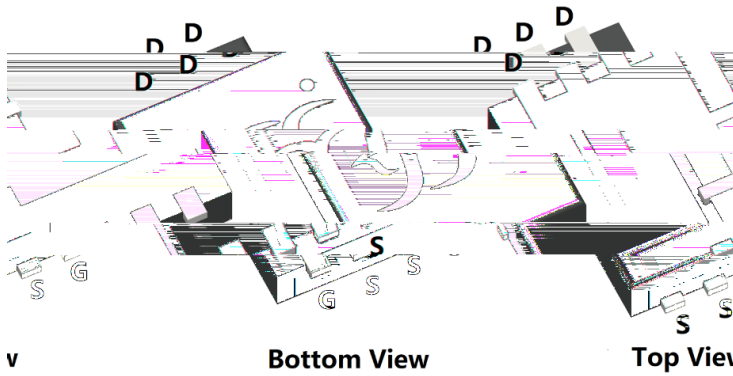




# N-Channel Enhancement Mode Field Effect Transistor

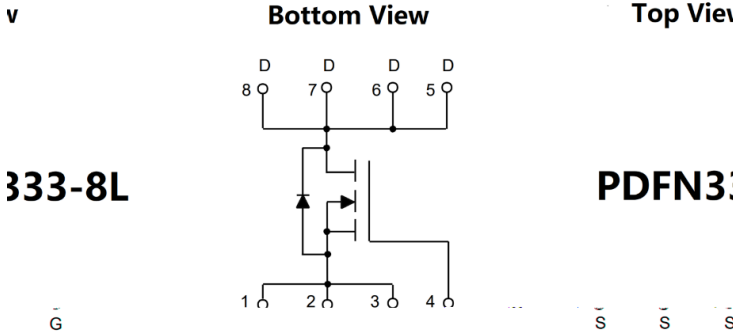


## Product Summary

$V_{DS}$	30V
$I_D$	60A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	6.1m
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	14m
100% EAS Tested	
100% $V_{DS}$ Tested	

## General Description

- Trench Power LV 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



333-8L

PDFN33

## 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	$T_A=25^\circ C$	$I_D$	12	A
	$T_A=100^\circ C$		7.5	
	$T_C=25^\circ C$		60	
	$T_C=100^\circ C$		38	
Pulsed Drain Current <sup>A</sup>		$I_{DM}$	200	A
Avalanche energy <sup>B</sup>		EAS	70.8	mJ
Total Power Dissipation <sup>C</sup>	$T_A=25^\circ C$	$P_D$	1.92	W
	$T_A=100^\circ C$		0.77	
	$T_C=25^\circ C$		39	
	$T_C=100^\circ C$		15	
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	$R_{JA}$	55	65	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{JC}$	2.6	3.2	

### Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQ60N03C	F1	Q60N03C	5000	10000	100000	13" reel



# YJQ60N03C

## 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	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	1.1	1.5	2.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=20A$	-	4.7	6.1	m
		$V_{GS}=4.5V, I_D=10A$	-	10.4	14	
Diode Forward Voltage	$V_{SD}$	$I_S=15A, V_{GS}=0V$	-	-	1.2	V
Gate resistance	$R_G$	$f=1MHz$	-	2.6	-	
Maximum Body-Diode Continuous Current	$I_S$		-	-	60	A
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=15V, V_{GS}=0V, f=1MHz$	-	1320	-	pF
Output Capacitance	$C_{oss}$		-	185	-	
Reverse Transfer Capacitance	$C_{rss}$		-	170	-	
<b>Switching Parameters</b>						
Total Gate Charge	$Q_g$		-	27	-	
Gate-Source Charge	$Q_{gs}$	$V_{GS}=10V, V_{DS}=15V, I_D=15A$	-	5	-	nC





# YJQ60N03C

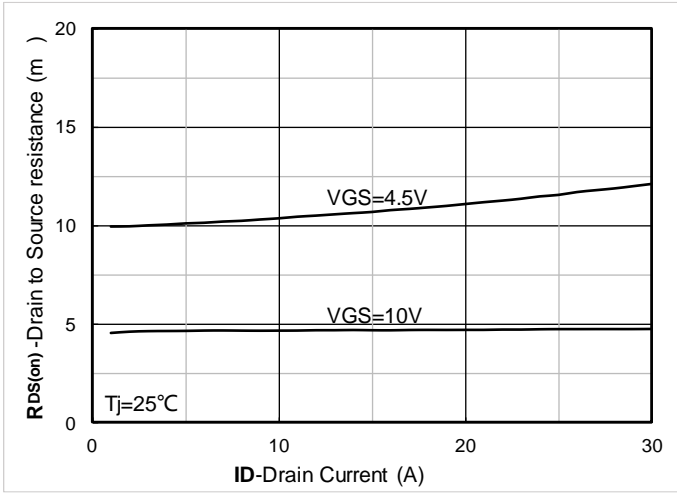


Figure 7.  $R_{DS(on)}$  VS Drain Current

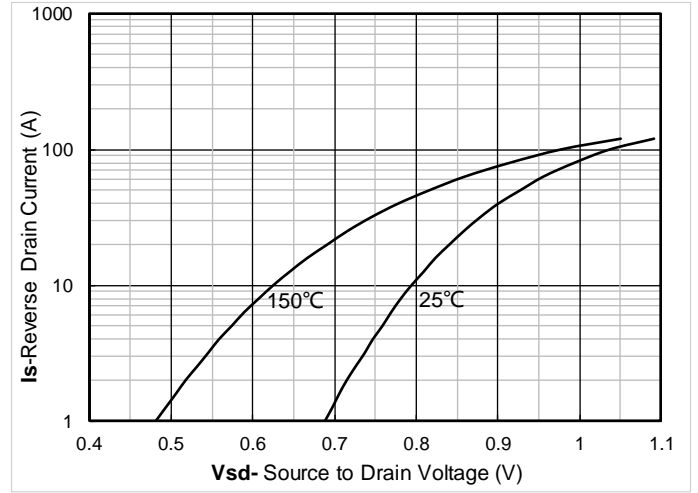


Figure 8. Forward characteristics of reverse diode

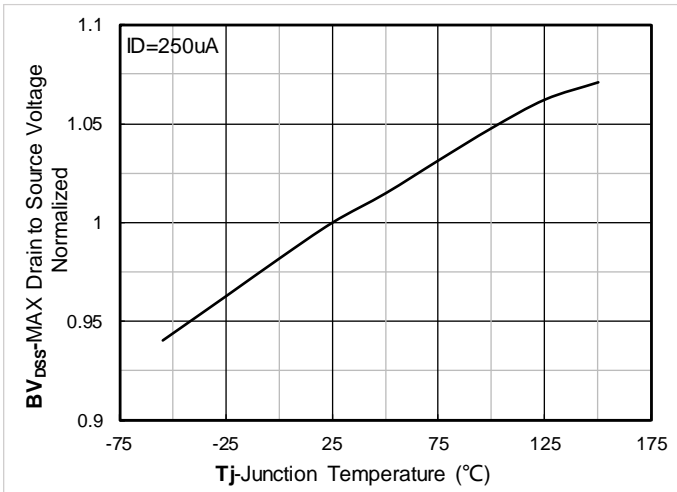


Figure 9. Normalized breakdown voltage

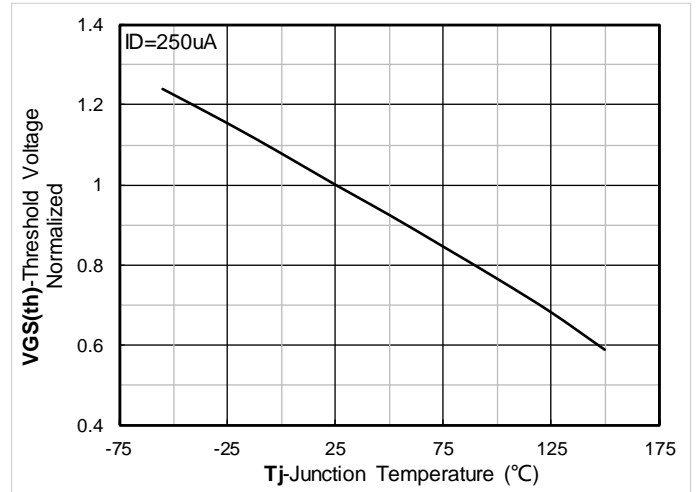


Figure 10. Normalized Threshold voltage

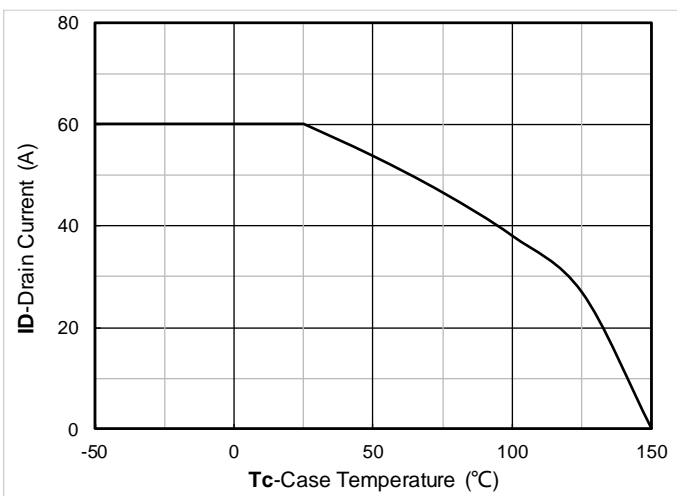


Figure 11. Current dissipation

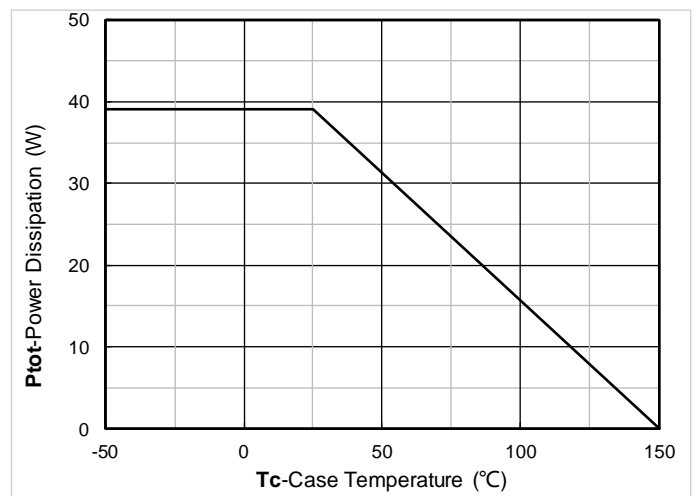


Figure 12. Power dissipation

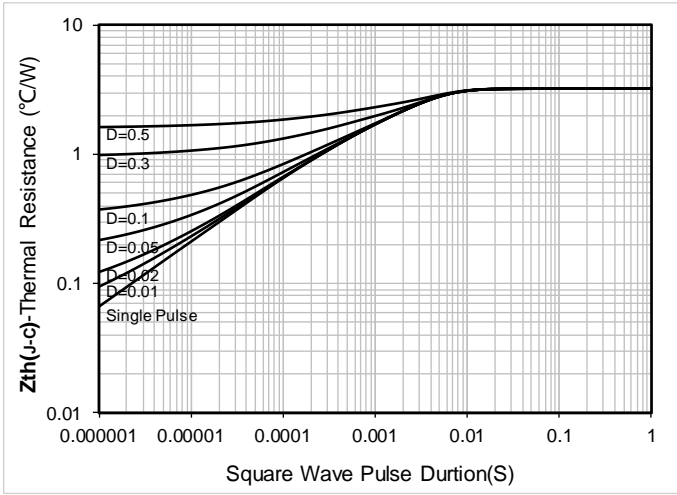


Figure 13. Maximum Transient Thermal Impedance

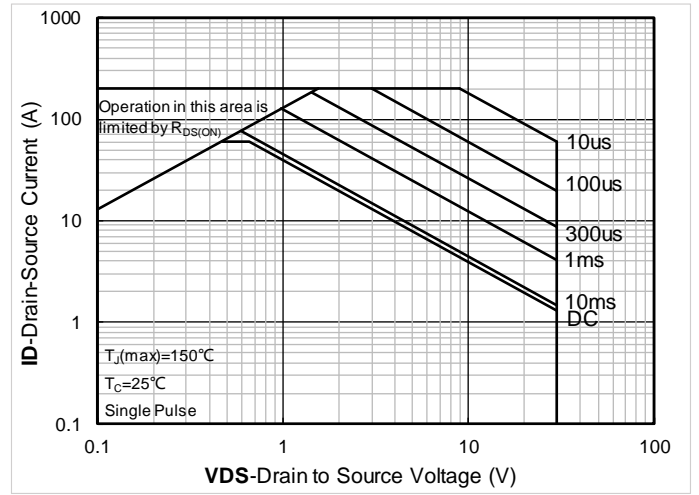


Figure 14. Safe Operation Area

### Test Circuits & Waveforms

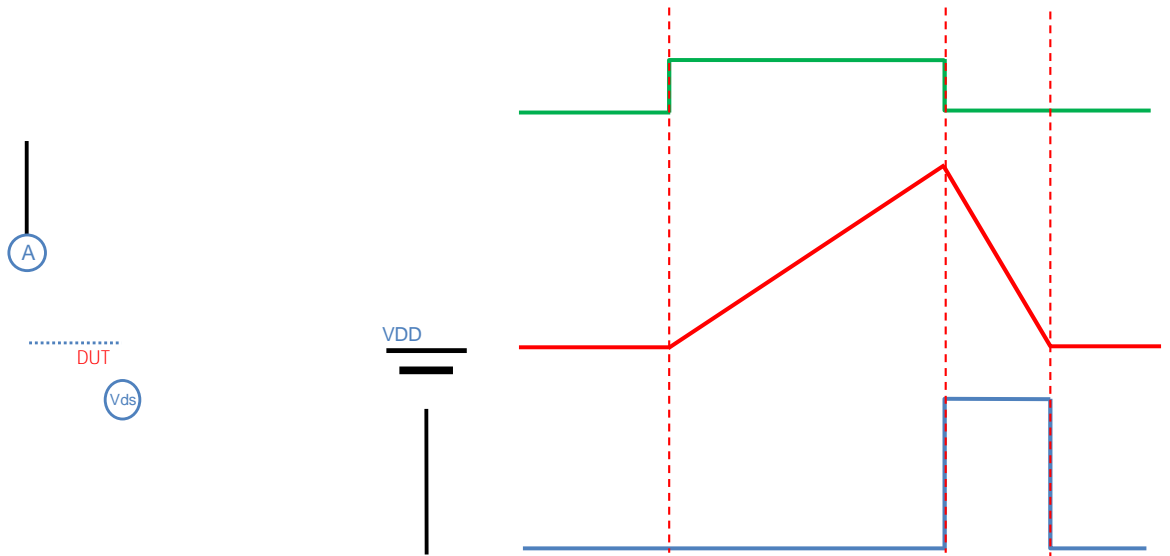


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

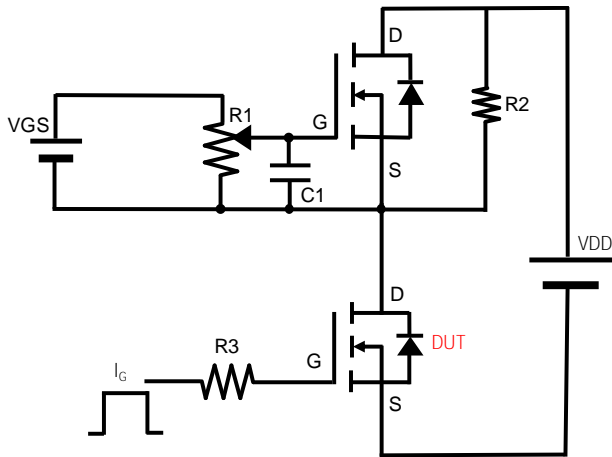


Figure B. Gate Charge Test Circuit & Waveform

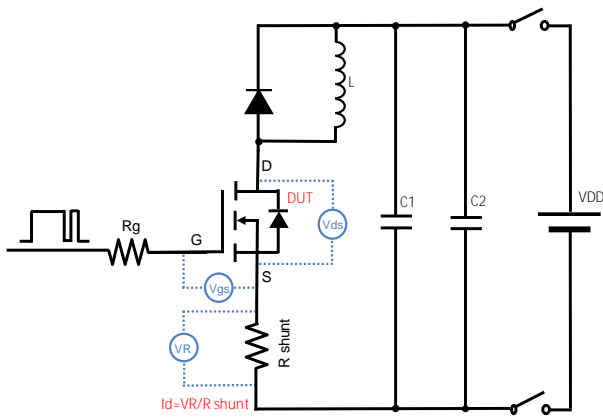


Figure C. Resistive Switching Test Circuit & Waveform

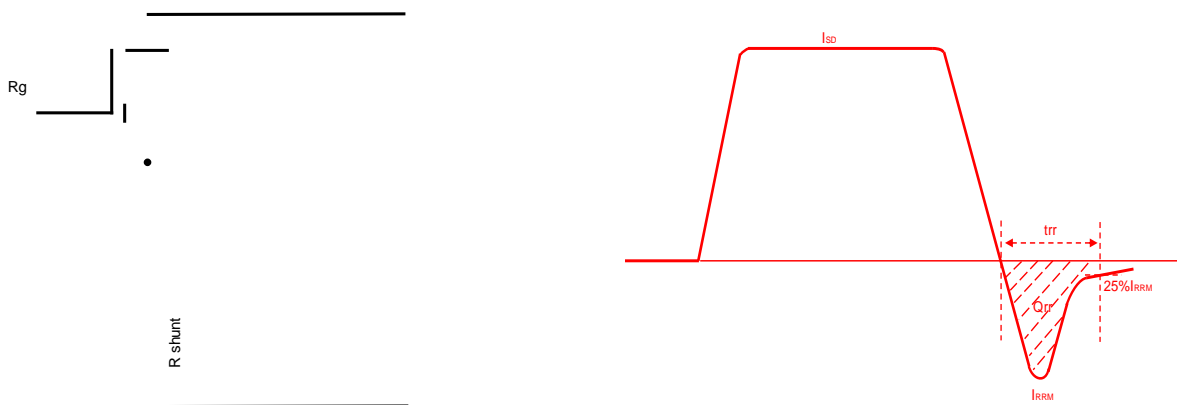
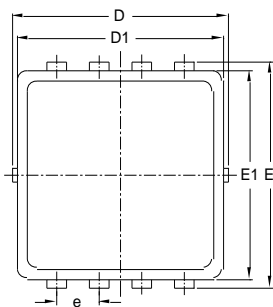


Figure D. Diode Recovery Test Circuit & Waveform

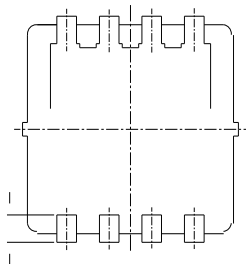


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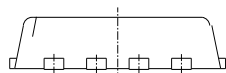
## PDFN3333-8L-B-0.75mm Package information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

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



## YJQ60N03C

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