Micro Commercial Components

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MCMN2012

N-Channel Enhancement Mode Field Effect Transistor

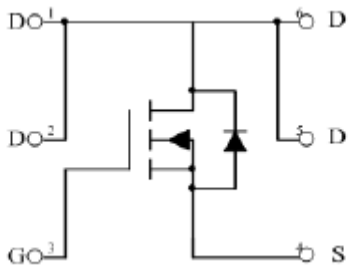
Features

- TrenchFET Power MOSFET
- Small package
- Halogen free available upon request by adding suffix "-HF"
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Marking:N2012

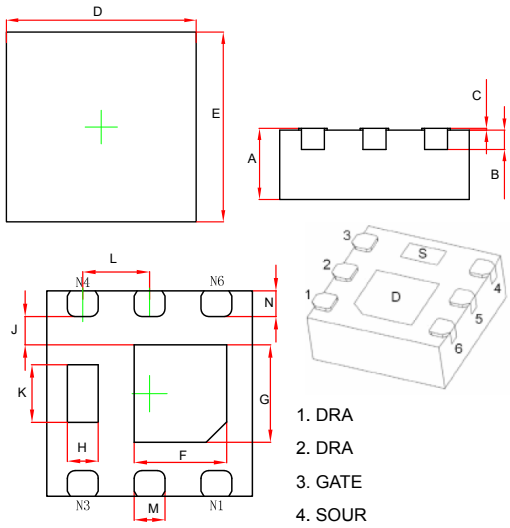
Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Parameter	Rating	Unit
V_{DS}	Drain-source Voltage	20	V
I_D	Drain Current-Continuous	12	A
I_{DM}	Pulsed Drain Current (note1)	40	A
V_{GS}	Gate-source Voltage	± 10	V
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	167	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

Equivalent Circuit



DFN2020-6J



1. DRA
2. DRA
3. GATE
4. SOUR
5. DRA
6. DRA

Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.028	.032	0.700	0.800	
B	0.008REF.		0.203REF.		
C	0000	0.002	0.000	0.050	
D	0.076	0.082	1.924	2.076	
E	0.076	0.082	1.924	2.076	
F	0.031	0.039	0.800	1.000	
G	0.033	0.041	0.850	1.050	
H	0.008	0.016	0.200	0.400	
J	0.008	---	0.200	---	
K	0.018	0.026	0.460	0.660	
L	0.026TYP.		0.650TYP.		
M	0.010	0.014	0.250	0.350	
N	0.007	0.013	0.174	0326	

ELECTRICAL CHARACTERISTICS(T_a=25℃ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} =20V,V_{GS} = 0V			1	uA
Gate-body leakage current	I_{GSS}	V_{GS} =±10V, V_{DS} = 0V			±100	nA
Gate threshold voltage (note 3)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA	0.35	0.7	1	V
Drain-source on-resistance(note 3)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =9.7A		9	11	mΩ
		V_{GS} =2.5V, I_D =9A		12	13	mΩ
		V_{GS} =1.8V, I_D =8.1A		15.5	16	mΩ
		V_{GS} =1.5V, I_D =4.5A		21	22	mΩ
		V_{GS} =1.2V, I_D =2.4A			41	mΩ
Forward tranconductance(note 3)	g_{FS}	V_{DS} =4V, I_D =9.7A	20			S
Diode forward voltage (note 3)	V_{SD}	I_S=10A, V_{GS} = 0V			1.2	V
DYNAMIC PARAMETERS (note 4)						
Input Capacitance	C_{iss}	V_{DS} =4V,V_{GS} =0V,f =1MHz		1800		pF
Output Capacitance	C_{oss}			650		pF
Reverse Transfer Capacitance	C_{rss}			450		pF
Gate Resistance	R_g	f=1MHz		2.5		Ω
SWITCHING PARAMETERS (note 4)						
Turn-on delay time	$t_{d(on)}$	V_{GEN}=4.5V,V_{DD}=4V, I_D=10A,R_g=1Ω R_L=0.4Ω		12	20	ns
Turn-on rise time	t_r			10	15	ns
Turn-off delay time	$t_{d(off)}$			65	100	ns
Turn-off fall time	t_f			20	30	ns
Total Gate Charge	Q_g	V_{DS}=4V,V_{GS}=5V I_D=10A			32	nC
Gate-Source Chage	Q_{gs}			2.5		nC
Gage-Drain Charge	Q_{gd}			6.5		nC

Notes :

1.Surface mounted on FR4 board using 1 square inch pad size,1oz copper.

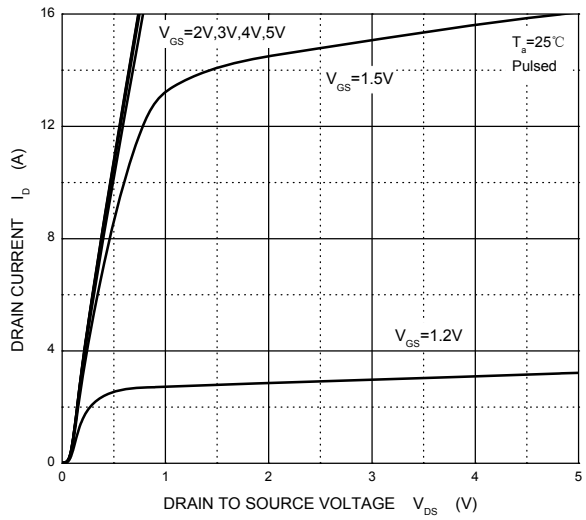
2.Surface mounted on FR4 board using the minimum pad size,1oz copper.

3. Pulse test : Pulse width=300μs, duty cycle≤2%.

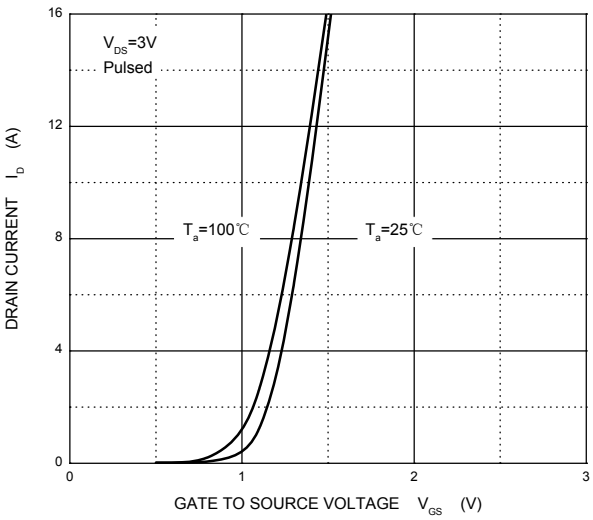
4. These parameters have no way to verify.

Typical Characteristics

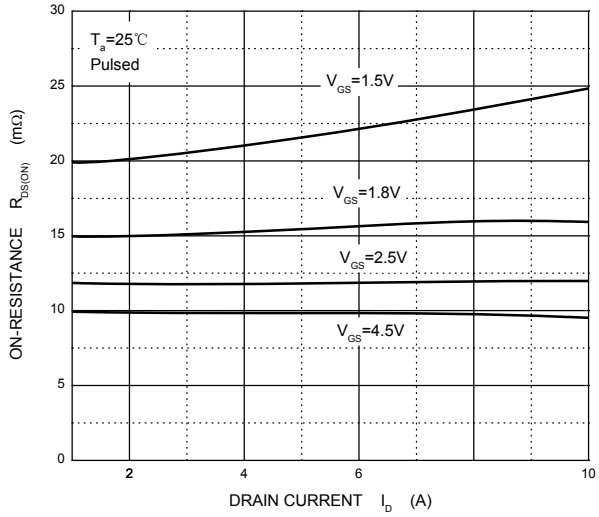
Output Characteristics



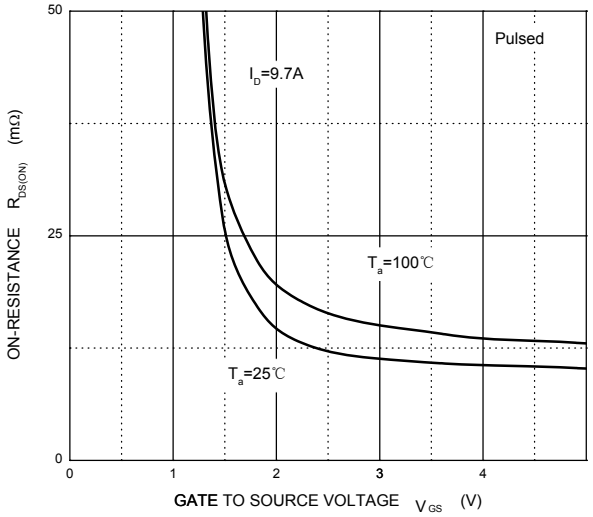
Transfer Characteristics



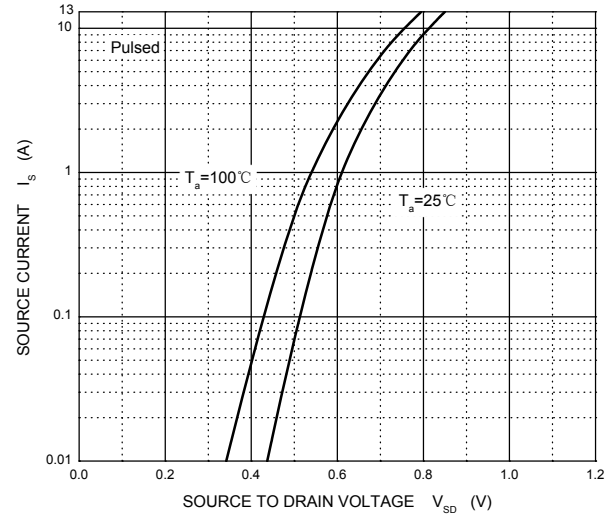
$R_{DS(ON)}$ — I_D



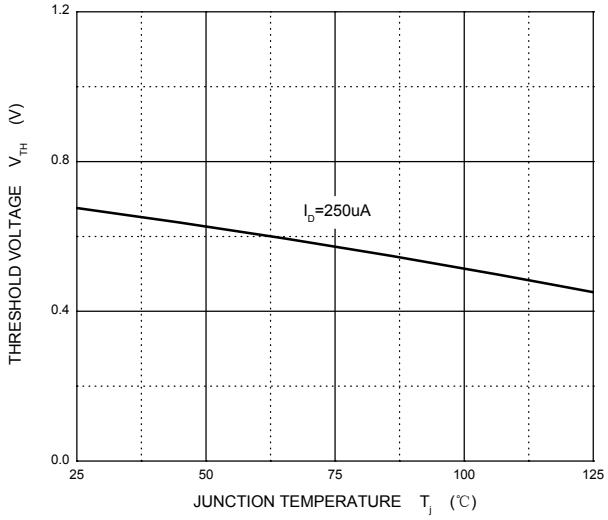
$R_{DS(ON)}$ — V_{GS}



I_S — V_{SD}



Threshold Voltage



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Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel:3Kpcs/Reel

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