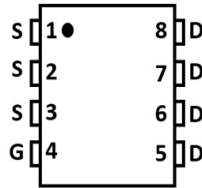
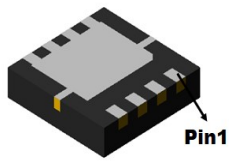
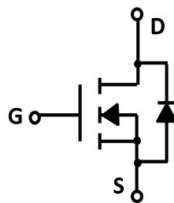


N-Channel Enhancement Mode Field Effect Transistor



DFN3.3X3.3



Product Summary

- V_{DS} 100V
- I_D 40A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $< 18.5 \text{ mohm}$
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) $< 22.5 \text{ mohm}$
- 100% UIS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

Applications

- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC converter
- Invertors

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_c=25^\circ\text{C}$	I_D	40	A
	$T_c=100^\circ\text{C}$		25.3	
Pulsed Drain Current ^A		I_{DM}	160	A
Avalanche energy ^B		E_{AS}	81	mJ
Total Power Dissipation ^C	$T_c=25^\circ\text{C}$	P_D	43	W
	$T_c=100^\circ\text{C}$		17.2	
Junction and Storage Temperature Range		T_J, T_{STG}	$-55 \sim +150$	$^\circ\text{C}$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10S$	$R_{\theta JA}$	20	25	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		45	55	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	2.4	2.9	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ40G10A	F1	Q40G10A	5000	10000	100000	13" reel



YJQ40G10A

■ 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	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, 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	1.0	1.8	2.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A		15	18.5	mΩ
		V _{GS} =4.5V, I _D =20A		18	22.5	
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.3	V
Maximum Body-Diode Continuous Current	I _S				40	A
Gate resistance	R _G	f=1MHz, Open drain		1		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, f=1MHZ		1051		pF
Output Capacitance	C _{oss}			399		
Reverse Transfer Capacitance	C _{rss}			18		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =50V, I _D =25A		16		nC
Gate-Source Charge	Q _{gs}			5.6		
Gate-Drain Charge	Q _{gd}			2.4		
Reverse Recovery Chrage	Q _{rr}	I _F =20A, di/dt=100A/us		42		ns
Reverse Recovery Time	t _{rr}			39.8		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =50V, I _{DS} =25A R _{GEN} =2.2Ω		39.2		
Turn-on Rise Time	t _r			11		
Turn-off Delay Time	t _{D(off)}			53.2		
Turn-off fall Time	t _f			15.8		

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

B. V_{DD}=50V, R_G=25Ω, L=0.5mH.

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

D. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25° C. The Power dissipation PDSM is based on R_{θJA} ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.



■ Typical Performance Characteristics

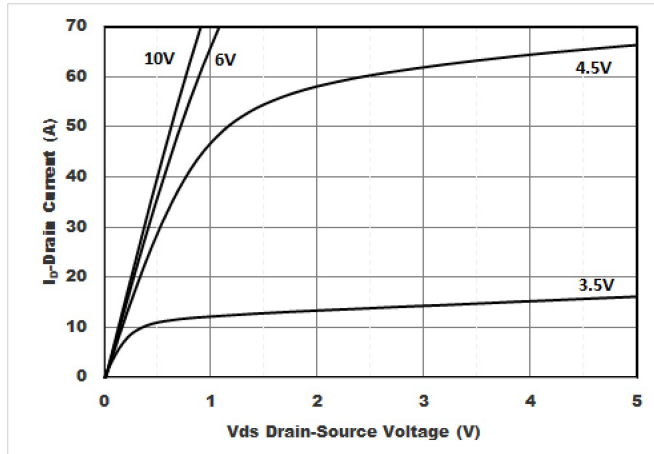


Figure1. Output Characteristics

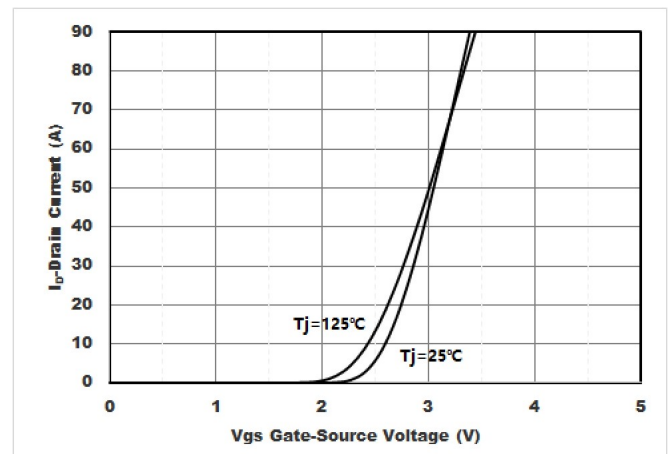


Figure2. Transfer Characteristics

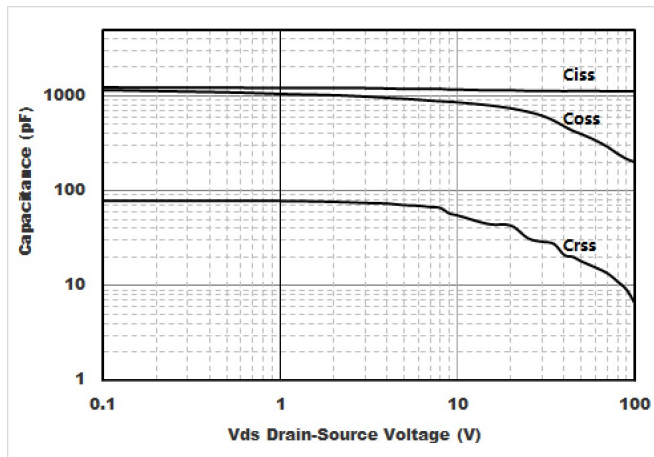


Figure3. Capacitance Characteristics

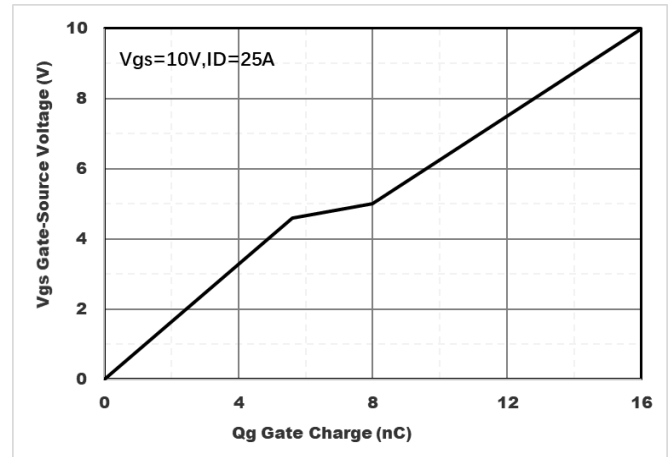


Figure4. Gate Charge

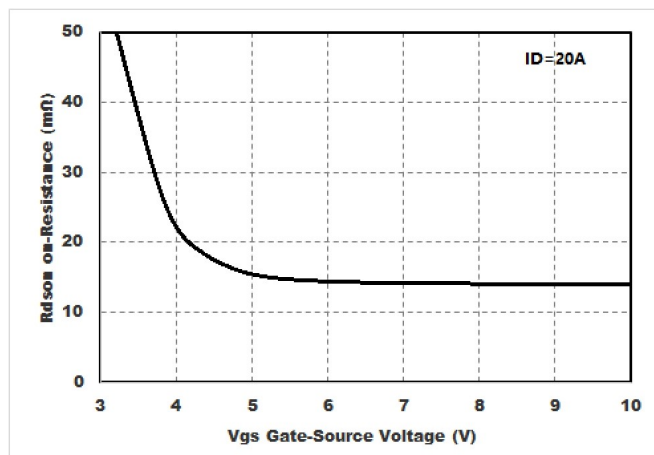


Figure5. : On-Resistance vs. Gate to Source Voltage

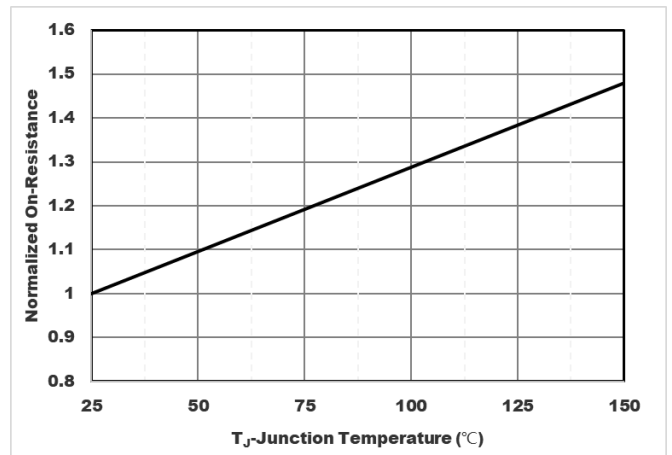


Figure6.Normalized On-Resistance



YJQ40G10A

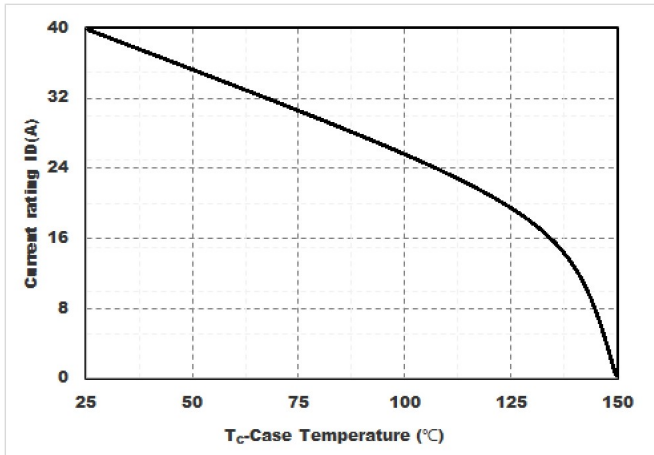


Figure7. Drain current

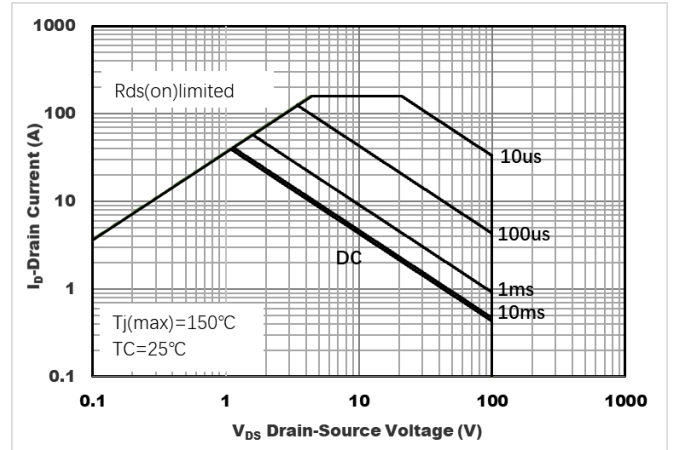


Figure8.Safe Operation Area

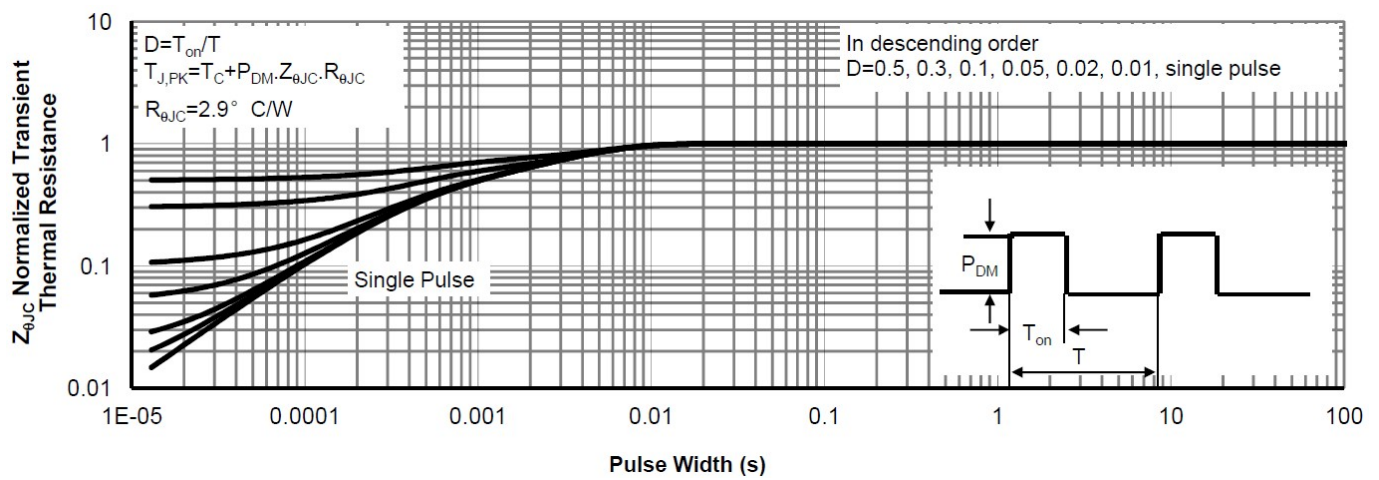
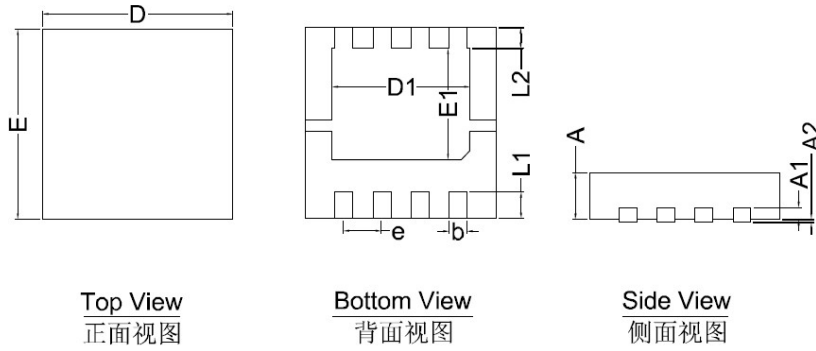


Figure9.Normalized Maximum Transient thermal impedance

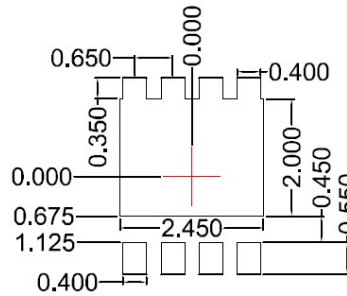


YJQ40G10A

■ DFN3.3x3.3 Package information



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		
b	0.20	0.30	0.40
e	0.65 BSC		



Suggested Solder Pad Layout
Top View

- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.10\text{mm}$.
 3. The pad layout is for reference purposes only.



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The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), Yangjie or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale.

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