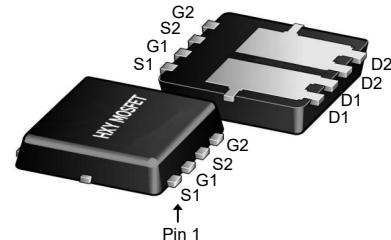




General Description

The NTMFD5C466NT1G 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.

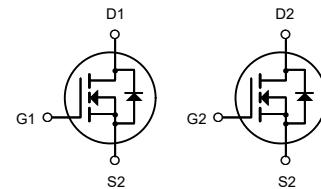


DFN5X6-8L

General Features

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

$R_{DS(ON)} < 8.5m\Omega$ @ $V_{GS}=10V$



Applications

Consumer electronic power supply Motor control

Dual N-Channel MOSFET

Synchronous-rectification Isolated DC
Synchronous-rectification applications

Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
NTMFD5C466NT1G	DFN5X6-8L	HXY MOSFET	5000

Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		40	V
V_{GSS}	Gate-Source Voltage		± 20	V
I_D	Continuous Drain Current		40	A
	$T_c = 100^\circ C$	25	A	
I_{DM}	Pulsed Drain Current ^{note1}		100	A
E_{AS}	Single Pulsed Avalanche Energy ^{note2}		28	mJ
P_D	Power Dissipation	$T_c = 25^\circ C$	29	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case		3.2	$^\circ C/W$
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +175	$^\circ C$



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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	---	---	V
R _{D(on)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =12A	---	6.9	8.5	mΩ
		V _{GS} =4.5V, I _D =10A	---	10.0	15	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	1.35	---	3	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =32V, V _{GS} =0V, T _J =25°C	---	---	1	uA
		V _{DS} =32V, V _{GS} =0V, T _J =55°C	---	---	5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	---	1.7	---	Ω
Q _g	Total Gate Charge (4.5V)	V _{DS} =20V, V _{GS} =4.5V, I _D =12A	---	5.8	---	nC
Q _{gs}	Gate-Source Charge		---	3	---	
Q _{gd}	Gate-Drain Charge		---	1.2	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =15V, V _{GS} =10V, R _G =3.3Ω	---	14.3	---	ns
T _r	Rise Time		---	5.6	---	
T _{d(off)}	Turn-Off Delay Time		---	20	---	
T _f	Fall Time		---	11	---	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	690	---	pF
C _{oss}	Output Capacitance		---	193	---	
C _{rss}	Reverse Transfer Capacitance		---	38	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _s	Continuous Source Current ^{1,5}	V _G =V _D =0V, Force Current	---	---	40	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _s =1A, T _J =25°C	---	---	1	V

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 300us , duty cycle \leq 2%
- 3.The EAS data shows Max. rating . The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=31A
- 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

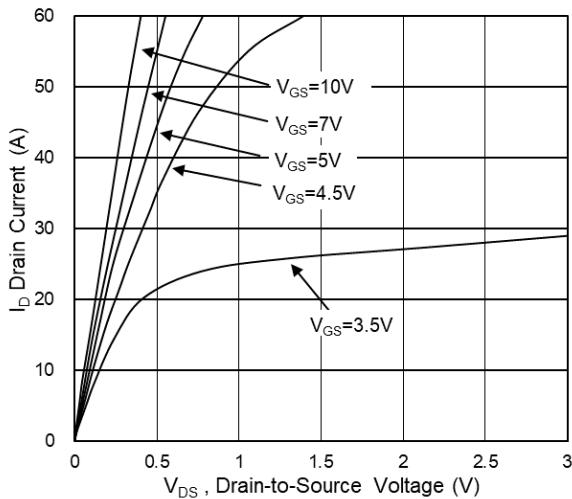


Fig.1 Typical Output Characteristics

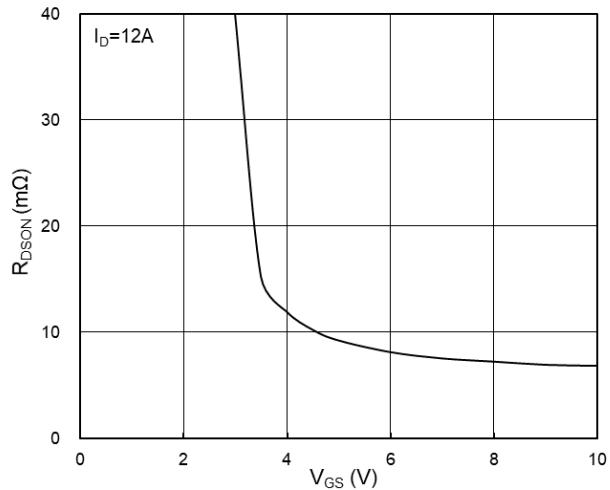


Fig.2 On-Resistance vs G-S Voltage

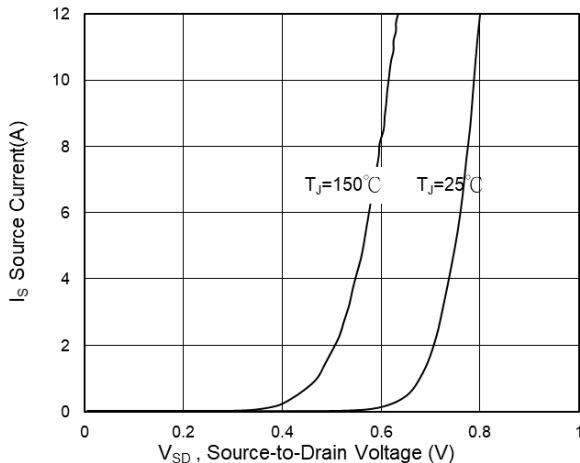


Fig.3 Source Drain Forward Characteristics

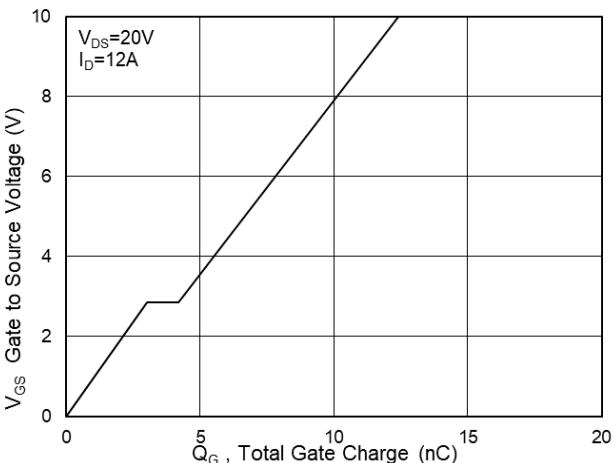


Fig.4 Gate-Charge Characteristics

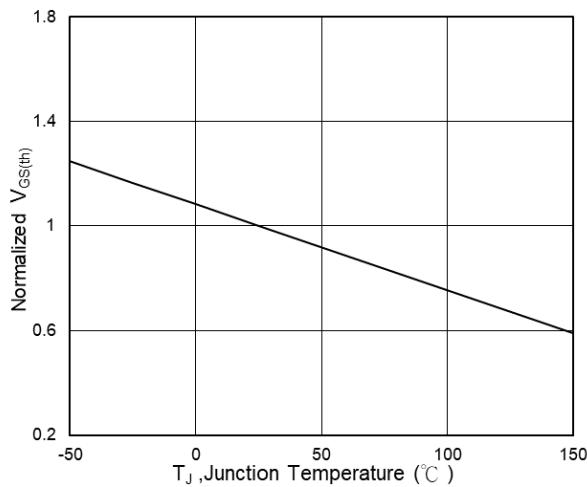


Fig.5 Normalized $V_{GS(th)}$ vs T_J

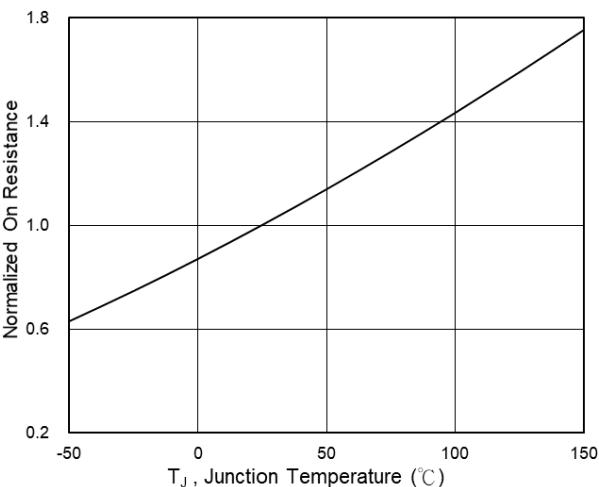


Fig.6 Normalized $R_{DS(on)}$ vs T_J

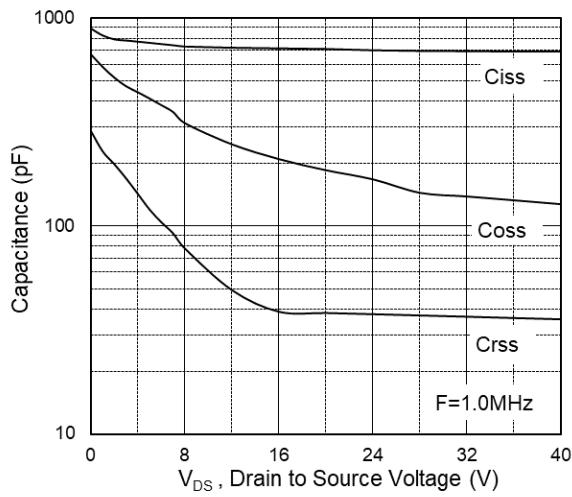


Fig.7 Capacitance

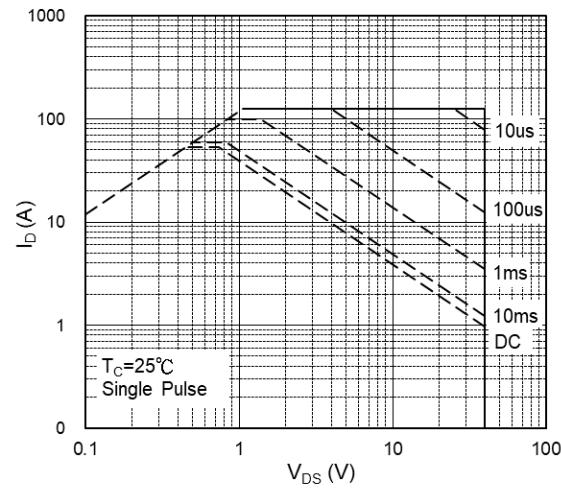


Fig.8 Safe Operating Area

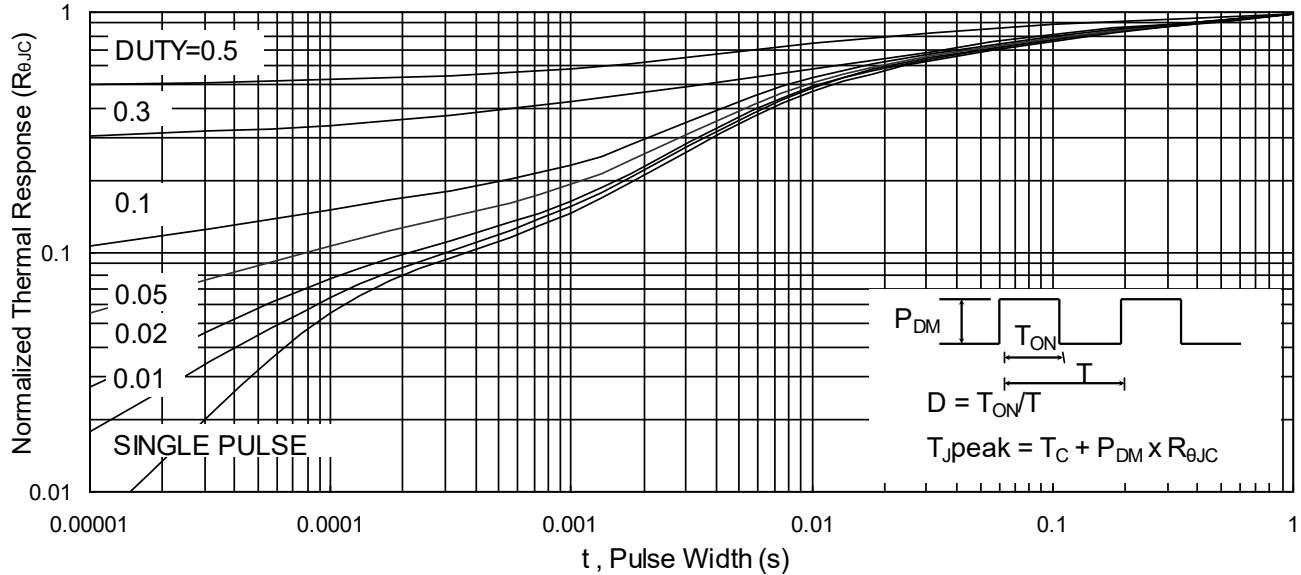


Fig.9 Normalized Maximum Transient Thermal Impedance

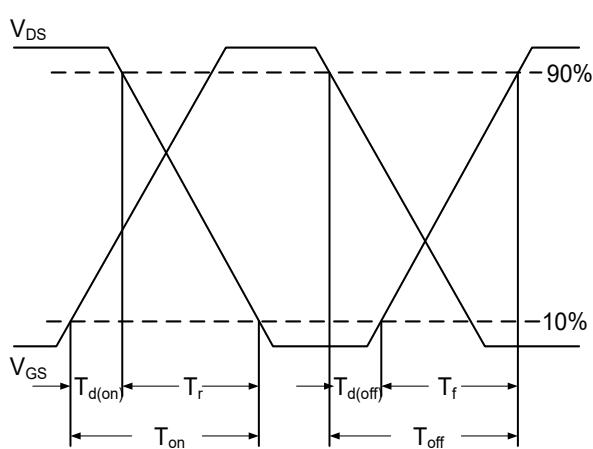


Fig.10 Switching Time Waveform

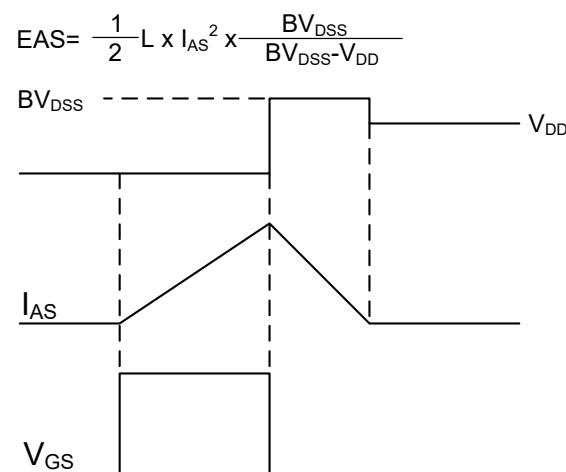
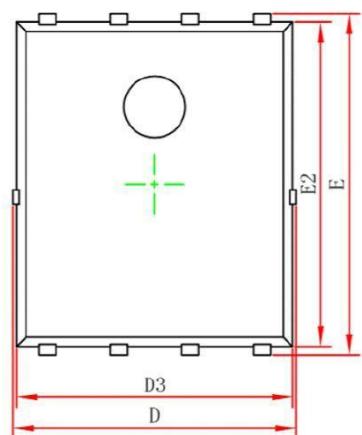


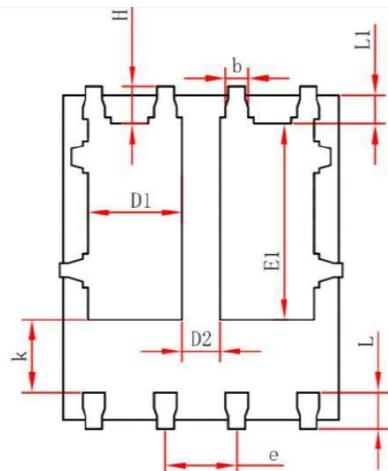
Fig.11 Unclamped Inductive Waveform



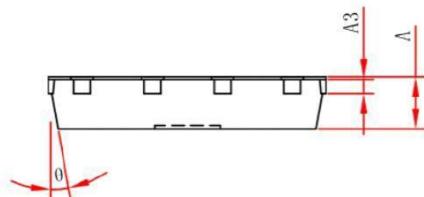
Package Mechanical Data- PDFN5X6-8L



Top View



Bottom View



Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.000	0.035	0.039
A3	0.154REF.		0.006REF.	
D	4.944	5.096	0.195	0.201
E	5.974	6.126	0.235	0.241
D1	1.470	1.870	0.058	0.074
D2	0.470	0.870	0.019	0.034
E1	3.375	3.575	0.133	0.141
D3	4.824	4.976	0.190	0.196
E2	5.674	5.826	0.223	0.229
k	1.190	1.390	0.047	0.055
b	0.350	0.450	0.014	0.018
e	1.270TYP.		0.050TYP.	
L	0.559	0.711	0.022	0.028
L1	0.424	0.576	0.017	0.023
H	0.574	0.726	0.023	0.029
θ	10°		12°	



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