

## Features

- High Dense Cell Design For Extremely Low  $R_{DS(ON)}$
- Rugged and reliable
- High Speed Switching
- 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

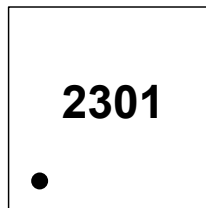
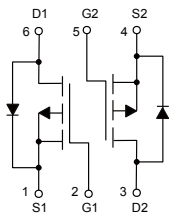
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 89°C/W Junction to Ambient<sup>(Note 2)</sup>

Parameter	Symbol	Rating	Unit
Drain -source Voltage	$V_{DS}$	-20	V
Gate -Source Voltage	$V_{GS}$	±10	V
Drain Current-Continuous	$I_D$	-3.8	A
Drain Current-Pulse <sup>(Note 2)</sup>	$I_{DM}$	-13	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.

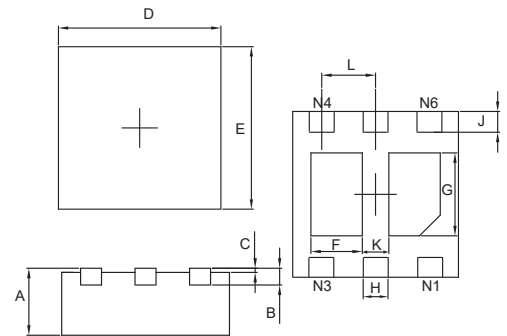
## Internal Structure and Marking Code



Pin1

# P-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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-20			V
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.5	-0.7	-0.9	V
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS} = \pm 8V, V_{DS} = 0V$			±100	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-4.5V, I_D=-1.9A$		49	70	mΩ
		$V_{GS}=-2.5V, I_D=-1.9A$		59	90	
Forward Transconductance <sup>(Note 4)</sup>	$g_{FS}$	$V_{DS}=-5V, I_D=-2.8A$		8		S
Diode Forward Current <sup>(Note 3)</sup>	$I_S$				-0.75	S
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-0.75A$			-1.2	V
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-6V, V_{GS}=0V, f=1MHz$		880		pF
Output Capacitance	$C_{oss}$			270		
Reverse Transfer Capacitance	$C_{rss}$			175		
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-6V, V_{GS}=-4.5V, I_D=-1A, R_{GEN}=6\Omega$		11	20	ns
Turn-On Rise Time	$t_r$			5	10	
Turn-Off Delay Time	$t_{d(off)}$			32	65	
Turn-Off Fall Time	$t_f$			23	45	
Total Gate Charge	$Q_g$	$V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.8A$		11	14.5	nC
Gate-Source Charge	$Q_{gs}$			1.5		
Gate-Drain Charge	$Q_{gd}$			2.1		

Note:

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

**Curve Characteristics**

Fig. 1 - Output Characteristics

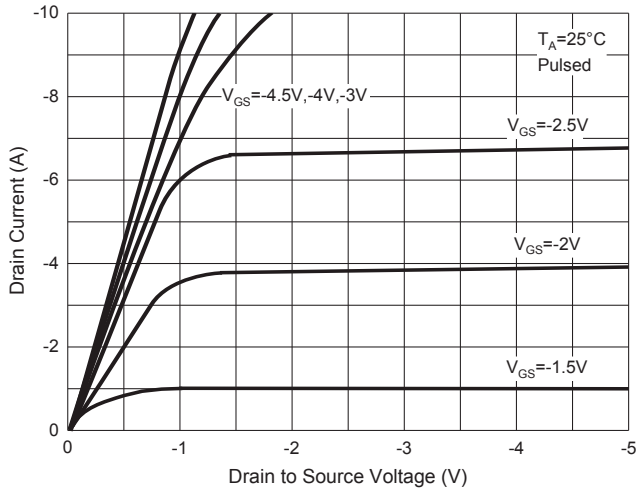


Fig. 2 - Transfer Characteristics

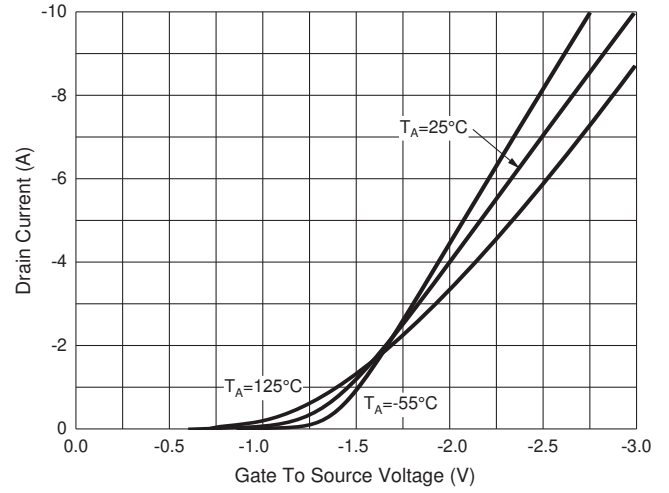


Fig. 3 - Capacitance Characteristics

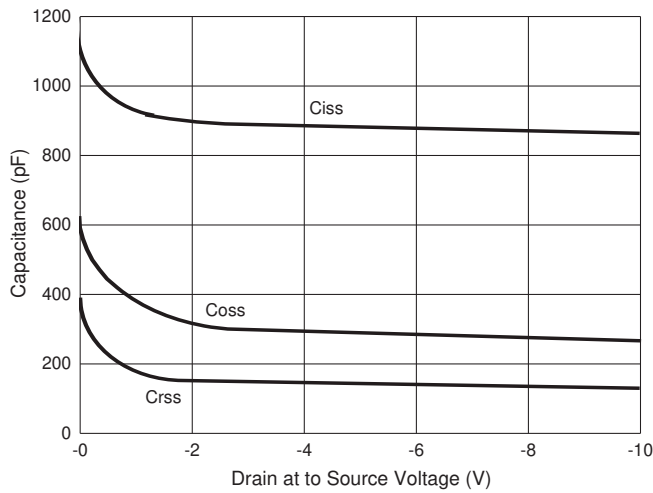


Fig. 4 -  $R_{DS(ON)}$ —Temperature

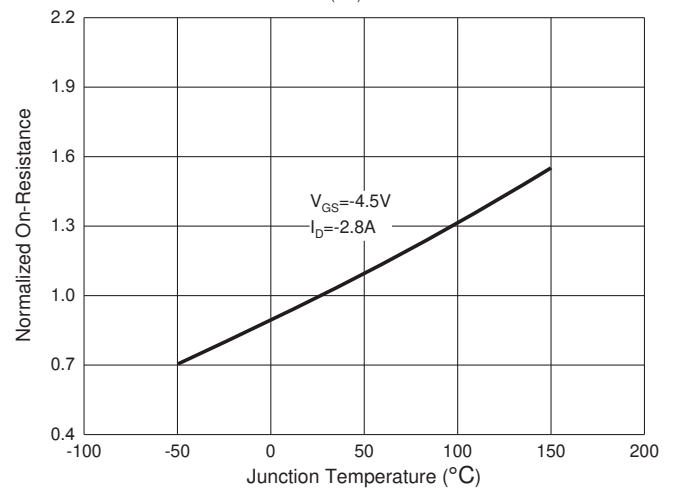


Fig. 5 - Threshold Voltage

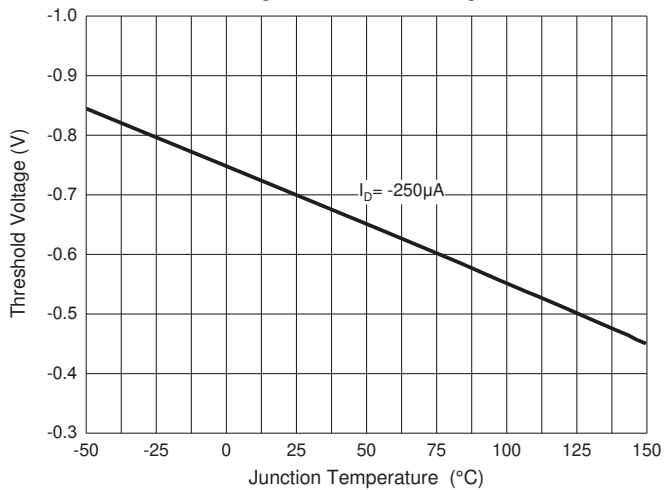
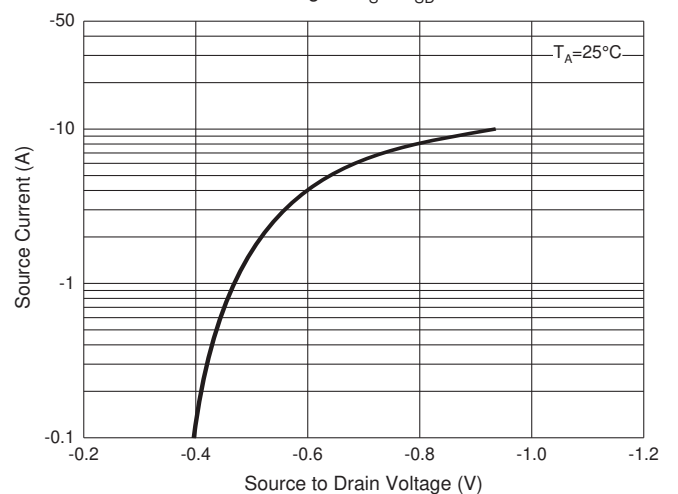


Fig. 6 -  $I_S$ — $V_{SD}$



## Ordering Information

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

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