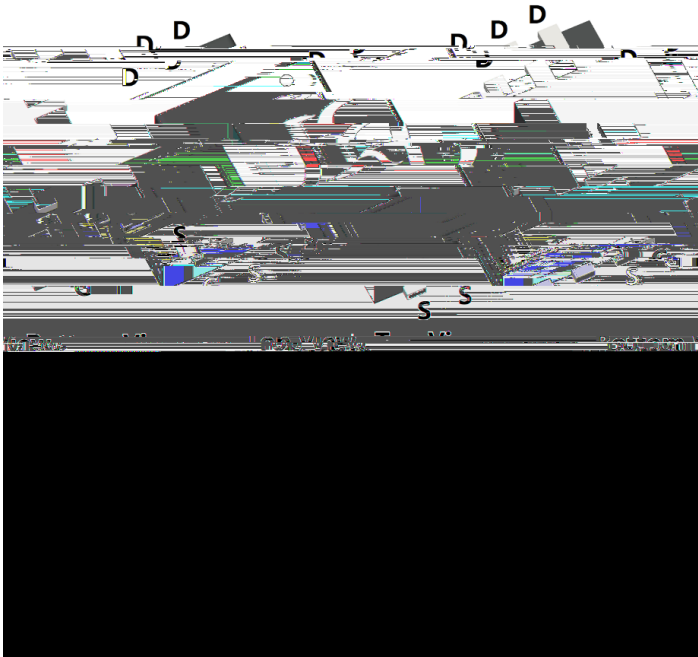




## N-Channel Enhancement Mode Field Effect Transistor



## 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 convertor

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		$V_{DS}$	30	V
Gate-source Voltage		$V_{GS}$	$\pm 20$	V
Drain Current	$T_A=25$	$I_D$	24	A
	$T_A=100$		15	
	$T_C=25$		100	
	$T_C=100$		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>	$T_A=25$	$P_D$	2.5	W
	$T_A=100$		1	
	$T_C=25$		50	
	$T_C=100$		20	
Junction and Storage Temperature Range		$T_J, T_{STG}$	-55 +150	

## Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient <sup>D</sup>	Steady-State	$R_{JA}$	40	50	/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	$\mu A$
		$V_{DS}=30V, V_{GS}=0V, T_J=150$	-	-	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	-	n 1 32S



Typical Electrical and Thermal Characteristics Diagrams

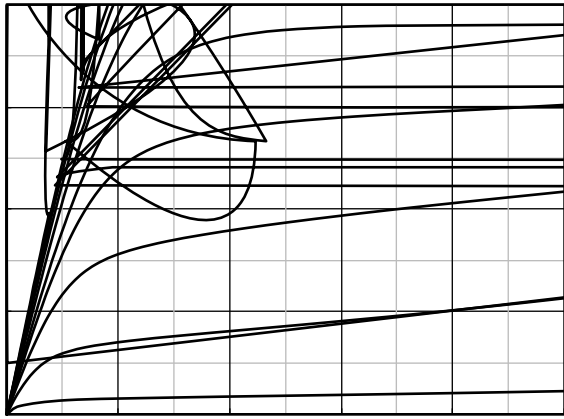


Figure 1. Output Characteristics

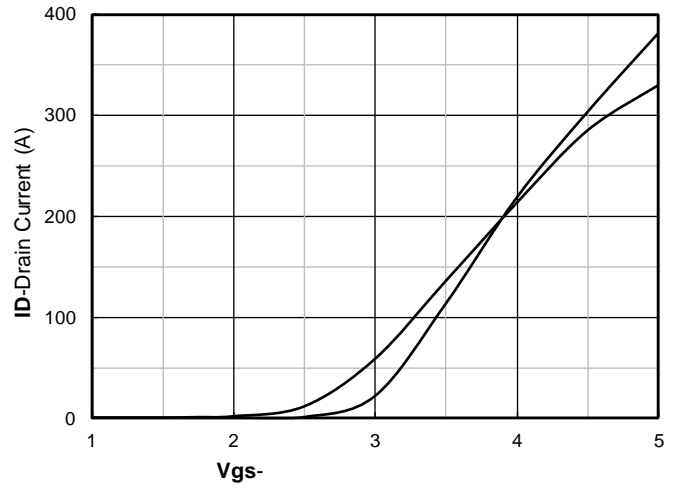


Figure 2. Transfer Characteristics



Figure 3. Capacitance Characteristics

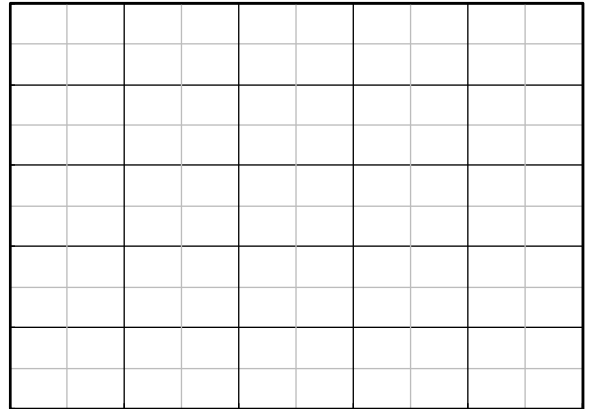


Figure 4. Gate Charge

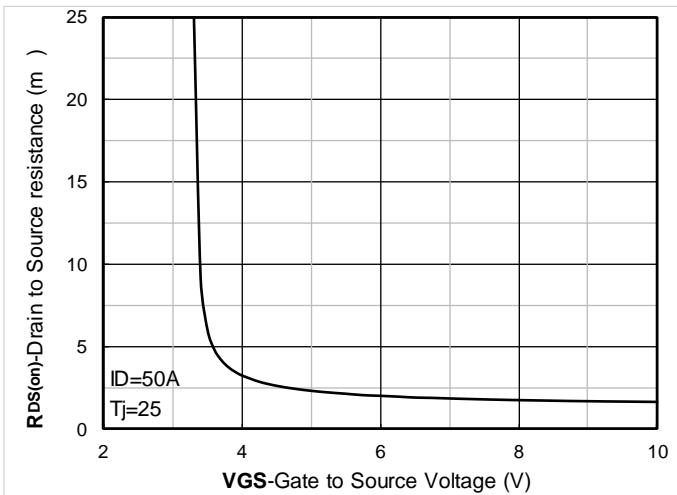


Figure 5. On-Resistance vs Gate to Source Voltage

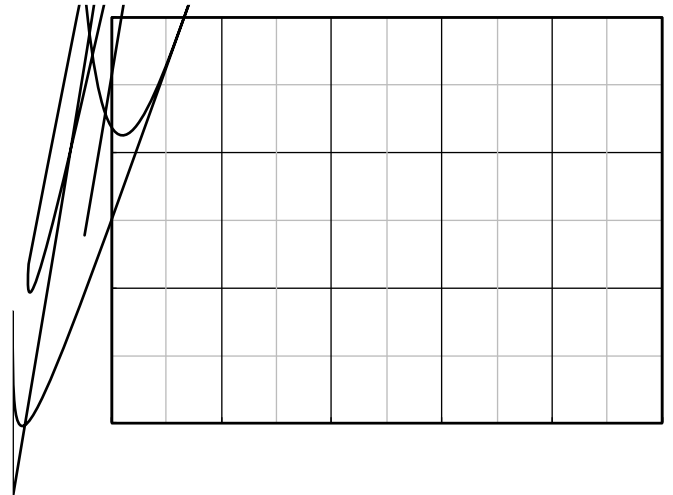


Figure 6. Normalized On-Resistance

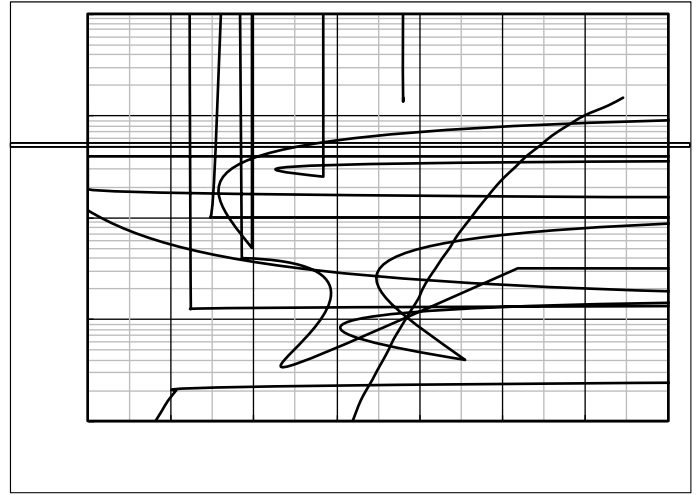


Figure 8. Forward characteristics of reverse diode

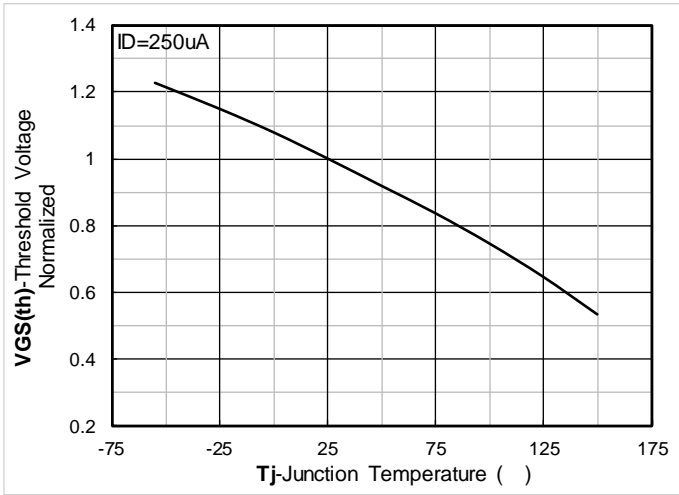


Figure 9. Normalized Threshold voltage

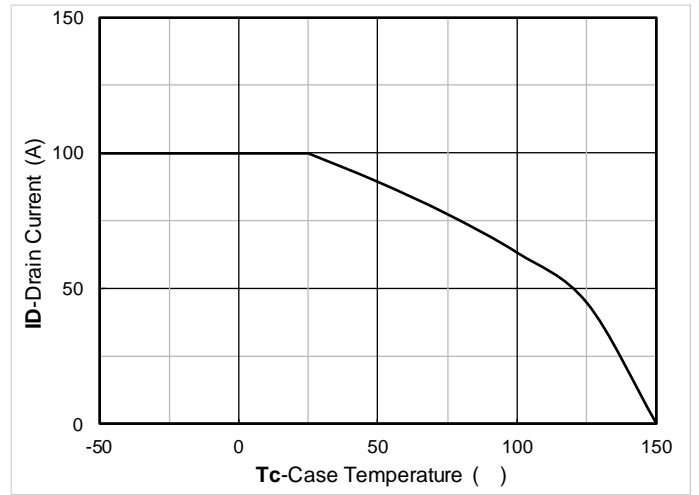


Figure 10. Current dissipation

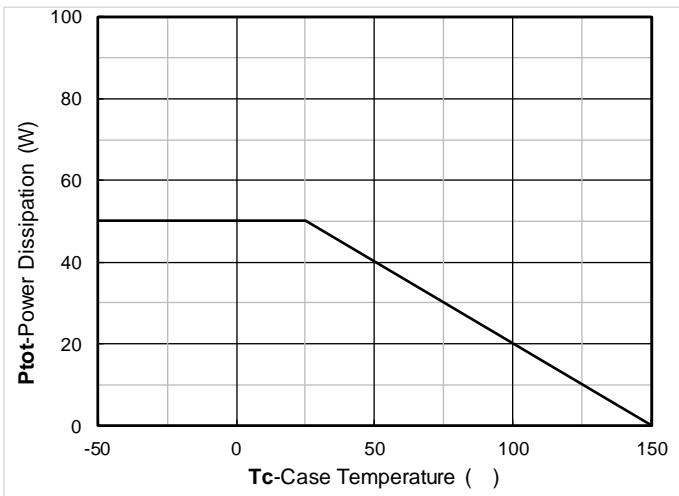


Figure 11. Power dissipation

Figure 12. Maximum Transient Thermal Impedance

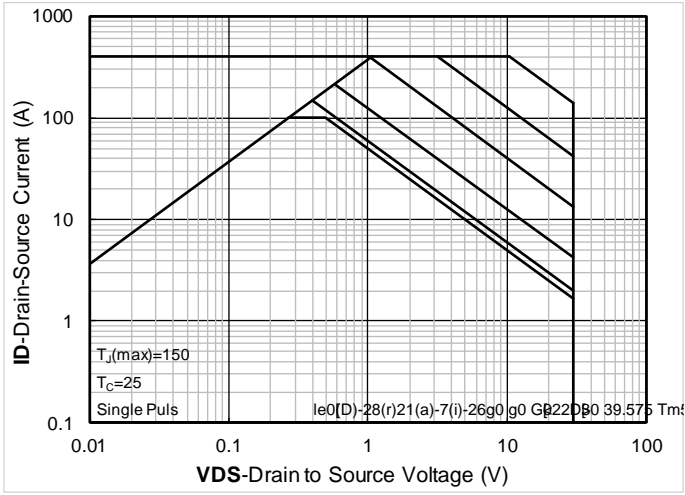


Figure 13. Safe Operation Area

Test Circ11P AMCID 7Lang (en-US)>BDC 00000888 0 5Bit\*nBT/F2108 Tf1 0 0 1 9 90m0 g0 G(Q1)ETQ

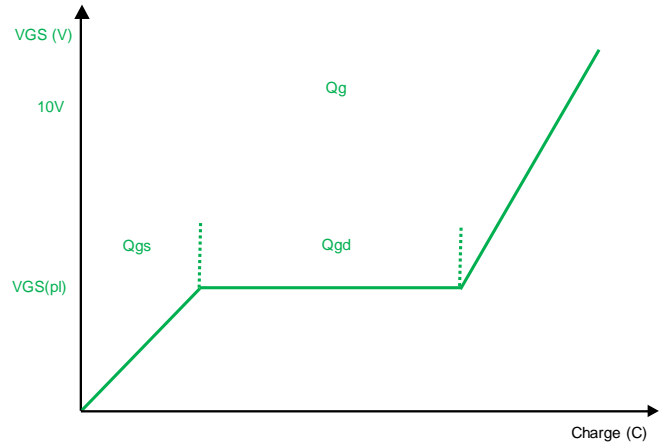
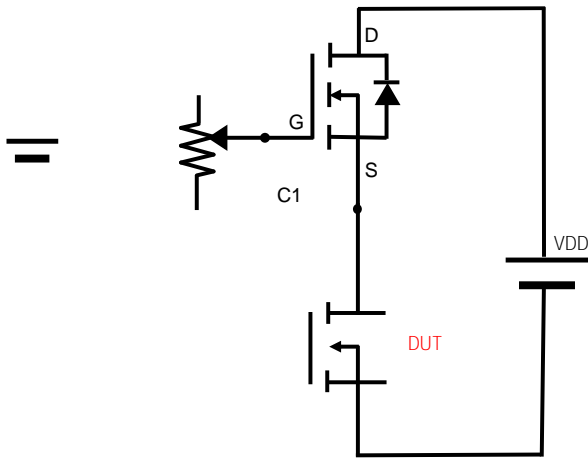


Figure B. Gate Charge Test Circuit & Waveform

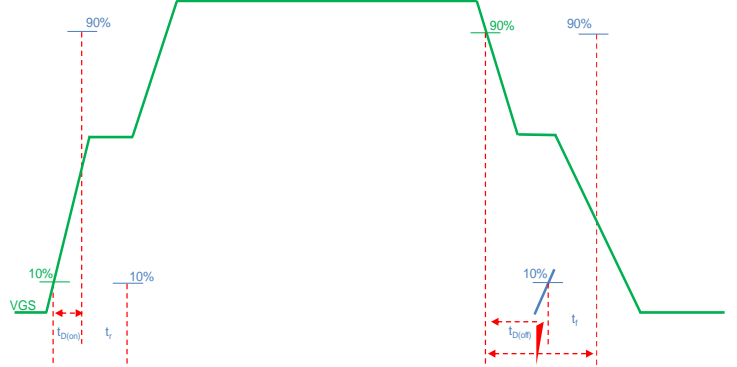
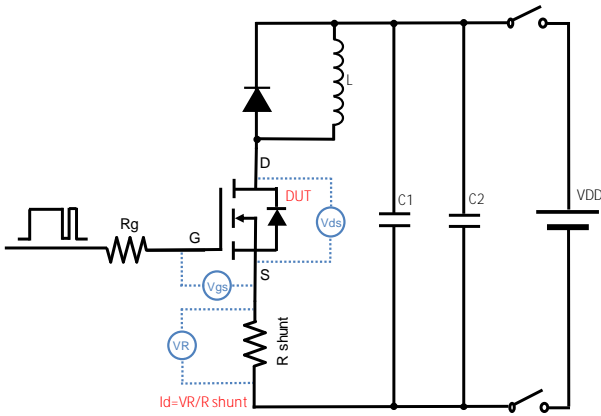


Figure C. Resistive Switching Test Circuit & Waveform

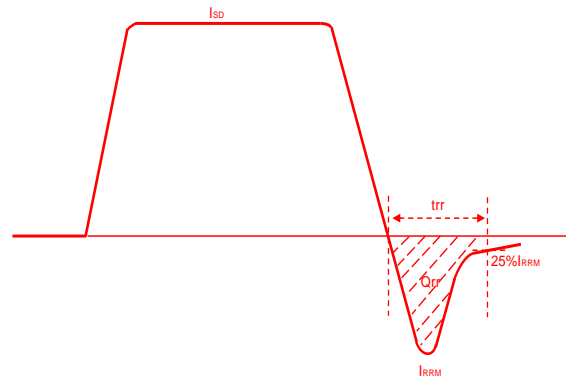
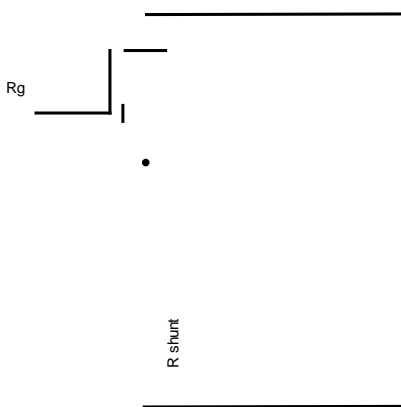
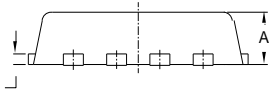
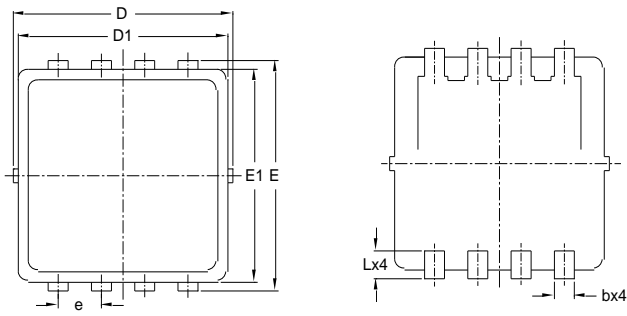


Figure D. Diode Recovery Test Circuit & Waveform



# YJQ100G03AJR

## PDFN3333-8L Package information



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

