

30V Dual N-Channel Enhancement Mode MOSFET

Description

The NP4834 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

- ◆ $V_{DS} = 30V, I_D = 10A$
- ◆ $R_{DS(ON)} = 11.5m\Omega$ (typical) @ $V_{GS} = 10V$
- ◆ $R_{DS(ON)} = 15.6m\Omega$ (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

100% UIS TESTED!

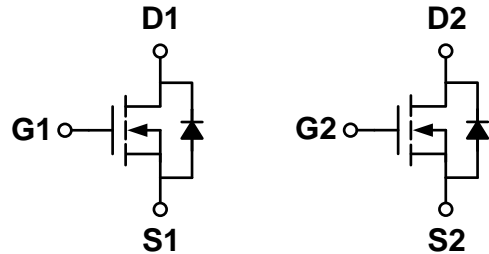
100% ΔV_{ds} TESTED!

Package

- ◆ PDFN3.3*3.3-8L

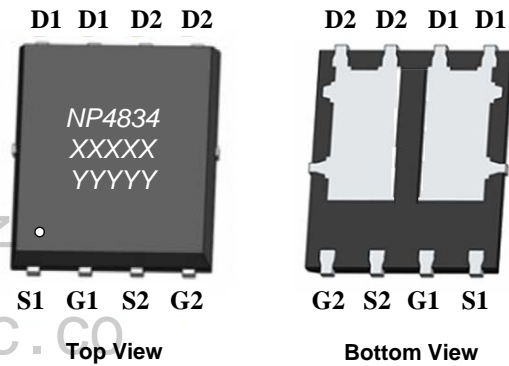


Schematic diagram



Marking and pin assignment

PDFN3.3*3.3-8L



Note: XXXX is the date code , YYYYY is the Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
NP4834QR	-55°C to +150°C	PDFN3.3*3.3-8L	5000

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	$T_A = 25^\circ C$	10	A
		$T_A = 75^\circ C$	8	
Pulsed Drain Current (Package Limited)	I_{DM}	55	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 _j	-55—150	°C
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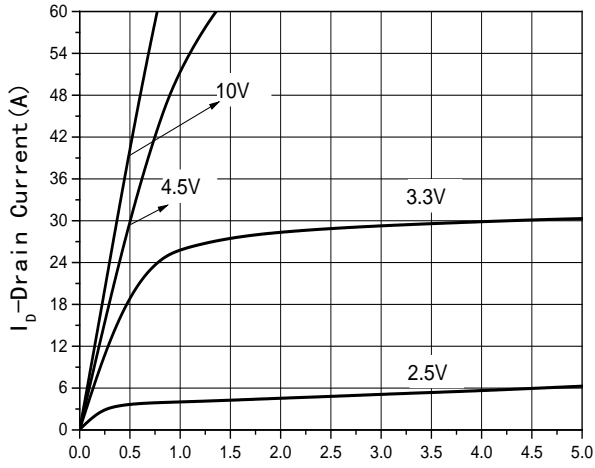
Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
Drain-source breakdown voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	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} =±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.65	3.0	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10V, I _D =10A	-	11.5	13	mΩ
		V _{GS} =4.5V, I _D =8A	-	15.6	18	
Forward transconductance	g _{fs}	V _{DS} =5V, I _D =10A	-	43	-	S
Dynamic Characteristics						
Input capacitance	C _{ISS}	V _{DS} =15V, V _{GS} =0V f=1.0MHz	-	933	-	pF
Output capacitance	C _{OSS}		-	135	-	
Reverse transfer capacitance	C _{RSS}		-	103	-	
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	-	1.6	2.4	Ω
Switching Characteristics						
Turn-on delay time	t _{D(ON)}	V _{DS} =15V, V _{GS} =10V R _L =1.5Ω R _{GEN} =3Ω	-	4.4	-	ns
Rise time	t _r		-	9	-	
Turn-off delay time	t _{D(OFF)}		-	17	-	
Fall time	t _f		-	6	-	
Total gate charge	Q _g	V _{DS} =15V, I _D =10A V _{GS} =10V	-	19.3	-	nC
Gate-source charge	Q _{gs}		-	2.4	-	
Gate-drain charge	Q _{gd}		-	4	-	

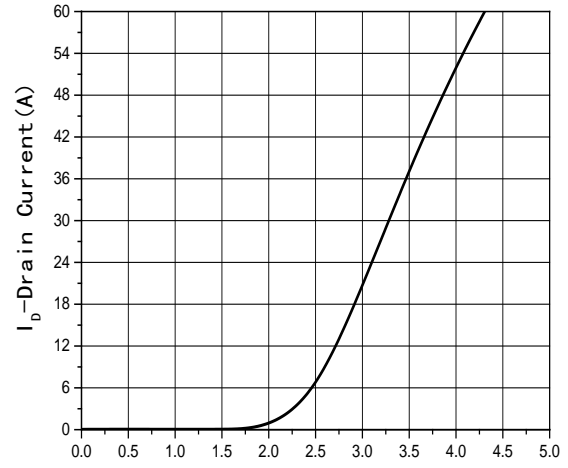
Thermal Characteristics

Thermal Resistance junction-to ambient	R _{th JA}	100	°C/W
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Typical Performance Characteristics



V_{DS} Drain-Source Voltage (V)
Fig1 Output Characteristics



V_{GS} Gate-Source Voltage (V)
Fig2 Transfer Characteristics

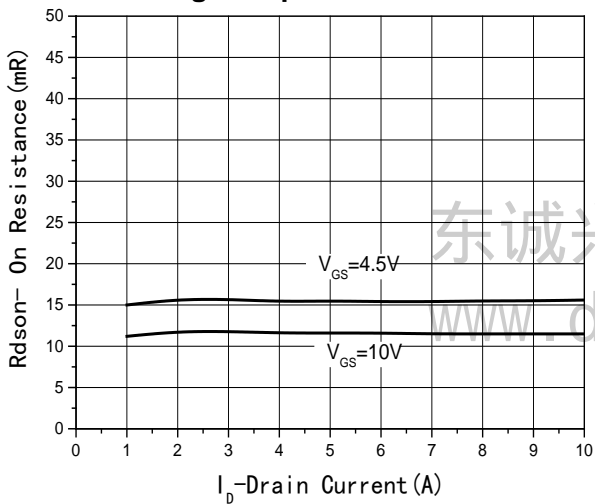


Fig3 R_{DS(on)}-Drain current

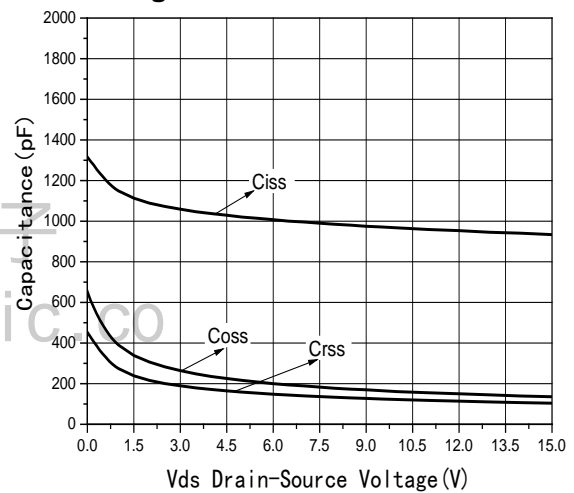


Fig4 Capacitance vs V_{DS}

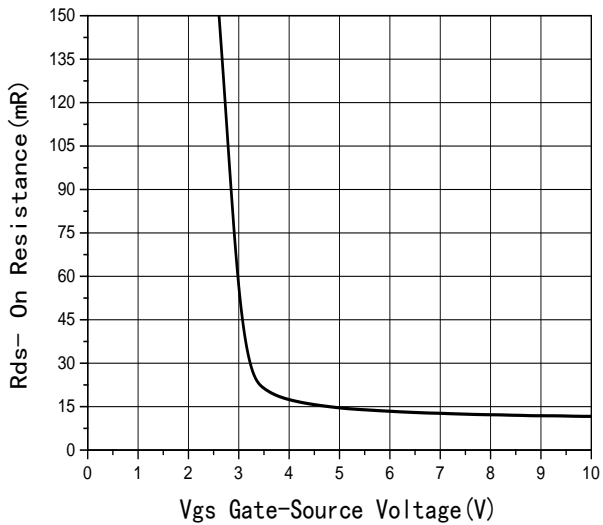


Fig5 R_{DS(on)}-Gate Drain voltage

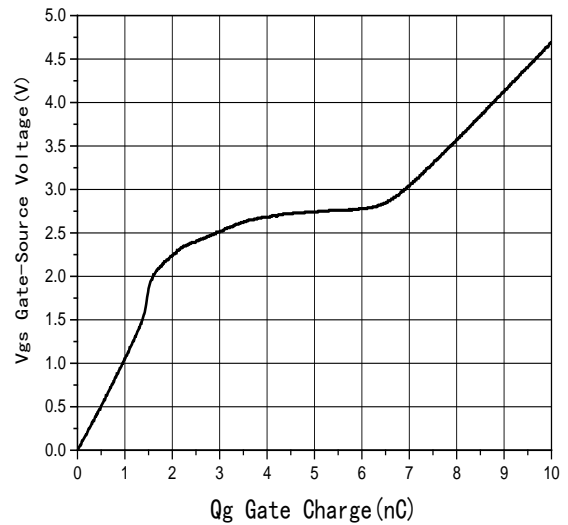


Fig6 Gate Charge

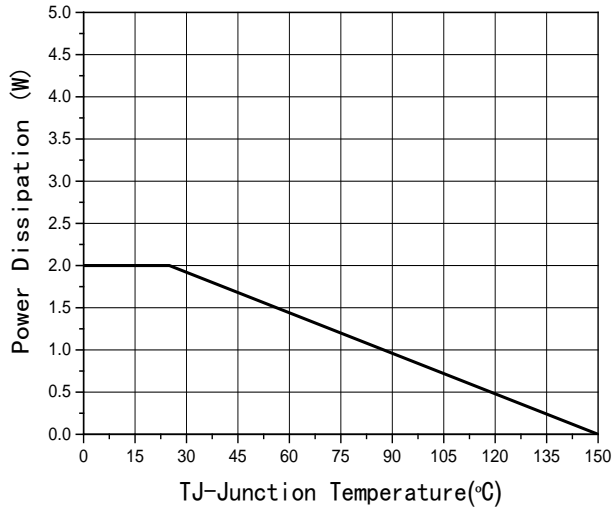


Fig7 Power De-rating

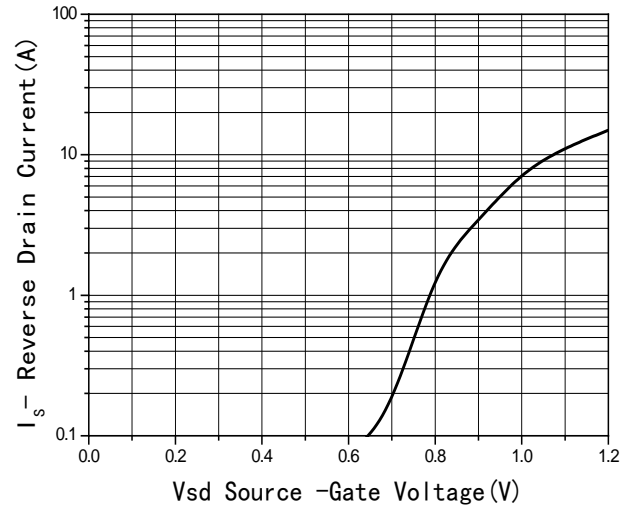
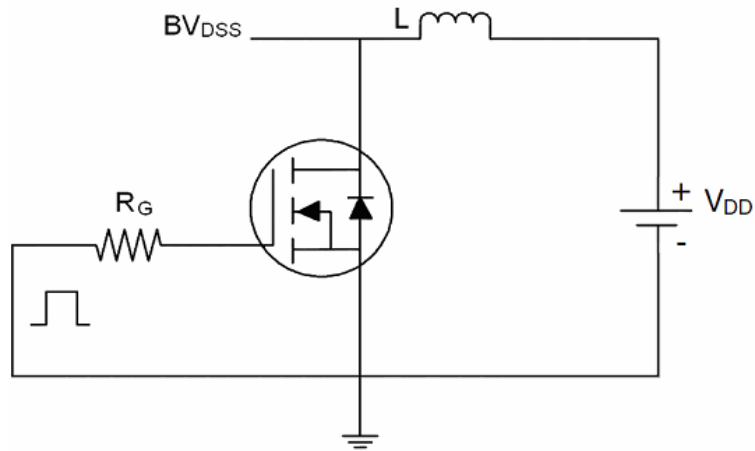


Fig8 Source-Drain Diode Forward

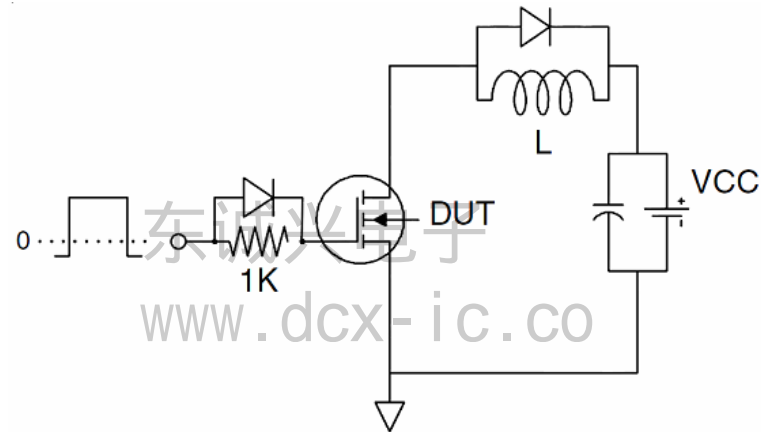
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Test Circuit:

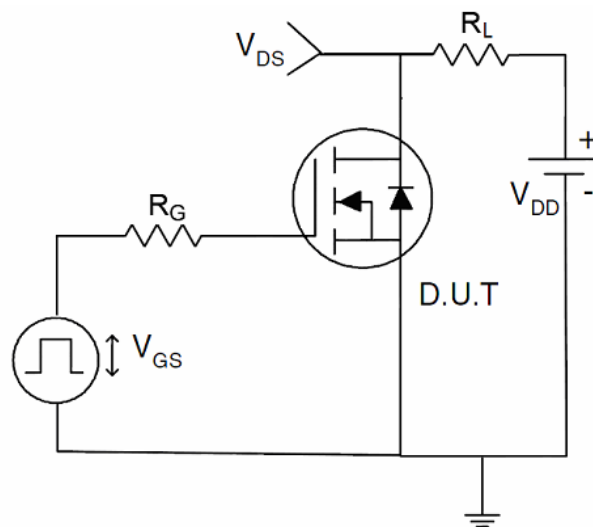
(1)、EAS Test Circuit



(2)、Gate Charge Test Circuit

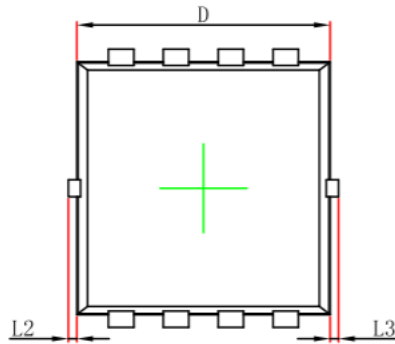


(3)、Switch Time Test Circuit

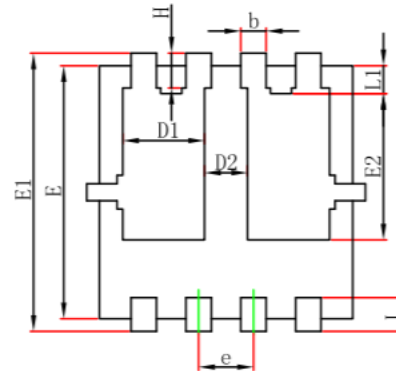


Package Information

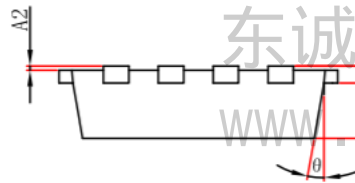
- PDFN3.3*3.3-8L



Top View
[顶视图]



Bottom View
[背视图]



Side View
[侧视图]

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.650	0.850	0.026	0.033
A1	0.152 REF.		0.006 REF.	
A2	0~0.05		0~0.002	
D	2.900	3.100	0.114	0.122
D1	0.935	1.135	0.037	0.045
D2	0.280	0.480	0.011	0.019
E	2.900	3.100	0.114	0.122
E1	3.150	3.450	0.124	0.136
E2	1.535	1.935	0.060	0.076
b	0.200	0.400	0.008	0.016
e	0.550	0.750	0.022	0.030
L	0.300	0.500	0.012	0.020
L1	0.180	0.480	0.007	0.019
L2	0~0.100		0~0.004	
L3	0~0.100		0~0.004	
H	0.315	0.515	0.012	0.020
θ	9°	13°	9°	13°