

- ★ Green Device
- ★ Super Low Gate
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology
- ★ 100% EAS Guaranteed

Product Summary

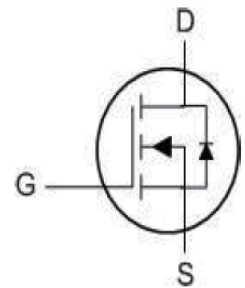
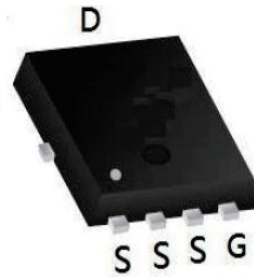
RoHS

BVDSS	RDS(on)	ID
60V	6mΩ	80A

Description

The 80N06F is the high cell density trenched N-ch MOSFETs, which provides excellent RDS(on) and gate charge for most of the synchronous buck converter applications. The 80N06F meets the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

PDFN5X6 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Max.	Units
V <sub>DSS</sub>	Drain-Source Voltage	60	V
V <sub>GSS</sub>	Gate-Source Voltage	±25	V
I <sub>D</sub>	Continuous Drain Current	T <sub>C</sub> = 25°C	80
		T <sub>C</sub> = 100°C	52
I <sub>DM</sub>	Pulsed Drain Current <small>note1</small>	320	A
EAS	Single Pulsed Avalanche Energy <small>note2</small>	169	mJ
P <sub>D</sub>	Power Dissipation	T <sub>C</sub> = 25°C	108
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	1.4	°C/W
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Temperature Range	-55 to +175	°C

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

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Units
<b>Off Characteristic</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V,$	-	-	1	$\mu A$
$I_{GSS}$	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	$V_{GS}=10V, I_D = 30A$	-	6	7	m $\Omega$
<b>Dynamic Characteristics</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=30V, V_{GS}=0V,$ $f=1.0MHz$	-	4136	-	pF
$C_{oss}$	Output Capacitance		-	286	-	pF
$C_{rss}$	Reverse Transfer Capacitance		-	257	-	pF
$Q_g$	Total Gate Charge	$V_{DS}=30V, I_D=30A,$ $V_{GS}=10V$	-	90	-	nC
$Q_{gs}$	Gate-Source Charge		-	9	-	nC
$Q_{gd}$	Gate-Drain("Miller") Charge		-	18	-	nC
<b>Switching Characteristics</b>						
$t_{d(on)}$	Turn-on Delay Time	$V_{DS}=30V, I_D=30A,$ $R_G=1.8\Omega, V_{GS}=10V$	-	9	-	ns
$t_r$	Turn-on Rise Time		-	7	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	40	-	ns
$t_f$	Turn-off Fall Time		-	15	-	ns
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
$I_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	80	A
$I_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
$V_{SD}$	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=30A$	-	-	1.2	V
$t_{rr}$	Body Diode Reverse Recovery Time	$I_F=30A, dI/dt=100A/\mu s$	-	33	-	ns
$Q_{rr}$	Body Diode Reverse Recovery Charge		-	46	-	nC

## Notes:

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
2. EAS condition :  $T_J=25^\circ\text{C}, V_{DD}=30V, V_G=10V, L=0.5mH, R_g=25\Omega, I_{AS}=26A$
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 0.5\%$

Typical Electrical and Thermal Characteristics (Curves)

Figure 1: Output Characteristics

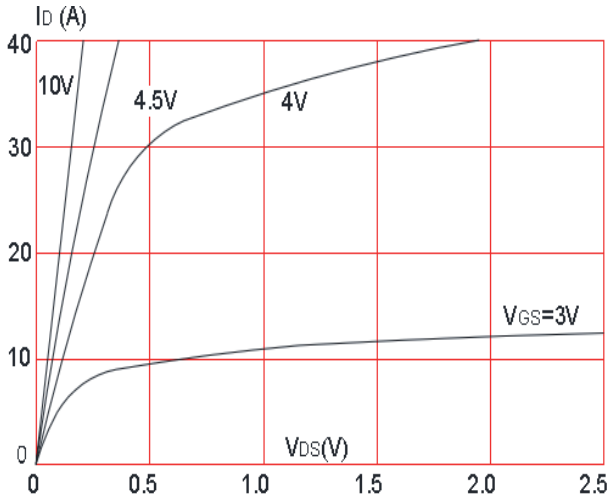


Figure 2: Typical Transfer Characteristics

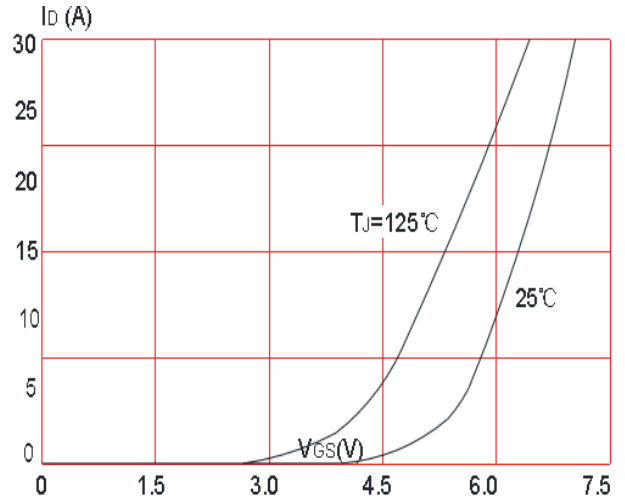


Figure 3: On-resistance vs. Drain Current

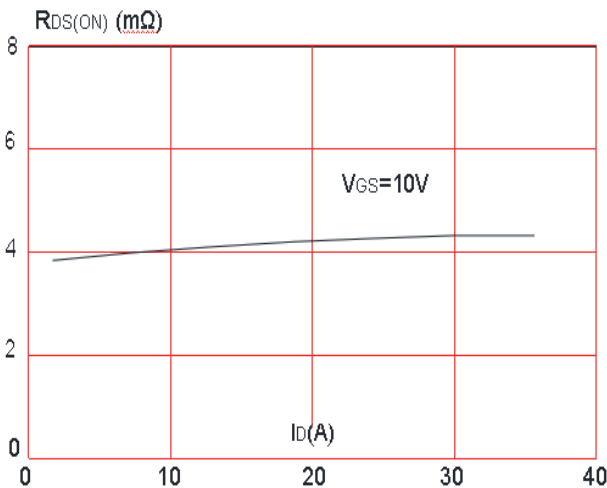


Figure 4: Body Diode Characteristics

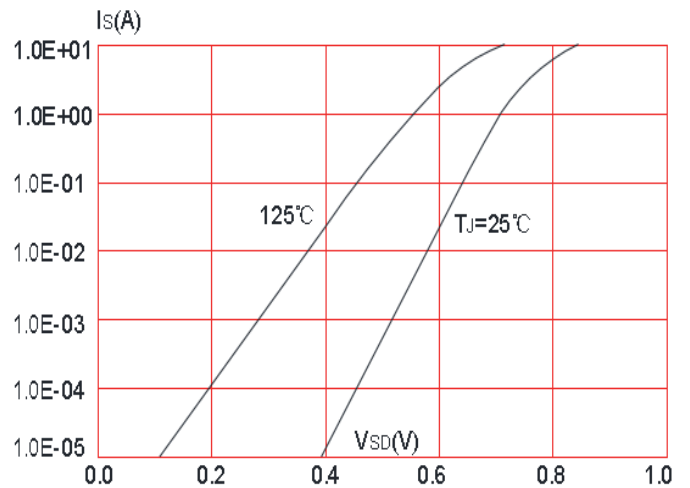


Figure 5: Gate Charge Characteristics

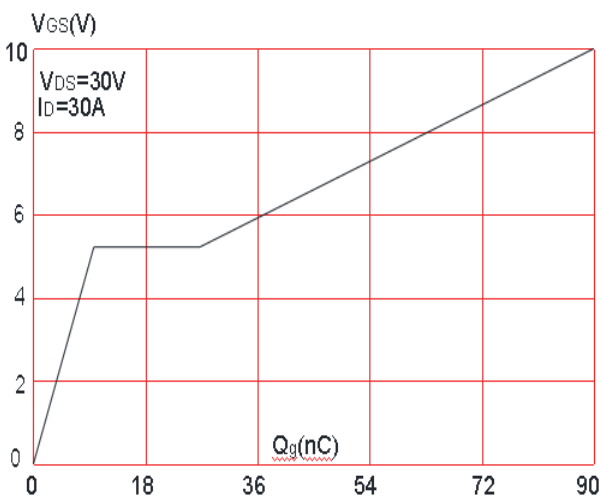
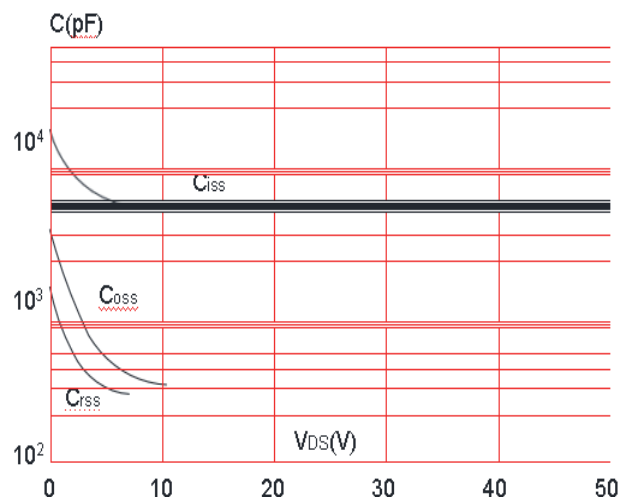


Figure 6: Capacitance Characteristics



## Typical Performance Characteristics

Figure 7: Normalized Breakdown Voltage

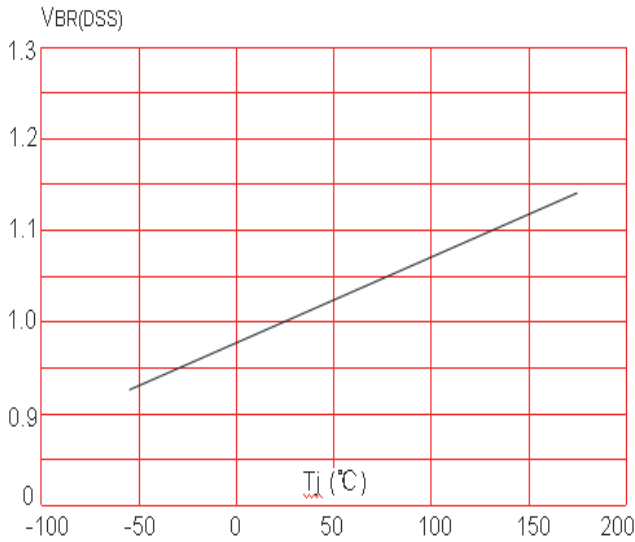


Figure 8: Normalized on Resistance vs. Junction Temperature

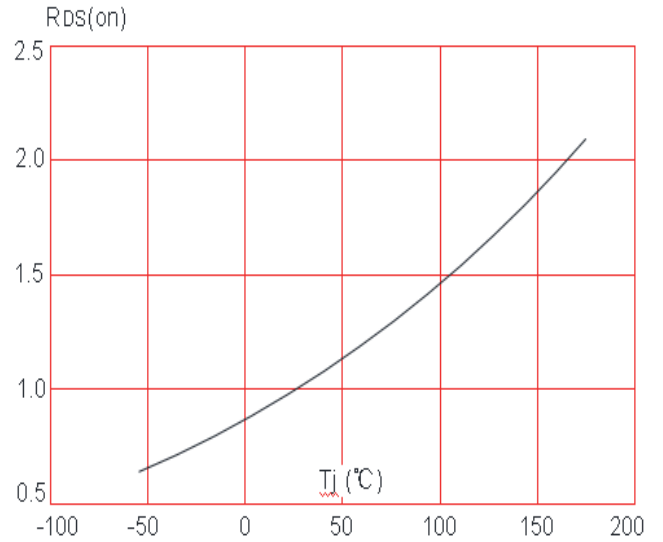


Figure 9: Maximum Safe Operating Area

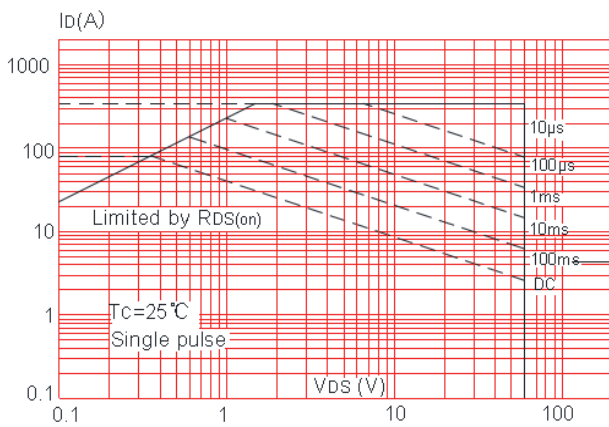


Figure 11: Maximum Continuous Drain Current vs. Case Temperature

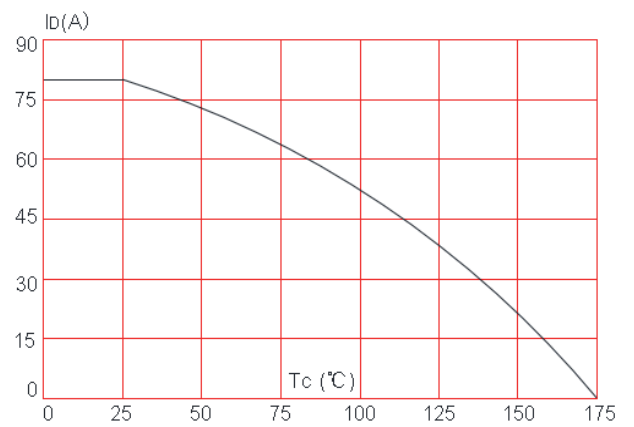
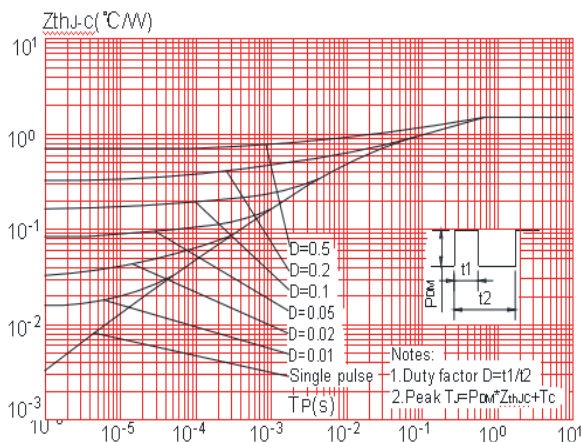
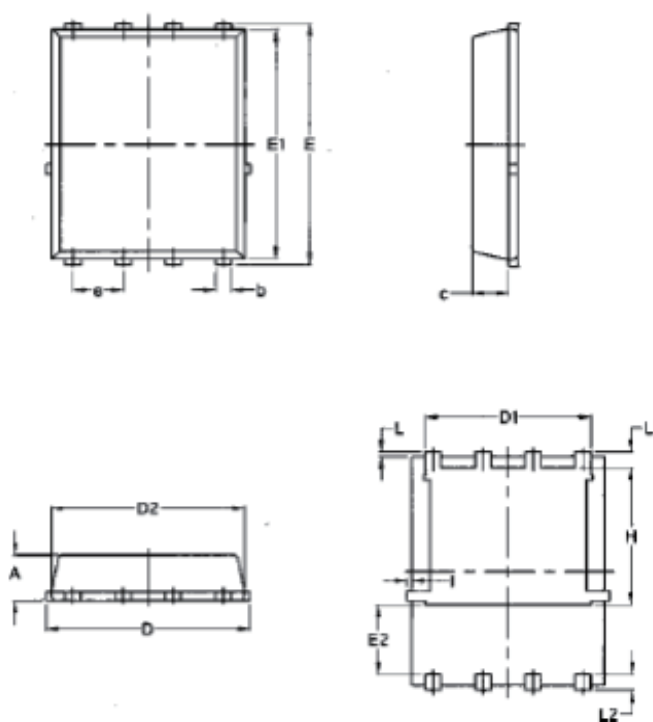


Figure 10: Maximum Effective Transient Thermal Impedance



**Package Mechanical Data-DFN5\*6-8L-JQ Single**


Symbol	Common			
	mm		Inch	
	Min	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
l	/	0.18	/	0.0070