



MPU04N80

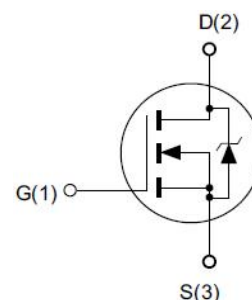
N-Channel Power MOSFET

Features

- ◆ 800V, 4A, $R_{DS(ON)}(Typ.) = 3.7\Omega @ V_{GS} = 10V$
- ◆ Halogen Free
- ◆ Fast Switching
- ◆ Low Gate Charge
- ◆ 100% Single Pulse avalanche energy Test

Application

- ◆ Standby Power
- ◆ Cell Phone Charger
- ◆ LED power supplies



Absolute Maximum Ratings $T_c = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-Source Voltage ^a	800	V
V_{GS}	Gate-Source Voltage	± 30	V
I_D	Drain Current-Continuous, $T_c = 25^\circ C$	4	A
	Drain Current-Continuous, $T_c = 100^\circ C$	2.3	A
I_{DM}	Drain Current-Pulsed ^b	16	A
P_D	Maximum Power Dissipation @ $T_J = 25^\circ C$	131	W
E_{AS}	Single Pulsed Avalanche Energy ^c	151	mJ
T_J, T_{STG}	Operating and Store Temperature Range	150, -55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.95	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	100	$^\circ C/W$

Electrical Characteristics $T_J = 25^\circ C$ unless otherwise noted

■ Off Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	800	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS} = 800V, V_{GS} = 0V$	-	-	1	μA
I_{GSS}	Forward Gate Body Leakage Current	$V_{DS} = 0V, V_{GS} = \pm 30V$	-	-	± 100	nA



MPU04N80

N-Channel Power MOSFET

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	2	-	4	V
$R_{DS(on)}$	Static Drain-Source On-Resistance	$V_{GS} = 10V, I_D = 2A$	-	3.7	4.5	Ω
g_{fs}	Forward Transconductance	$V_{DS} = 15V, I_D = 2A$	-	3.2	-	S

■ Dynamic Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
C_{iss}	Input Capacitance	$V_{DS} = 25V,$ $V_{GS} = 0V,$ $f = 1.0MHz$	-	567	-	pF
C_{oss}	Output Capacitance		-	48	-	
C_{rss}	Reverse Transfer Capacitance		-	4.3	-	

■ On Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
$t_{d(on)}$	Turn-On Delay Time	$V_{DD} = 400V,$ $I_D = 4A,$ $R_G = 10\Omega$	-	14	-	ns
t_r	Turn-On Rise Time		-	12	-	
$t_{d(off)}$	Turn-Off Delay Time		-	24	-	
t_f	Turn-Off Fall Time		-	18	-	
Q_g	Total Gate Charge	$V_{DD} = 640V,$ $V_{GS} = 10V,$ $I_D = 4A$	-	17.3	-	nC
Q_{gs}	Gate-Source Charge		-	2.6	-	
Q_{gd}	Gate-Drain Charge		-	9.9	-	

■ Drain-Source Diode Characteristics

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
I_S	Drain-Source Diode Forward Continuous Current	$V_{GS} = 0V$	-	-	4	A
I_{SM}	Maximum Pulsed Current	$V_{GS} = 0V$	-	-	16	
V_{SD}	Drain-Source Diode Forward Voltage	$V_{GS} = 0V, I_S = 4A$	-	-	1.4	V
T_{rr}	Body Diode Reverse Recovery Time	$I_S = 4A, V_{GS} = 0V$ $di_F/dt = 100A/\mu s$	-	531	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge	$I_S = 4A, V_{GS} = 0V$ $di_F/dt = 100A/\mu s$	-	2370	-	nC

Notes:

- $T_J = +25^\circ C$ to $+150^\circ C$
- Repetitive rating; pulse width limited by maximum junction temperature.
- $L = 10mH, V_{DD} = 50V, I_{AS} = 5.5A, R_G = 25\Omega$ Starting $T_J = 25^\circ C$.

■ Characteristic Curve

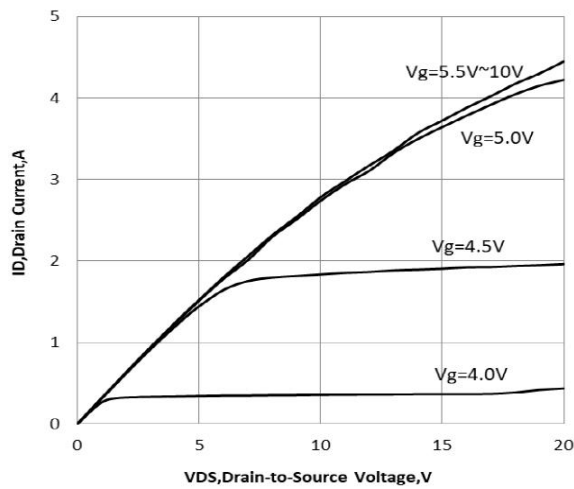


Figure 1. Typical Output Characteristics

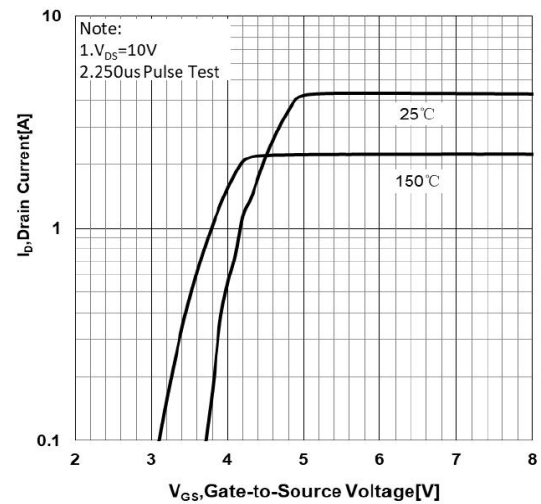


Figure 2. Typical Transfer Characteristics

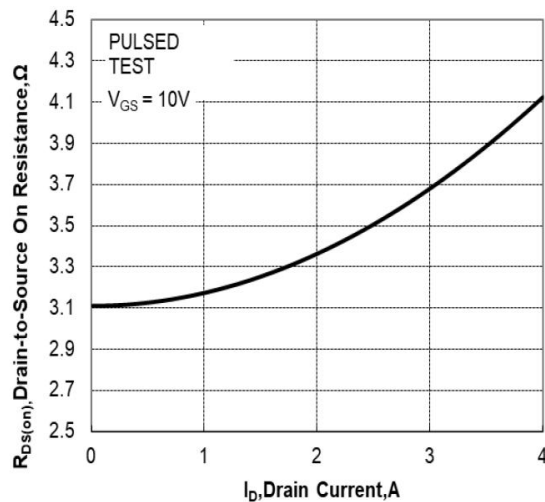


Figure 3. On-Resistance vs Drain Current

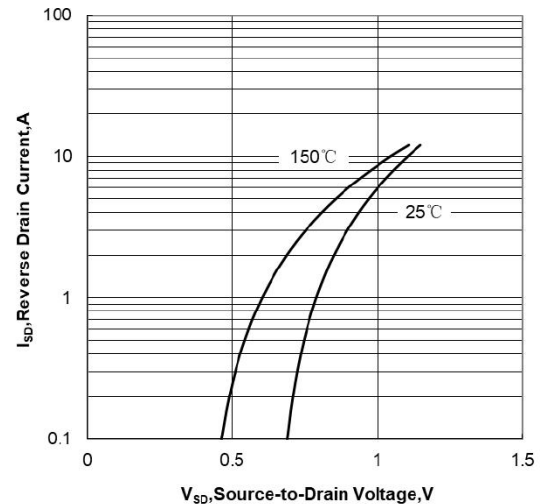


Figure 4. Body-Diode Characteristics

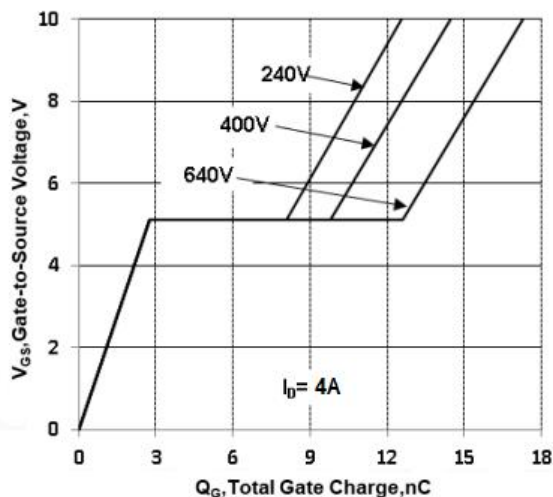


Figure 5. Gate-Charge Characteristics

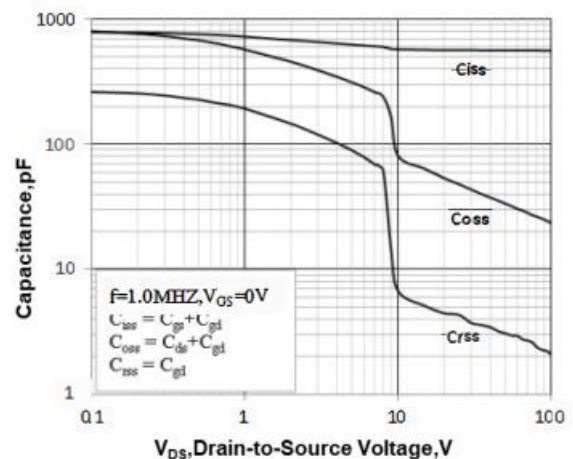


Figure 6. Capacitance Characteristics

■ Characteristic Curve

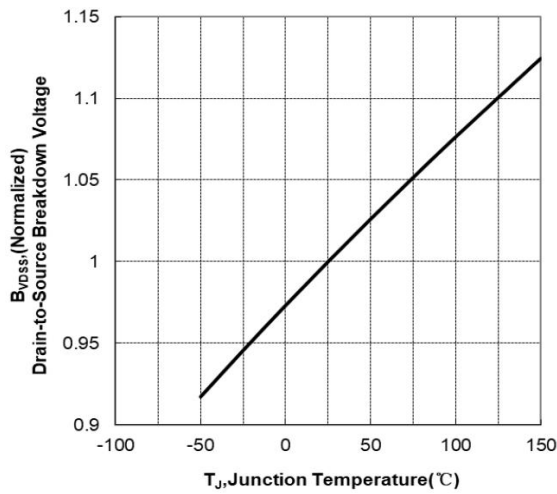


Figure 7. Normalized Breakdown voltage vs Junction Temperature

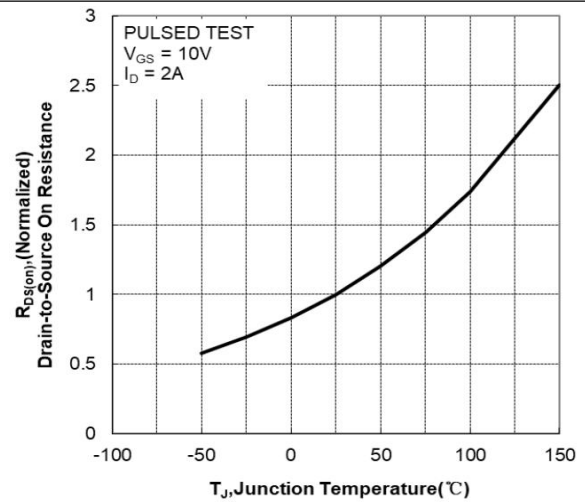


Figure 8. Normalized on Resistance vs Junction Temperature

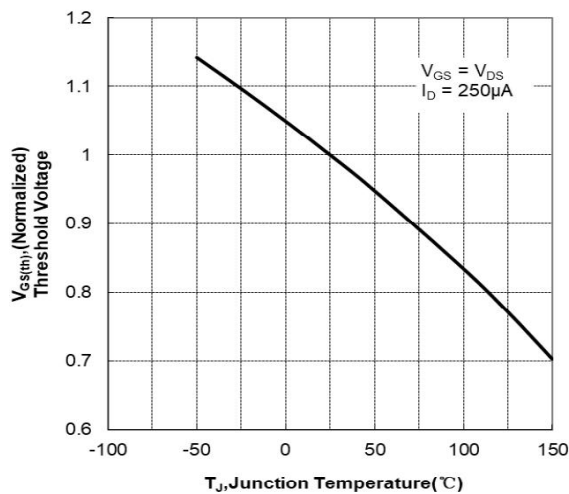


Figure 9. Typical Threshold Voltage vs Junction Temperature

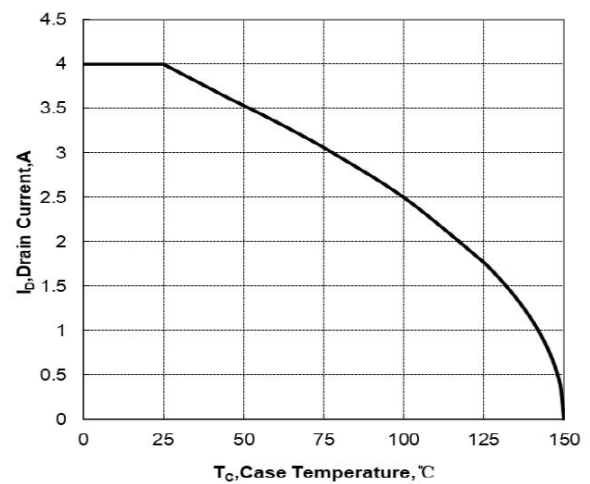


Figure 10. Maximum Continuous Drain Current vs Case Temperature

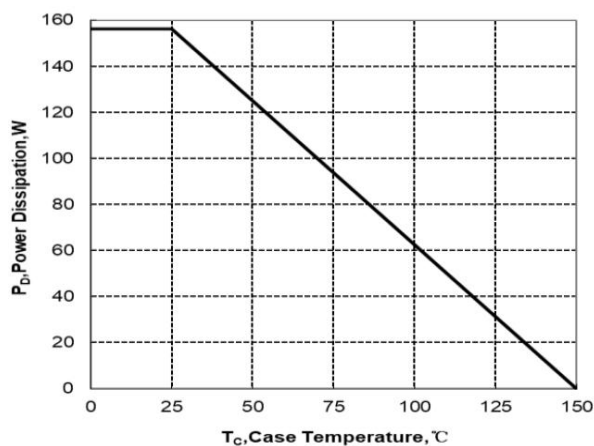


Figure 11. Maximum Power dissipation vs Case Temperature

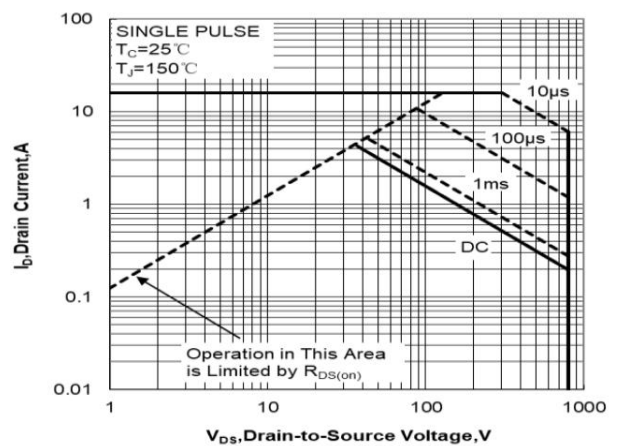


Figure 12. Maximum Forward Bias Safe Operating Area

■ Package Information

