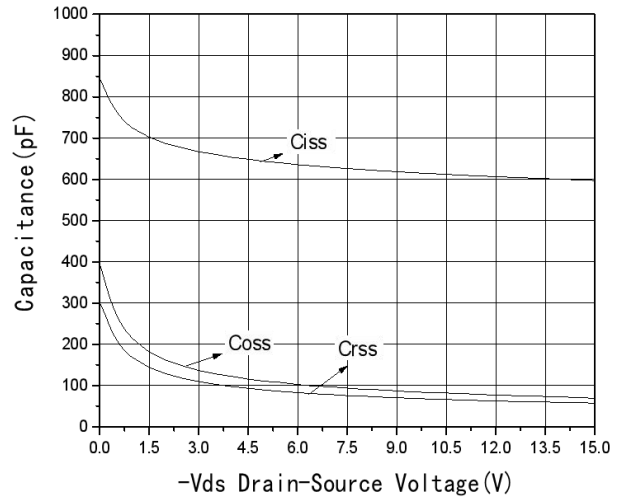


Fig4 Capacitance vs V_{DS}

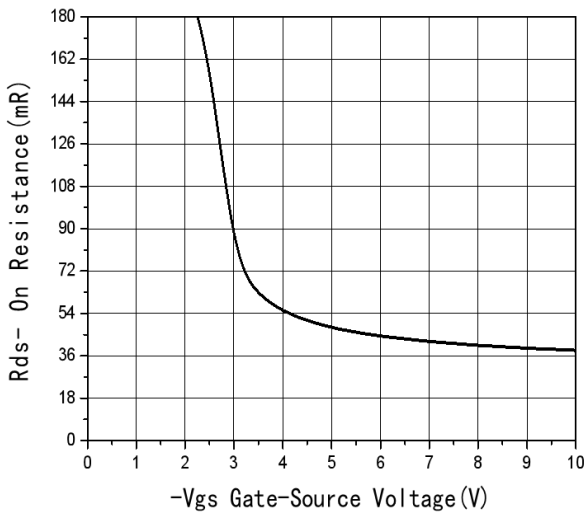


Fig5 $R_{DS(on)}$ -Gate Drain voltage

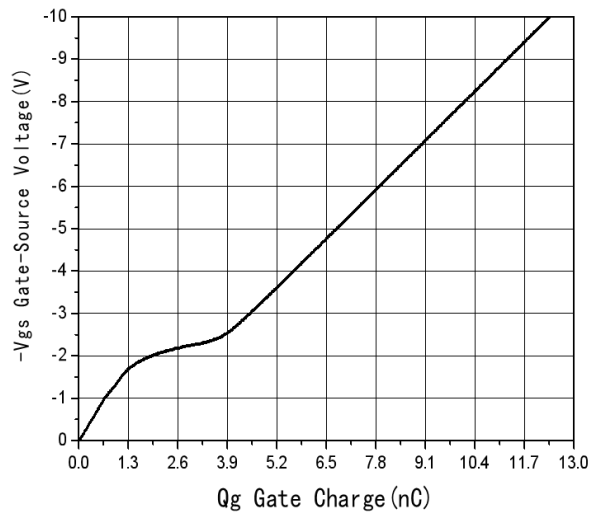


Fig6 Gate Charge

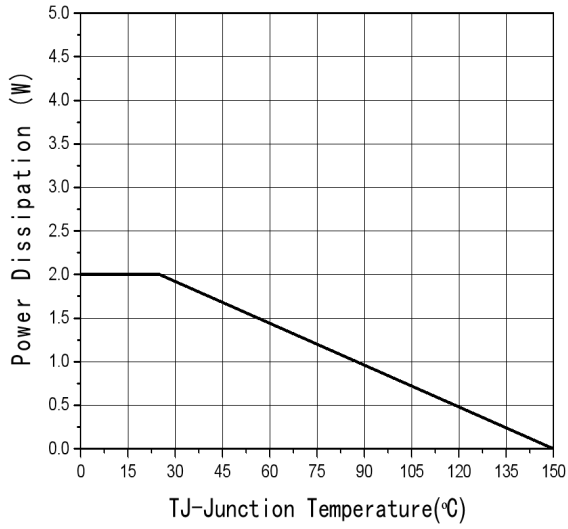


Fig7 Power De-rating

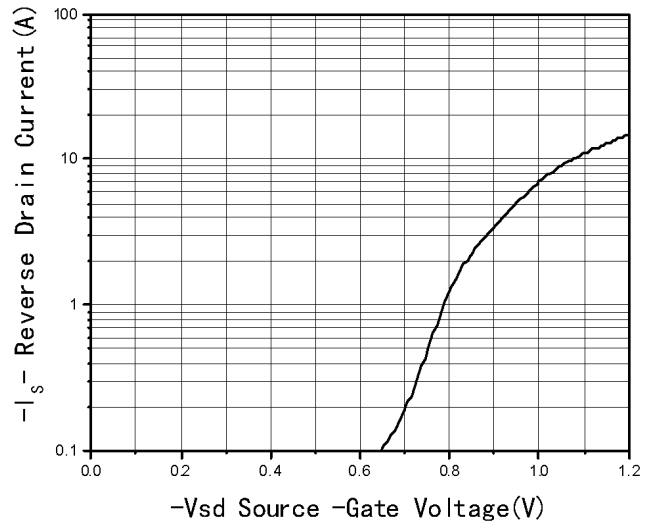
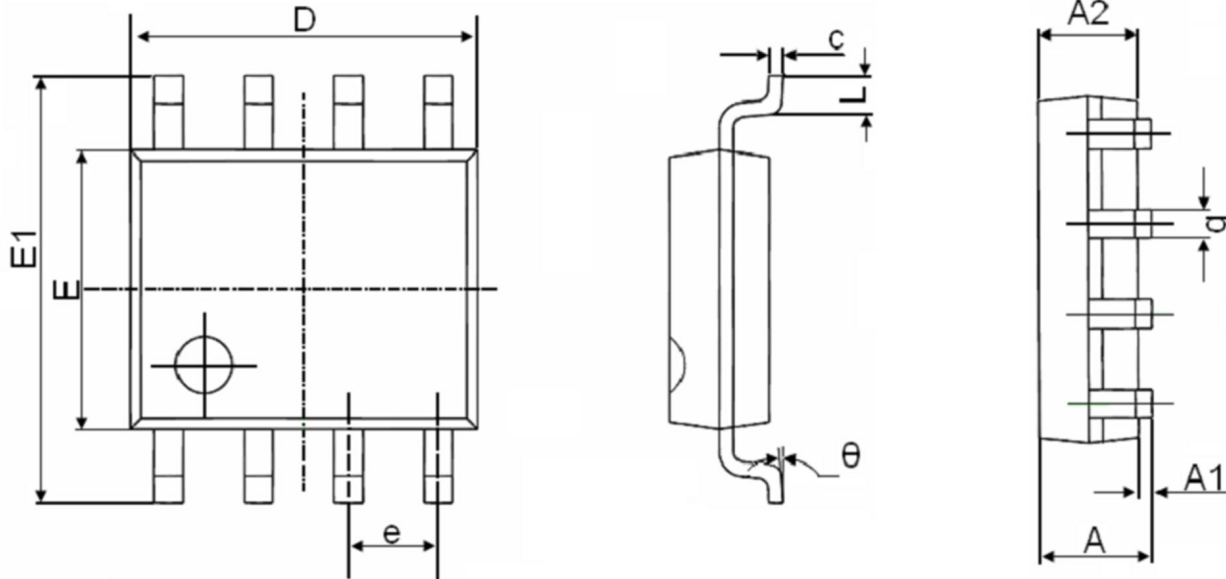


Fig8 Source-Drain Diode Forward

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°