Micro Commercial Components

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20736 Marilla Street Chatsworth
CA 91311
Phone: (818) 701-4933
Fax: (818) 701-4939

MCPF04N60

N-Channel Enhancement Mode Field Effect Transistor

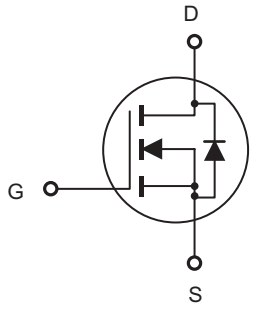
Features

- High Current Rating
- Lower Capacitance
- Halogen free available upon request by adding suffix "-HF"
- Lower $R_{dS(ON)}$
- Lower Total Gate Charge
- Tighter VSD Specifications
- Avalanche Energy Specified
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1

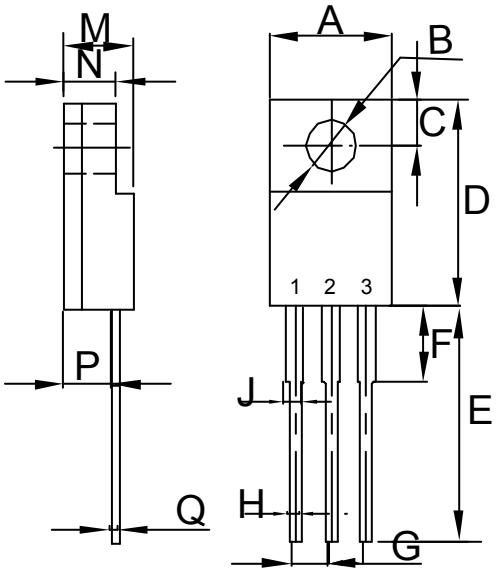
Maximum Ratings @ 25ºC Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	600	V
I_D	Drain Current-Continuous	4.0	A
I_S	Continuous Drain-Source Diode Forward Current	4.0	A
V_{GSS}	Gate-source Voltage	±30	V
E_{AS}	Single Pulsed Avalanche Energy(note1)	80	mJ
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	62.5	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃
T_L	Maximum lead temperure for soldering purposes,1/8" from case for 5 seconds	260	℃

Internal Block Diagram



TO-220F



1.GATE
2.DRAIN
3.SOURCE

DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.392	.408	9.96	10.36	
B	.138		3.50		Φ
C	.106		2.70		
D	.583	.598	14.80	15.20	
E	.520		13.20		
F	.142	.158	3.60	4.00	
G	.100		2.54		
H	.020	.030	0.50	0.75	
J	.043	.053	1.10	1.35	
M	.169	.185	4.30	4.70	
N	.110	.126	2.80	3.20	
P	.098	.114	2.50	2.90	
Q	.020	.030	0.50	0.75	

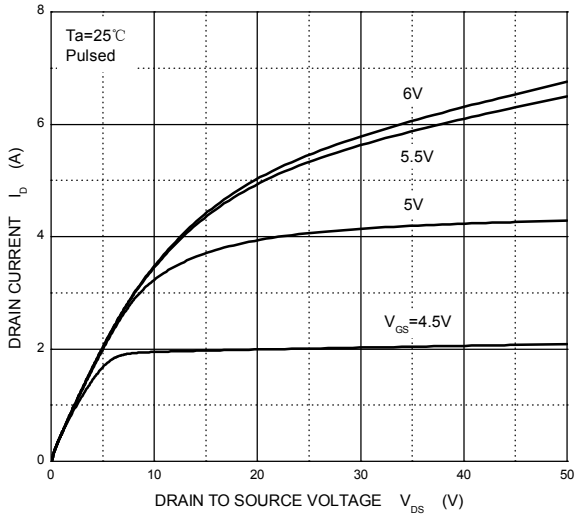
Electrical characteristics (T_a=25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Off characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	600			V
Drain-source diode forward voltage(note2)	V_{SD}	V_{GS} = 0V, I_S =4.0A			1.5	
Zero gate voltage drain current	I_{DSS}	V_{DS} =600V, V_{GS} =0V			25	μA
Gate-body leakage current, forward(note2)	I_{GSSF}	V_{DS} =0V, V_{GS} =30V			100	nA
Gate-body leakage current, reverse(note2)	I_{GSSR}	V_{DS} =0V, V_{GS} =-30V			-100	
On characteristics (note2)						
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	2.0		4.0	V
Static drain-source on-resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =2.0A		2.0	3.0	Ω
Forward transconductance	g_{fs}	V_{DS} =50V, I_D =2A	2.5			S
Dynamic characteristics (note 3)						
Input capacitance	C_{iss}	V_{DS} =25V,V_{GS} =0V,f =1MHz		540	760	pF
Output capacitance	C_{oss}			125	180	
Reverse transfer capacitance	C_{rss}			8.0	20	
Switching characteristics						
Total gate charge	Q_g	V_{DS} =480V,V_{GS} =10V,I_D =4.0A		5.0	10	nC
Gate-source charge	Q_{gs}			2.7		
Gate-drain charge	Q_{gd}			2.0		
Turn-on delay time (note3)	$t_{d(on)}$	V_{DD}=300V, V_{GS}=10V, R_G=9.1Ω, I_D =4.0A		12	20	ns
Turn-on rise time (note3)	t_r			7.0	10	
Turn-off delay time (note3)	$t_{d(off)}$			19	40	
Turn-off fall time (note3)	t_f			10	20	

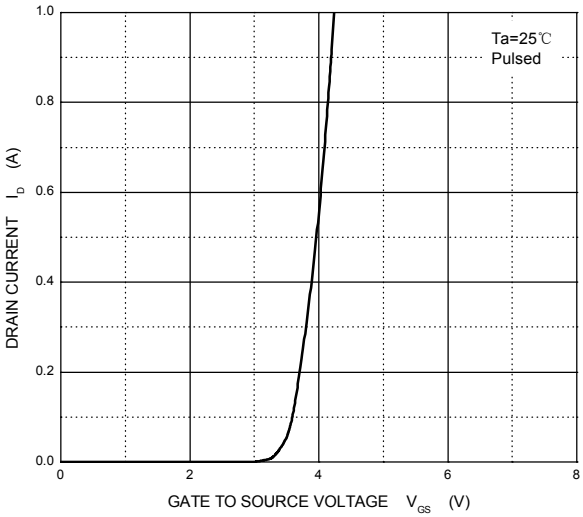
Notes :

1. L=30mH, I_L=4 A, V_{DD}=100V, V_{GS}=10V,R_G=25Ω,Starting T_J=25℃.
2. Pulse Test : Pulse width≤300μs, duty cycle ≤2%.
3. These parameters have no way to verify.

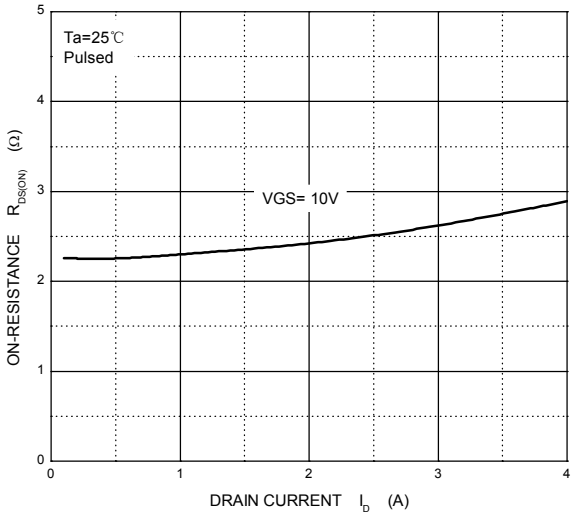
Output Characteristics



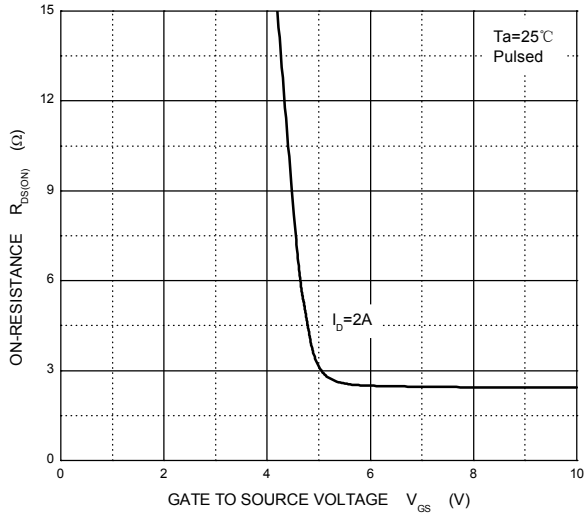
Transfer Characteristics



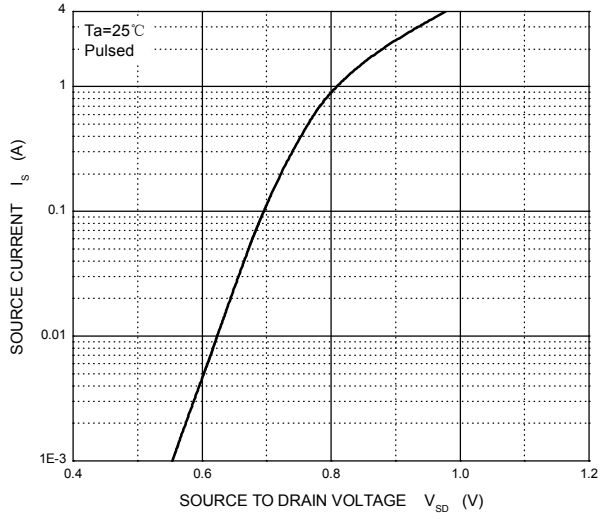
$R_{DS(ON)}$ — I_D



$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



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Ordering Information :

Device	Packing
Part Number-BP	Bulk;4Kpcs/Box

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

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