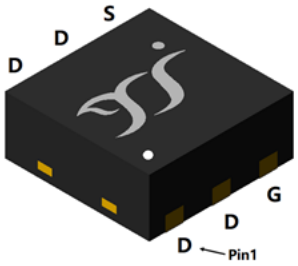
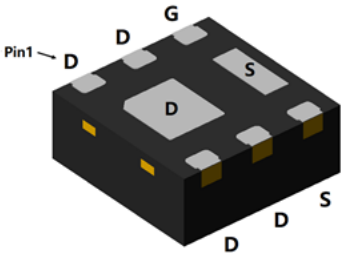
P-Channel Enhancement Mode Field Effect Transistor

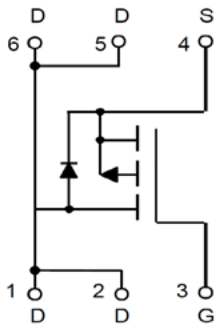


Top View



Bottom View

DFN2020-6L



Product Summary

- V_{DS} -20V
- I_D -16A
- $R_{DS(ON)}$(at V_{GS}= -4.5V) ＜19mohm
- $R_{DS(ON)}$(at V_{GS}= -2.5V) ＜22mohm
- $R_{DS(ON)}$(at V_{GS}= -1.8V) ＜30mohm

General Description

- Trench Power MV MOSFET technology
- High density cell design for Low $R_{DS(ON)}$
- High Speed switching
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Battery protection
- Load switch
- Power management

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Maximum	Unit
Drain-source Voltage		V_{DS}	-20	V
Gate-source Voltage		V_{GS}	±10	V
Drain Current	Tc=25℃ @ Steady State	I_D	-16	A
	T_C=70℃ @ Steady State		-12.8	
Pulsed Drain Current [A]		I_{DM}	-64	A
Total Power Dissipation @ T_C=25℃		P_D	18	W
Total Power Dissipation @ T_A=25℃		P_D	1.66	W
Thermal Resistance Junction-to-Case @ Steady State		$R_{\theta JC}$	6.9	℃/W
Thermal Resistance Junction-to-Ambient @ Steady State [B]		$R_{\theta JA}$	75	℃/W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ1216A	F1	Q1216	3000	30000	120000	7” reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-250μA	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V,T_C=25℃			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±10V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-0.4	-0.62	-1.0	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -4.5V, I_D=-10A		11	19	mΩ
		V_{GS}= -2.5V, I_D=-6.5A		14	22	
		V_{GS}= -1.8V, I_D=-4.0A		20	30	
Diode Forward Voltage	V_{SD}	I_S=-13A,V_{GS}=0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-13	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-10V,V_{GS}=0V,f=1MHZ		2992		pF
Output Capacitance	C_{oss}			330		
Reverse Transfer Capacitance	C_{rss}			272		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-15V,I_D=-9.1A		72.8		nC
Gate Source Charge	Q_{gs}			6.6		
Gate Drain Charge	Q_{gd}			10.1		
Reverse Recovery Charge	Q_{rr}	I_F=-6A, di/dt=100A/us		34		
Reverse Recovery Time	t_{rr}			67		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DS}=-15V, I_D=-6A, R_{GEN}=2.5Ω		7		
Turn-on Rise Time	t_r			33		
Turn-off Delay Time	$t_{D(off)}$			130		
Turn-off Fall Time	t_f			132		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

■ Typical Performance Characteristics

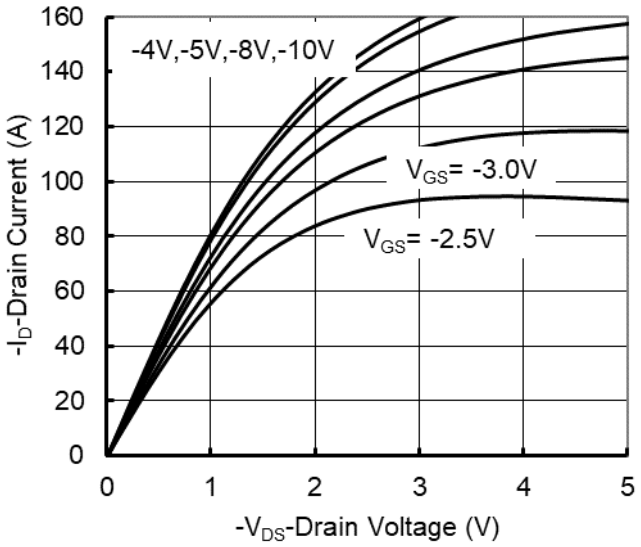


Figure 1. Output Characteristics

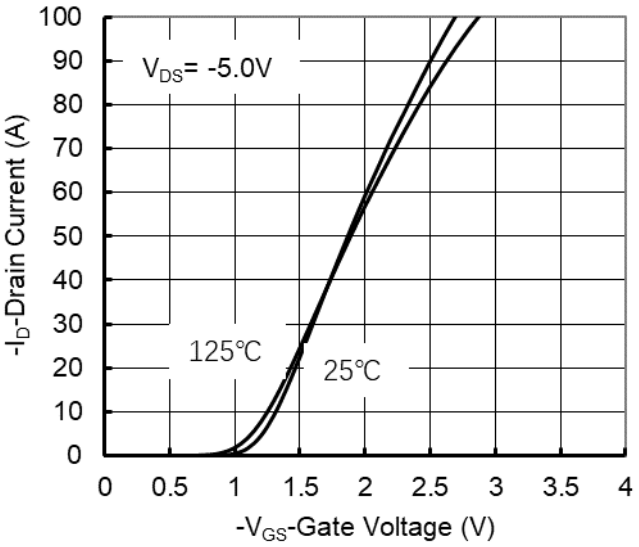


Figure 2. Transfer Characteristics

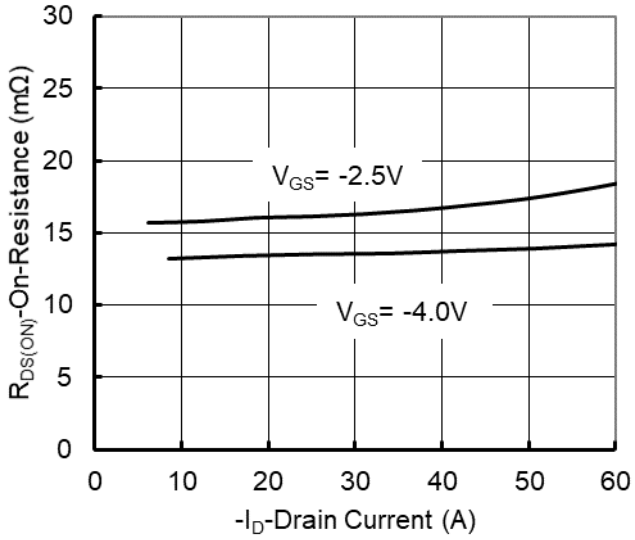


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

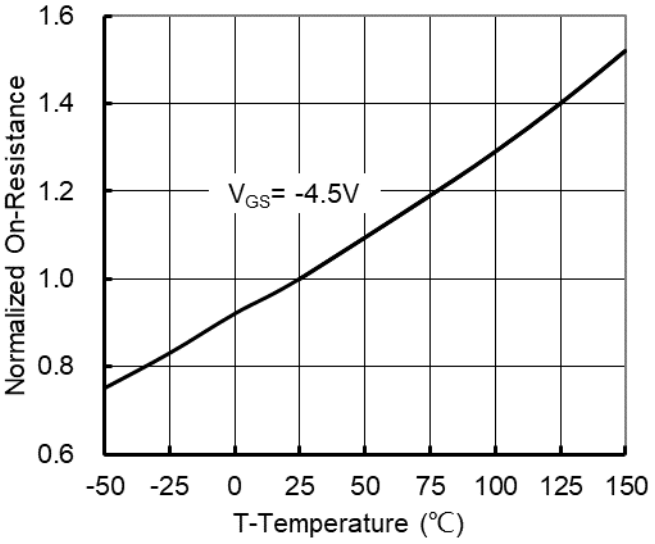


Figure 4. On-Resistance vs. Junction Temperature

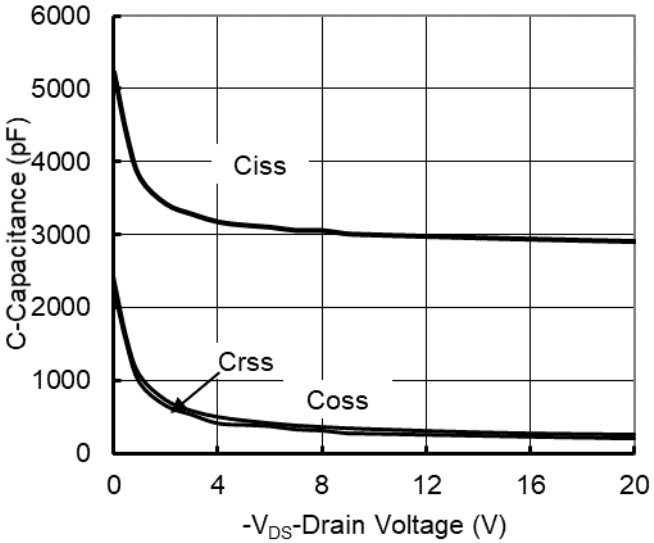


Figure 5. Capacitance Characteristics

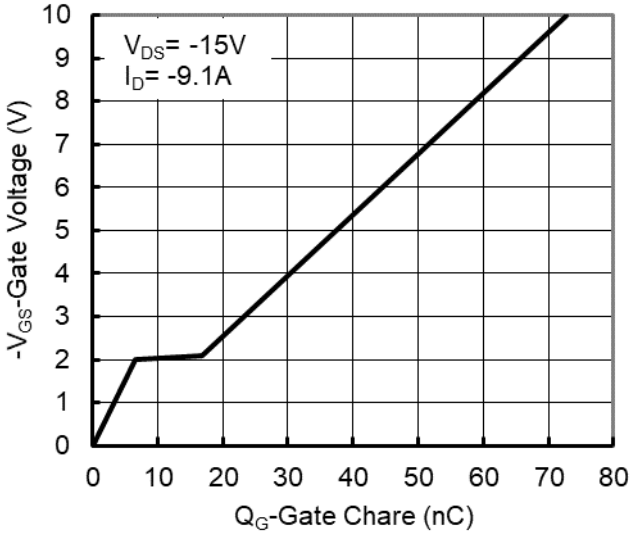


Figure 6. Gate Charge

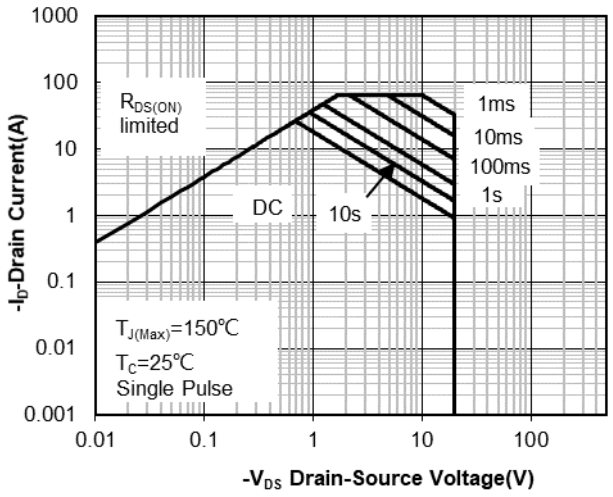


Figure 7. Safe Operation Area

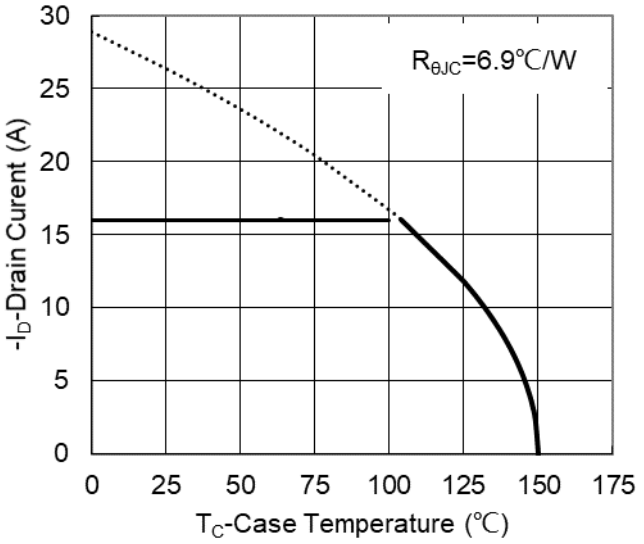
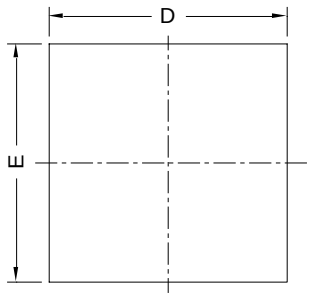
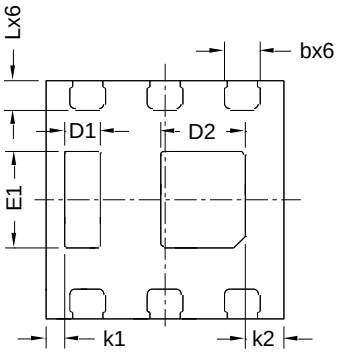


Figure 8. Maximum Continuous Drain Current vs Case Temperature

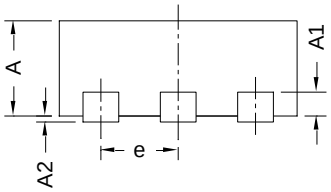
■ DFN2020-6L-E-0.8MM Package information



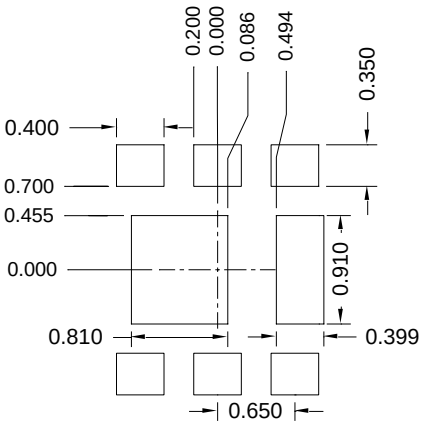
Top View
正面视图



Bottom View
背面视图



Side View
侧面视图



Suggested Solder Pad Layout
Top View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	1.90	2.00	2.10
E	1.90	2.00	2.10
A	0.70	0.80	0.90
A1		0.20 BSC	
A2			0.10
D1	0.20	0.30	0.40
D2	0.61	0.71	0.81
E1	0.71	0.81	0.91
L	0.15	0.25	0.35
b	0.20	0.30	0.40
e		0.65 BSC	
k1		0.156 BSC	
k2		0.326 BSC	

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.

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