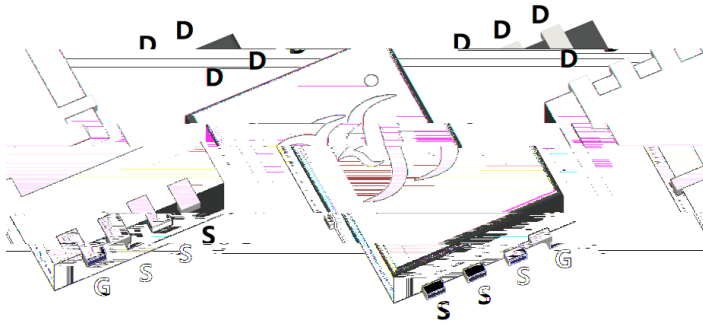


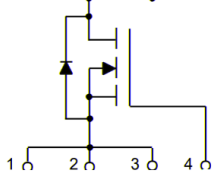
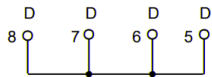


## N-Channel Enhancement Mode Field Effect Transistor



Bottom View

Top View



PDFN3333-8L

### Product Summary

$V_{DS}$	30V
$I_D$	100A
$R_{DS(ON)}$ ( at $V_{GS}=10V$ )	2.1m
$R_{DS(ON)}$ ( at $V_{GS}=4.5V$ )	4.5m
100% EAS Tested	
100% $V_{DS}$ Tested	

### General Description

Split gate trench MOSFET technology  
 Excellent package for heat dissipation  
 High density cell design for low  $R_{DS(ON)}$   
 Moisture Sensitivity Level 1  
 Epoxy Meets UL 94 V-0 Flammability Rating  
 Halogen Free

### Applications

Power switching application  
 Uninterruptible power supply  
 DC-DC converter

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	30	V
Gate-source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	$T_A=25^\circ C$	$I_D$	24	A
	$T_A=100^\circ C$		15	
	$T_C=25^\circ C$		100	
	$T_C=100^\circ C$		63	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	400	A
Avalanche energy <sup>B</sup>		EAS	162	mJ
Total Power Dissipation <sup>C</sup>	$T_A=25^\circ C$	$P_D$	2.5	W
	$T_A=100^\circ C$		1	
	$T_C=25^\circ C$		50	
	$T_C=100^\circ C$		20	
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 <sup>D</sup>	Steady-State	$R_{JA}$	40	50	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{JC}$	2	2.5	

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ100G03AJR	F1	100G03A	5000	10000	100000	13" reel



# YJQ100G03AJR

## Electrical Characteristics ( $T_J=25$ 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	$\mu A$
		$V_{DS}=30V, V_{GS}=0V, T_J=150^\circ C$	-	-	100	
Gate-Body Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.2	1.7	2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=50A$	-	1.6	2.1	m
		$V_{GS}=10V, I_D=20A$	-	1.6	2.1	
		$V_{GS}=4.5V, I_D=20A$	-	2.5	4.5	
Diode Forward Voltage	$V_{SD}$	$I_S=50A, V_{GS}=0V$	-	-	1.2	V
Gate resistance	$R_G$	$f=1MHz$	-	3	-	
Maximum Body-Diode Continuous Current	$I_S$		-	-	100	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=500KHz$	-	2630	-	$\mu F$
Output Capacitance	$C_{oss}$		-	1830	-	
Reverse Transfer Capacitance	$C_{riss}$		-	100	-	
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$	$V_{GS}=10V, V_{DS}=15V, I_D=50A$	-	45	-	nC
Gate-Source Charge	$Q_{gs}$		-	17	-	
Gate-Drain Charge	$Q_{gd}$		-	8	-	
Reverse Recovery Charge	$Q_{rr}$	$I_F=50A, di/dt=100A/us$	-	40	-	nC
Reverse Recovery Time	$t_{rr}$		-	52	-	ns
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=15V, I_D=50A$ $R_{GEN}=2.2$	-	14	-	ns
Turn-on Rise Time	$t_r$		-	89	-	
Turn-off Delay Time	$t_{D(off)}$		-	27	-	
Turn-off fall Time	$t_f$		-	23	-	

- A. Repetitive rating; pulse width limited by max. junction temperature.  
 B.  $T_J=25^\circ C, V_{DD}=25V, V_G=10V, R_G=25, L=1mH, I_{AS}=18A$ .  
 C.  $P_d$  is based on max. junction temperature, using junction-case thermal resistance.  
 D. The value of  $R_{JA}$  is measured with the device mounted on 1 in<sup>2</sup>



# YJQ100G03AJR

## Typical Electrical and Thermal Characteristics Diagrams

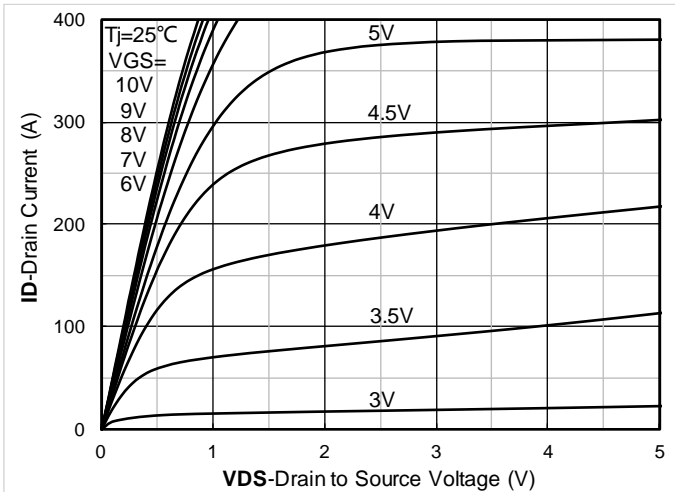


Figure 1. Output Characteristics

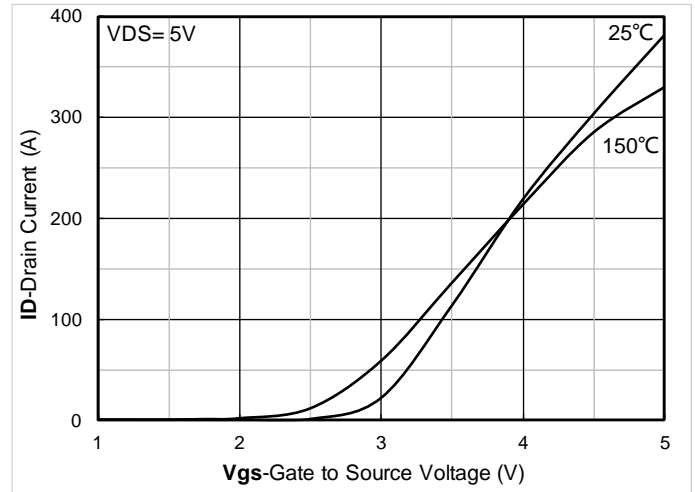


Figure 2. Transfer Characteristics

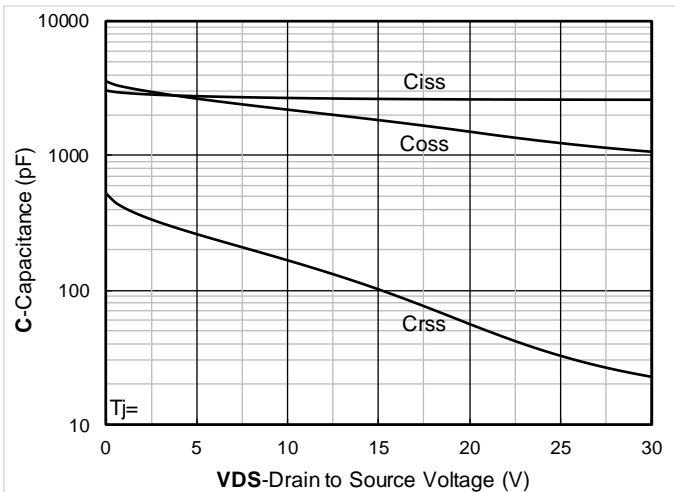


Figure 3. Capacitance Characteristics

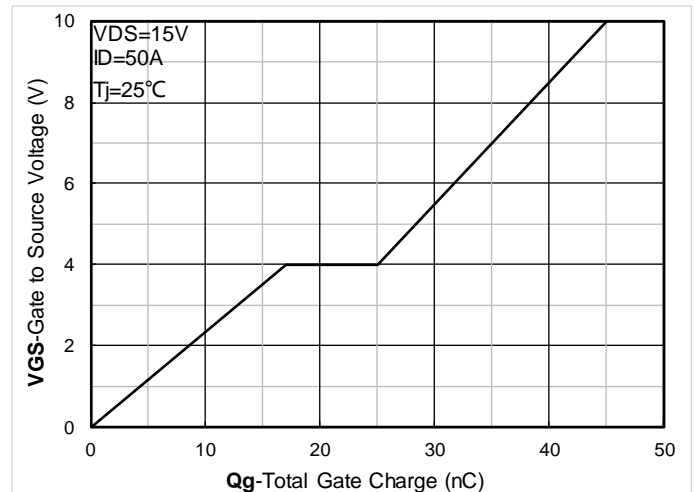


Figure 4. Gate Charge

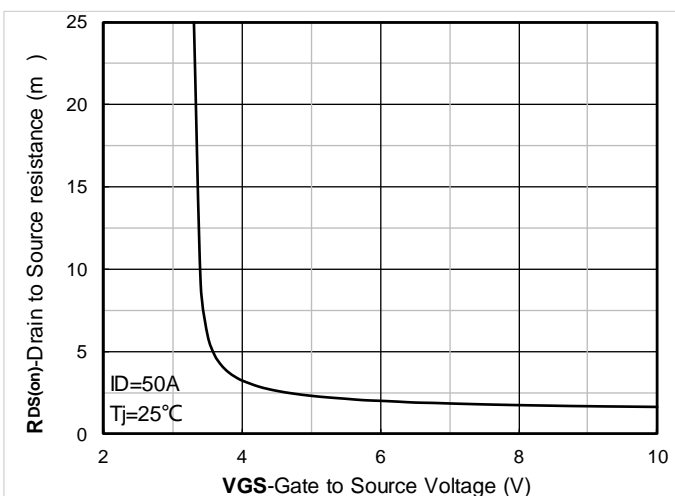


Figure 5. On-Resistance vs Gate to Source Voltage

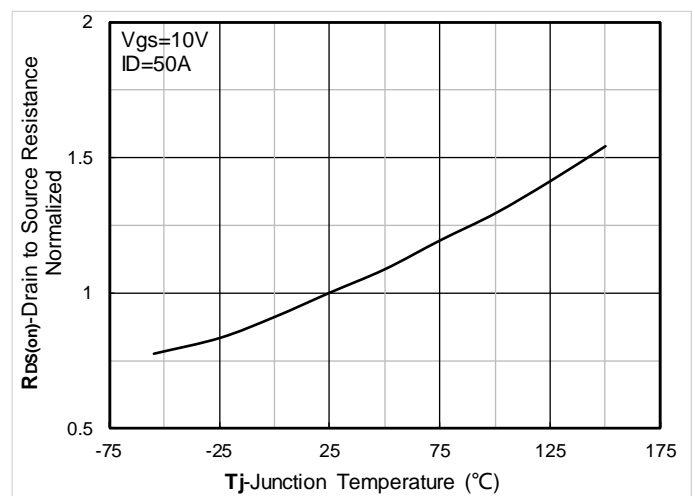


Figure 6. Normalized On-Resistance



# YJQ100G03AJR

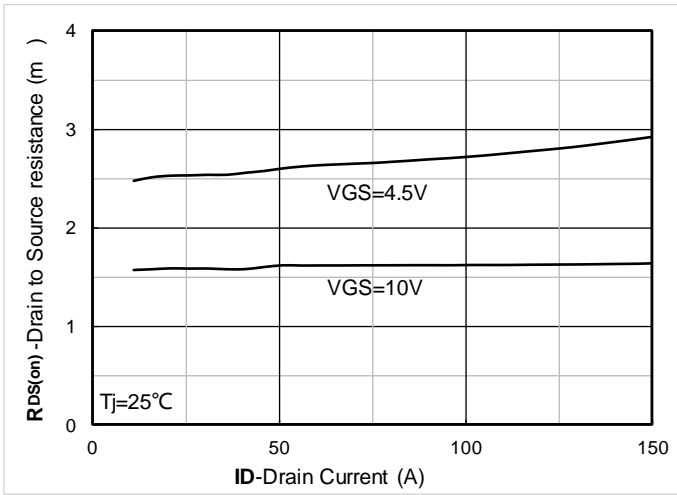


Figure 7.  $R_{DS(on)}$  VS Drain Current

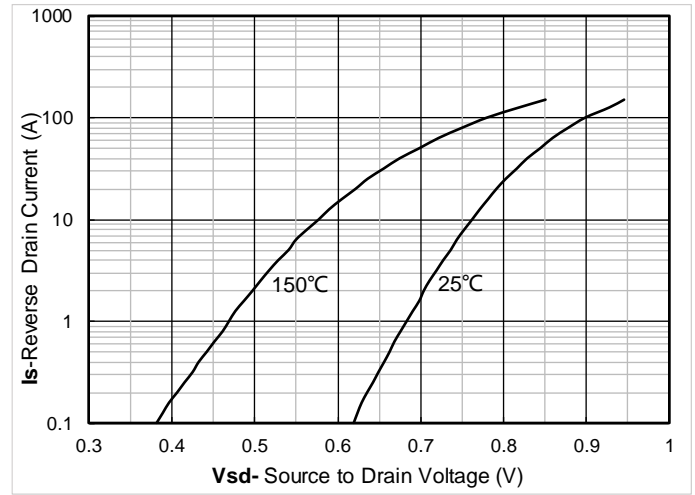


Figure 8. Forward characteristics of reverse diode

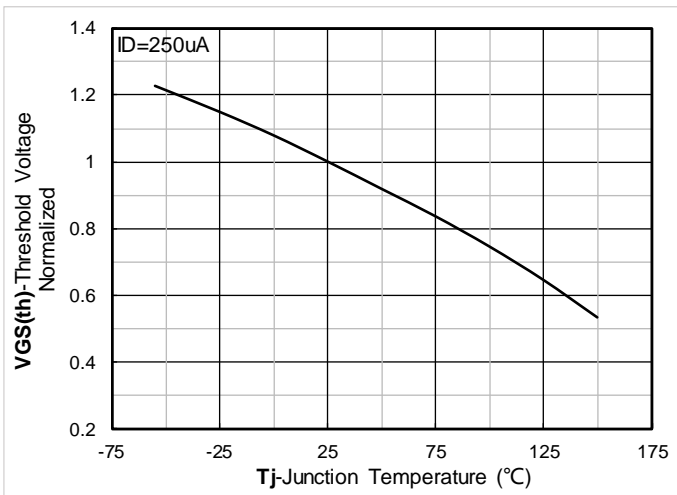


Figure 9. Normalized Threshold voltage

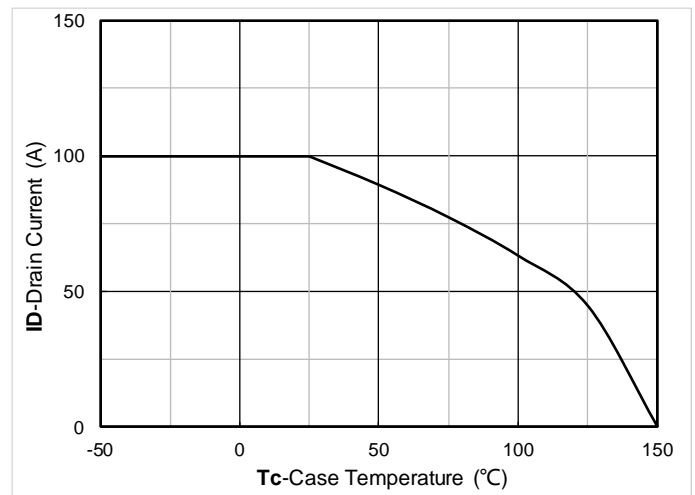


Figure 10. Current dissipation

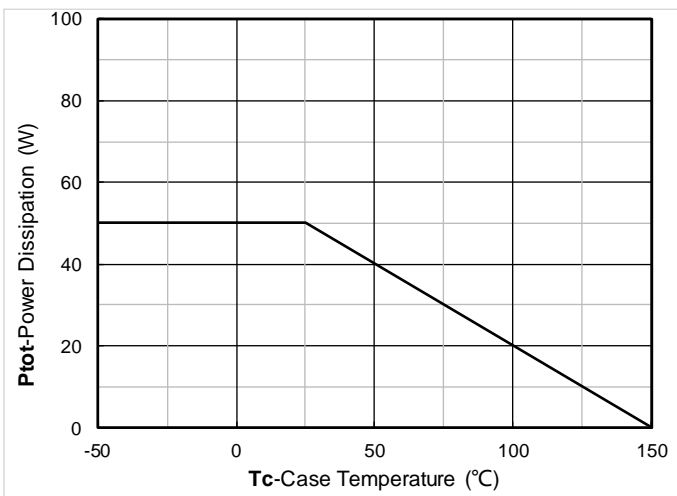


Figure 11. Power dissipation

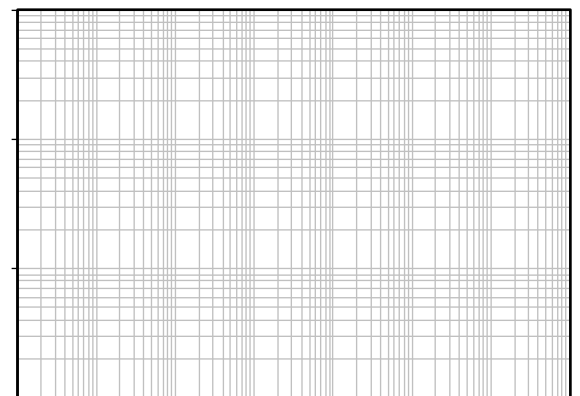


Figure 12. Maximum Transient Thermal Impedance

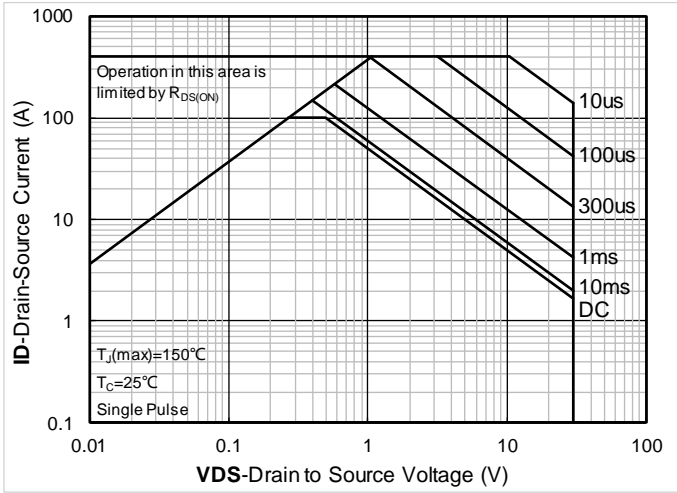


Figure 13. Safe Operation Area

## Test Circuits & Waveforms

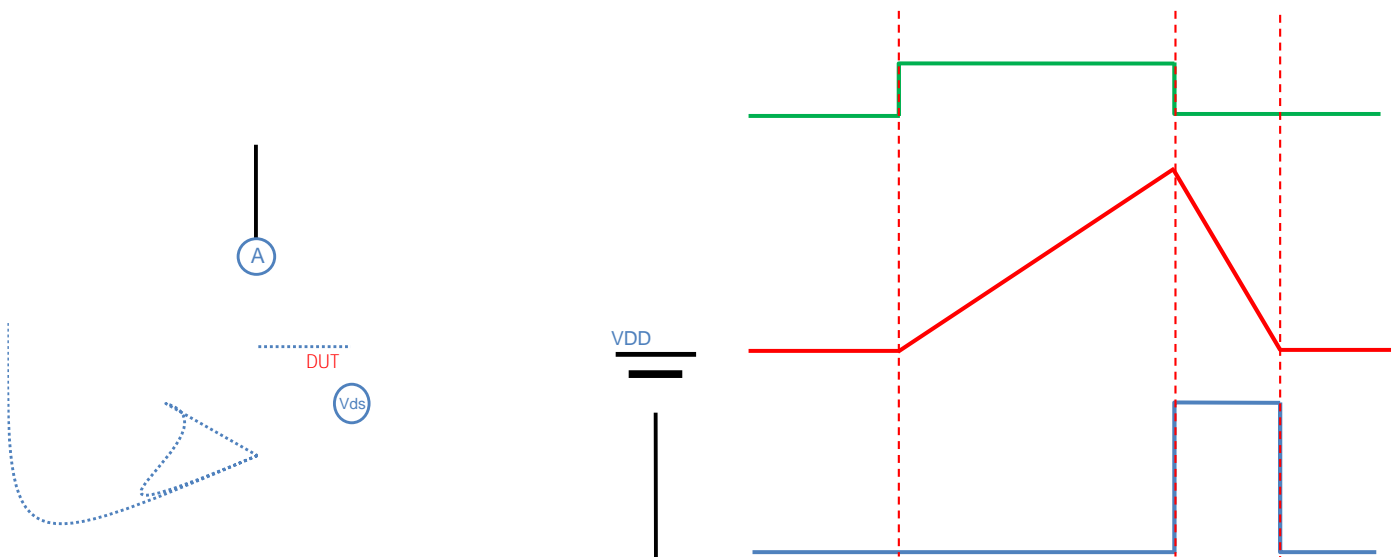


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform



# YJQ100G03AJR

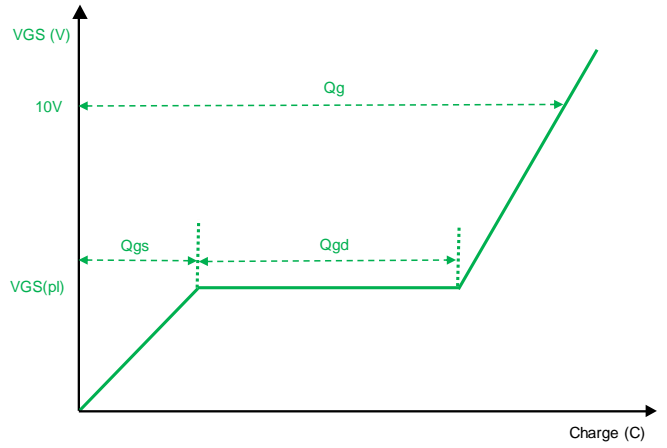
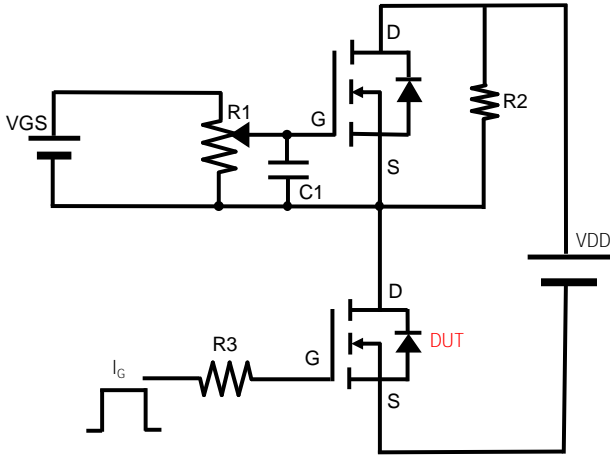


Figure B. Gate Charge Test Circuit & Waveform

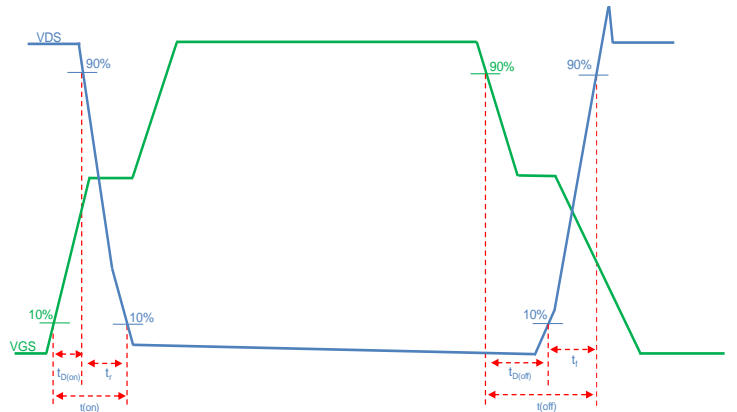
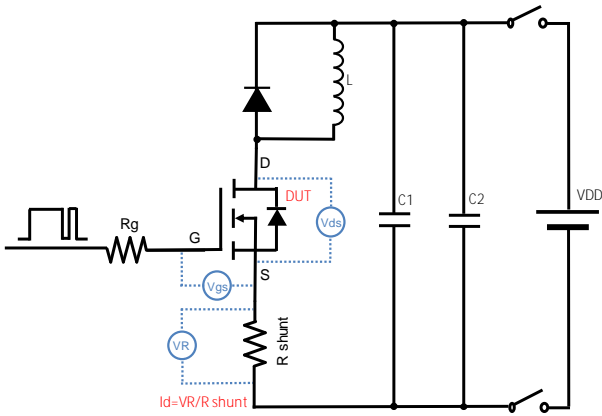


Figure C. Resistive Switching Test Circuit & Waveform

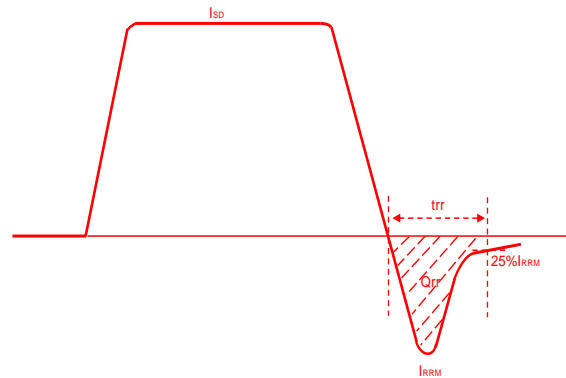
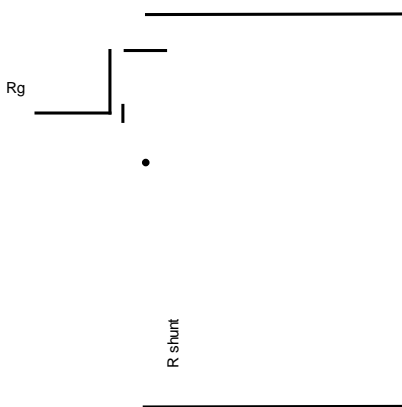
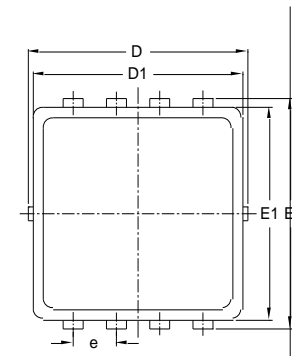


Figure D. Diode Recovery Test Circuit & Waveform

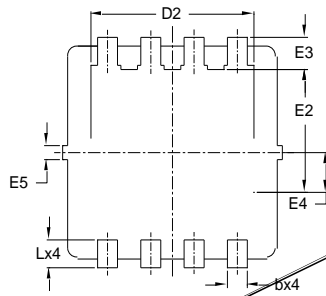


# YJQ100G03AJR

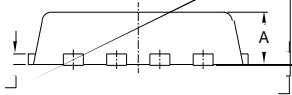
## PDFN3333-8L Package information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

SYMBOL	DIMENSIONS			
	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.028	0.033	0.700	0.850
A1	0.000	0.002	0.000	0.050
b	0.008	0.016	0.200	0.400
c	0.004	0.010	0.100	0.250
D	0.124	0.136	3.150	3.450
D1	0.118	0.130	3.000	3.300
D2	0.089	0.104	2.250	2.650
E	0.124	0.136	3.150	3.450
E1	0.114	0.126	2.900	3.200
E2	0.061	0.076	1.540	1.940
E3	0.011	0.026	0.280	0.650
E4	0.022 REF		0.570 REF	
E5	0.008 REF		0.200 REF	
e	0.026 BSC		0.650 BSC	
L	0.012	0.020	0.300	0.500

NOTE:

- 1.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
- 2.TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
- 3.THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.

UNIT mm

SUGGESTED SOLDER PAD LAYOUT



# YJQ100G03AJR

---

## 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 0000888 0 Ga7((1(i)116(r))30(t)-100 G[h]3(e)30( ))TJETQq0.0000888 0 595.92 841.92 reW\* nBT/F5 9.16 Tf1 0 0 1 32.664 714.7 Tm0 g0