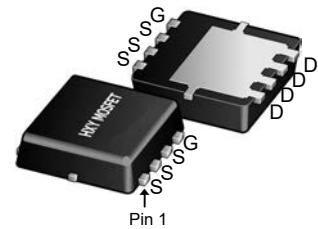




Description

The HNVTFS5C680NLTAG 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.

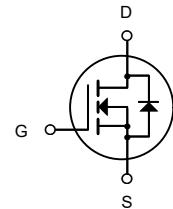


DFN3X3-8L

General Features

$V_{DS} = 60V$ $I_D = 30A$

$R_{DS(ON)} < 30m\Omega$ @ $V_{GS}=10V$



Application

Battery protection

N-Channel MOSFET

Load switch

Uninterruptible power supply

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
HNVTFS5C680NLTAG	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	± 20	V
$I_D @ T_c=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	30	A
$I_D @ T_c=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V^1$	16	A
Idm	Pulsed Drain Current ²	90	A
EAS	Single Pulse Avalanche Energy ³	42	mJ
$P_D @ T_c=25^\circ C$	Total Power Dissipation ⁴	33	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-ambient ¹	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	3.79	$^\circ C/W$



Electrical Characteristics (T_J=25 °C, unless otherwise noted)

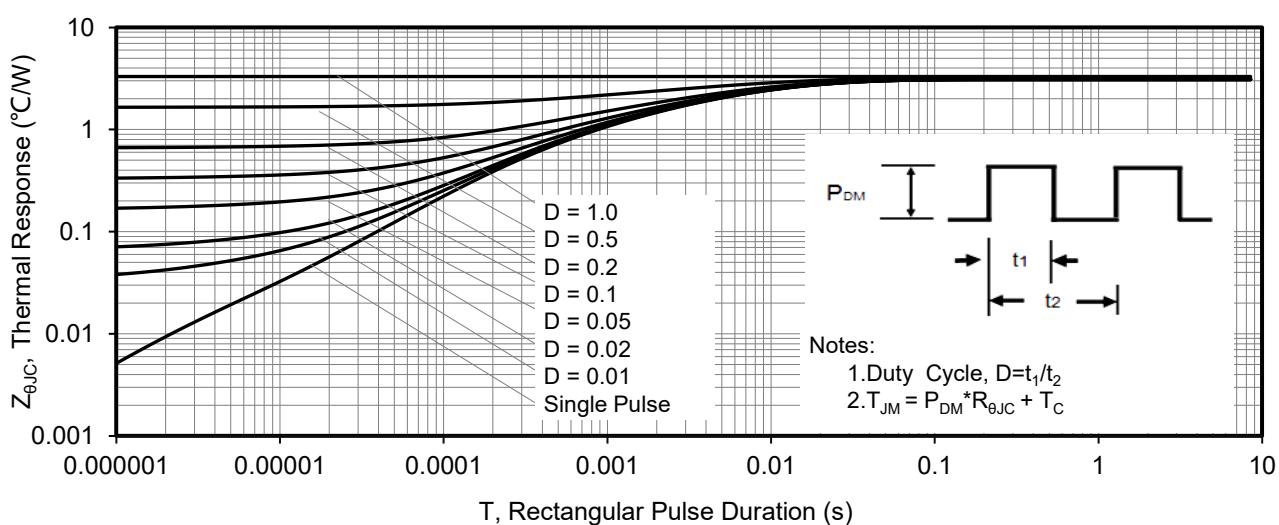
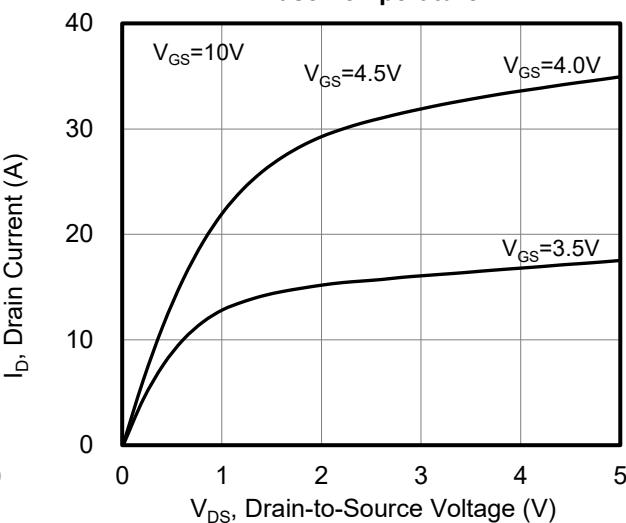
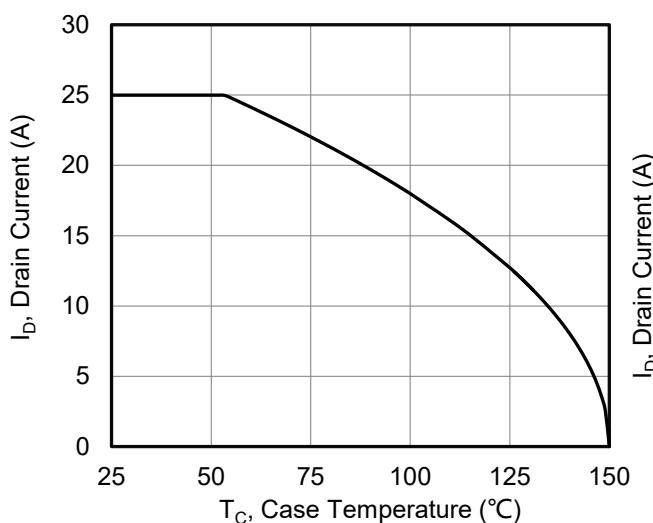
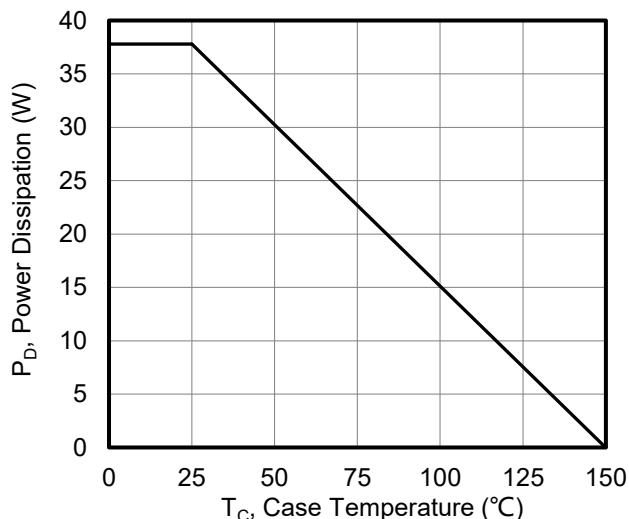
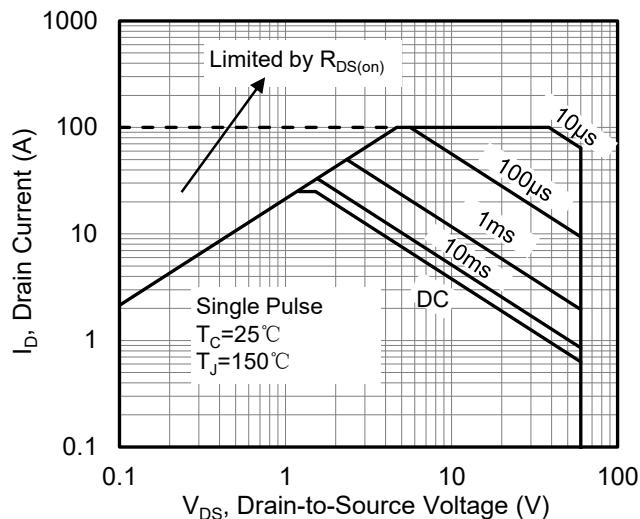
Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{GS} =0V, V _{DS} =60V	---	---	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0A	---	---	±100	nA
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-Source On Resistance ³	V _{GS} =10V, I _D =20A	---	24	30	mΩ
		V _{GS} =4.5V, I _D =20A	---	31	40	
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	---	1060	---	pF
C _{oss}	Output Capacitance		---	64	---	
C _{rss}	Reverse Transfer Capacitance		---	54	---	
t _{d(on)}	Turn-On Delay Time	V _{DD} =30V, V _{GS} =10V, I _D =20A, R _G = 3Ω	---	8.4	---	ns
t _r	Rise Time		---	8.5	---	ns
t _{d(off)}	Turn-Off Delay Time		---	36	---	ns
t _f	Fall Time		---	5	---	ns
Q _g	Total Gate Charge	V _{DS} =30V, V _{GS} =10V, I _D =20A	---	26	---	nC
Q _{gs}	Gate-Source Charge		---	5.7	---	nC
Q _{gd}	Gate-Drain "Miller" Charge		---	5.2	---	nC
I _S	Continuous Source Current	V _G =V _D =0V	---	---	20	A
I _{SM}	Pulsed Source Current	V _G =V _D =0V	---	---	90	A
V _{SD}	Forward on voltage	I _S =20A, V _{GS} =0V	---	---	1.2	V
T _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	---	18	---	nS
Q _{rr}	Body Diode Reverse Recovery Charge		---	13	---	nC

Notes:

- 1) L=0.5mH, VDD=30V, Start TJ=25°C.
- 2) Limited by maximum junction temperature.
- 3) Repetitive Rating: Pulse width limited by maximum junction temperature



Typical Characteristics



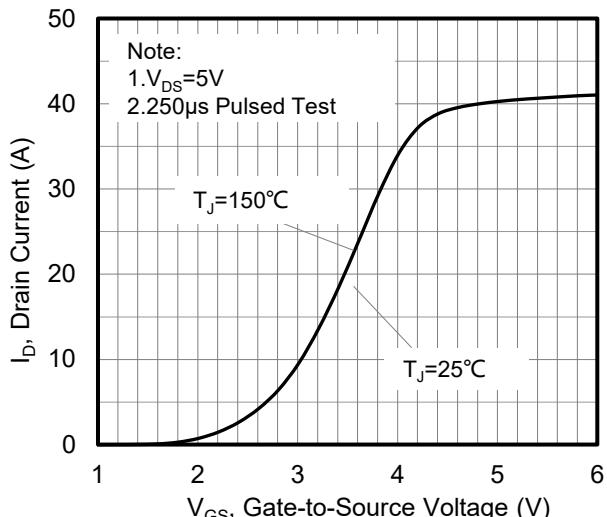


Figure 6. Typical Transfer Characteristics

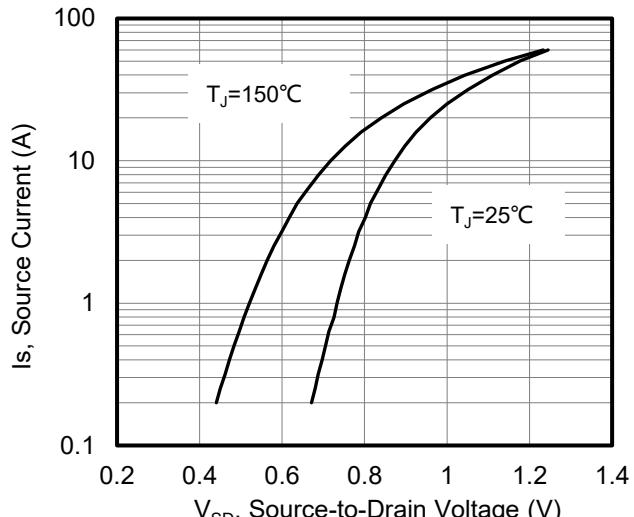


Figure 7. Typical Body Diode Transfer Characteristics

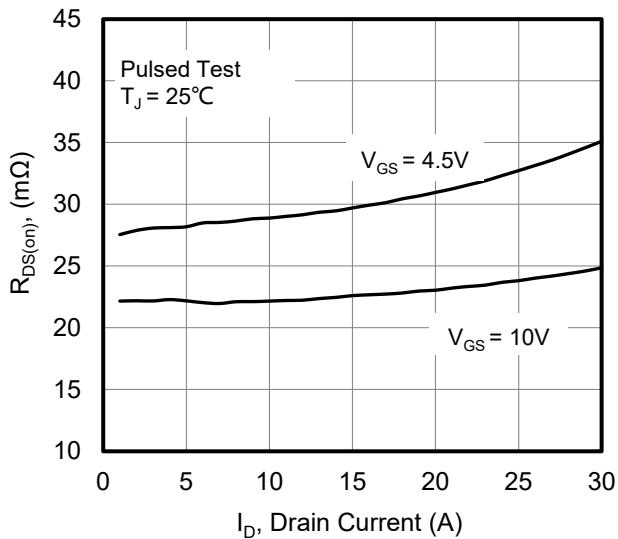


Figure 8. Drain-to-Source On Resistance vs Drain Current

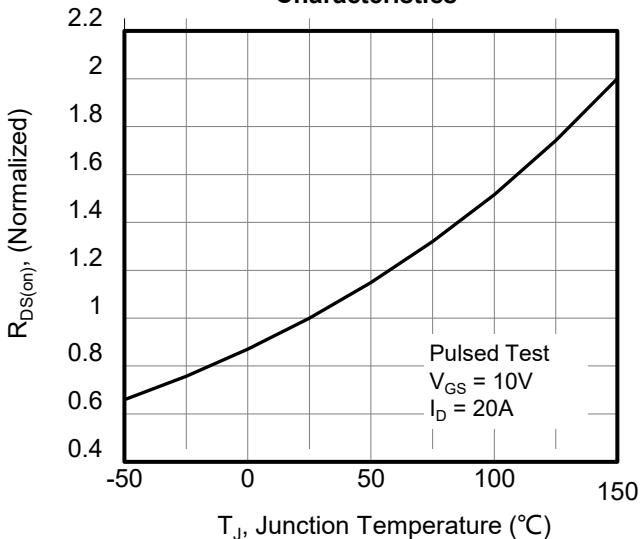


Figure 9. Normalized On Resistance vs Junction Temperature

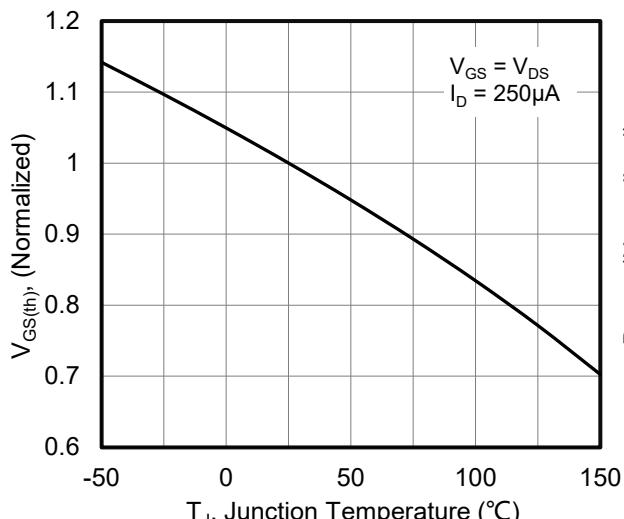


Figure 10. Normalized Threshold Voltage vs Junction Temperature

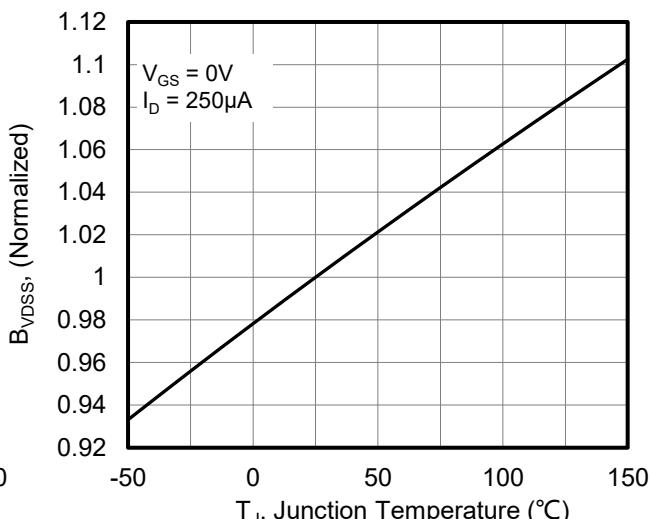


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

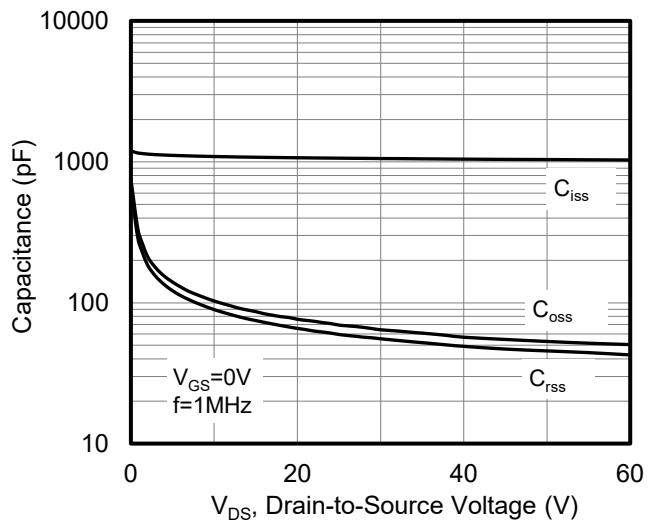
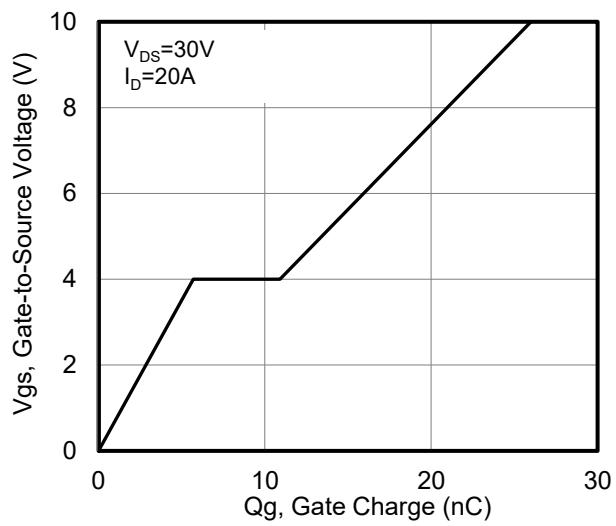


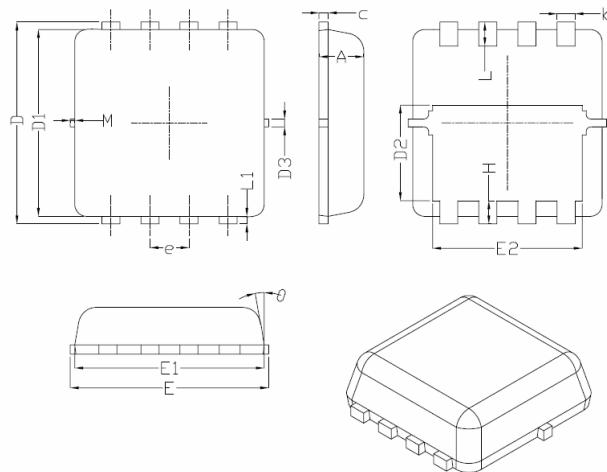
Figure 12. Capacitance Characteristics



**Figure 13. Typical Gate Charge vs
Gate to Source Voltage**



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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