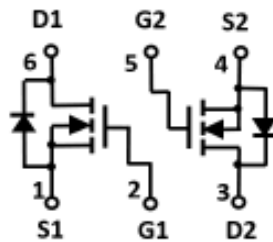


**DFN2020-6**



### Product Summary

• $V_{DS}$	30V
• $I_D$	7.7A
• $R_{DS(ON)}$ ( at $V_{GS}=10V$ )	<27 mohm
• $R_{DS(ON)}$ ( at $V_{GS}=4.5V$ )	<33 mohm
• $R_{DS(ON)}$ ( at $V_{GS}=2.5V$ )	<45 mohm

### General Description

- Trench Power LV MOSFET technology
- High density cell design for low  $R_{DS(ON)}$
- High Speed switching

### Applications

- Battery protection
- Load switch
- Power management

### ■ Absolute Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	$V_{DS}$	30	V
Gate-source Voltage	$V_{GS}$	$\pm 12$	V
Drain Current	$I_D$	$T_A=25^\circ\text{C}$	7.7
		$T_A=70^\circ\text{C}$	6.2
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	30	A
Total Power Dissipation @ $T_A=25^\circ\text{C}$	$P_D$	2.0	W
Thermal Resistance Junction-to-Ambient @ Steady State	$R_{\theta JA}$	56	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	$^\circ\text{C}$

### ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
LMQ3400A	F1	3400A.	3000	30000	120000	7" reel

## ■ Electrical Characteristics ( $T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
<b>Static Parameter</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=30V, V_{GS}=0V$			1	$\mu A$
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.5	0.9	1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=7.7A$		21	27	m $\Omega$
		$V_{GS}=4.5V, I_D=5A$		25	33	
		$V_{GS}=2.5V, I_D=3A$		33	45	
Diode Forward Voltage	$V_{SD}$	$I_S=7.7A, V_{GS}=0V$		0.8	1.2	V
Maximum Body-Diode Continuous Current	$I_S$				7.7	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1\text{MHz}$		535		pF
Output Capacitance	$C_{oss}$			130		
Reverse Transfer Capacitance	$C_{rss}$			36		
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=4.5V, V_{DS}=15V, I_D=7.7A$		4.8		nC
Gate Source Charge	$Q_{gs}$			1.2		
Gate Drain Charge	$Q_{gd}$			1.7		
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=4.5V, V_{DD}=15V, I_D=1A, R_{GEN}=2.8\Omega$		12		ns
Turn-on Rise Time	$t_r$			52		
Turn-off Delay Time	$t_{D(off)}$			17		
Turn-off Fall Time	$t_f$			10		

A.Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$ .

## ■ Typical Performance Characteristics

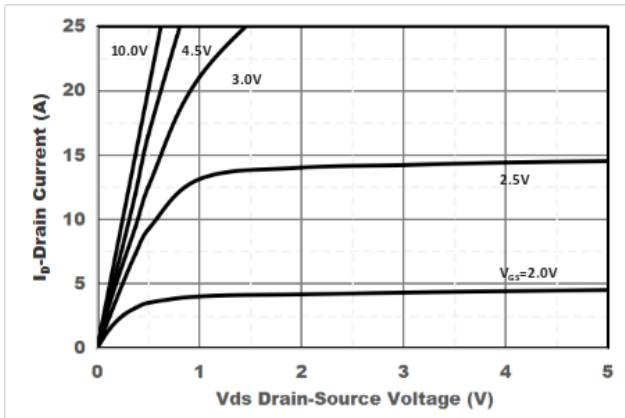


Figure1. Output Characteristics

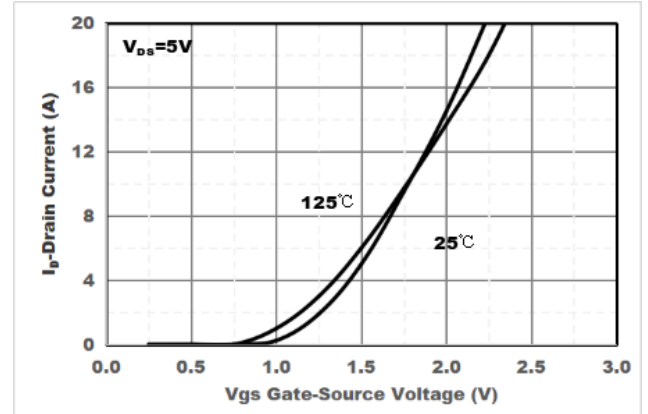


Figure2. Transfer Characteristics

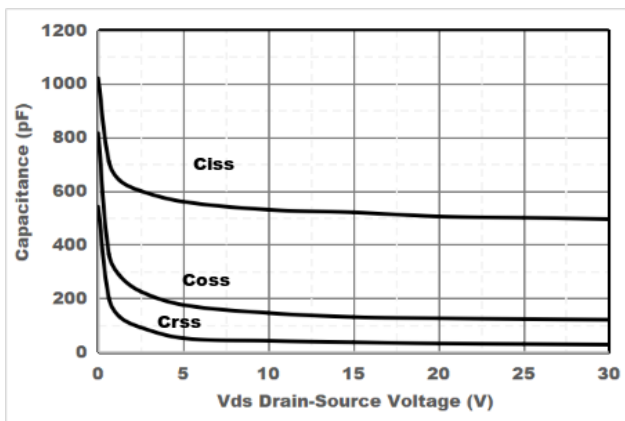


Figure3. Capacitance Characteristics

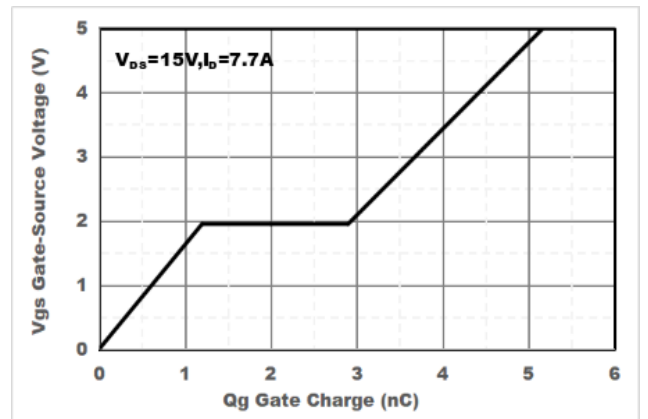


Figure4. Gate Charge

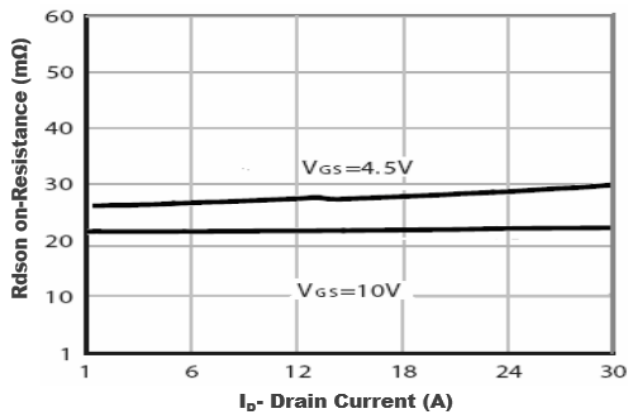


Figure5. Drain-Source on Resistance

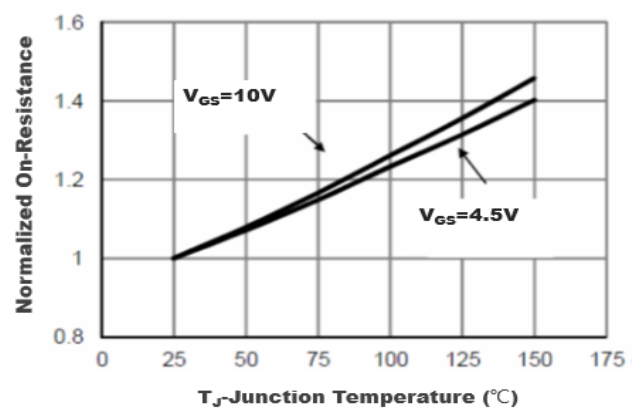


Figure6. Drain-Source on Resistance

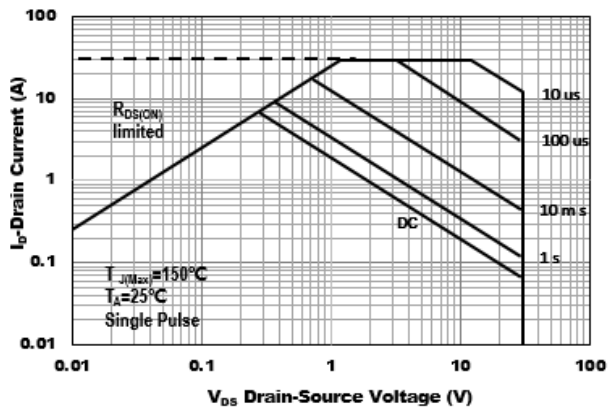


Figure7. Safe Operation Area

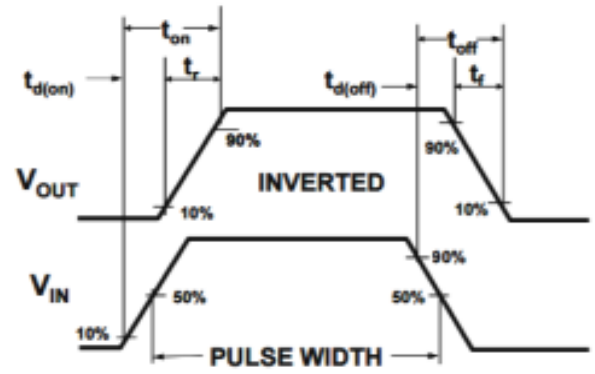
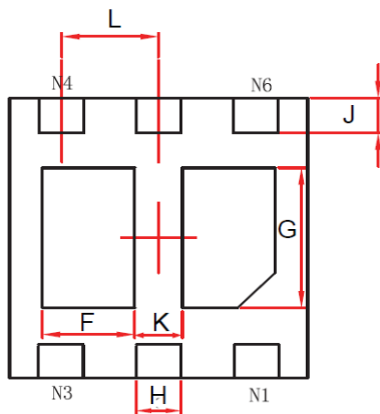
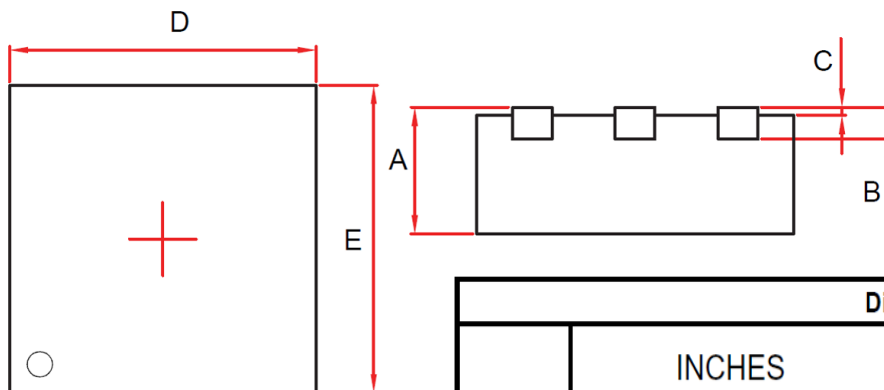


Figure8. Switching wave

## ■ DFN2020-6 Package information



Dimensions					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.030	.034	0.750	0.850	
B	0.008REF.		0.200REF.		
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	0.026TYP.		0.650TYP.		