



## Description

The NTTFS5826NL 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 Battery protection or in other Switching application.

## General Features

$V_{DS} = 60V$   $I_D = 15A$

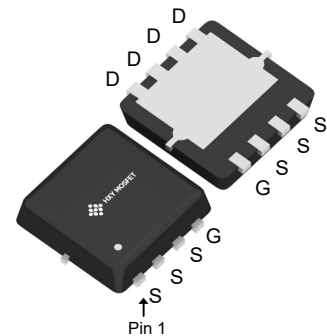
$R_{DS(ON)} < 40m\Omega$  @  $V_{GS}=10V$

## Application

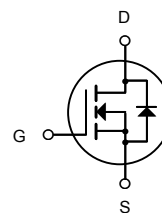
Battery protection

Load switch

Uninterruptible power supply



DFN3X3-8L



N-Channel MOSFET

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
NTTFS5826NL	DFN3X3-8L	HXY MOSFET	5000

## Absolute Maximum Ratings ( $T_C=25^{\circ}C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
$V_{DS}$	Drain-Source Voltage	60	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D@T_A=25^{\circ}C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	15	A
$I_D@T_A=70^{\circ}C$	Continuous Drain Current, $V_{GS}$ @ 10V <sup>1</sup>	11	A
$I_{DM}$	Pulsed Drain Current <sup>2</sup>	46	A
EAS	Single Pulse Avalanche Energy <sup>3</sup>	25.5	mJ
$I_{AS}$	Avalanche Current	20	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation <sup>4</sup>	34.7	W
$T_{STG}$	Storage Temperature Range	-55 to 175	$^{\circ}C$
$T_J$	Operating Junction Temperature Range	-55 to 175	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient <sup>1</sup>	62	$^{\circ}C/W$



**Electrical Characteristics ( $T_J=25^{\circ}\text{C}$ , unless otherwise noted)**

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	60	-	-	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =60V, V <sub>GS</sub> = 0V,	-	-	1.0	μA
I <sub>GSS</sub>	Gate to Body Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> = ±20V	-	-	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.0	1.6	2.5	V
R <sub>DS(on)</sub>	Static Drain-Source on-Resistance <small>note3</small>	V <sub>GS</sub> =10V, I <sub>D</sub> =5A	-	28	40	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A	-	36	50	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, f=1.0MHz	-	1148	-	pF
C <sub>oss</sub>	Output Capacitance		-	58.5	-	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		-	49.4	-	pF
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =30V, I <sub>D</sub> =2.5A, V <sub>GS</sub> =10V	-	20.3	-	nC
Q <sub>gs</sub>	Gate-Source Charge		-	3.7	-	nC
Q <sub>gd</sub>	Gate-Drain(“Miller”) Charge		-	5.3	-	nC
t <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =30V, I <sub>D</sub> =5A, R <sub>G</sub> =1.8Ω, V <sub>GS</sub> =10V	-	7.6	-	ns
t <sub>r</sub>	Turn-on Rise Time		-	20	-	ns
t <sub>d(off)</sub>	Turn-off Delay Time		-	15	-	ns
t <sub>f</sub>	Turn-off Fall Time		-	24	-	ns
I <sub>S</sub>	Maximum Continuous Drain to Source Diode Forward Current		-	-	5	A
I <sub>SM</sub>	Maximum Pulsed Drain to Source Diode Forward Current		-	-	15	A
V <sub>SD</sub>	Drain to Source Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =5A	-	-	1.2	V
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =5A, dI/dt=100A/μs	-	29	-	ns
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge		-	43	-	nC

- Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature  
2. EAS condition :  $T_J=25^{\circ}\text{C}, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=8.7A$   
3. Pulse Test: Pulse Width $\leq 300\mu s$ , Duty Cycle $\leq 0.5\%$



## Typical Characteristics

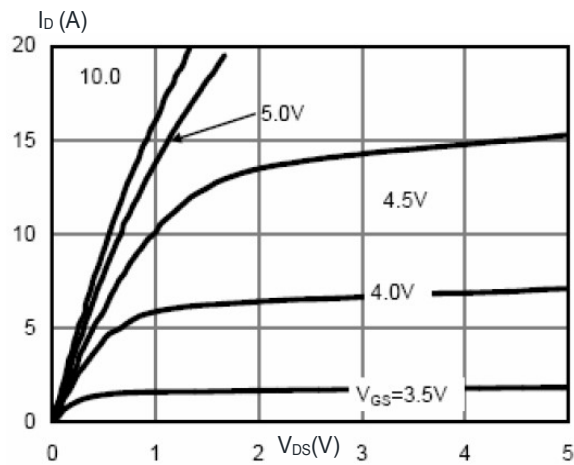


Figure1: Output Characteristics

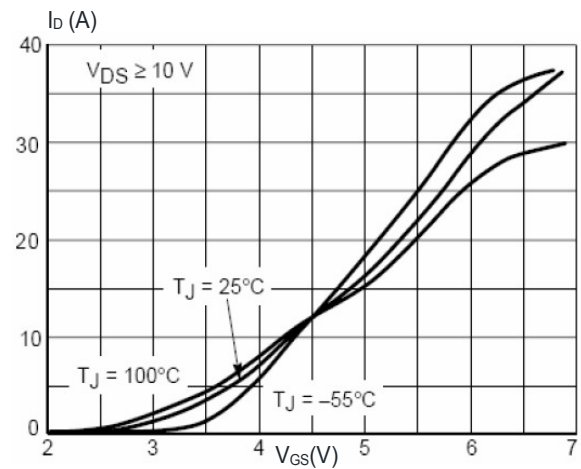


Figure 2: Typical Transfer Characteristics

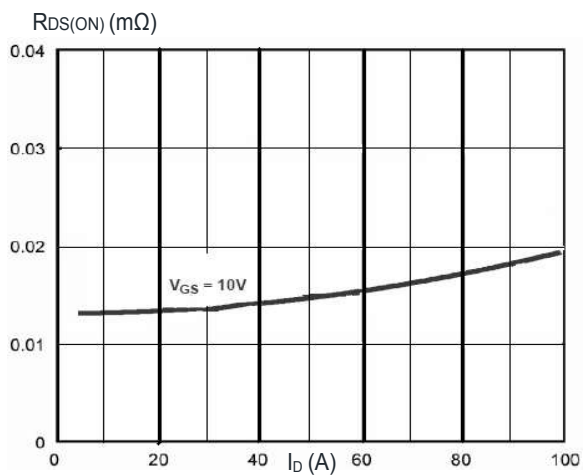


Figure 3: Rdson- Drain Current

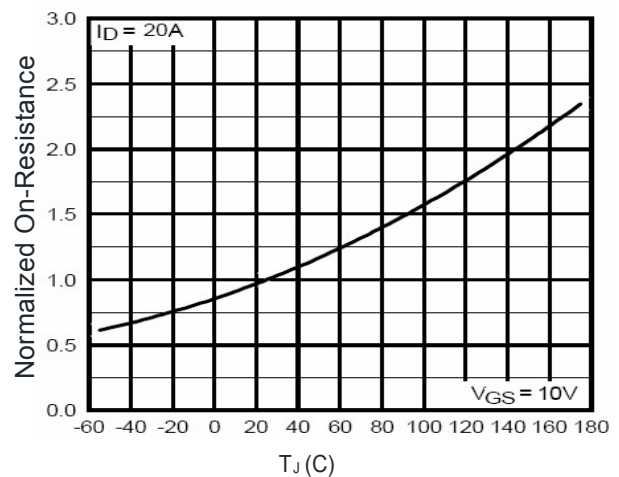


Figure 4: Rdson-Junction Temperature

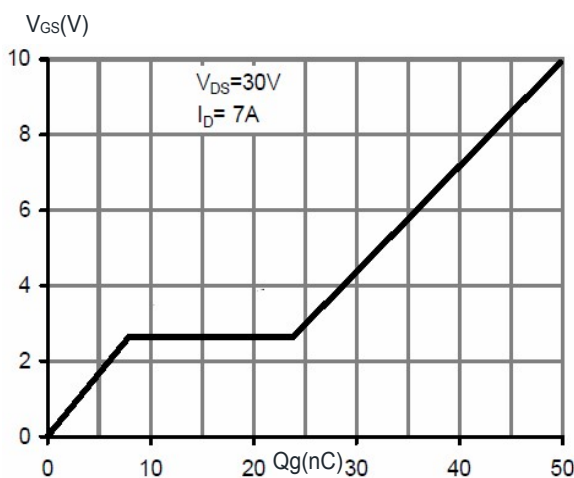


Figure 5: Gate Chare

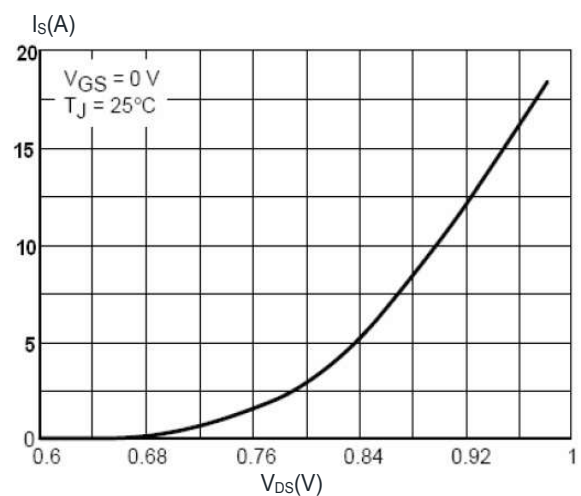


Figure 6: Source-Drain Diode Forward

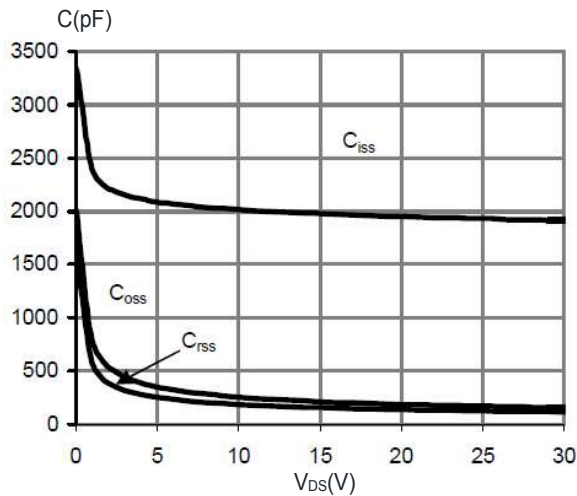


Figure 7: Capacitance vs Vds

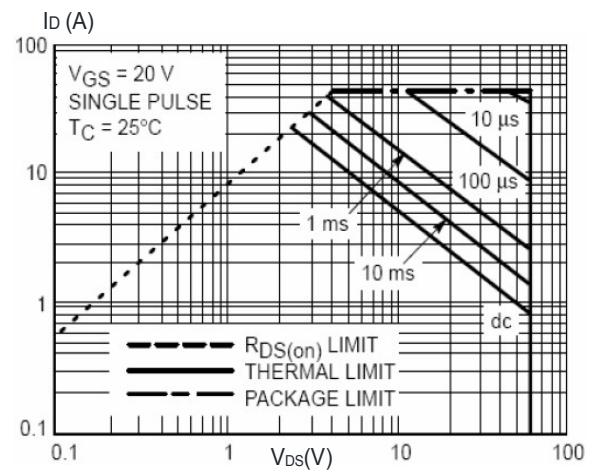


Figure 7: Safe Operation Area

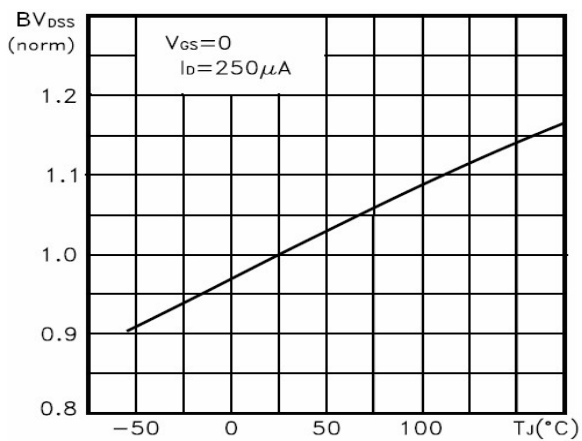


Figure 8: BVDSS vs Junction Temperature

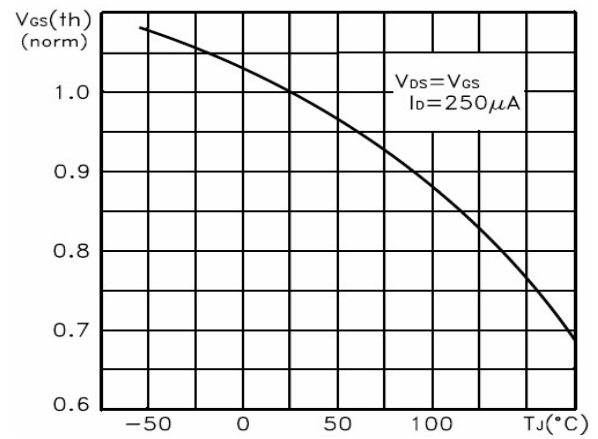


Figure 9: VGS(th) vs Junction Temperature

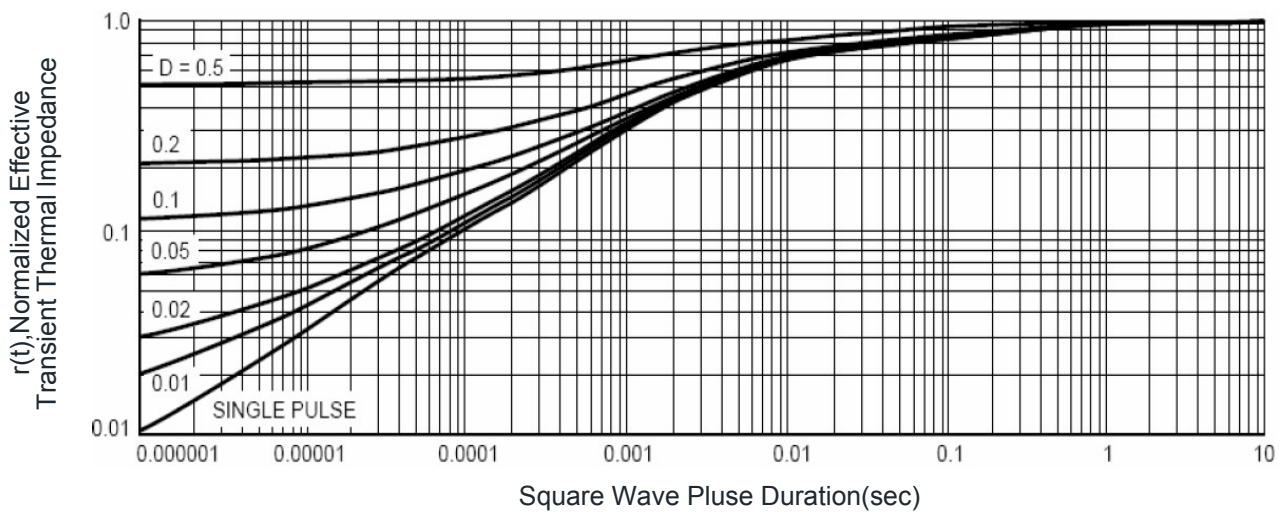


Figure 11: Normalized Maximum Transient Thermal Impedance



## Test Circuit

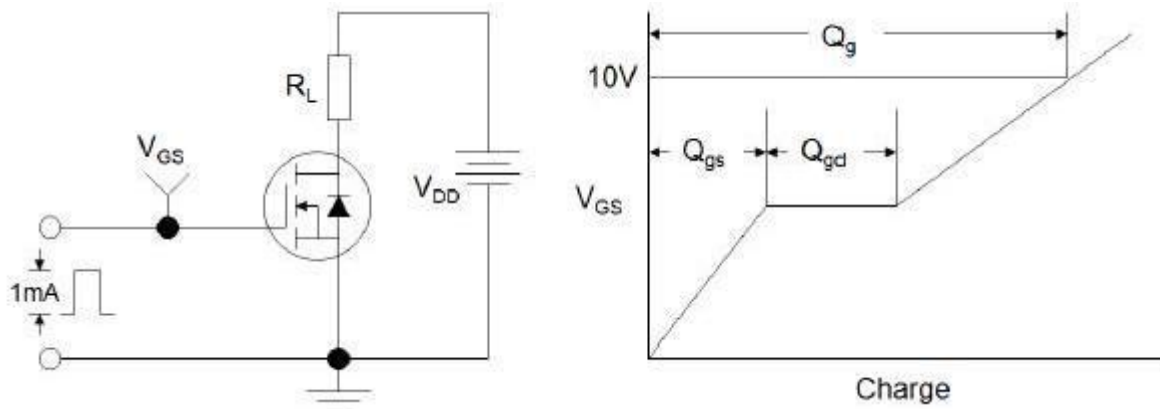


Figure1:Gate Charge Test Circuit & Waveform

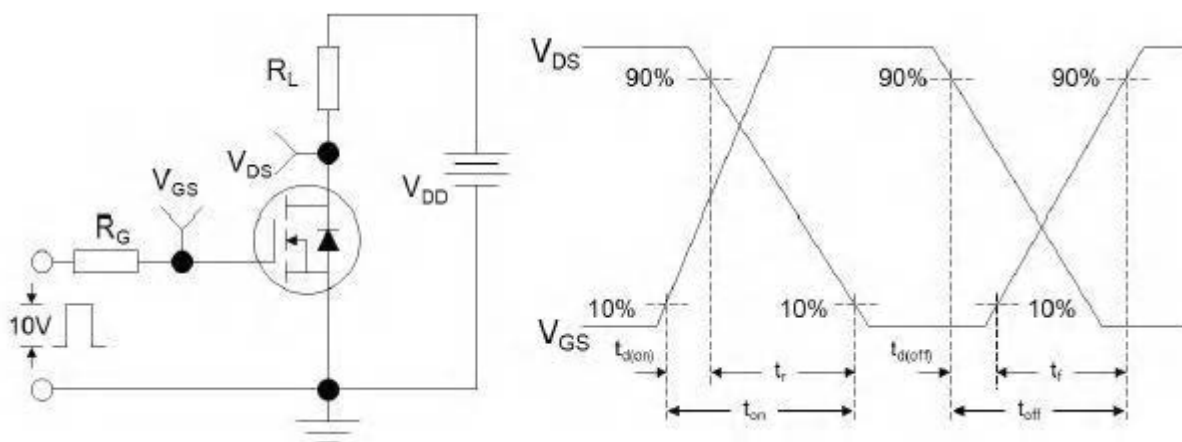


Figure 2: Resistive Switching Test Circuit & Waveforms

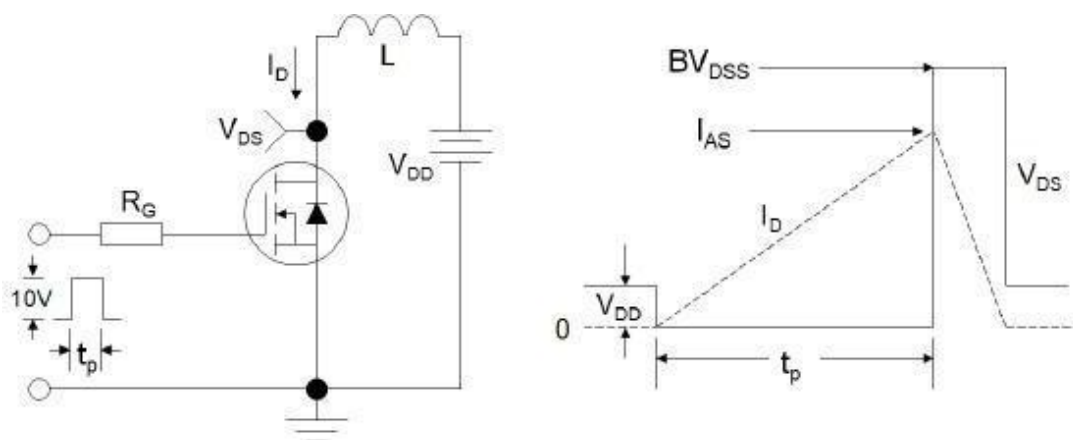
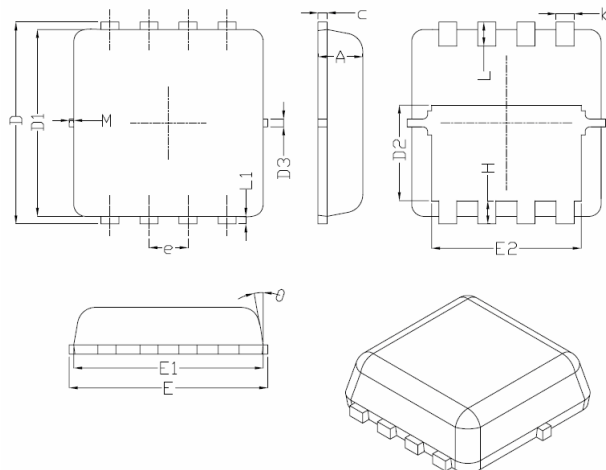


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



## DFN3X3-8L Package Information



Symbol	Dimensions In Millimeters		
	Min.	Nom.	Max.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.48	1.58	1.68
D3	-	0.13	-
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	-	0.13	-
M	*	*	0.15
θ		10°	12°



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