

General Description

The HLDF080FN uses advanced trench technology and design to provide excellent RDS(ON) with low gate Charge. It can be used in a wide variety of applications.

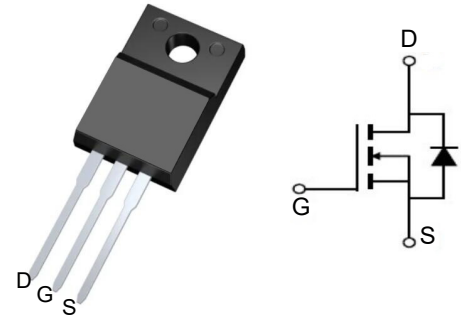


Features

V_{DS}	70	V
I_D	80	A
$R_{DS(ON)}(at V_{GS} = 10V)$	8	m Ω
$R_{DS(ON)}(at V_{GS} = 4.5V)$	10	m Ω

Application

- Power switching application.
- Hard switched and high frequency circuits.
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
MY80N07F	TO-220F	MY80N07F	1000

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain- Source Voltage	70	V
V_{GS}	Gate Source Voltage	± 20	V
$I_D @ T_c = 25^\circ\text{C}$	Continuous Drain Current ¹	80	A
$I_D @ T_c = 100^\circ\text{C}$	Continuous Drain Current ¹	51	A
I_{DM}	Pulsed Drain Current ³	320	A
E_{AS}, E_{AR}	Avalanche Energy ⁵	68	mJ
I_{AS}, I_{AR}	Avalanche Current ⁵	37	A
$P_D @ T_c = 25^\circ\text{C}$	Total Power Dissipation ⁴	103	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction- to- Case ²	1.21	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ²	62	$^\circ\text{C}/\text{W}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	---	70	---	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance ²	$V_{GS}=10V$, $I_D=10A$	---	8.0	11	m Ω
		$V_{GS}=4.5V$, $I_D=10A$	---	10	13	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	2	3	4	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=70V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	uA
		$V_{DS}=56V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	10	
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
g_{FS}	Forward Transconductance	$V_{DS}=10V$, $I_D=10A$	---	22	---	S
Q_g	Total Gate Charge (4.5V)	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=40A$	---	24	36	nC
Q_{gs}	Gate-Source Charge		---	1.9	3	
Q_{gd}	Gate-Drain Charge		---	5	7.5	
$T_{d(on)}$	Turn-On Delay Time	$V_{DD}=30V$, $I_{DS}=40A$, $V_{GEN}=10V$, $R_G=6\Omega$	---	10	15	nS
T_r	Rise Time		---	23	35	
$T_{d(off)}$	Turn-Off Delay Time		---	27	41	
T_f	Fall Time		---	12	18	
C_{iss}	Input Capacitance	$V_{DS}=30V$, $V_{GS}=0V$, $f=1\text{MHz}$	---	4995	6800	pF
C_{oss}	Output Capacitance		---	320	625	
C_{rss}	Reverse Transfer Capacitance		---	240	430	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current ^{1,4}	$V_G=V_D=0V$	---	---	80	A
I_{SM}	Pulsed Source Current		---	---	160	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V$, $I_{SD}=10A$, $T_J=25^\circ\text{C}$	---	---	0.8	V
T_{rr}	Reverse Recovery Time	$I_S=10A$, $V_{GS}=10V$, $di/dt=100A/\mu s$, $T_J=25^\circ\text{C}$	---	40	---	nS
Q_{rr}	Reverse Recovery Charge		---	40	---	nC

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
4. The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.
5. The EAS test condition is $V_{DD}=30V$, $V_{GS}=10V$, $L=0.1mH$, $I_{AS}=37A$

Ratings and Characteristic curves

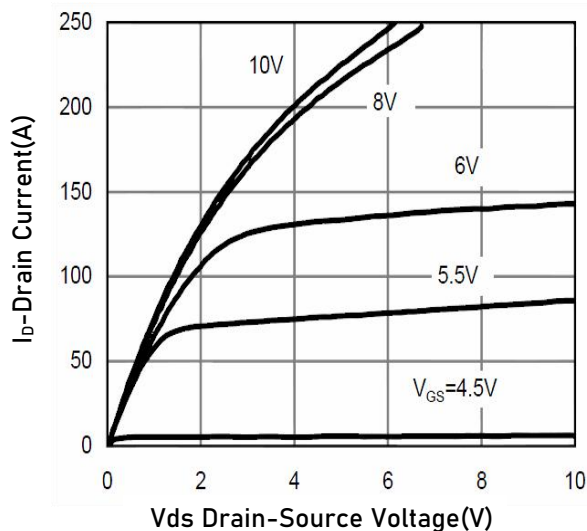


Fig.1 Typical Output Characteristics

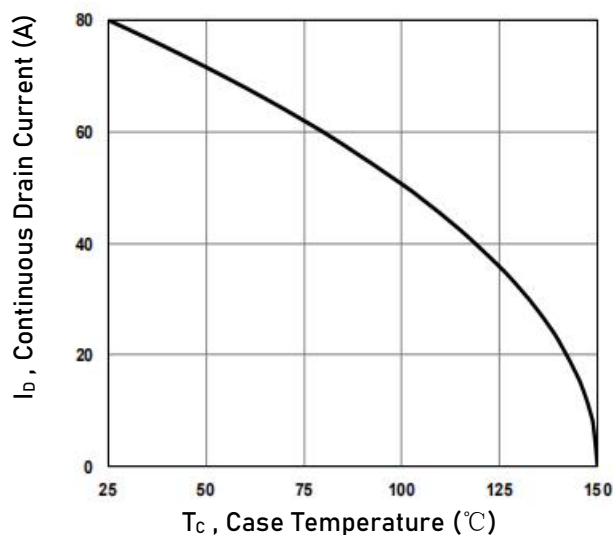


Fig.2 Drain Current

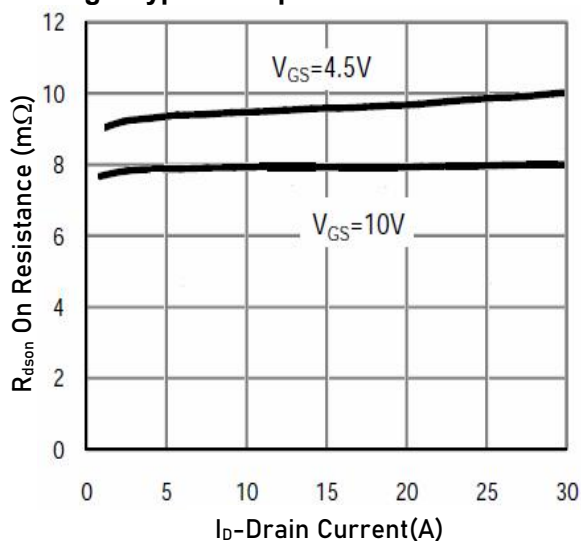


Fig.3 Drain-Source On Resistance

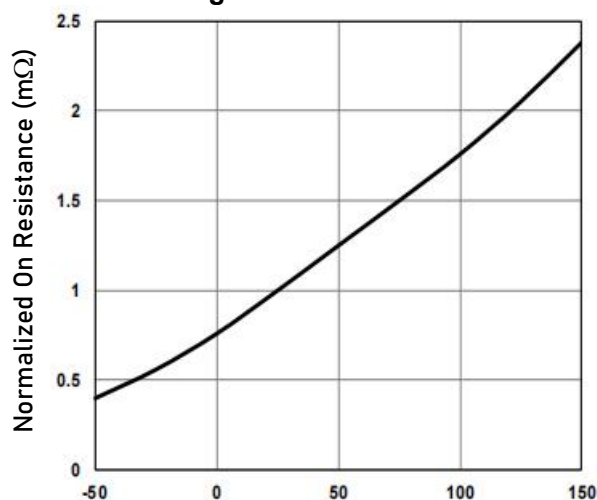


Fig.4 Normalized RDSON vs. T_J

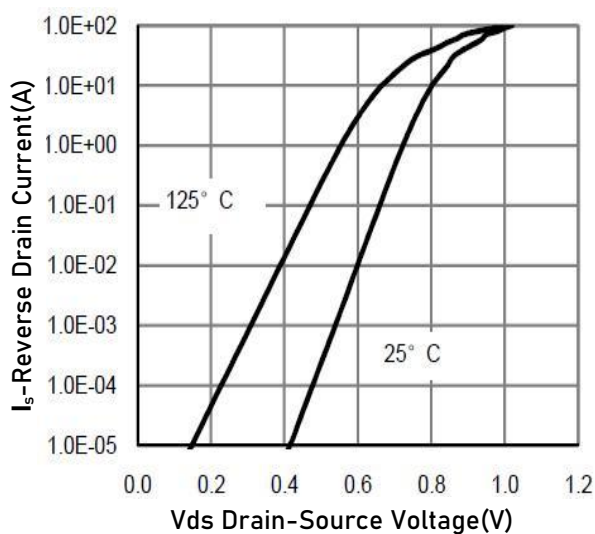


Fig.5 Forward Characteristics Of Reverse

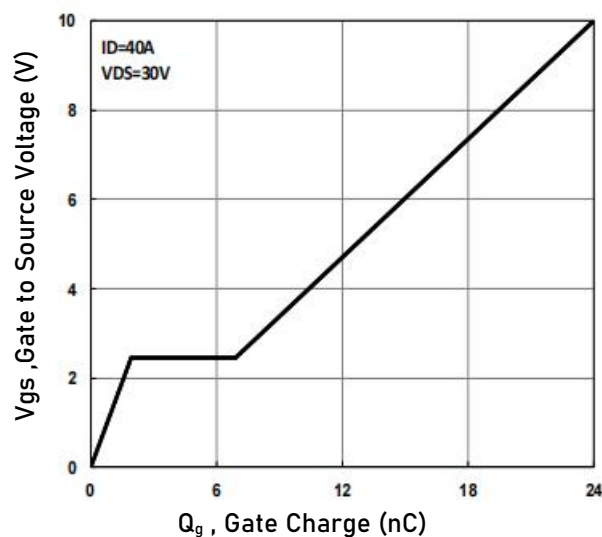


Fig.6 Gate-Charge Characteristics

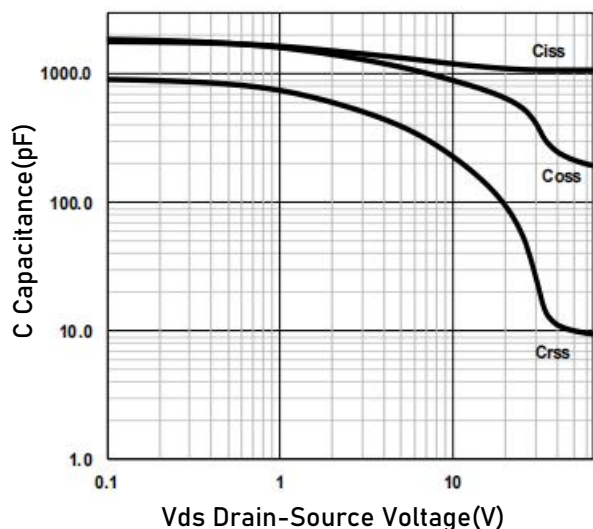


Fig.7 Capacitance

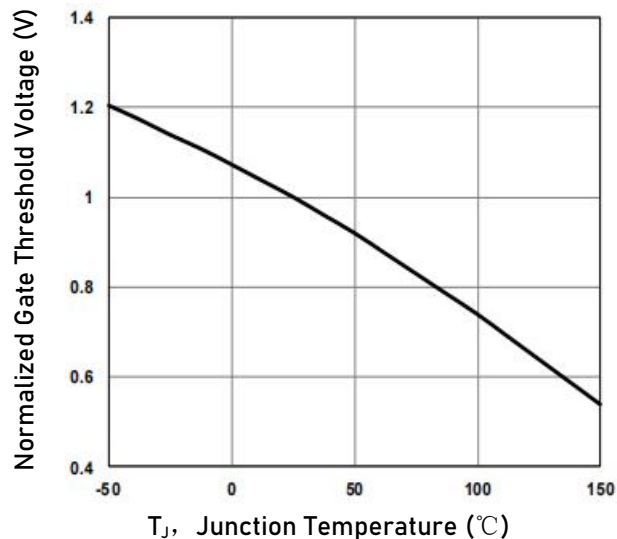


Fig.8 Normalized V_{th} vs. T_J

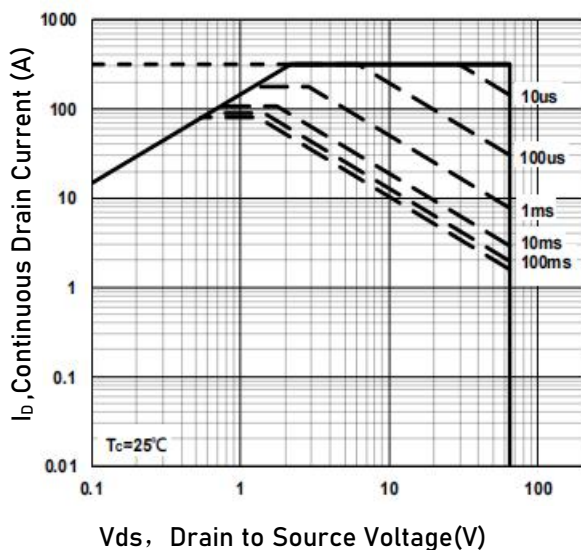


Fig.9 Safe Operating Area

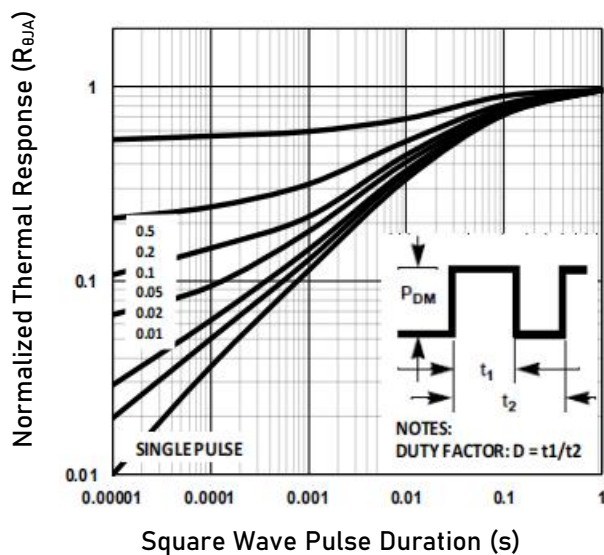
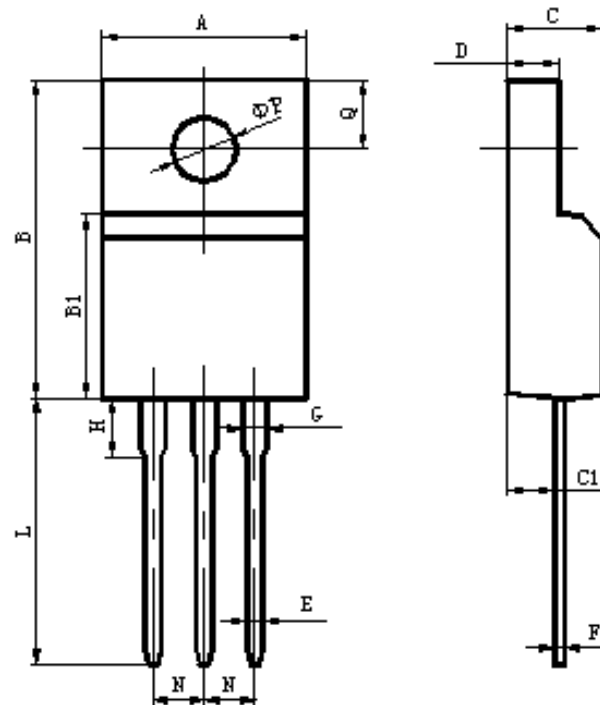


Fig.10 Transient Thermal Impedance

Package Mechanical Data-TO-220F Single



Items	Values(mm)	
	MIN	MAX
A	9.60	10.4
B	15.4	16.2
B1	8.90	9.50
C	4.30	4.90
C1	2.10	3.00
D	2.40	3.00
E	0.60	1.00
F	0.30	0.60
G	1.12	1.42
H	3.40	3.80
	2.40	2.90
L*	12.0	14.0
N	2.34	2.74
Q	3.15	3.55
Φ P	2.90	3.30