
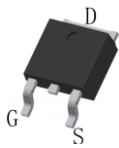
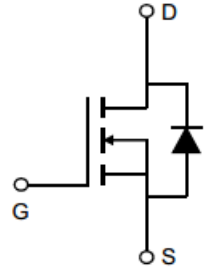


## 60V N-Channel Power MOSFET

<p><b>DESCRIPTION</b></p> <p>The MPG80N06 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Power switching application</li> <li>● Hard switched and High frequency circuits</li> <li>● Uninterruptible power supply</li> </ul>	<p><b>KEY CHARACTERISTICS</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS} = 60V, I_D = 80A</math> <math>R_{DS(ON)} &lt; 8.0m\Omega @ V_{GS}=10V</math></li> <li>● Special process technology for high ESD capability</li> <li>● High density cell design for lower <math>R_{dson}</math></li> <li>● Fully characterized avalanche voltage and current</li> <li>● Good stability and uniformity with high EAS</li> <li>● Excellent package for good heat dissipation</li> </ul> <p style="text-align: center;"><b>100% UIS TESTED!</b> <b>100% DVDS TESTED!</b></p>	
 <p><b>TO-220 Top View</b></p>	 <p><b>TO-252-2L Top View</b></p>	 <p><b>Schematic diagram</b></p>

### Package Marking And Ordering Information

Device Marking	Ordering Codes	Package	Product Code	Packing
80N06	MPG80N06-P	TO-220	80N06	Tube
80N06	MDT80N06-D	TO-252-2L	80N06	Tape Reel

### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous	$I_D$	80	A
Drain Current-Pulsed <sup>(Note 1)</sup>	$I_{DM}$	320	A
Maximum Power Dissipation( $T_C=25^\circ C$ )	$P_D$	107	W
Single pulse avalanche energy <sup>(Note 2)</sup>	$E_{AS}$	280	mJ
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 To 175	°C

### Thermal Characteristic

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.4	°C/W
--------------------------------------	-----------------	-----	------

**Electrical Characteristics (TA=25°C unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	60	-	-	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$	-	-	1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2	3	4	V
Drain-Source On-State Resistance <sup>(Note 3)</sup>	$R_{DS(ON)}$	$V_{GS}=10V, I_D=20A$	-	7	8	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS}=10V, I_D=20A$	-	25	-	S
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=30V, V_{GS}=0V,$ $f=1.0MHz$	-	3000	-	pF
Output Capacitance	$C_{oss}$		-	270	-	pF
Reverse Transfer Capacitance	$C_{rss}$		-	240	-	pF
<b>Switching Characteristics</b> <sup>(Note 4)</sup>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=30V, I_D=30A,$ $V_{GS}=10V, R_{GEN}=3\Omega$	-	8.5	-	nS
Turn-on Rise Time	$t_r$		-	7	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	40	-	nS
Turn-Off Fall Time	$t_f$		-	15	-	nS
Total Gate Charge	$Q_g$	$V_{DS}=48V, I_D=40A$ $V_{GS}=10V$	-	72	-	nC
Gate-Source Charge	$Q_{gs}$		-	21.5	-	nC
Gate-Drain Charge	$Q_{gd}$		-	28	-	nC
<b>Drain-Source Diode Characteristics</b>						
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=80A$	-	-	1.2	V

**Notes:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition :  $T_j=25^\circ C, V_{DD}=20V, V_G=10V, L=0.5mH, R_g=25\Omega$
3. Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .
4. Guaranteed by design, not subject to production.

Characteristics Curves

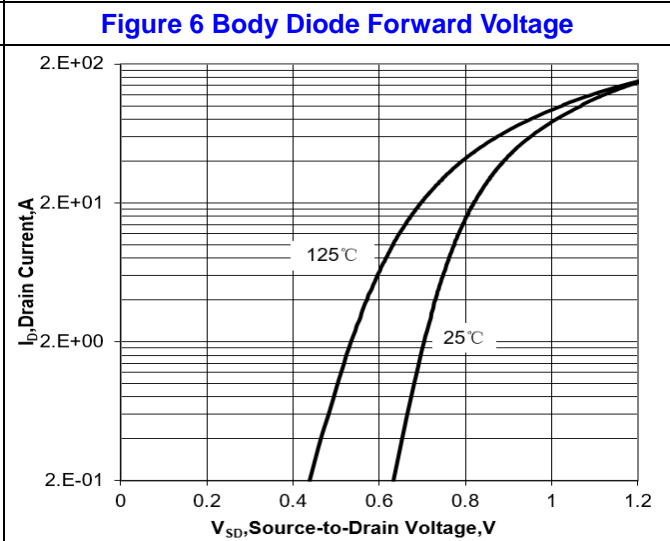
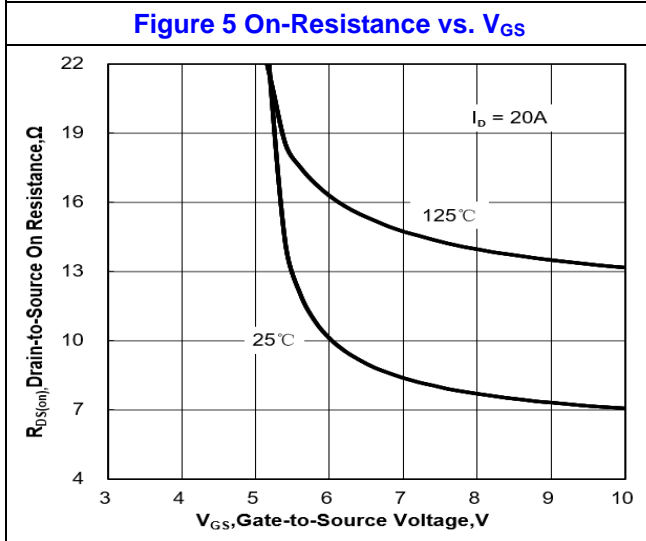
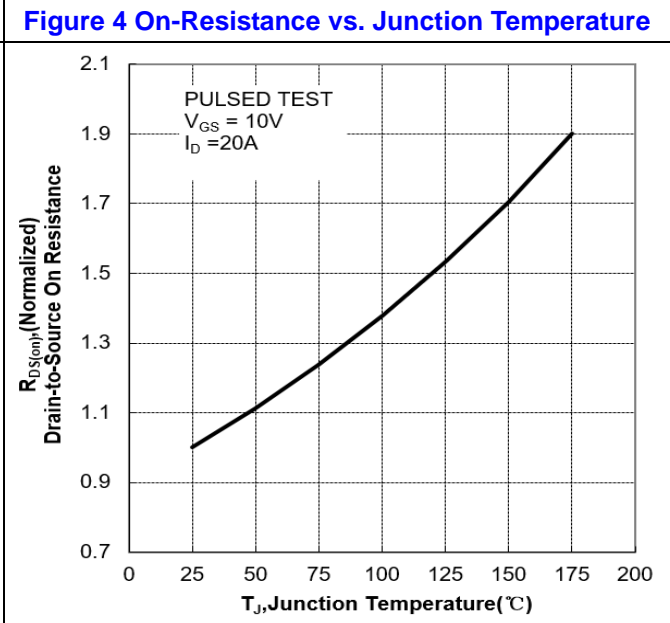
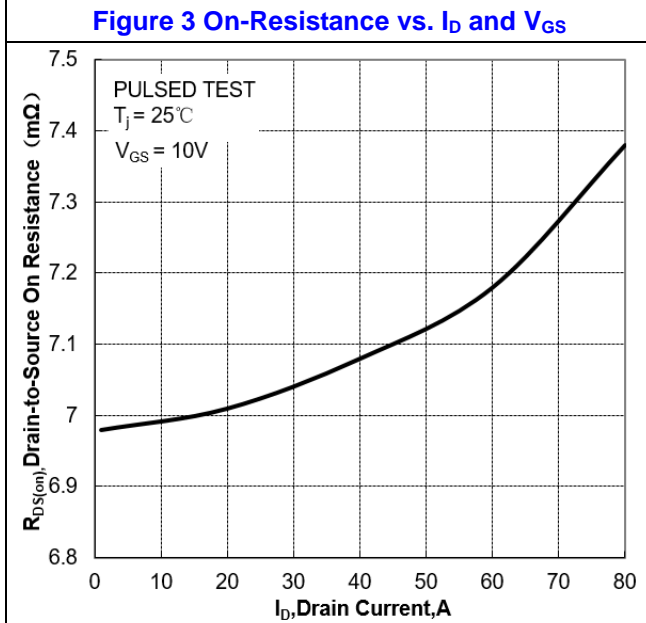
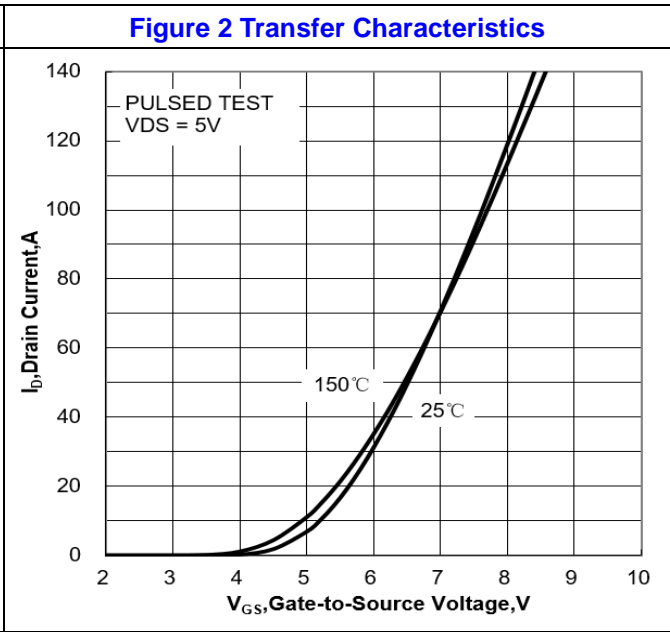
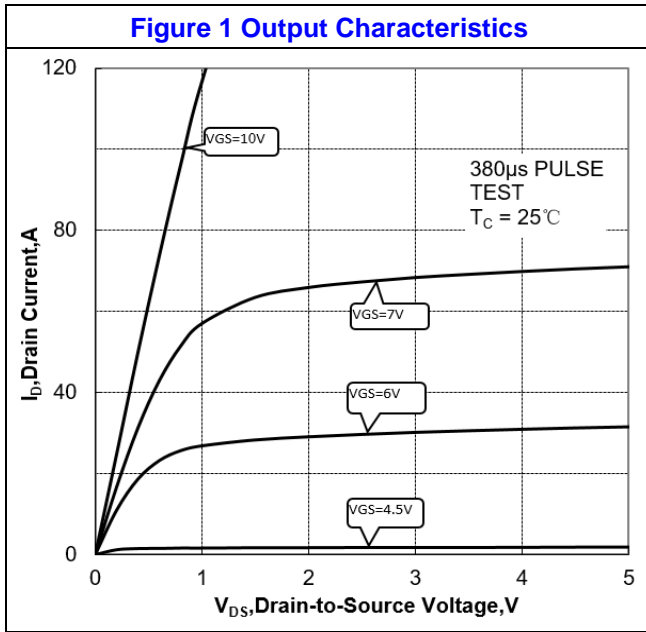


Figure 7 Gate-Charge Characteristics

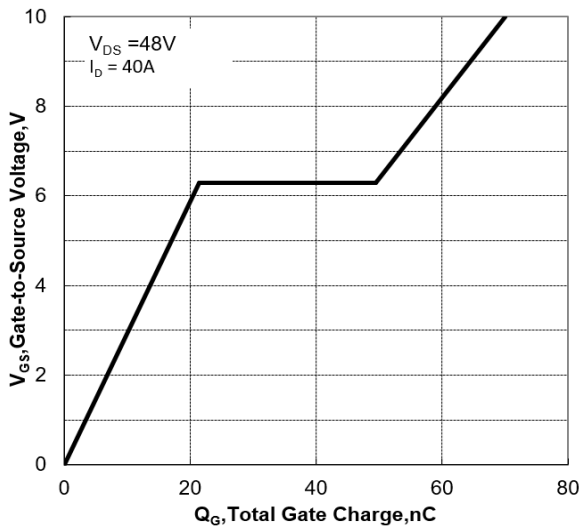


Figure 8 Capacitance Characteristics

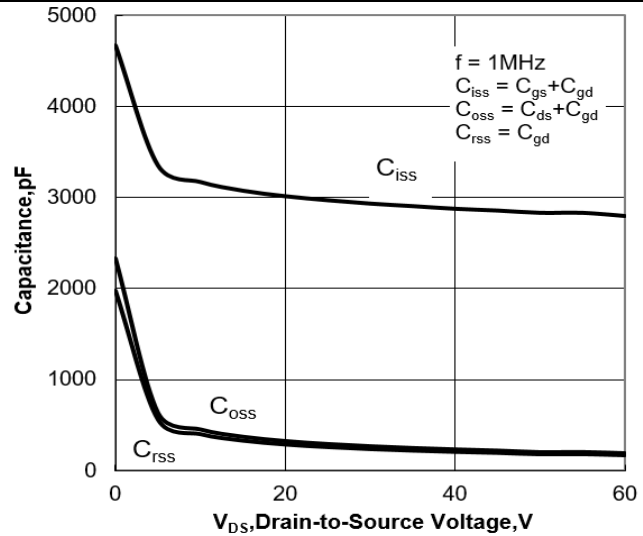


Figure 9 Maximum Forward Biased Safe Operation Area

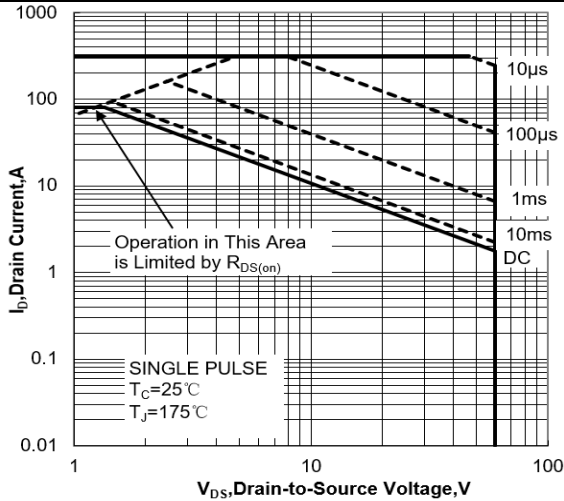


Figure 10 Single Pulse Power Rating Junction-to-Ambient

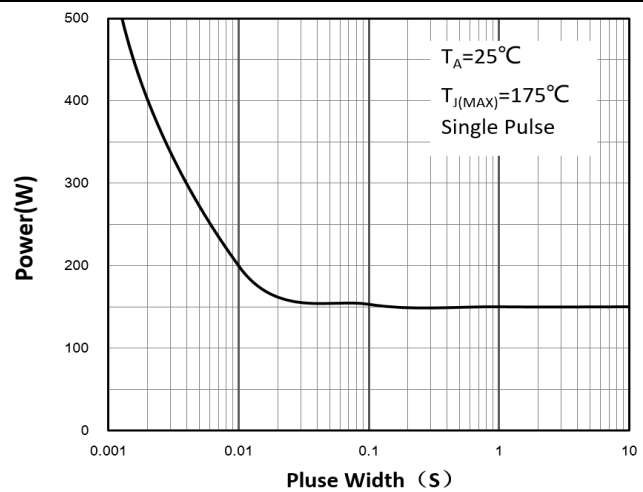
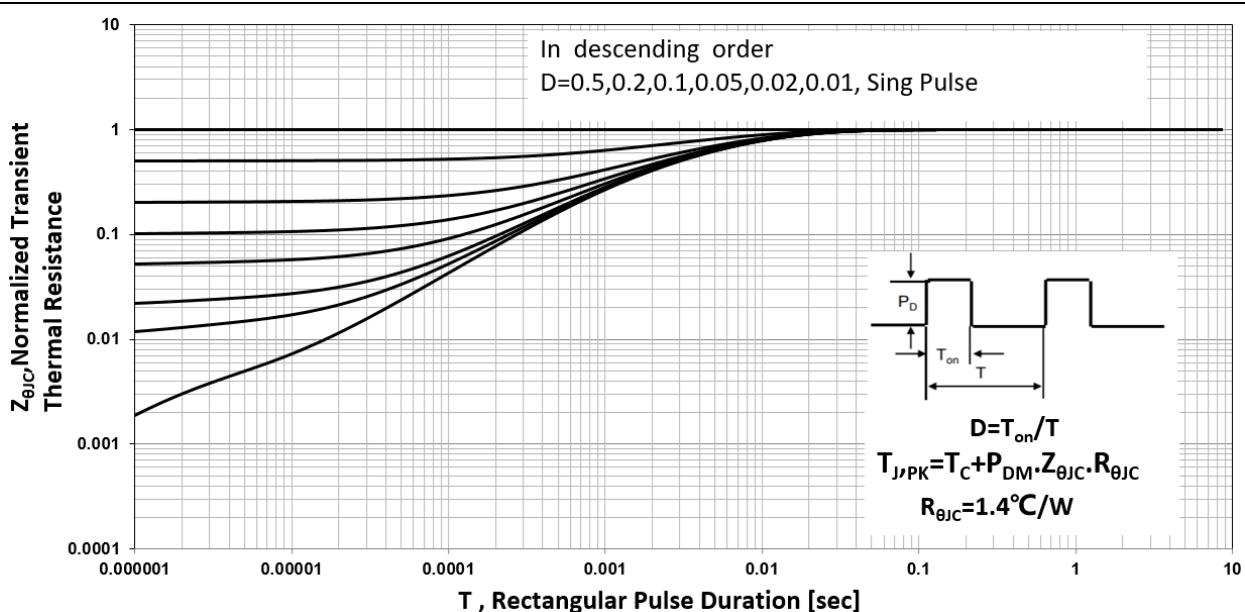
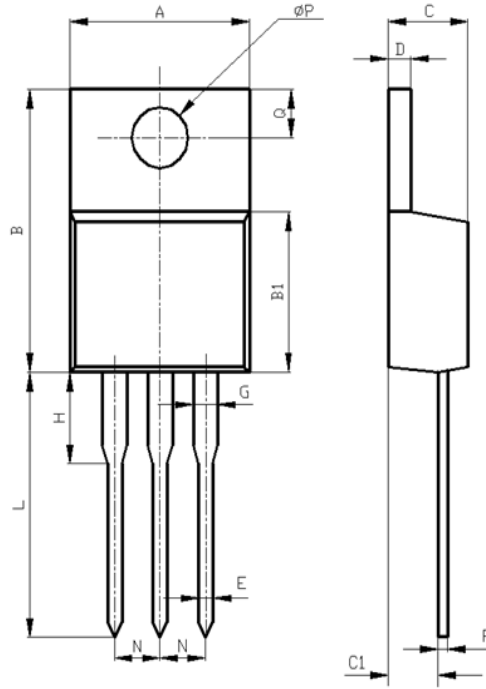


Figure 11 Normalized Maximum Transient Thermal Impedance

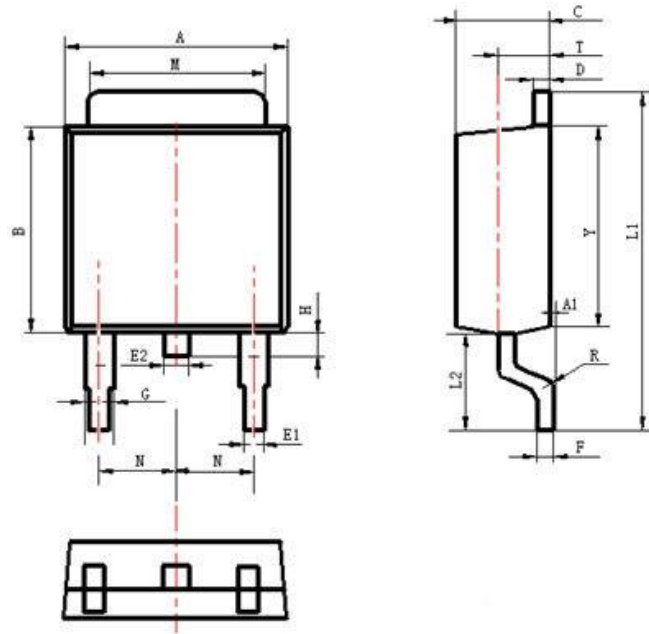


## Package Description



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
$\phi P$	3.50	3.90

TO-220 Package



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

### TO-252 Package