

**Features**

- Trench FET Structure
- High Dense Cell Design for Extremely Low  $R_{DS(ON)}$
- 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)

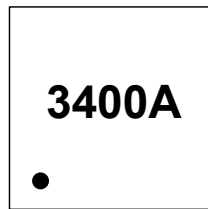
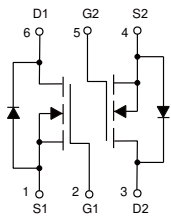
**Maximum Ratings**

- Operating Junction Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature Range:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Thermal Resistance:  $89^{\circ}\text{C/W}$  Junction to Ambient<sup>(Note2)</sup>

Parameter	Symbol	Rating	Unit
Drain -Source Voltage	$V_{DS}$	30	V
Gate -Source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current-Continuous	$I_D$	5.0	A
Drain Current-Pulsed <sup>(Note3)</sup>	$I_{DM}$	30	A
Power Dissipation	$P_D$	1.4	W

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

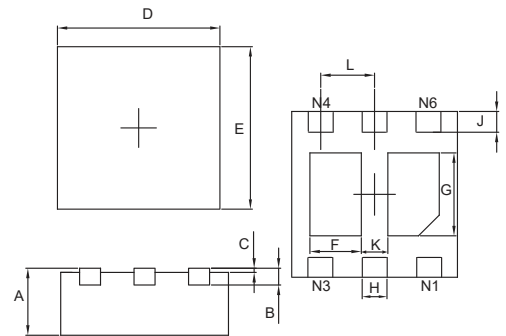
**Internal Structure and Marking Code**



Pin1

**N-Channel MOSFET**

**DFN2020-6L**



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.030	0.034	0.750	0.850	
B	0.008		0.200		TYP.
C	0.000	0.002	0.000	0.050	
D	0.077	0.081	1.950	2.050	
E	0.077	0.081	1.950	2.050	
F	0.017	0.027	0.440	0.690	
G	0.033	0.043	0.840	1.090	
H	0.010	0.014	0.250	0.350	
J	0.007	0.015	0.175	0.375	
K	0.010	0.014	0.250	0.350	
L	0.026		0.650		TYP.

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

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7		1.5	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V, V_{GS}=0V$			1	$\mu A$
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.8A$		29	32	m $\Omega$
		$V_{GS}=4.5V, I_D=5.0A$		32	38	
		$V_{GS}=2.5V, I_D=4.0A$		40	45	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V, I_D=5.0A$	8.0			S
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$			1155	pF
Output Capacitance	$C_{oss}$			108		
Reverse Transfer Capacitance	$C_{rss}$			84		
Gate Resistance	$R_g$	$V_{DS}=0V, V_{GS}=0V, f=1MHz$			3.6	$\Omega$
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, R_L=2.7\Omega, V_{DS}=15V, R_{GEN}=3\Omega$			5	ns
Turn-On Rise Time	$t_r$				7	
Turn-Off Delay Time	$t_{d(off)}$				40	
Turn-Off Fall Time	$t_f$				6	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Diode Forward voltage <sup>(Note 4)</sup>	$V_{SD}$	$V_{GS}=0V, I_S=1A$			1.0	V

Notes:

- 2.Surface Mounted on FR4 Board,  $t < 5$  sec.
- 3.Repetitive Rating : Pulse width limited by maximum junction temperature.
- 4.Pulse Test: Pulse Width $\leq 300\mu A$ , Duty Cycle $\leq 2\%$ .
- 5.Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics**

Fig. 1 - Output Characteristics

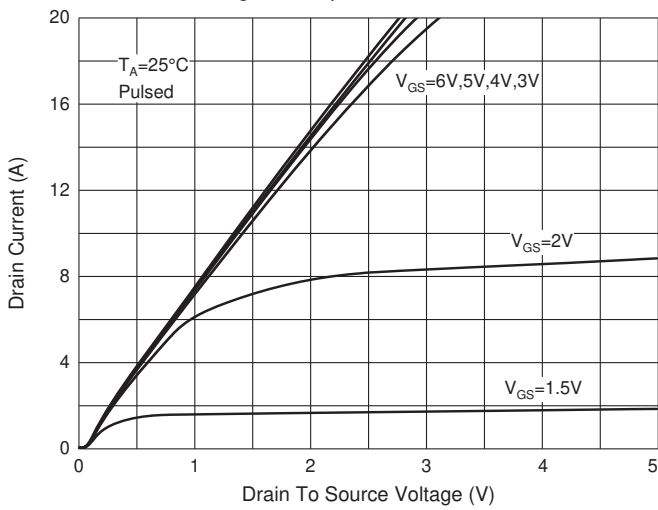


Fig. 2 - Transfer Characteristics

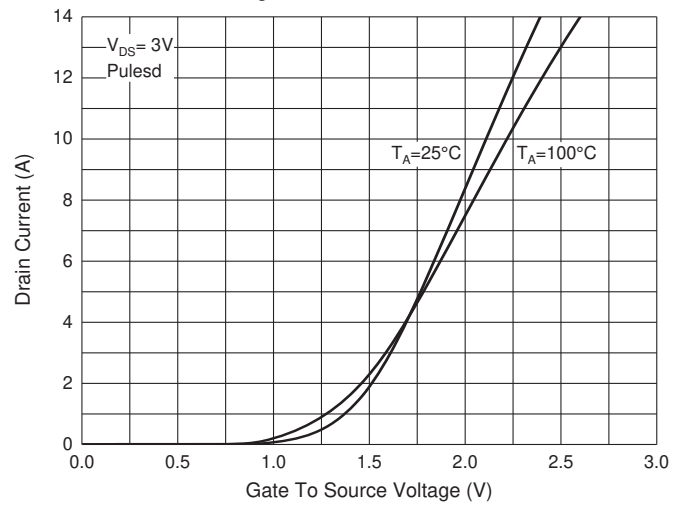


Fig. 3 -  $R_{DS(ON)} - I_D$

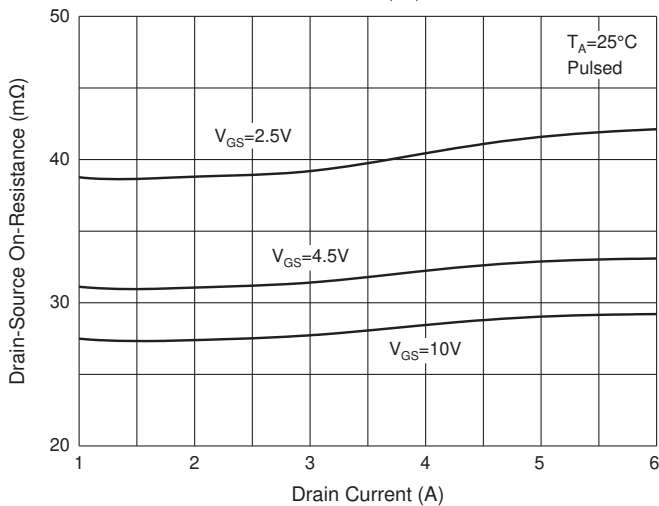


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

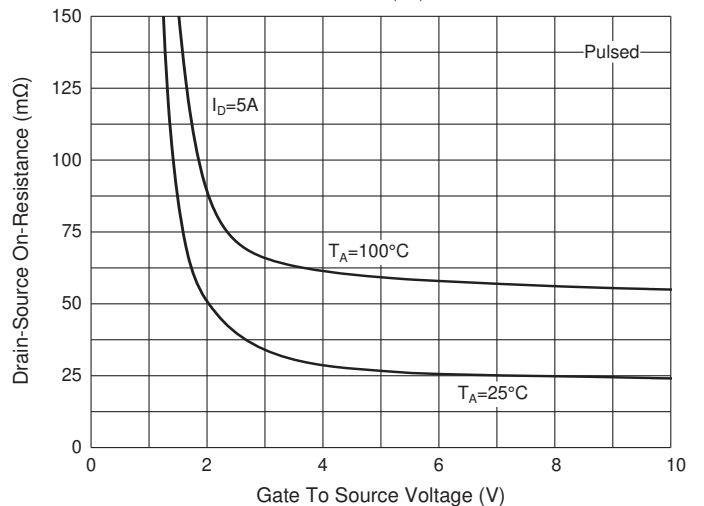


Fig. 5 -  $I_S - V_{SD}$

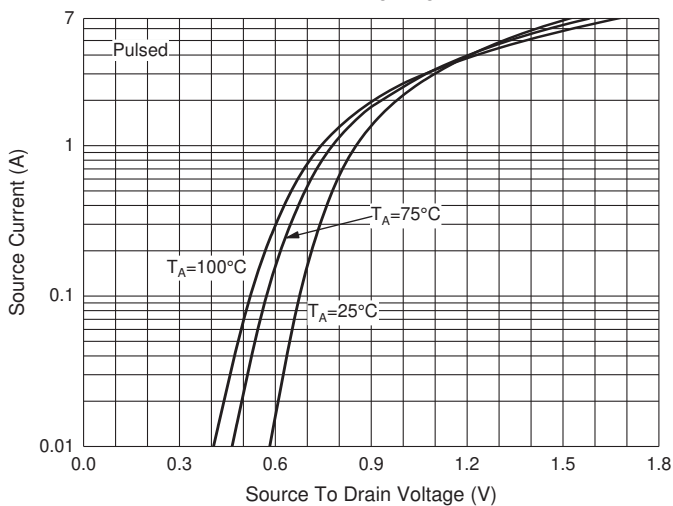
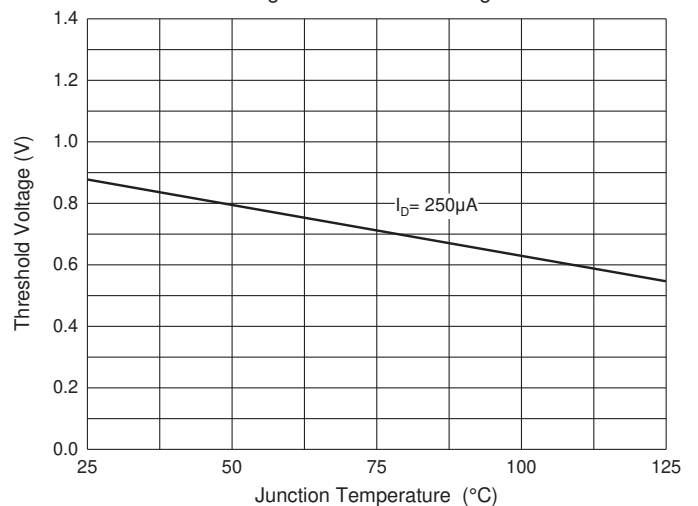


Fig. 6 - Threshold Voltage



## Ordering Information

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

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