

## Features

- Advanced Trench MOSFET Process Technology
- Ultra Low On-Resistance With Low Gate Charge
- 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

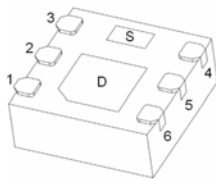
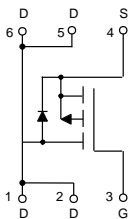
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 357°C/W Junction to Ambient

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-12	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current	$I_D$	-8	A
Pulsed Drain Current (Note 2)	$I_{DM}$	-28	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.

2. Pulse Width Limited by Maximum Junction Temperature.

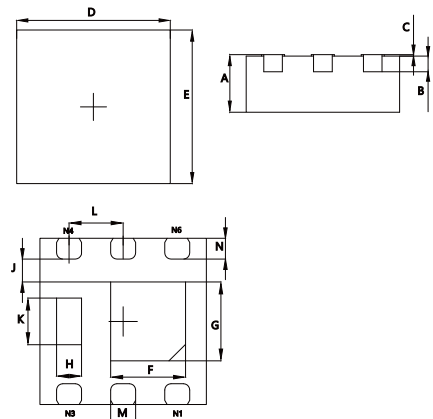
## Internal Structure



**Marking: 1208**

# P-CHANNEL MOSFET

## DFN2020-6J



DIM	INCHES		MM		NOTE
	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 @ 25°C (Unless Otherwise Specified)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-12			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-12V, V_{GS}=0V$			-1	$\mu A$
Gate-Threshold Voltage <sup>(Note 2)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.4		-1	V
Drain-Source On-Resistance <sup>(Note 2)</sup>	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-5A$			28	m $\Omega$
		$V_{GS}=-3.7V, I_D=-4.6A$			32	
		$V_{GS}=-2.5V, I_D=-4.3A$			40	
		$V_{GS}=-1.8V, I_D=-1A$			63	
		$V_{GS}=-1.5V, I_D=-0.5A$			150	
Forward Transconductance <sup>(Note 2)</sup>	$g_{FS}$	$V_{DS}=-5V, I_D=-5A$		18		S
<b>Dynamic Characteristics<sup>(Note 3)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, V_{GS}=0V, f=1MHz$		1275		pF
Output Capacitance	$C_{oss}$			255		
Reverse Transfer Capacitance	$C_{rss}$			236		
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$	1.9		19	$\Omega$
Total Gate Charge	$Q_g$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-5A$		14	21	nC
Gate-Source Charge	$Q_{gs}$			2.3		
Gate-Drain Charge	$Q_{gd}$			3.6		
Reverse Recovery Charge	$Q_{rr}$	$I_F=-4A, di/dt=100A/\mu s$		8	16	
Reverse Recovery Time	$t_{rr}$			24	48	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-6V, V_{GEN}=-4.5V, I_D=-4A$ $R_L=6\Omega, R_{GEN}=1\Omega$		26	40	ns
Turn-On Rise Time	$t_r$			24	40	
Turn-Off Delay Time	$t_{d(off)}$			45	70	
Turn-Off Fall Time	$t_f$			20	35	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$				-8	A
Pulsed Diode Forward Current	$I_{SM}$				-28	
Body Diode Voltage	$V_{SD}$	$I_S=-4A, V_{GS}=0V$			-1.2	V

Note: 2. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

3. Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics**

Fig. 1 - Output Characteristics

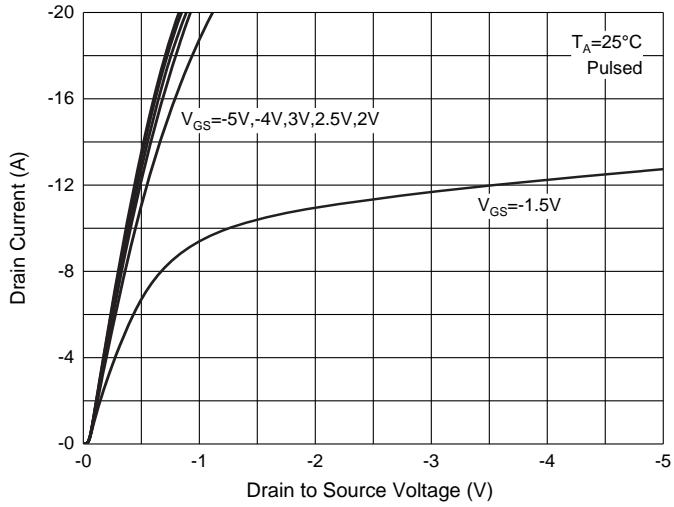


Fig. 2 - Transfer Characteristics

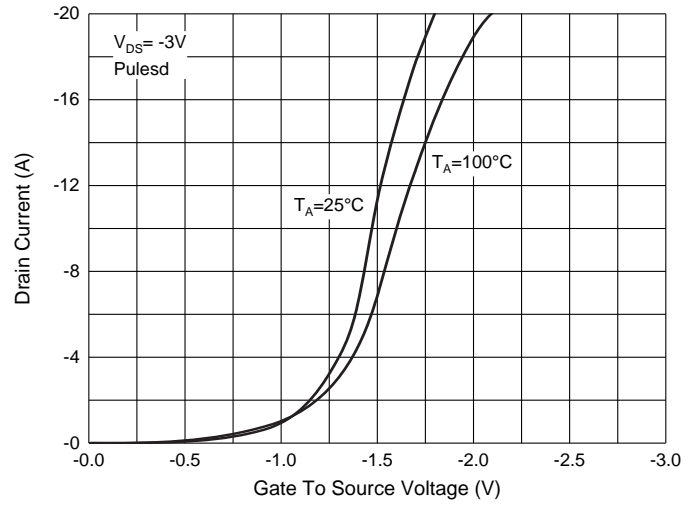


Fig. 3 -  $R_{DS(ON)} - I_D$

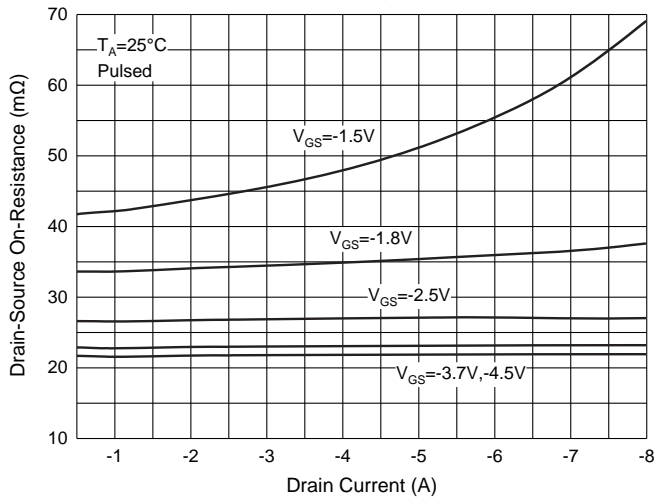


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

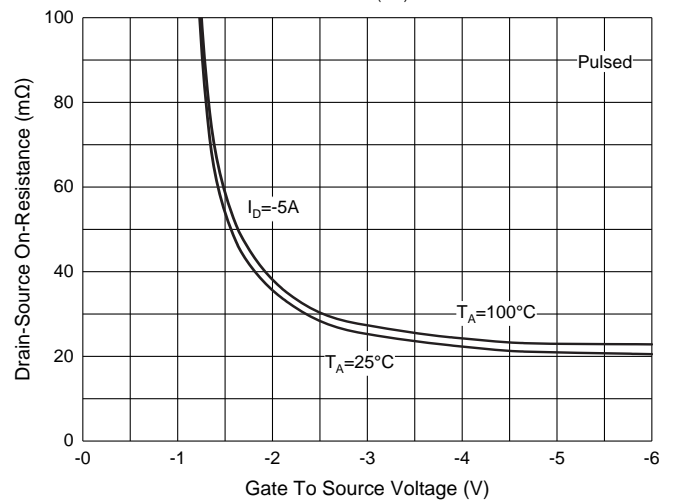


Fig. 5 -  $I_S - V_{SD}$

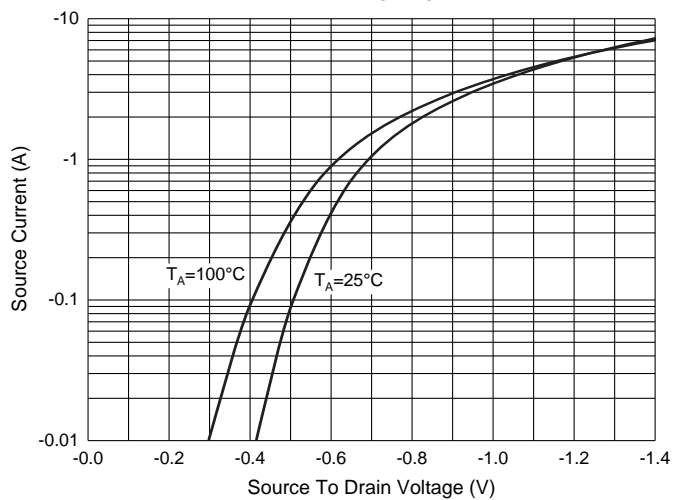
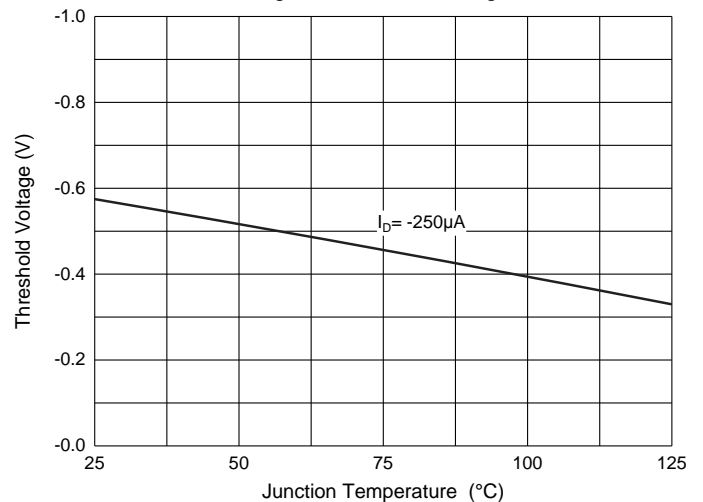


Fig. 6 - Threshold Voltage



## Ordering Information

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

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