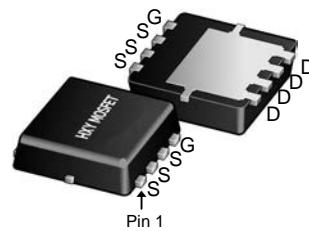




Description

The NVTFS4C08NWFTAG use advanced SGT MOSFET technology to provide low RDS(ON), low gate charge, fast switching and excellent avalanche characteristics. This device is specially designed to get better ruggedness.

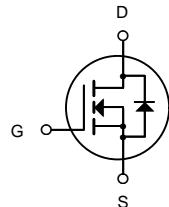


General Features

$V_{DS} = 30V$ $I_D = 40A$

$R_{DS(ON)} < 6.3m\Omega$ @ $V_{GS} = 10V$

DFN3X3-8L



N-Channel MOSFET

Applications

Consumer electronic power supply Motor control

Synchronous-rectification Isolated DC

Synchronous-rectification applications

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
NVTFS4C08NWFTAG	DFN3X3-8L	HXY MOSFET	5000

Absolute Maximum Ratings (T_c=25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D @ $T_c = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	40	A
I_D @ $T_c = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	28	A
I_D @ $T_A = 25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	27	A
I_D @ $T_A = 70^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	24	A
I_{DM}	Pulsed Drain Current ²	135	A
EAS	Single Pulse Avalanche Energy ³	29.8	mJ
I_{AS}	Avalanche Current	27	A
P_D @ $T_c = 25^\circ C$	Total Power Dissipation ⁴	30	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	50	°C/W
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	4.6	°C/W



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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_D=250\text{uA}$	30	---	---	V
$\text{R}_{\text{DS(ON)}}$	Static Drain-Source On-Resistance ²	$\text{V}_{\text{GS}}=10\text{V}$, $\text{I}_D=20\text{A}$	---	5	6.3	$\text{m}\Omega$
		$\text{V}_{\text{GS}}=4.5\text{V}$, $\text{I}_D=15\text{A}$	---	6.9	9	
$\text{V}_{\text{GS(th)}}$	Gate Threshold Voltage	$\text{V}_{\text{GS}}=\text{V}_{\text{DS}}$, $\text{I}_D=250\text{uA}$	1.2	---	2.5	V
I_{DSS}	Drain-Source Leakage Current	$\text{V}_{\text{DS}}=24\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $T_J=25^\circ\text{C}$	---	---	1	uA
		$\text{V}_{\text{DS}}=24\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $T_J=55^\circ\text{C}$	---	---	5	
I_{GSS}	Gate-Source Leakage Current	$\text{V}_{\text{GS}}=\pm 20\text{V}$, $\text{V}_{\text{DS}}=0\text{V}$	---	---	± 100	nA
g_{fs}	Forward Transconductance	$\text{V}_{\text{DS}}=5\text{V}$, $\text{I}_D=20\text{A}$	---	67	---	S
R_{g}	Gate Resistance	$\text{V}_{\text{DS}}=0\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	1.7	---	Ω
Q_{g}	Total Gate Charge (4.5V)	$\text{V}_{\text{DS}}=15\text{V}$, $\text{V}_{\text{GS}}=4.5\text{V}$, $\text{I}_D=15\text{A}$	---	8	---	nC
Q_{gs}	Gate-Source Charge		---	2.4	---	
Q_{gd}	Gate-Drain Charge		---	3.2	---	
$\text{T}_{\text{d(on)}}$	Turn-On Delay Time	$\text{V}_{\text{DD}}=15\text{V}$, $\text{V}_{\text{GS}}=10\text{V}$, $\text{R}_{\text{G}}=3.3\Omega$	---	7.1	---	ns
T_{r}	Rise Time		---	40	---	
$\text{T}_{\text{d(off)}}$	Turn-Off Delay Time		---	15	---	
T_{f}	Fall Time		---	6	---	
C_{iss}	Input Capacitance	$\text{V}_{\text{DS}}=15\text{V}$, $\text{V}_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	814	---	pF
C_{oss}	Output Capacitance		---	498	---	
C_{rss}	Reverse Transfer Capacitance		---	41	---	
I_{s}	Continuous Source Current ^{1,6}	$\text{V}_{\text{G}}=\text{V}_{\text{D}}=0\text{V}$, Force Current	---	---	40	A
V_{SD}	Diode Forward Voltage ²	$\text{V}_{\text{GS}}=0\text{V}$, $\text{I}_{\text{s}}=1\text{A}$, $T_J=25^\circ\text{C}$	---	---	1	V
t_{rr}	Reverse Recovery Time	$\text{I}_{\text{F}}=20\text{A}$, $\text{di}/\text{dt}=100\text{A}/\mu\text{s}$, $T_J=25^\circ\text{C}$	---	15	---	nS
Q_{rr}	Reverse Recovery Charge		---	25	---	nC

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- 3.The EAS data shows Max. rating . The test condition is $\text{V}_{\text{DD}}=25\text{V}$, $\text{V}_{\text{GS}}=10\text{V}$, $\text{L}=0.1\text{mH}$, $\text{I}_{\text{AS}}=24\text{A}$
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_{D} and I_{DM} , in real applications , should be limited by total power dissipation.



Typical Characteristics

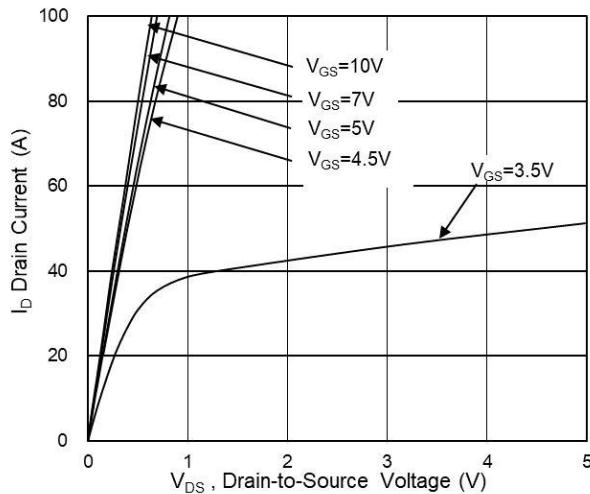


Fig.1 Typical Output Characteristics

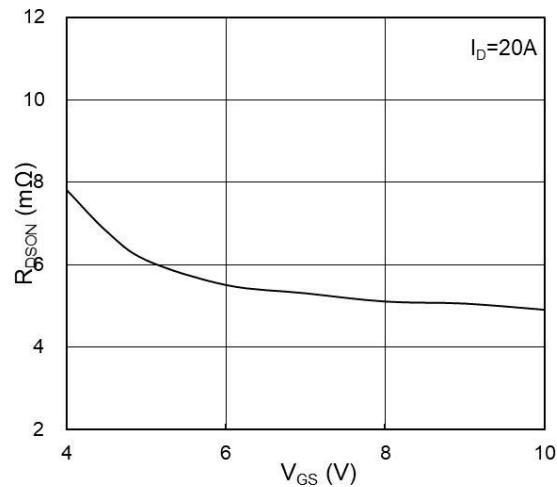


Fig.2 On-Resistance vs G-S Voltage

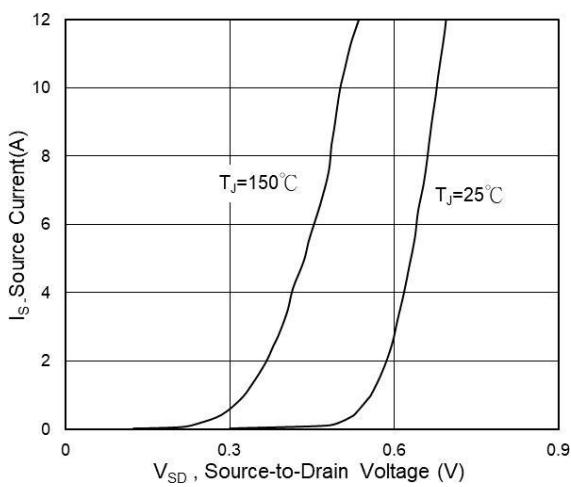


Fig.3 Source Drain Forward Characteristics

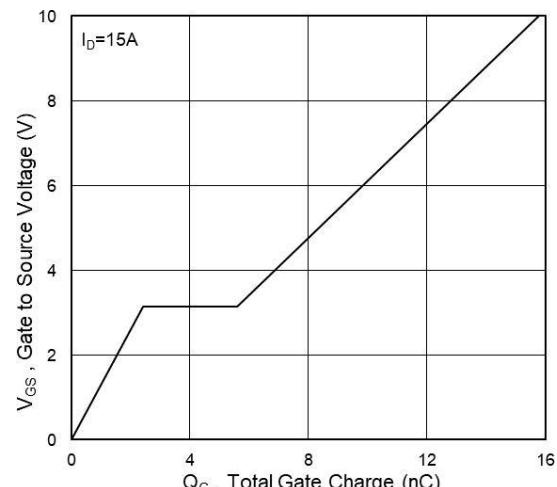


Fig.4 Gate-Charge Characteristics

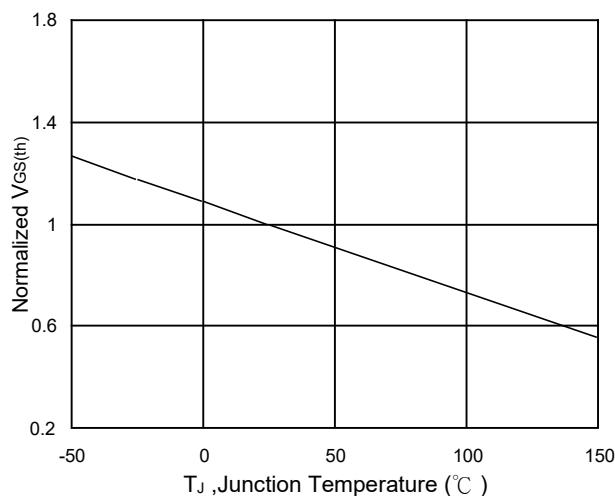


Fig.5 Normalized $V_{GS(th)}$ vs T_J

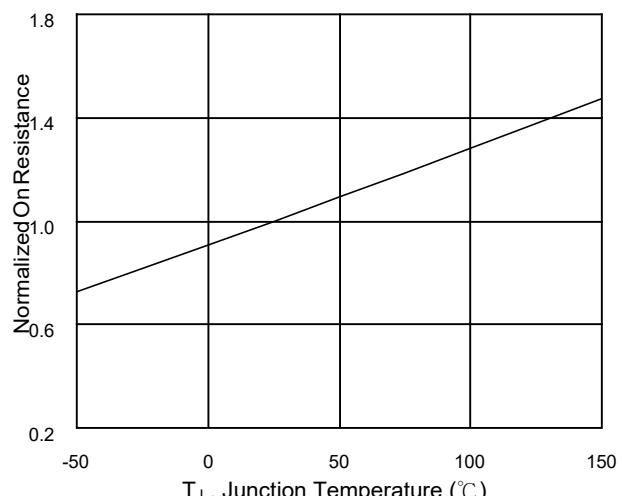
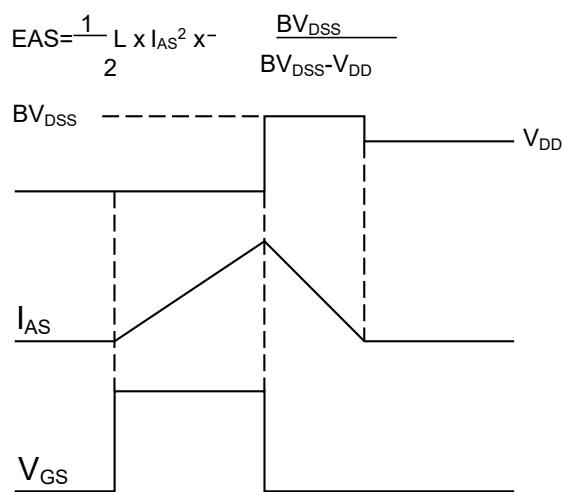
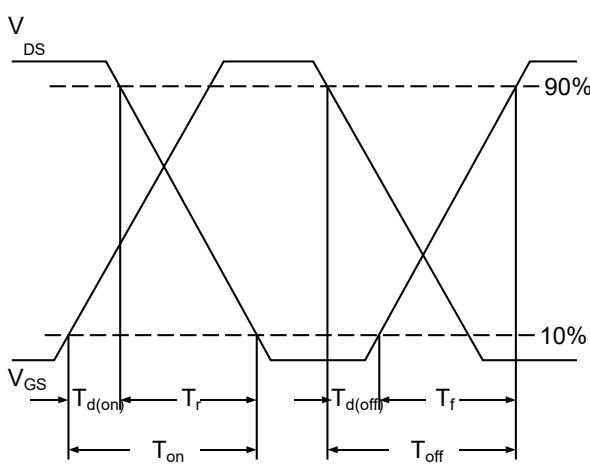
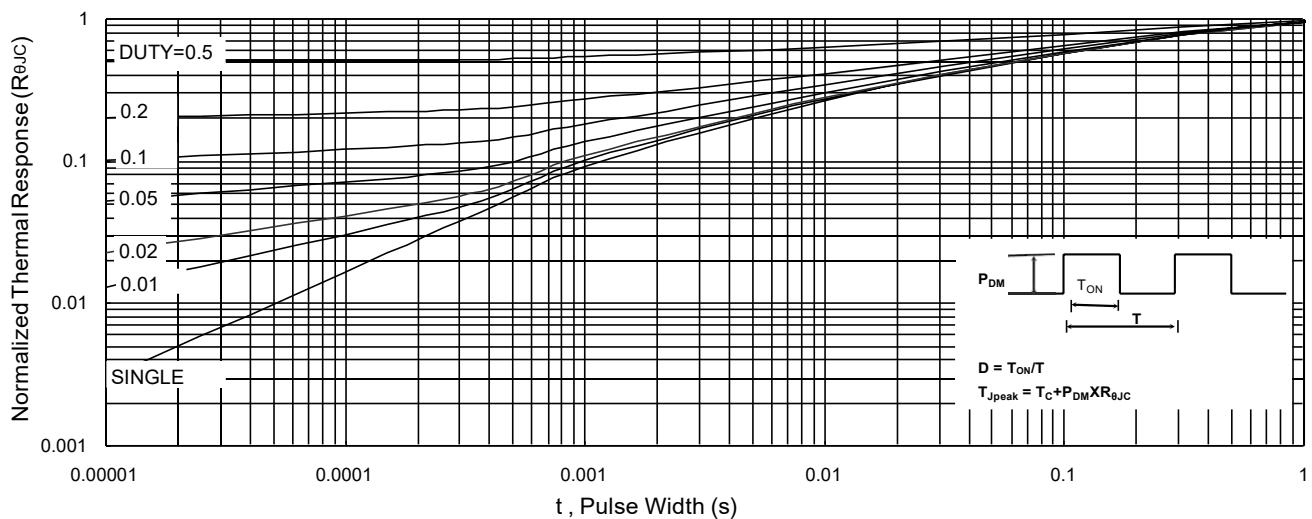
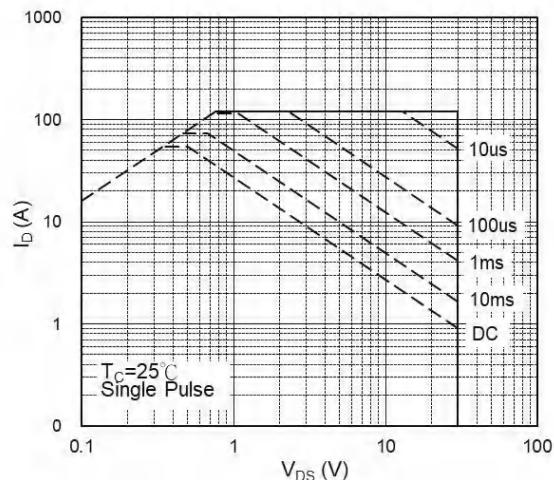
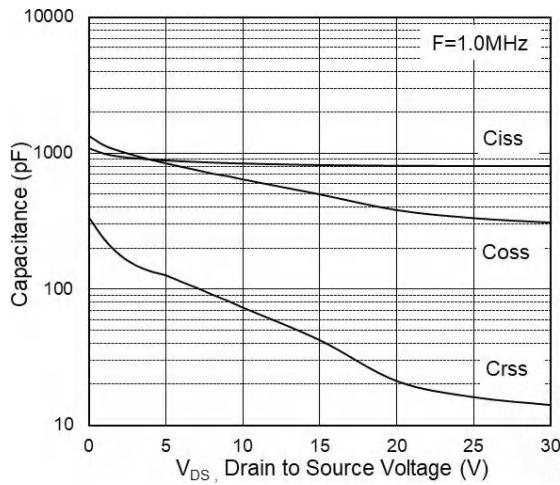
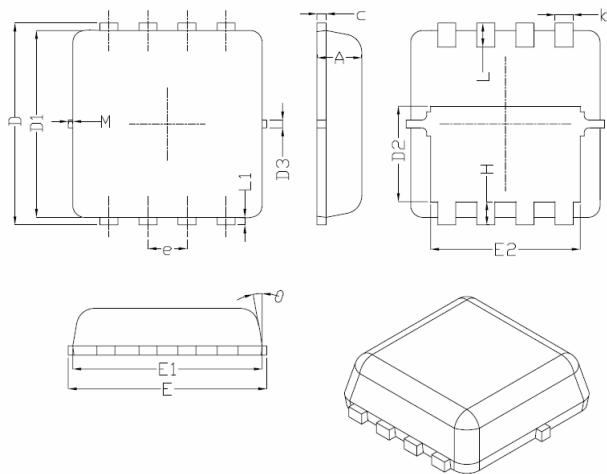


Fig.6 Normalized $R_{DS(on)}$ vs T_J





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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