

Features

- TrenchFET Power MOSFET
- Epoxy meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- Lead Free Finish/RoHS Compliant ("P" Suffix designates RoHS Compliant. See ordering information)

Maximum Ratings

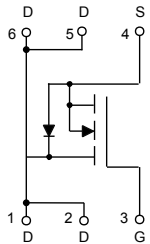
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 167°C/W Junction to Ambient^(Note 2)

Parameter	Symbol	Rating	Unit
Drain -Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current	I_D	12	A
Drain Current-Pulse ^(Note3)	I_{DM}	40	A

Note:

1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

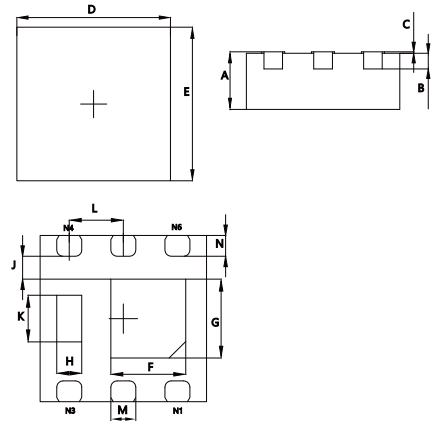
Internal Structure



Marking: N2012

N-Channel MOSFET

DFN2020-6J



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.028	0.032	0.700	0.800	
B	0.008		0.203		TYP.
C	0.000	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	0.026		0.650		TYP.
M	0.010	0.014	0.250	0.350	
N	0.007	0.013	0.174	0.326	

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	20			V
Gate-Threshold Voltage ^(Note 4)	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.35	0.7	1.0	V
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=5A$		10	15	m Ω
		$V_{GS}=2.5V, I_D=5A$		13	18	
		$V_{GS}=1.8V, I_D=5A$		18	30	
Forward Transconductance ^(Note 4)	g_{FS}	$V_{DS}=4V, I_D=9.7A$	20			S
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=10A$			1.2	V
Dynamic Characteristics^(Note 5)						
Input Capacitance	C_{iss}	$V_{DS}=4V, V_{GS}=0V, f=1MHz$		1800		pF
Output Capacitance	C_{oss}			650		
Reverse Transfer Capacitance	C_{rss}			450		
Gate Resistance	R_g	$f=1MHz$		2.5		Ω
Switching Characteristics^(Note 5)						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=4V, V_{GEN}=4.5V, R_L=0.4\Omega, I_D=10A, R_G=1\Omega$		12	20	ns
Turn-On Rise Time	t_r			10	15	
Turn-Off Delay Time	$t_{d(off)}$			65	100	
Turn-Off Fall Time	t_f			20	30	
Total Gate Charge	Q_g	$V_{DS}=4V, V_{GS}=5V, I_D=10A$			32	nC
Gate-Source Charge	Q_{gs}			2.5		
Gate-Drain Charge	Q_{gd}			6.5		

Note:

2. Surface Mounted On FR4 Board Using The Minimum Pad Size, 1oz Copper.
3. Surface Mounted On FR4 Board Using 1 Square Inch Pad Size, 1oz Copper.
4. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
5. These Parameters Have No Way To Verify.

Curve Characteristics

Fig. 1 - Output Characteristics

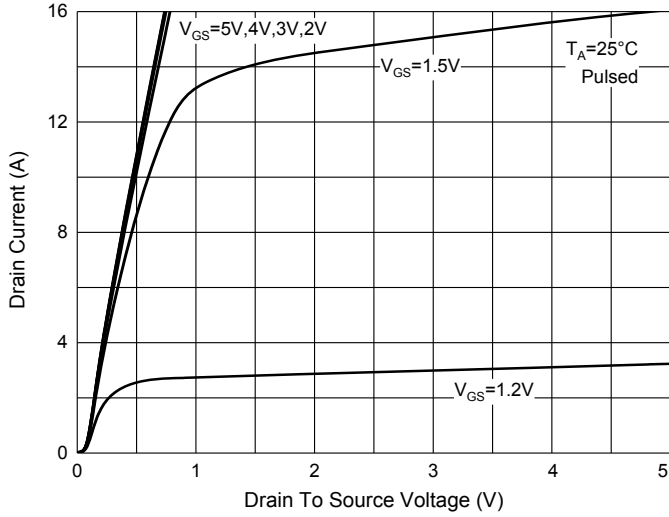


Fig. 2 - Transfer Characteristics

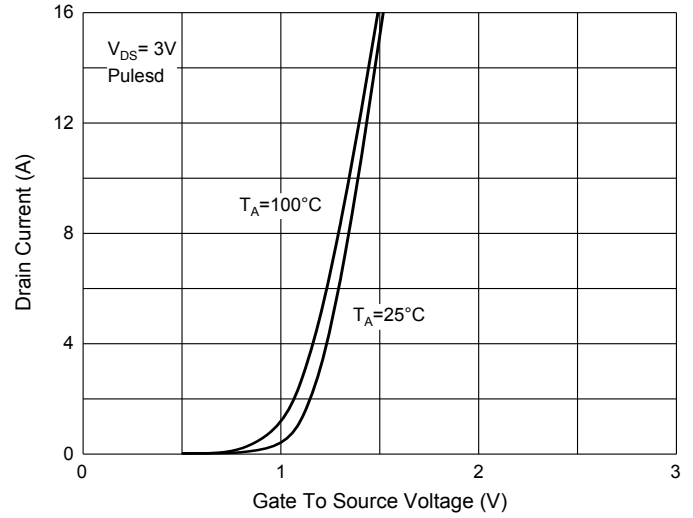


Fig. 3 - $R_{DS(ON)} - I_D$

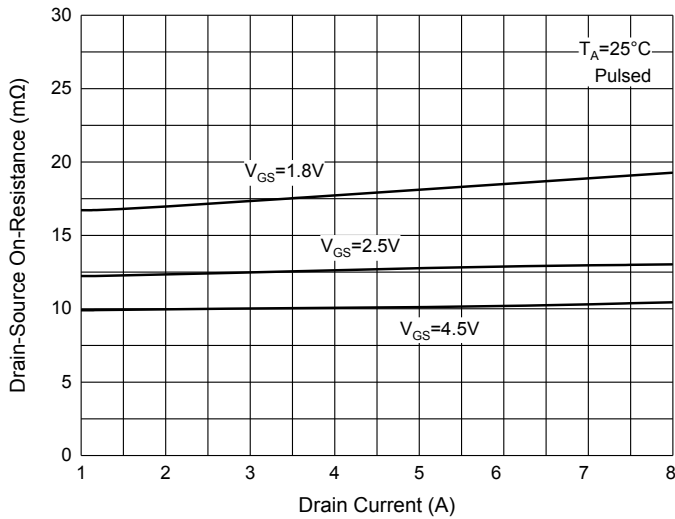


Fig. 4 - $R_{DS(ON)} - V_{GS}$

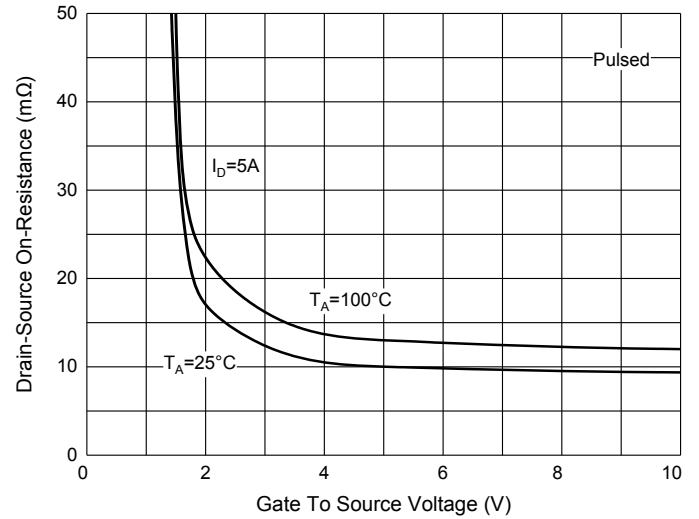


Fig. 5 - $I_S - V_{SD}$

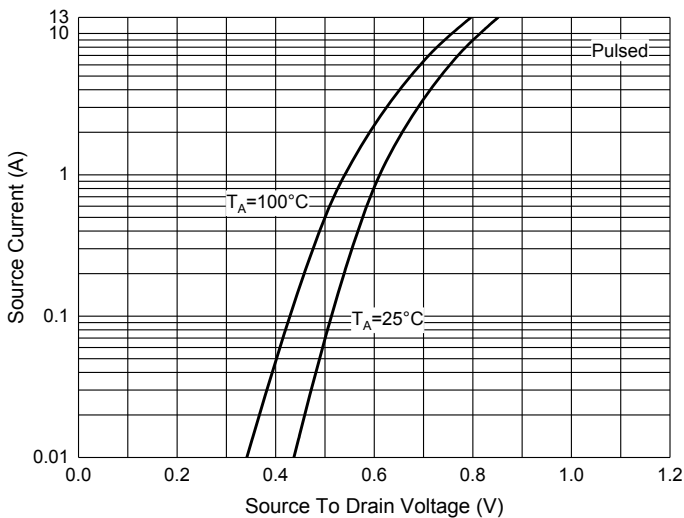
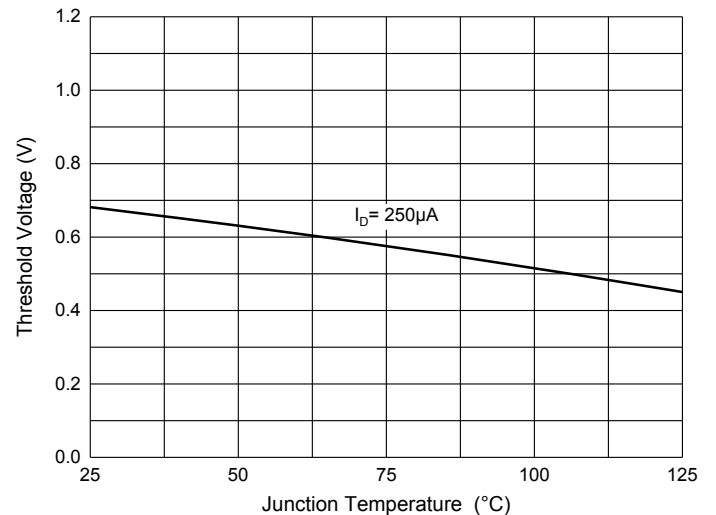


Fig. 6 - Threshold Voltage



Ordering Information

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

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