

Description

The ENP35N04 uses Trench technology that is uniquely optimized to provide the most efficient high frequency switching performance. Both conduction and switching power losses are minimized due to an extremely low combination of $R_{DS(ON)}$ and Q_g . This device is ideal for high-frequency switching and synchronous rectification.

General Description

- ◆ $V_{DS} = 40V$, $I_D = 35A$ $R_{DS(ON)} = 7.9m\Omega$ (typical) @ $V_{GS} = 10V$ $R_{DS(ON)} = 10.2m\Omega$ (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

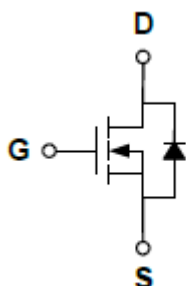
Applications

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

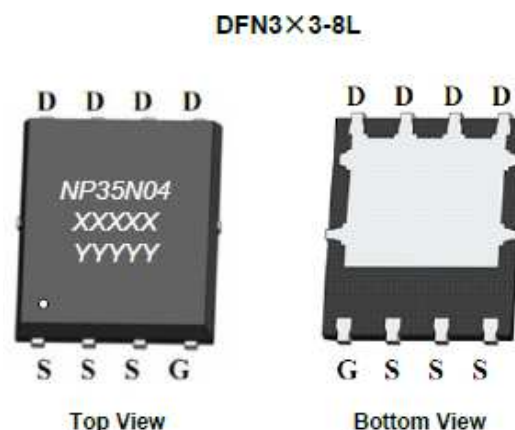
Package

- ◆ DFN3*3-8L

Schematic diagram



Marking and pin assignment



XXXX—Wafer Information

YYYY—Quality Code

Ordering Information

Part Number	Storage Temperature	Package
ENP35N04FGR	-55°C to +150°C	DFN3*3-8L



N-Channel Trench Enhancement Mode MOSFET

ENP35N04

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

parameter	symbol	limit	unit
Drain-source voltage	V_{DS}	40	V
Gate-source voltage	V_{GS}	± 20	V
Drain Current-Continuous (Silicon Limited)	I_D	35	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)	$I_D (100^\circ\text{C})$	15	A
Pulsed Drain Current (Package Limited)	I_{DM}	100	A
Single pulse avalanche energy	E_{AS}	150	mJ
Maximum power dissipation	P_D	35	W
Operating junction Temperature range	T_J	-55—150	$^\circ\text{C}$

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 =250μA	40	-	-	V
Zero gate voltage drain current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate-body leakage	I _{GSS}	V _{DS} =0V, V _{GS} =±20V	-	-	±10	μA
ON Characteristics						
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0	1.84	2.8	V
Drain-source on-state resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	7.9	9.5	mΩ
		V _{GS} =4.5V, I _D =20A	-	10.2	12	
Forward transconductance	g _{fs}	V _{DS} =5V, I _D =20A	26	30	-	S
Dynamic Characteristics						
Input capacitance	C _{ISS}	V _{DS} =20V ,V _{GS} =0V f=1.0MHz	-	1577	-	pF
Output capacitance	C _{OSS}		-	128	-	
Reverse transfer capacitance	C _{RSS}		-	112	-	
Switching Characteristics						
Turn-on delay time	t _{D(ON)}	V _{DS} =20V I _D =2.8A V _{GEN} =4.5V R _L =10ohm R _{GEN} =60ohm	-	14	-	ns
Rise time	t _r		-	18	-	
Turn-off delay time	t _{D(OFF)}		-	50	-	
Fall time	t _f		-	21	-	
Total gate charge	Q _g	V _{DS} =20V,I _D =20A V _{GS} =4.5V	-	32.4	-	nC
Gate-source charge	Q _{gs}		-	4.4	-	
Gate-drain charge	Q _{gd}		-	6	-	

Thermal Characteristics

Thermal Resistance junction-to ambient	$R_{th JA}$	100	$^\circ\text{C/W}$
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Typical Performance Characteristics

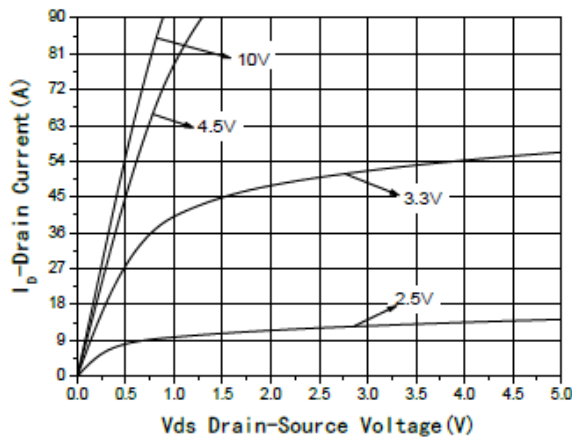


Fig1 Output Characteristics

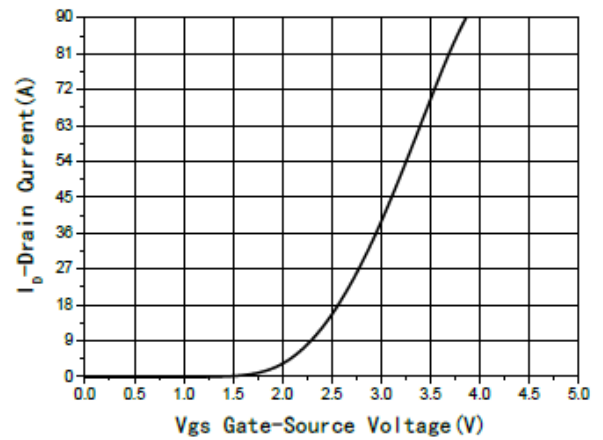


Fig2 Transfer Characteristics

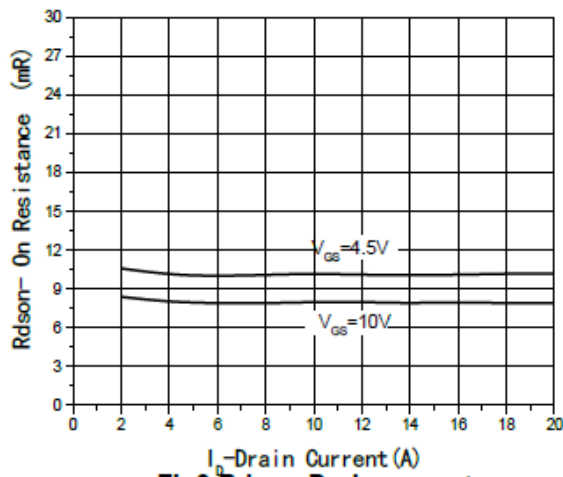


Fig3 $R_{DS(on)}$ -Drain current

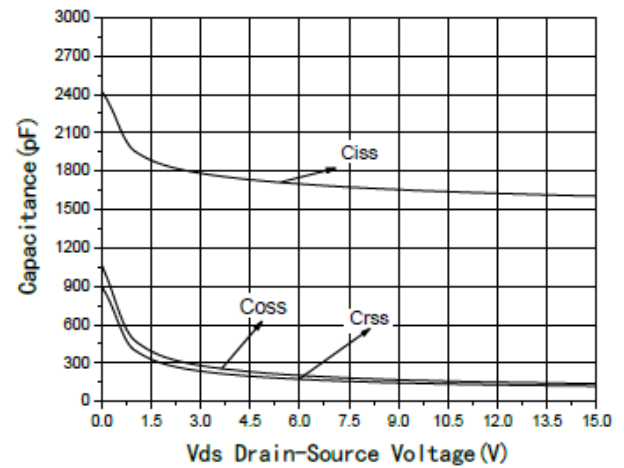


Fig4 Capacitance vs V_{DS}

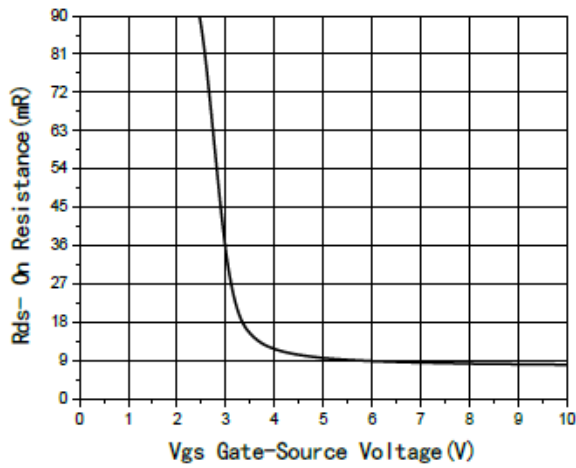


Fig5 Rdson-Gate Drain voltage

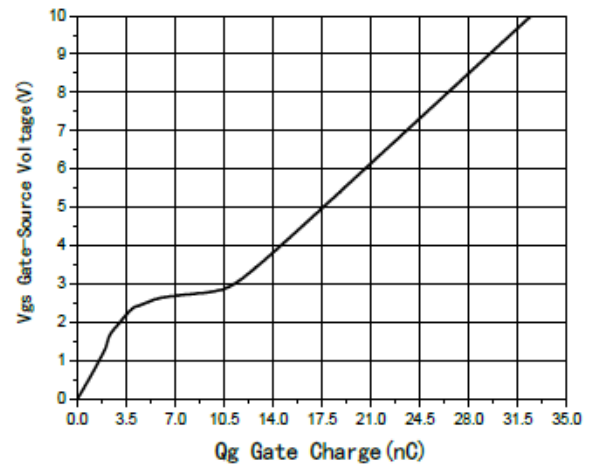


Fig6 Gate Charge

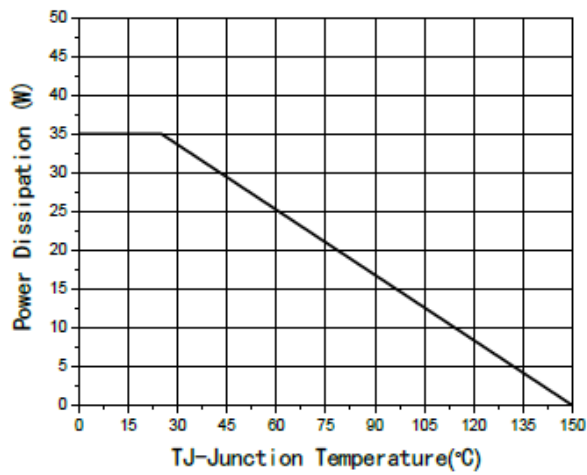


Fig7 Power De-rating

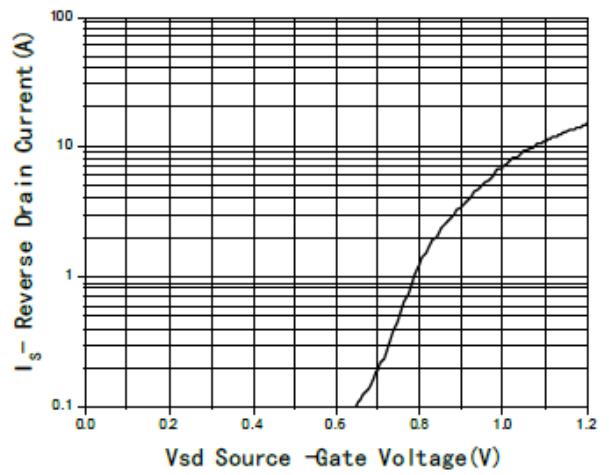


Fig8 Source-Drain Diode Forward

Package Information

DFN3×3-8L

