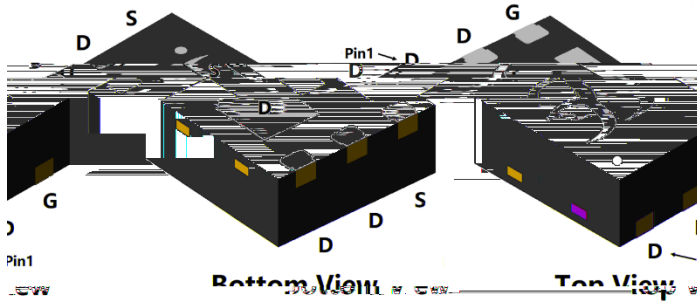




N-Channel Enhancement Mode Field Effect Transistor



Product Summary

V_{DS}	30V
I_D	10A
$R_{DS(ON)}$ (at $V_{GS}=4.5V$)	28m
$R_{DS(ON)}$ (at $V_{GS}=2.5V$)	35m
$R_{DS(ON)}$ (at $V_{GS}=1.8V$)	45m

General Description

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

UL 94 V-0 Flammability Rating

Applications

Power switching application
Uninterruptible power supply
DC-DC convertor

Absolute Maximum Ratings ($T_A=25$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	± 12	V
Drain Current	$T_A=25^\circ C$	I_D	5	A
	$T_A=100^\circ C$		3	
	$T_C=25^\circ C$		10	
	$T_C=100^\circ C$		6	
Pulsed Drain Current ^A		I_{DM}	40	A
Total Power Dissipation ^C	$T_A=25^\circ C$	P_D	1.5	W
	$T_A=100^\circ C$		0.6	
	$T_C=25^\circ C$		16	
	$T_C=100^\circ C$		6.5	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 +150	$^\circ C$

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	Steady-State	R	65	80	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	R	6	7.5	

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ10N03A	F1	Q10N03	3000	30000	120000	



YJQ10N03A

Electrical Characteristics ($T_J=25$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	



Typical Electrical and Thermal Characteristics Diagrams

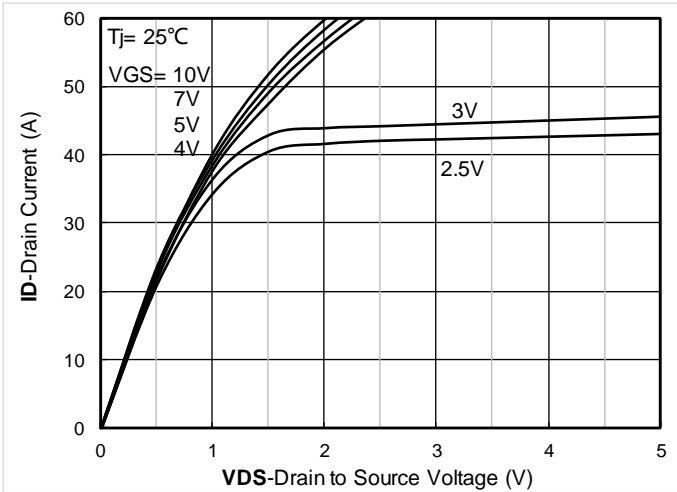


Figure 1. Output Characteristics

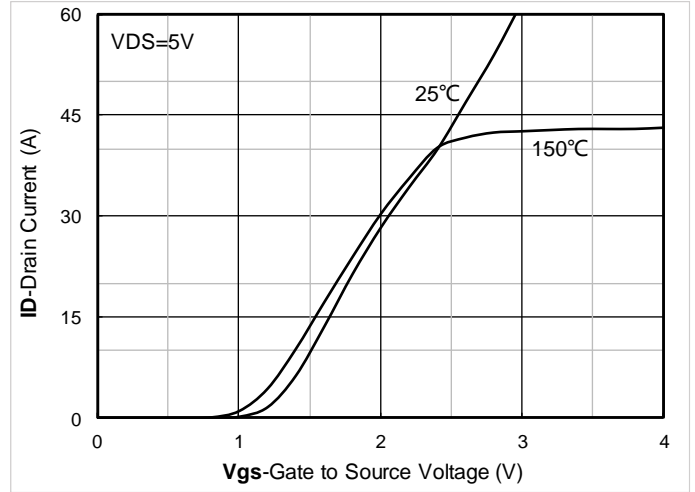


Figure 2. Transfer Characteristics

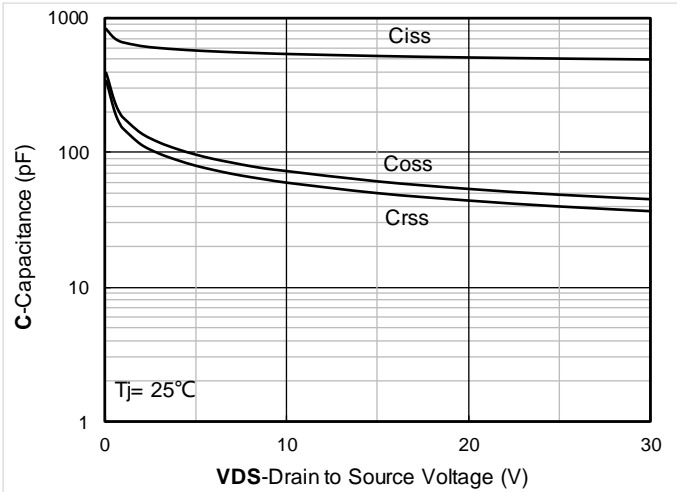


Figure 3. Capacitance Characteristics

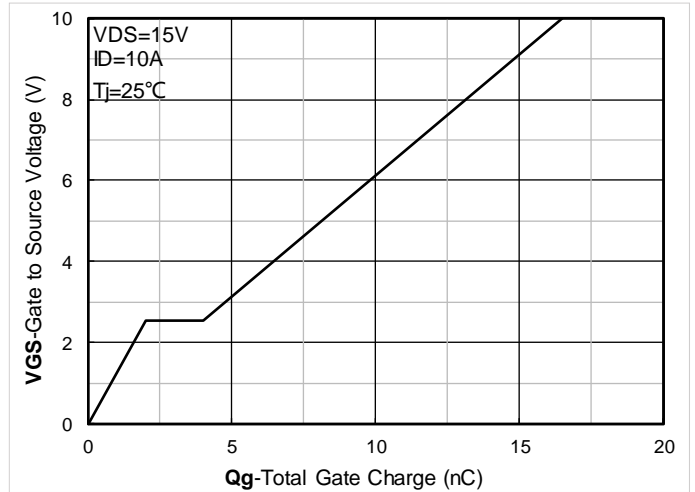


Figure 4. Gate Charge

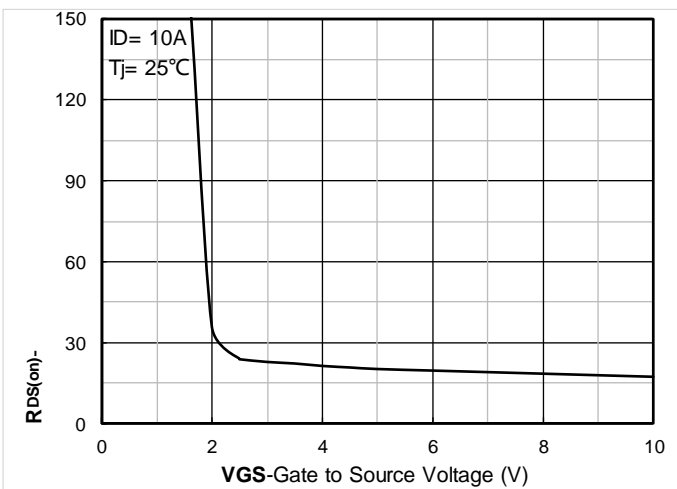


Figure 5. On-Resistance vs Gate to Source Voltage

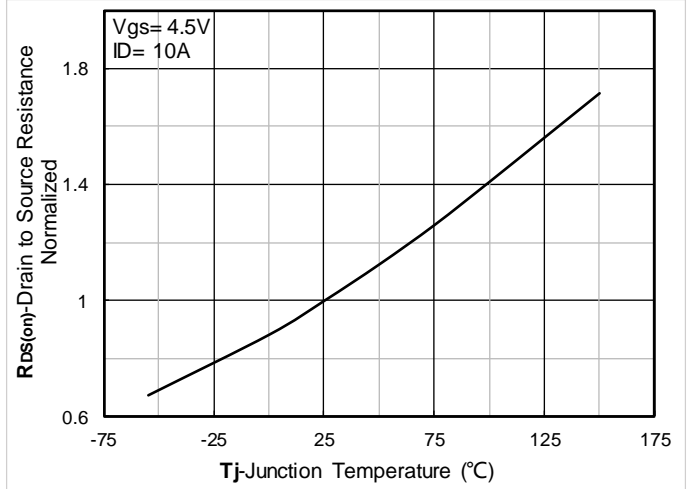


Figure 6. Normalized On-Resistance

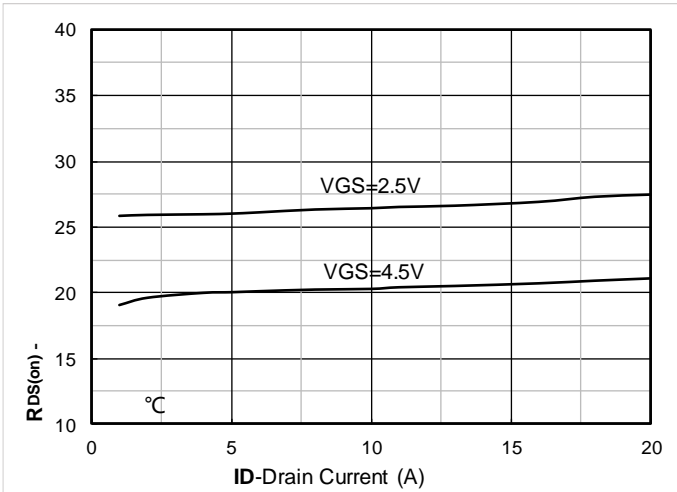


Figure 7. $R_{DS(on)}$ VS Drain Current

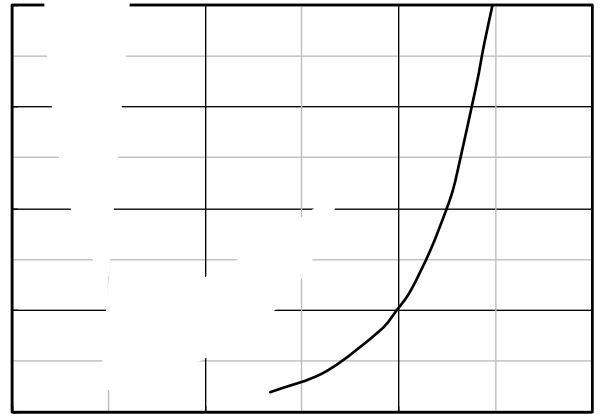


Figure 8. Forward characteristics of reverse diode

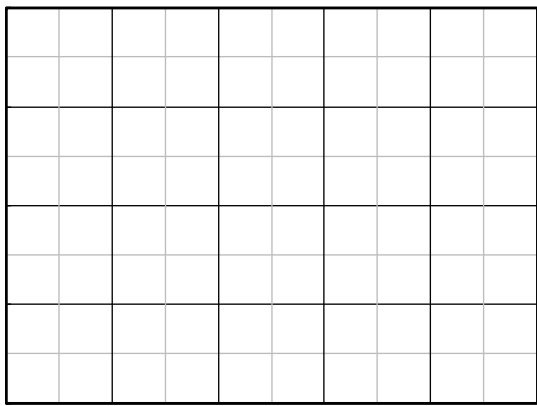


Figure 9. Normalized breakdown voltage

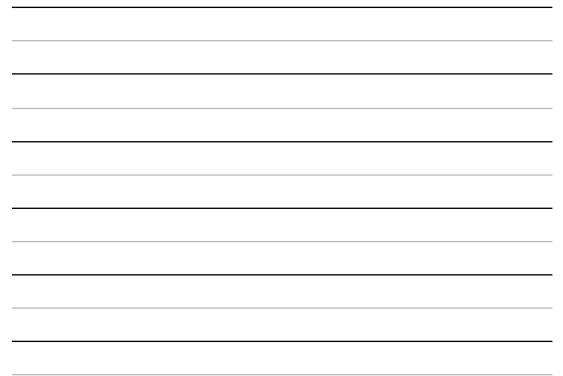


Figure 10. Normalized Threshold voltage

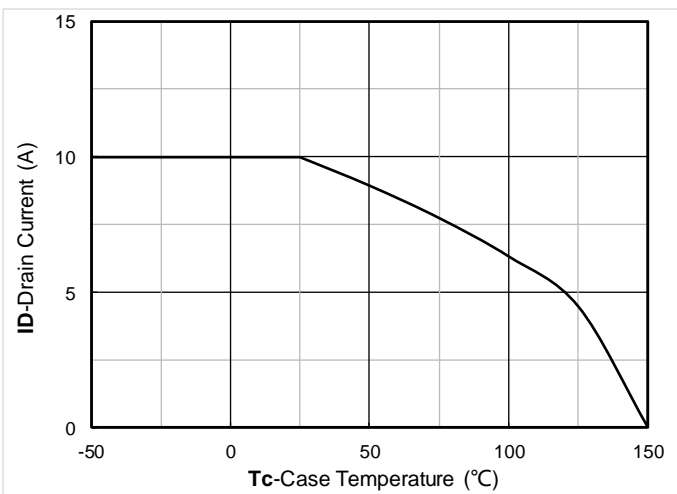


Figure 11. Current dissipation

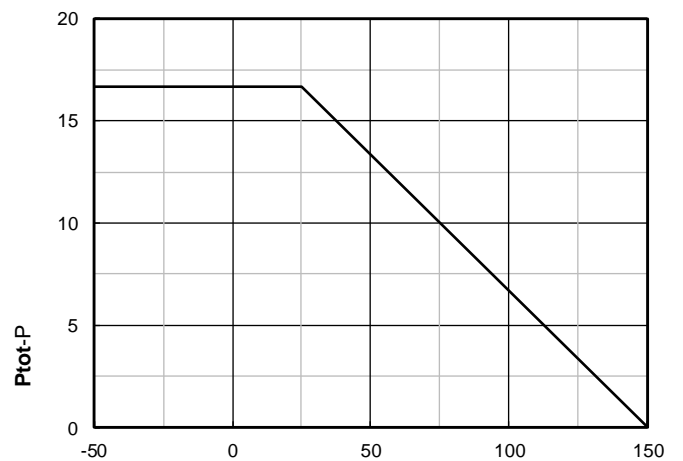


Figure 12. Power dissipation



YJQ10N03A

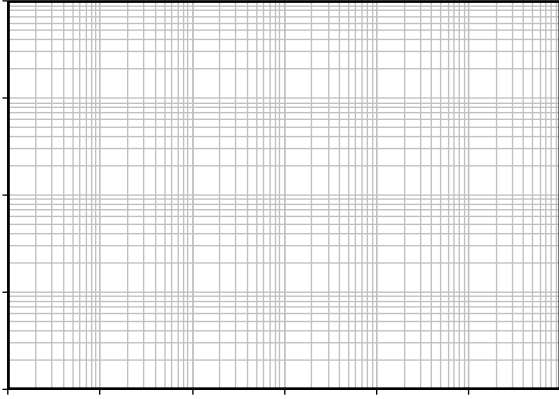


Figure 13. Maximum Transient Thermal Impedance

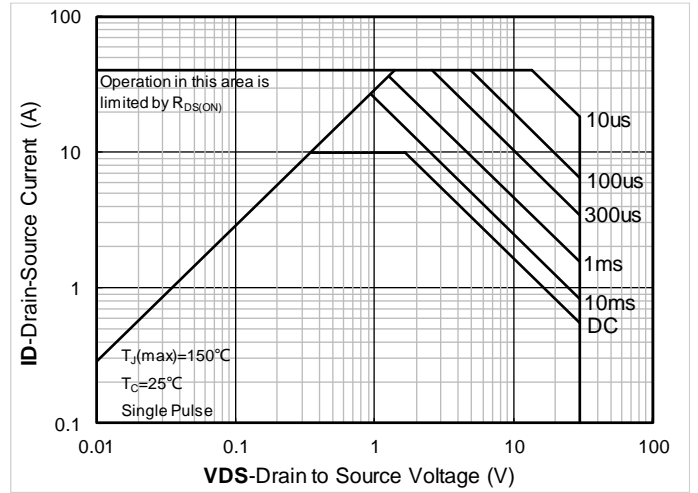


Figure 14. Safe Operation Area

Test Circuits & Waveforms

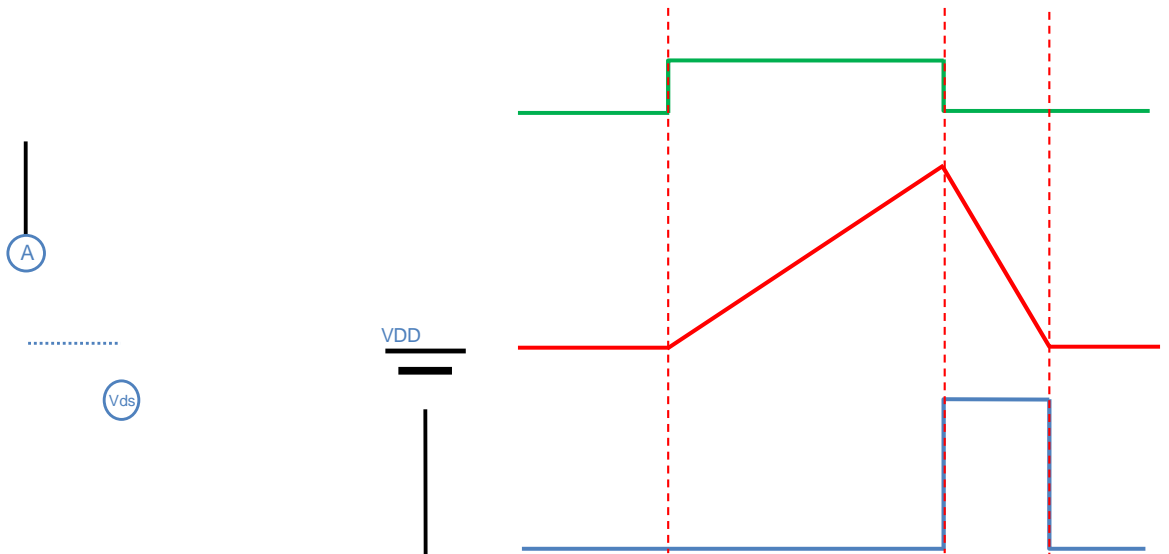


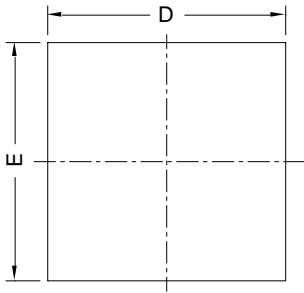
Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

YJQ10N03A

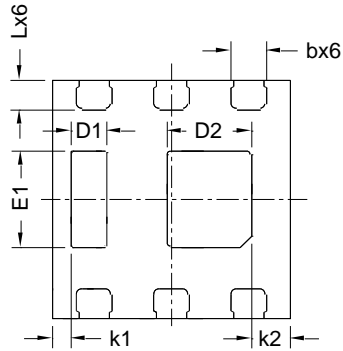


YJQ10N03A

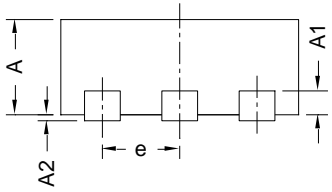
DFN2020-6L-E-0.8mm Package information



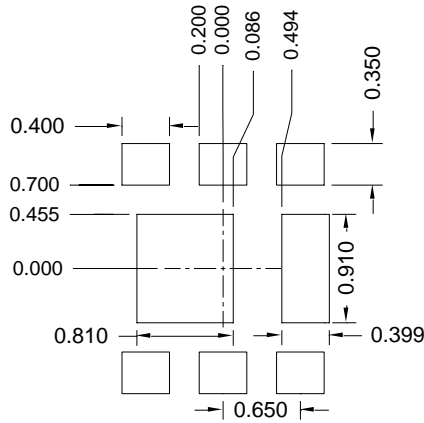
Top View



Bottom View



Side View



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: ± 0.10 mm.
3. The pad layout is for reference purposes only.

