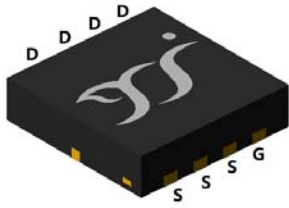
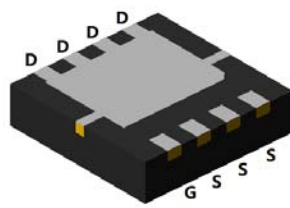


N-Channel Enhancement Mode Field Effect Transistor

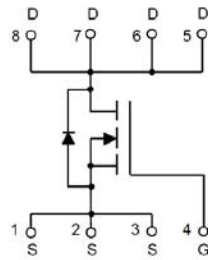


Top View



Bottom View

DFN3333-8L



Product Summary

- V_{DS} 40V
- I_D 69A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<5.7m\Omega$
- 100% EAS Tested

General Description

- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC converter
- 12V Automotive systems

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

Parameter	Symbol	Limit	Unit	
Drain-source Voltage	V_{DS}	40	V	
Gate-source Voltage	V_{GS}	± 20	V	
Drain Current	I_D	$T_C=25^\circ C$	69	A
		$T_C=100^\circ C$	48	
		$T_A=25^\circ C$	12	
		$T_A=100^\circ C$	8.6	
Pulsed Drain Current ^A	I_{DM}	276	A	
Avalanche energy ^B	EAS	81	mJ	
Total Power Dissipation ^C	P_D	$T_C=25^\circ C$	42	W
		$T_C=100^\circ C$	21	
		$T_A=25^\circ C$	2.2	
		$T_A=100^\circ C$	1.1	
Junction and Storage Temperature Range	T_J, T_{STG}	$-55 \sim +175$	$^\circ C$	

■ Thermal resistance

Parameter	Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$R_{\theta JA}$	55	66	$^\circ C/W$
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.9	3.5	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ69G04HHQ	F1	Q69G04H	5000	10000	100000	13" reel



YJQ69G04HHQ

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	40	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	2	3	4	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	4.4	5.7	mΩ
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	0.8	1.2	V
Gate resistance	R _G	f=1MHz	-	2.5	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHz	-	1139		pF
Output Capacitance	C _{oss}		-	504		
Reverse Transfer Capacitance	C _{rss}		-	21		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =20V, I _D =30A	-	14.5	-	nC
Gate-Source Charge	Q _{gs}		-	5.2	-	
Gate-Drain Charge	Q _{gd}		-	3	-	
Reverse Recovery Charge	Q _{rr}	I _F =30A, di/dt=100A/us	-	50	-	nC
Reverse Recovery Time	t _{rr}		-	55	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =20V, I _D =30A R _{GEN} =2.2Ω	-	10.4	-	ns
Turn-on Rise Time	t _r		-	155	-	
Turn-off Delay Time	t _{D(off)}		-	15	-	
Turn-off fall Time	t _f		-	8	-	

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=40V, V_G=10V, L=0.5mH, I_{AS}=18A.

C. P_d is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2oz. Copper, in the still air environment with T_A =25°C. The maximum allowed junction temperature of 175°C. The value in any given application depends on the user's specific board design..



YJQ69G04HHQ

Typical Electrical and Thermal Characteristics Diagrams

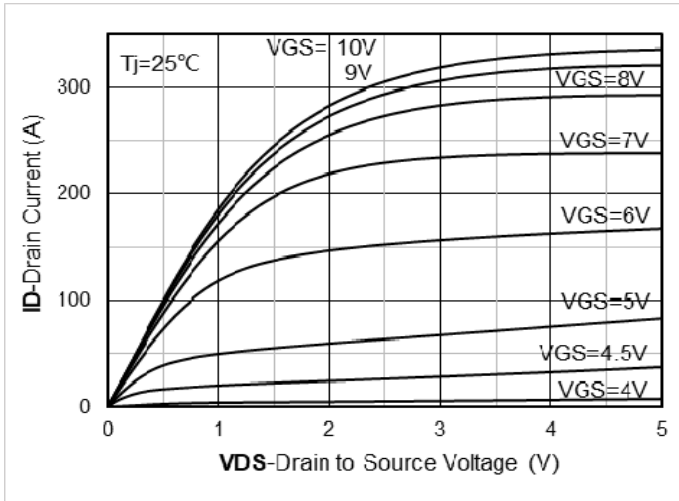


Figure 1. Output Characteristics

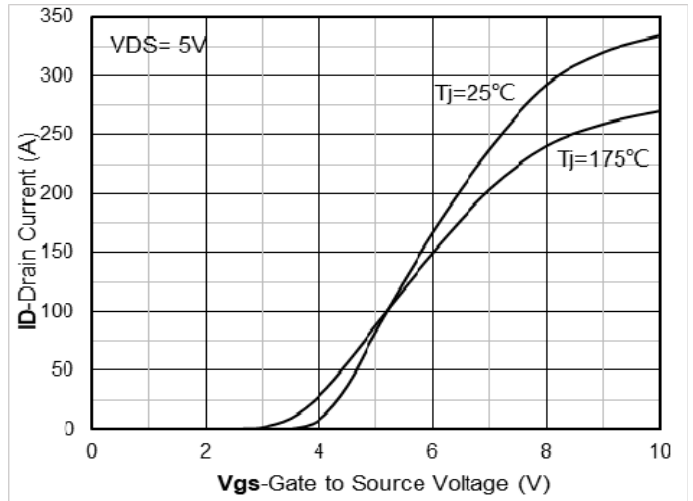


Figure 2. Transfer Characteristics

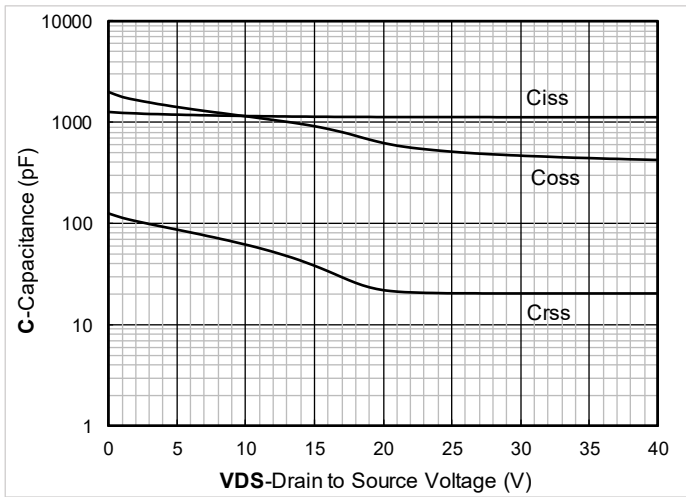


Figure 3. Capacitance Characteristics

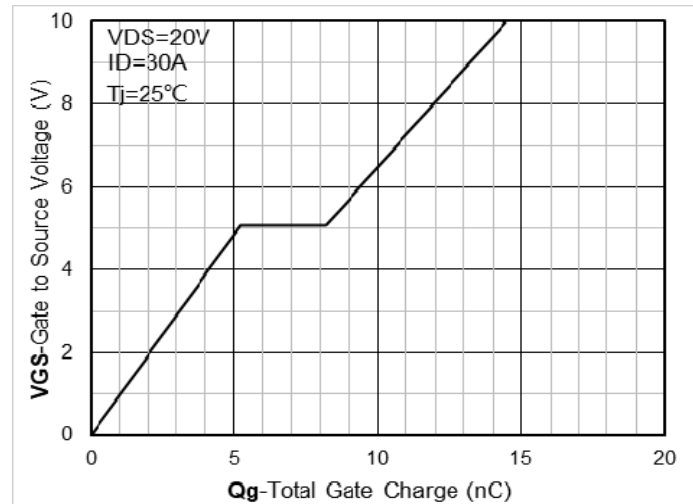


Figure 4. Gate Charge

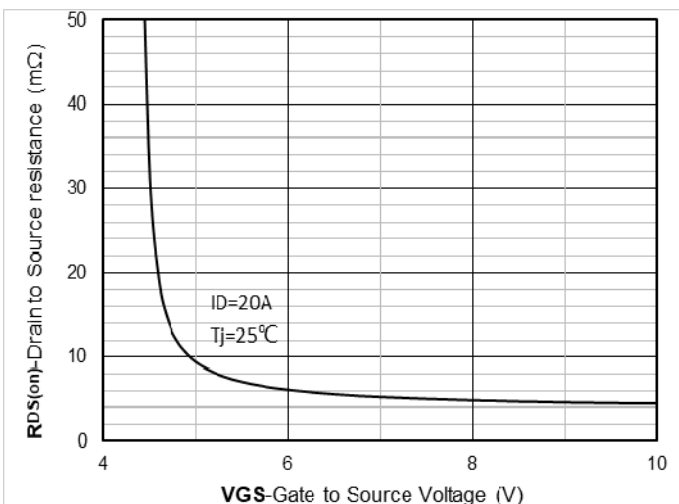


Figure 5. On-Resistance vs Gate to Source Voltage

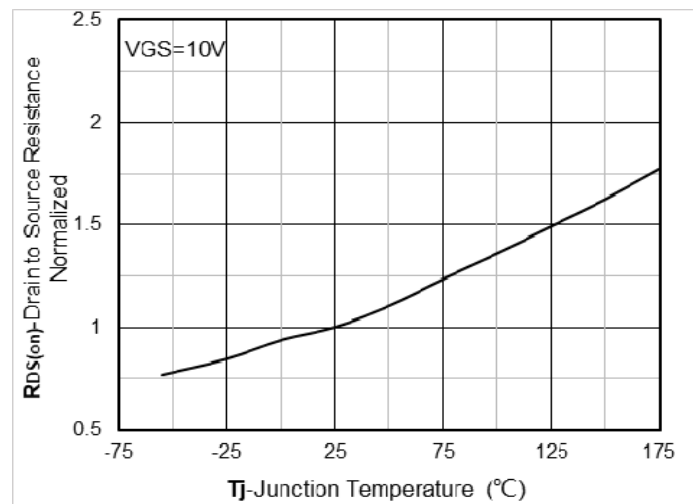


Figure 6. Normalized On-Resistance



YJQ69G04HHQ

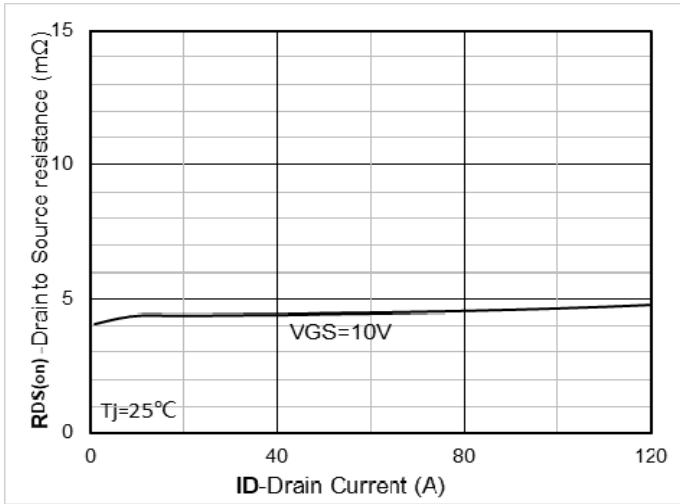


Figure 7. RDS(on) VS Drain Current

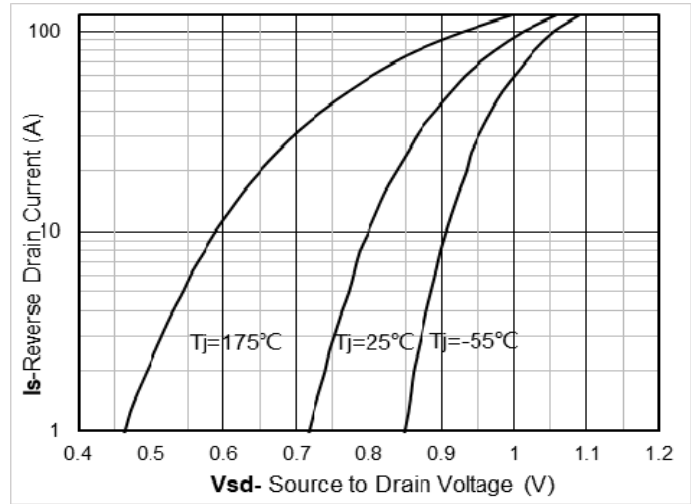


Figure 8. Forward characteristics of reverse diode

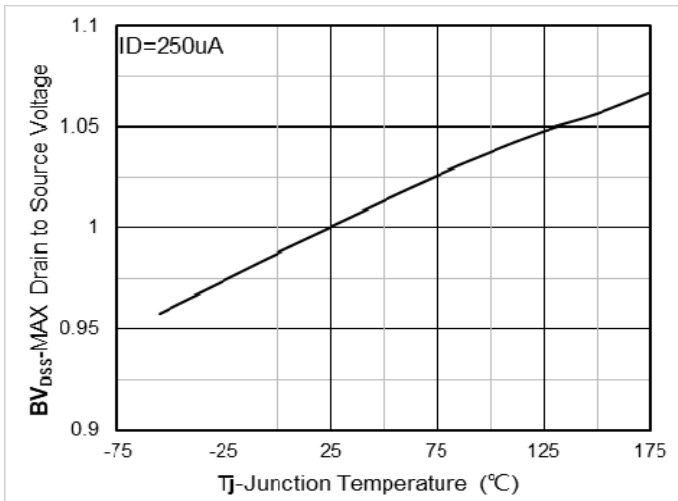


Figure 9. Normalized breakdown voltage

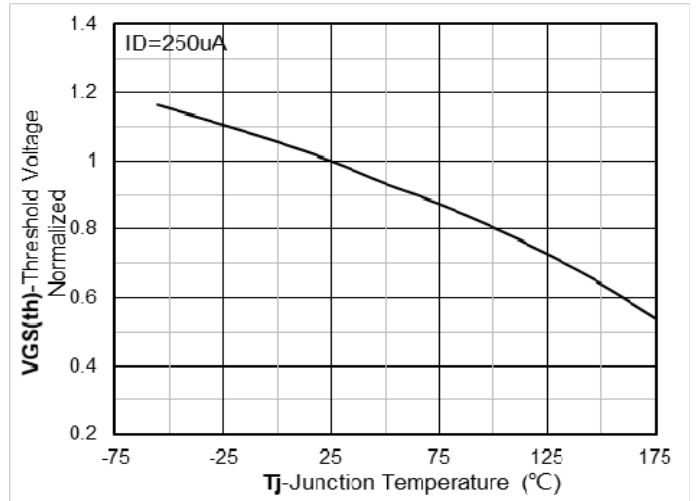


Figure 10. Normalized Threshold voltage

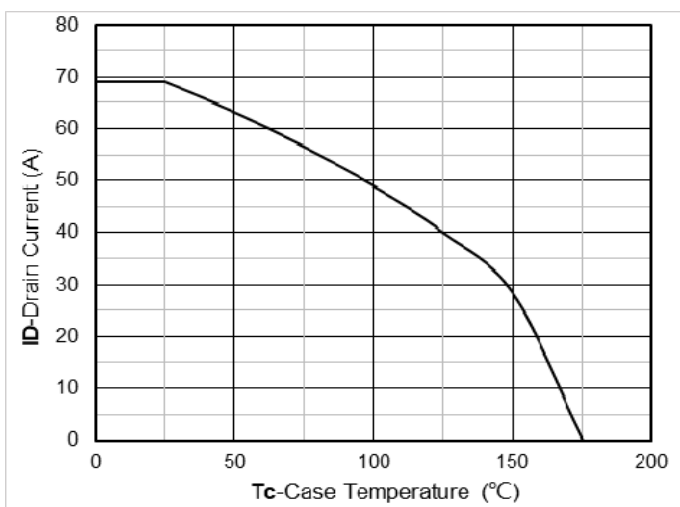


Figure 11. Current dissipation

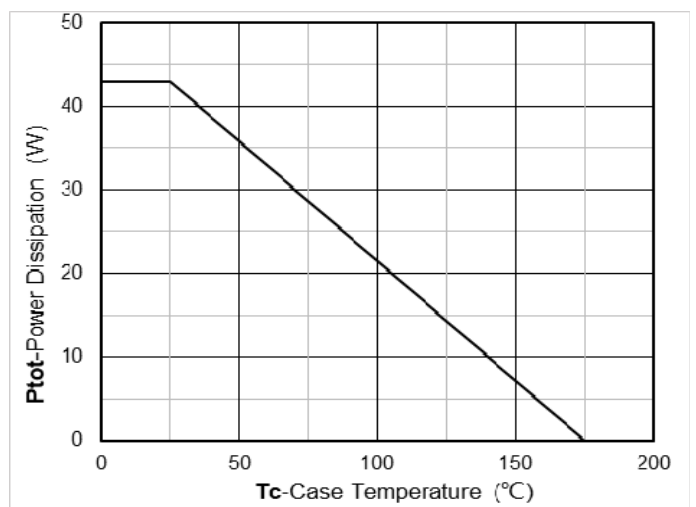


Figure 12. Power dissipation



YJQ69G04HHQ



Figure 13. Maximum Transient Thermal Impedance

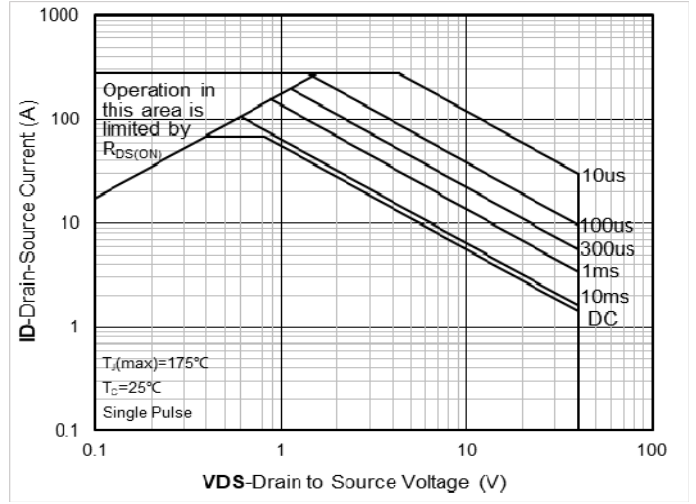
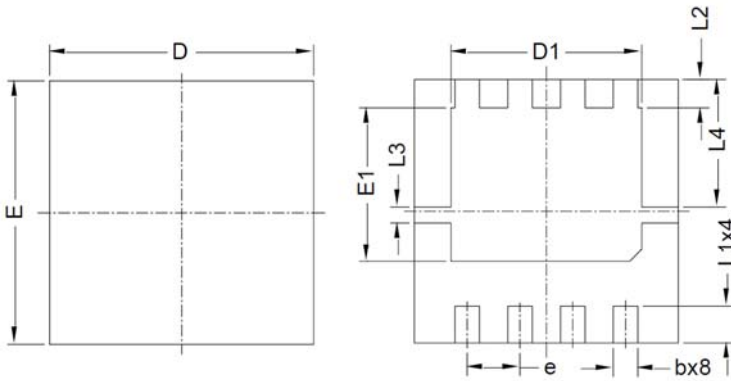


Figure 14. Safe Operation Area



YJQ69G04HHQ

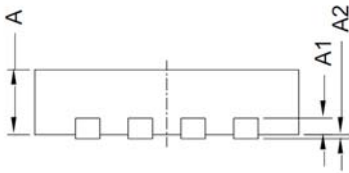
DFN3333-8L Package information



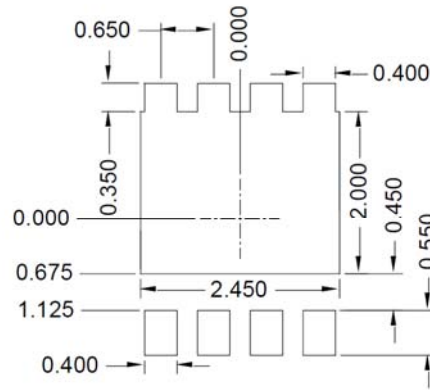
Top View
正面视图

Bottom View
背面视图

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	3.15	3.25	3.35
E	3.15	3.25	3.35
A	0.70	0.80	0.90
A1	0.20 BSC		
A2			0.10
D1	2.20	2.35	2.50
E1	1.80	1.90	2.00
L1	0.35	0.45	0.55
L2	0.35 BSC		
L3	0.20 BSC		
L4	1.57 BSC		
b	0.20	0.30	0.40
e	0.65 BSC		



Side View
侧面视图



Suggested Solder Pad Layout
Top View

Note:

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



Disclaimer

The information presented in this document is for reference only. Yangzhou Yangjie Electronic Technology Co., Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise.

The product listed herein is designed to be used with automotive electronics, are not designed for use in medical, life-saving, lifesustaining, or military, Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

This publication supersedes & replaces all information previously supplied. For additional information, please visit our website [http:// www.21yangjie.com](http://www.21yangjie.com) , or consult your nearest Yangjie's sales office for further assistance.