



MCP04N80

N-Channel Enhancement Mode Field Effect Transistor

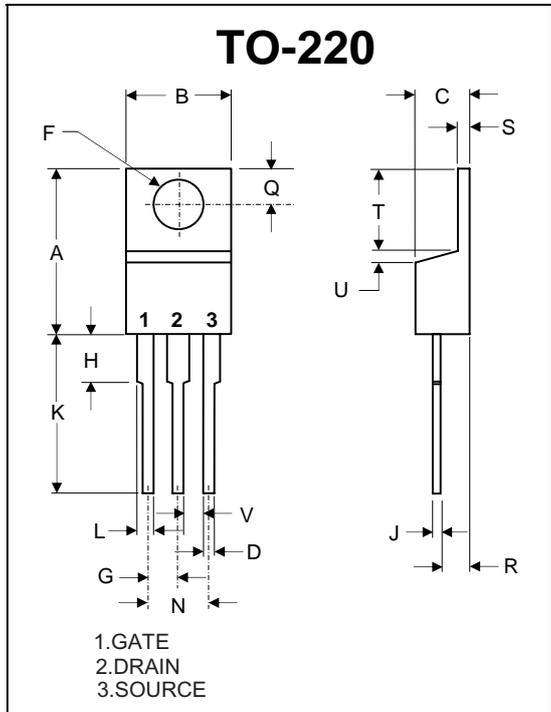
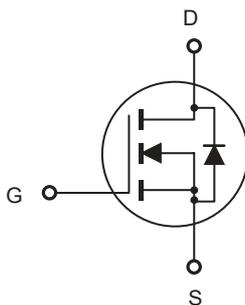
Features

- Excellent stability and uniformity
- Lower $R_{ds(ON)}$
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	800	V
I_D	Drain Current-Continuous	4.0	A
I_{DM}	Drain Current-Pulsed ⁽¹⁾	12.0	A
V_{GSS}	Gate-source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	162	mJ
E_{AR}	Repetitive Avalanche Energy ⁽¹⁾	0.2	mJ
P_D	Power Dissipation	63	W
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62	°C/W
T_J	Operating Junction Temperature	-55 to +150	°C
T_{STG}	Storage Temperature	-55 to +150	°C

Internal Block Diagram



DIM	DIMENSIONS				NOTE
	INCHES		MM		
A	.560	.625	14.22	15.88	
B	.380	.420	9.65	10.67	
C	.140	.190	3.56	4.82	
D	.020	.045	0.51	1.14	
F	.139	.161	3.53	4.09	∅
G	.190	.110	2.29	2.79	
H	---	.250	---	6.35	
J	.012	.025	0.30	0.64	
K	.500	.580	12.70	14.73	
L	.045	.060	1.14	1.52	
N	.190	.210	4.83	5.33	
Q	.100	.135	2.54	3.43	
R	.080	.115	2.04	2.92	
S	.045	.055	1.14	1.39	
T	.230	.270	5.84	6.86	
U	----	.050	----	1.27	
V	.045	----	1.15	----	

Electrical characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	800	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 800V, V _{GS} = 0V, T _J = 25°C	--	--	1	μA
		V _{DS} = 800V, V _{GS} = 0V, T _J = 150°C	--	--	100	
Gate-Source Leakage	I _{GSS}	V _{GS} = ±30V	--	--	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.5	--	4.5	V
Drain-Source On-Resistance (Note3)	R _{DS(on)}	V _{GS} = 10V, I _D = 2A	--	1	1.2	Ω
Forward Transconductance (Note3)	g _{fs}	V _{DS} = 10V, I _D = 2A	--	5	--	S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 50V, f = 1.0MHz	--	598	--	pF
Output Capacitance	C _{oss}		--	30	--	
Reverse Transfer Capacitance	C _{riss}		--	4	--	
Total Gate Charge	Q _g	V _{DD} = 640V, I _D = 4A, V _{GS} = 10V	--	13	--	nC
Gate-Source Charge	Q _{gs}		--	4.5	--	
Gate-Drain Charge	Q _{gd}		--	3	--	
Turn-on Delay Time	t _{d(on)}	V _{DD} = 400V, I _D = 4A, R _G = 25Ω	--	39	--	ns
Turn-on Rise Time	t _r		--	25	--	
Turn-off Delay Time	t _{d(off)}		--	100	--	
Turn-off Fall Time	t _f		--	18	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I _S	T _C = 25°C	--	--	4	A
Pulsed Diode Forward Current	I _{SM}		--	--	12	
Body Diode Voltage	V _{SD}	T _J = 25°C, I _{SD} = 4A, V _{GS} = 0V	--	0.9	1.2	V
Reverse Recovery Time	t _{rr}	V _R = 400V, I _F = I _S , di _F /dt = 100A/μs	--	250	--	ns
Reverse Recovery Charge	Q _{rr}		--	2.1	--	μC
Peak Reverse Recovery Current	I _{rrm}		--	16	--	A

■ **Electrical Characteristics Diagrams**

Figure 1. Output Characteristics

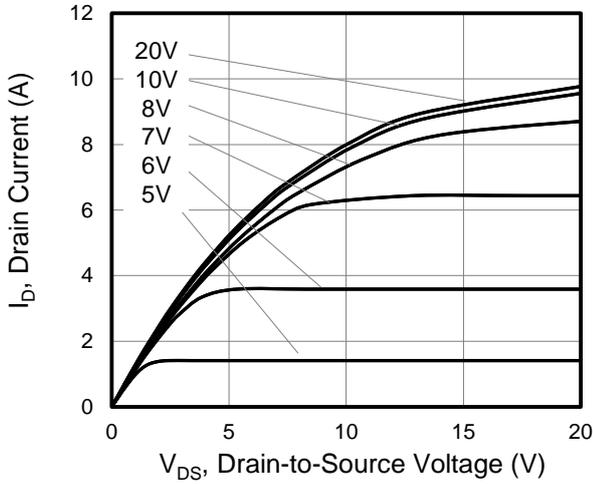


Figure 2. Transfer Characteristics

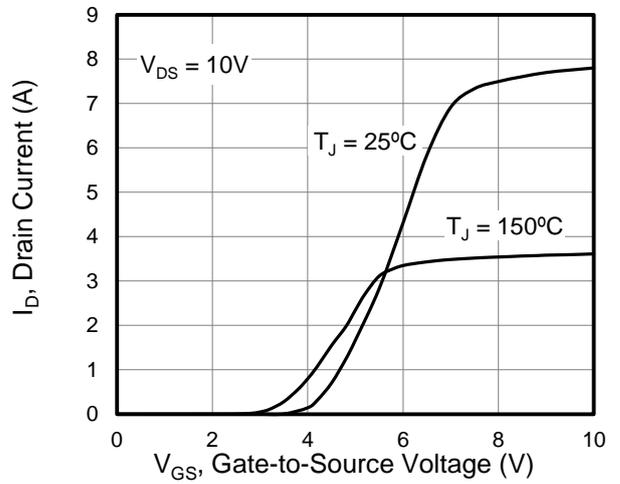


Figure 3. On-Resistance vs. Drain Current

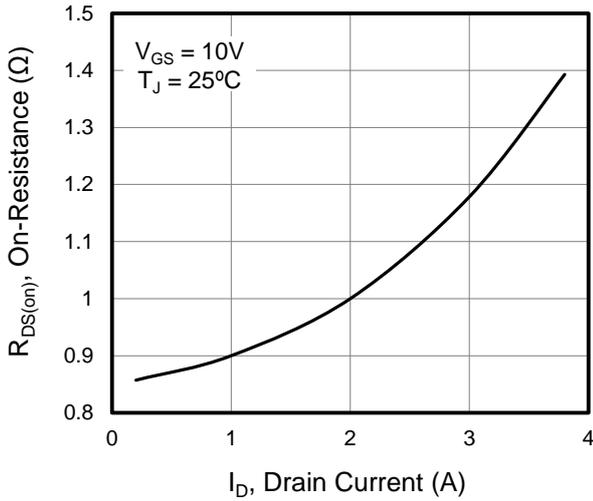


Figure 4. Capacitance

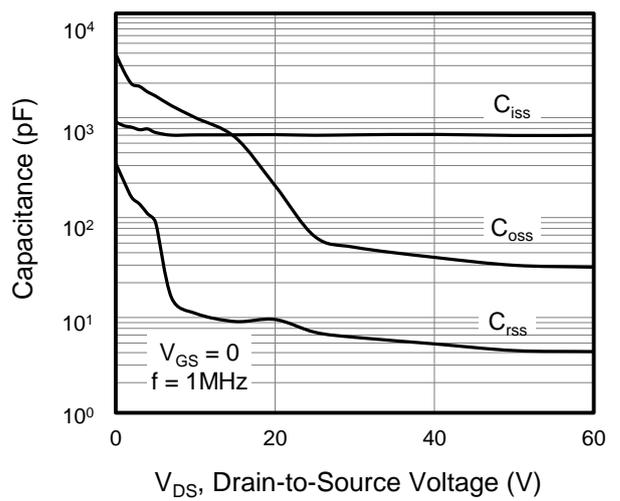


Figure 5. Gate Charge

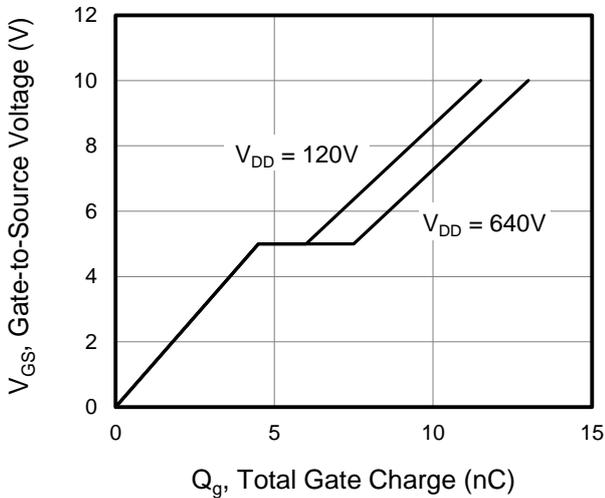
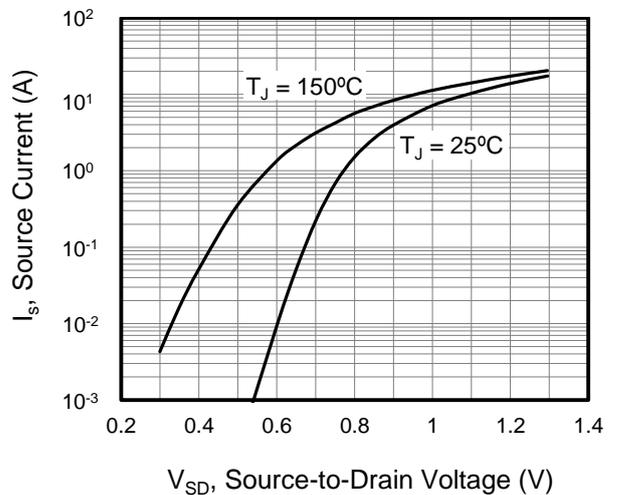


Figure 6. Body Diode Forward Voltage



■ Electrical Characteristics Diagrams

Figure 7. On-Resistance vs. Junction Temperature

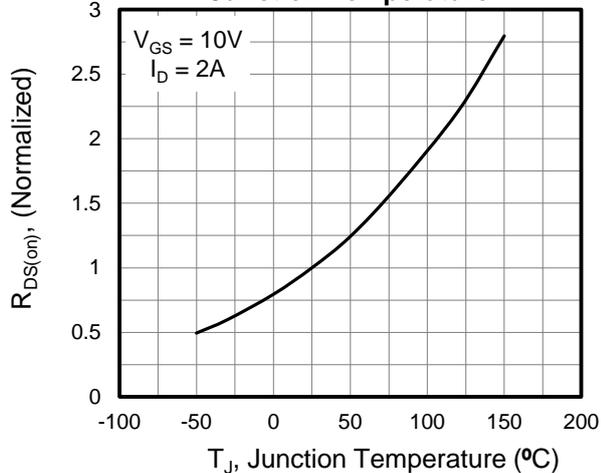


Figure 8. Threshold Voltage vs. Junction Temperature

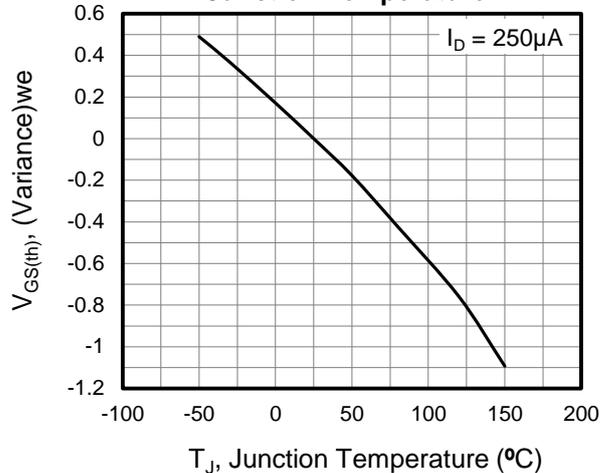
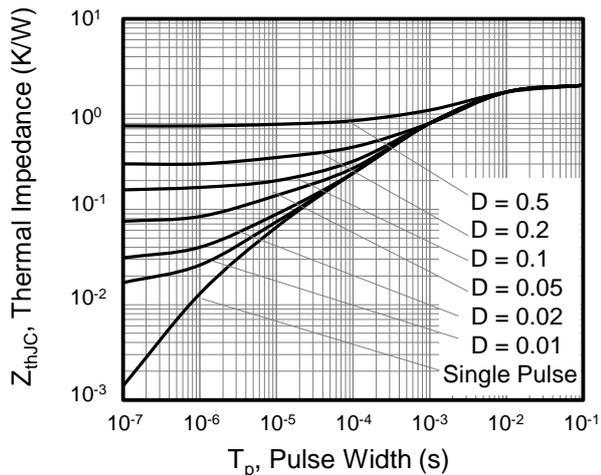


Figure 9. Transient Thermal Impedance





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Ordering Information :

Device	Packing
Part Number-BP	Bulk; 1Kpcs/Box

Note : Adding "-HF" suffix for halogen free, eg. Part Number-BP-HF

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Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.