N-Channel Enhancement Mode Field Effect Transistor

Product Summary

V_{DS}	40V
I_D	75A
$R_{DS(ON)}$(at V_{GS}=10V)	4.8m
100% EAS Tested	
100% V_{DS} Tested	

General Description

Excellent package for heat dissipation

High density cell design for low $R_{DS(ON)}$

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	40	-	-	V
		V_{GS}= 0V, I_D=1mA	40	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=40V, V_{GS}=0V	-	-	1	
		V_{DS}=40V, V_{GS}=0V, Tj=125℃	-	-	100	
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	2	2.8	4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A	-	3.8	4.8	
Diode Forward Voltage	V_{SD}	I_S=20A, V_{GS}=0V	-	-	1.2	V
Gate resistance	R_G	f=1MHz	-	1.6	-	
Maximum Body-Diode Continuous Current	I_S		-	-	75	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=20V, V_{GS}=0V, f=1MHz	-	880	-	pF
Output Capacitance	C_{oss}		-	495	-	
Reverse Transfer Capacitance	C_{rss}		-	42	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=20A	-	15.7	-	nC
Gate-Source Charge	Q_{gs}		-	4.6	-	
Gate-Drain Charge	Q_{gd}		-	4.9	-	
Reverse Recovery Charge	Q_{rr}	I_F=20A, di/dt=100A/us	-	11.3	-	nC
Reverse Recovery Time	t_{rr}		-	20.6	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=20V, I_D=20A R_{GEN}=3	-	11.6	-	ns
Turn-on Rise Time	t_r		-	58	-	
Turn-off Delay Time	$t_{D(off)}$		-	16.2	-	
Turn-off fall Time	t_f		-	6	-	

Note
1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of R is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in^2 pad of 2oz. Copper, in the still air environment with TA =25 .The maximum allowed junction temperature of 175 . The value in any given application depends on the user's specific board design.
3. Thermal resistance from junction to soldering point (on the exposed drain pad).

Typical Electrical and Thermal Characteristics Diagrams

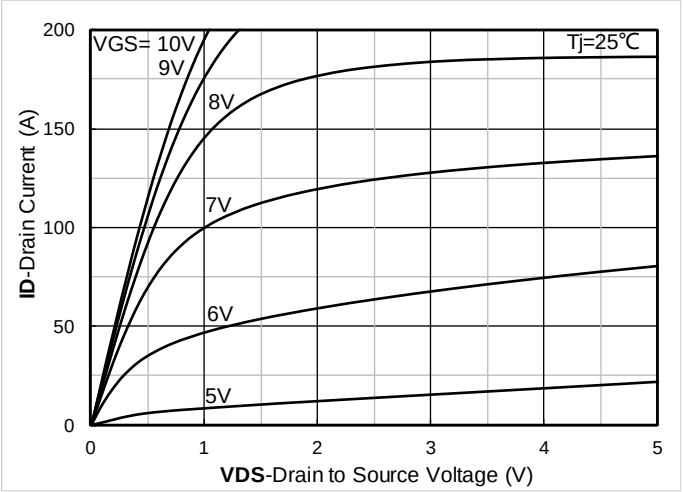


Figure 1. Output Characteristics

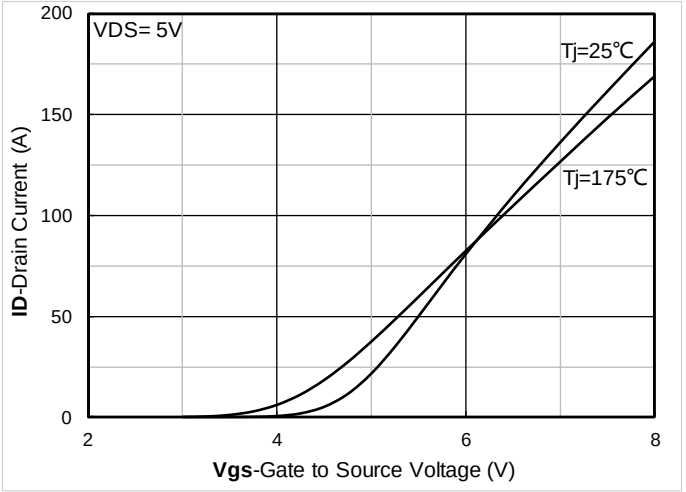


Figure 2. Transfer Characteristics

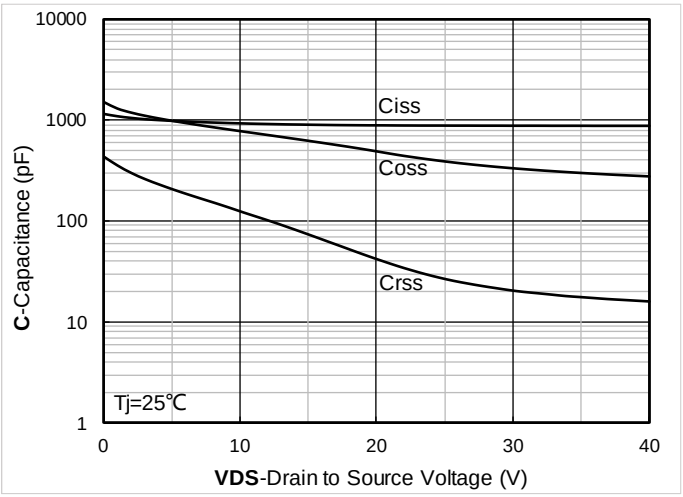


Figure 3. Capacitance Characteristics

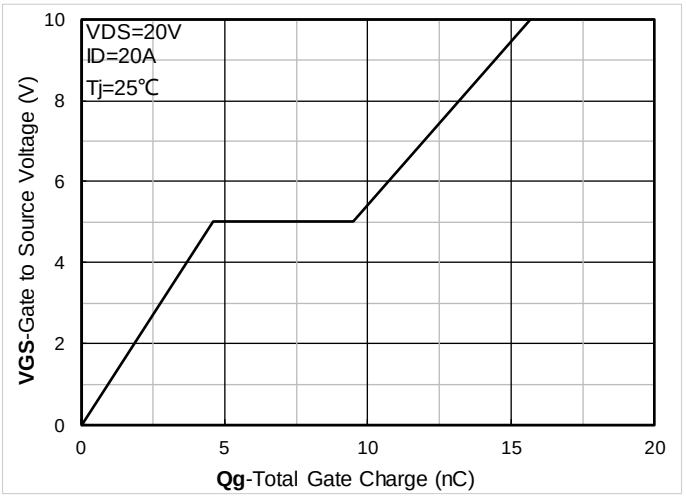


Figure 4. Gate Charge

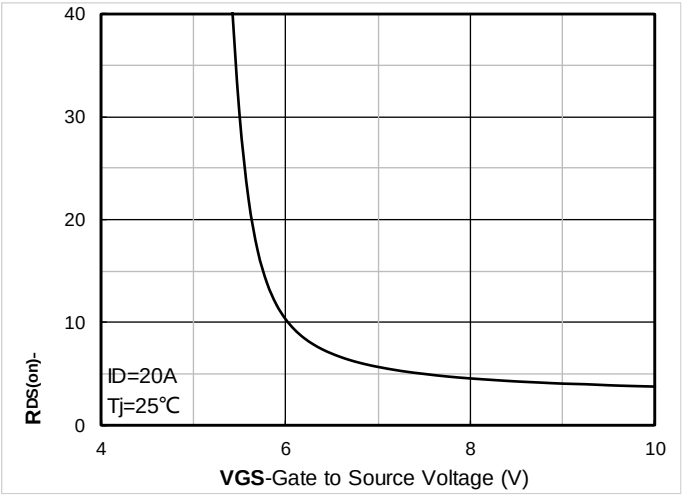


Figure 5. On-Resistance vs Gate to Source Voltage

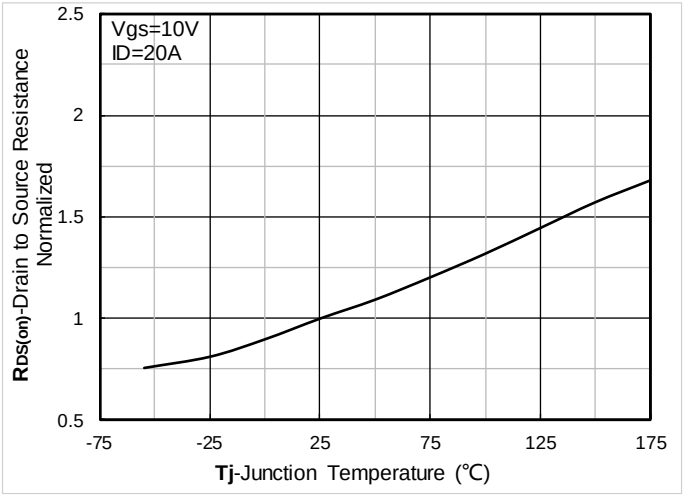


Figure 6. Normalized On-Resistance

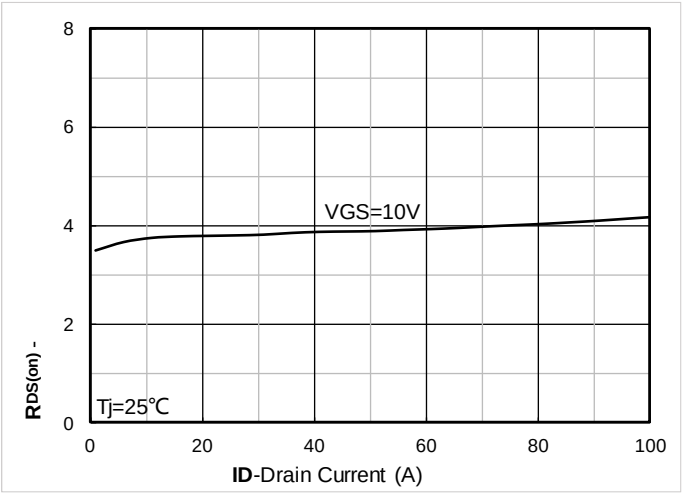


Figure 7. RDS(on) VS Drain Current

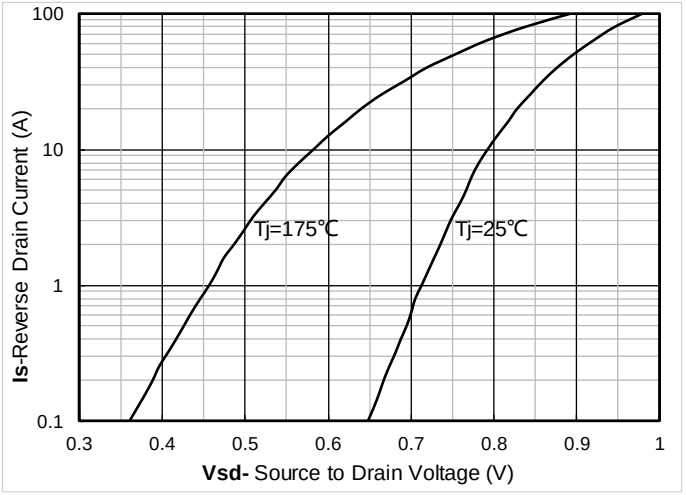


Figure 8. Forward characteristics of reverse diode

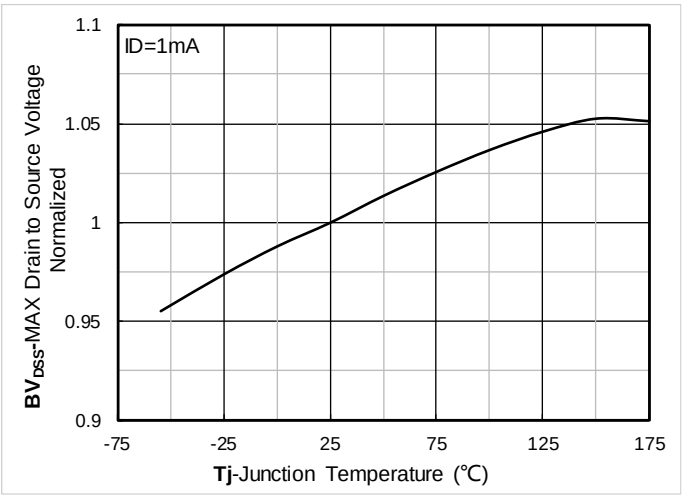


Figure 9. Normalized breakdown voltage

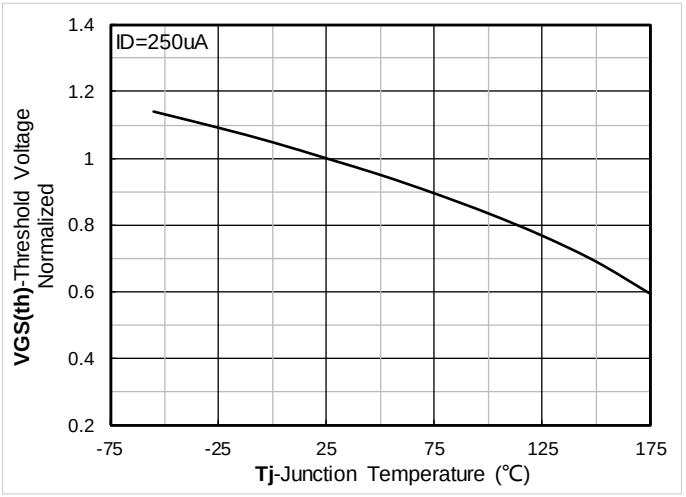


Figure 10. Normalized Threshold voltage

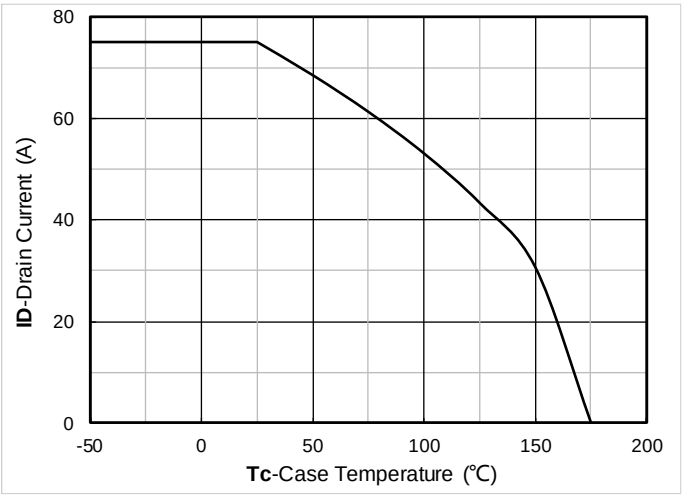


Figure 11. Current dissipation

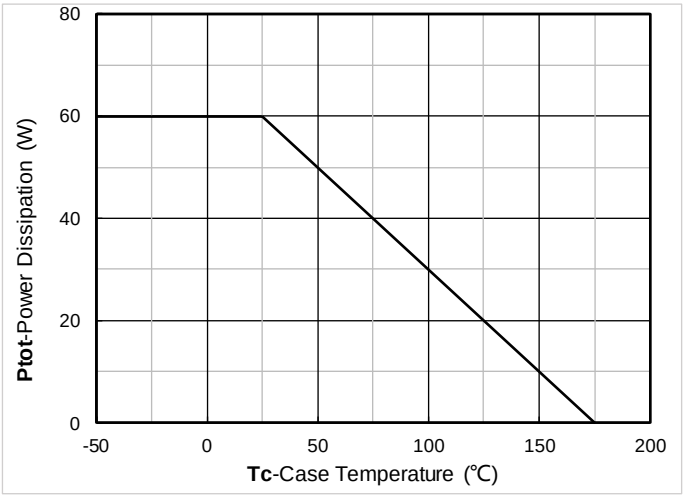


Figure 12. Power dissipation

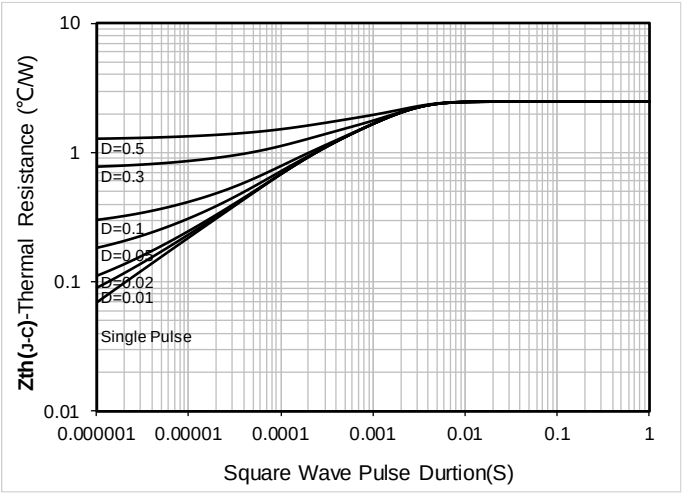


Figure 13. Maximum Transient Thermal Impedance

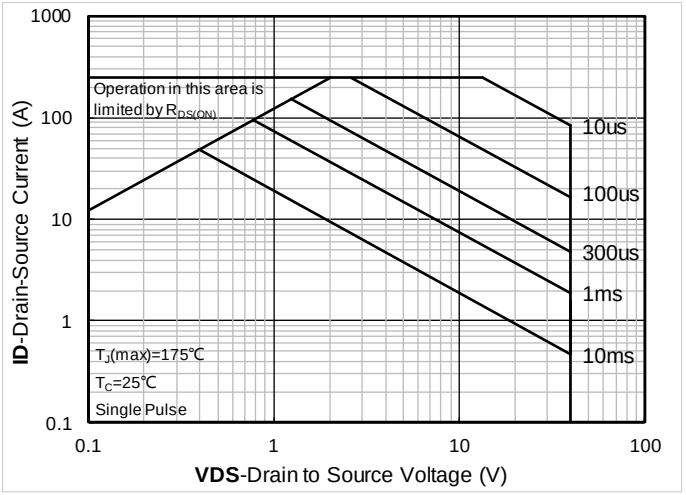


Figure 14. Safe Operation Area

Test Circuits & Waveforms

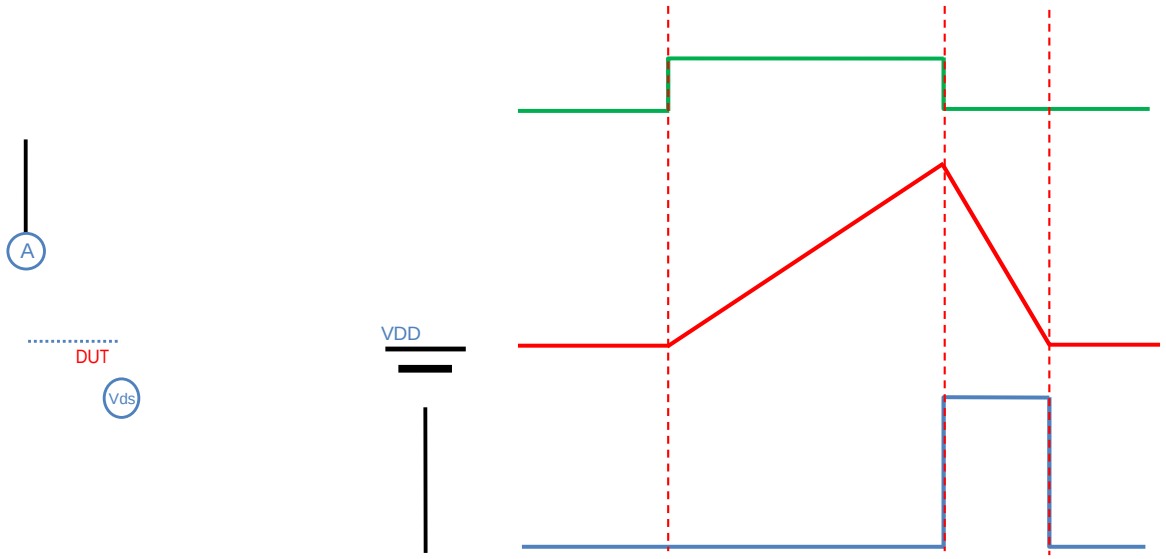


Figure A. Unclamped Inductive Switching (UIS) Test Circuit & Waveform

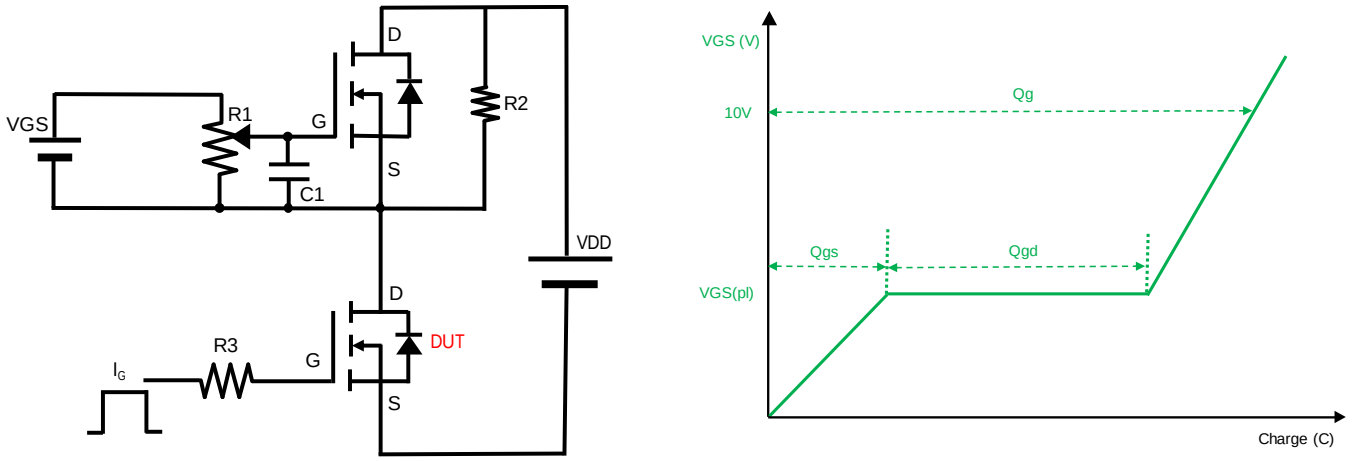


Figure B. Gate Charge Test Circuit & Waveform

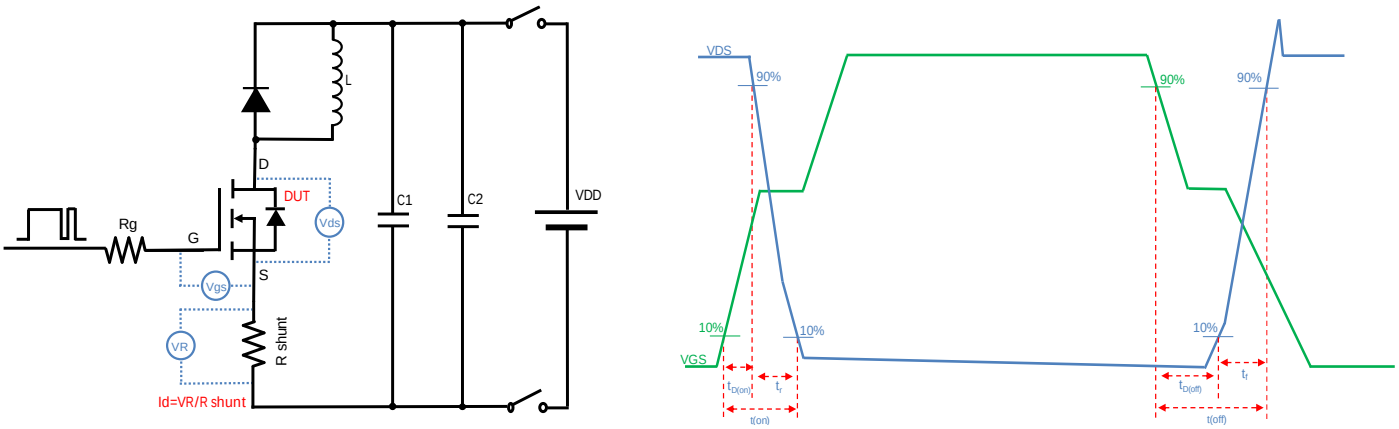


Figure C. Resistive Switching Test Circuit & Waveform

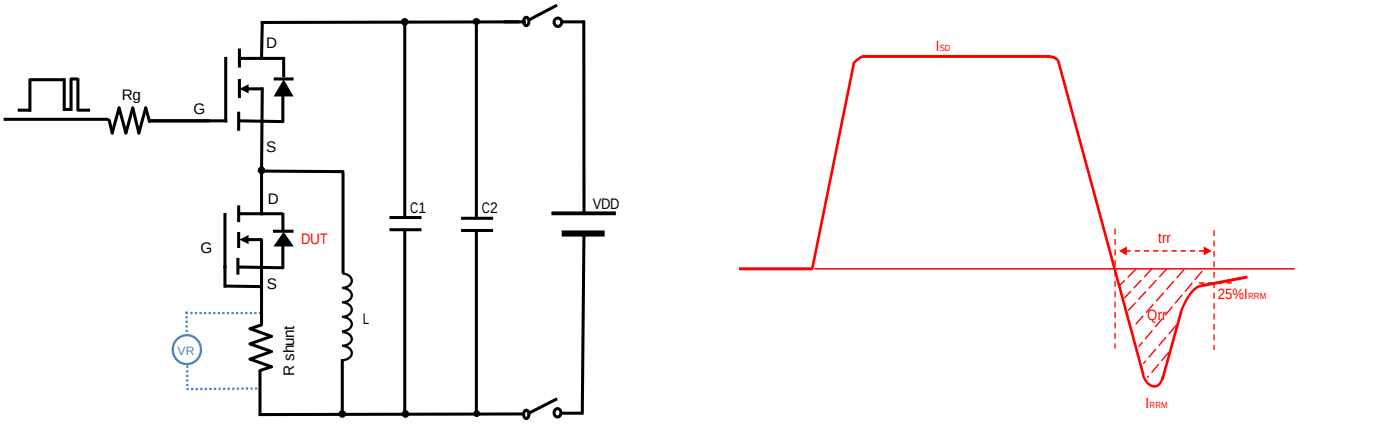
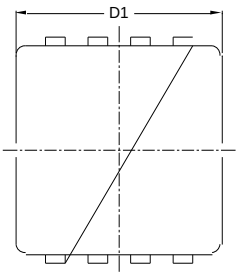
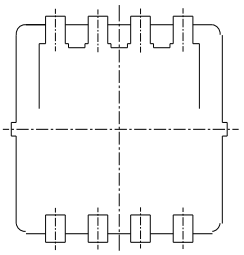


Figure D. Diode Recovery Test Circuit & Waveform

PDFN3333-8L-B-0.75MM Package information



TOP VIEW



BOTTOM VIEW

SIDE VIEW

UNIT mm

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.

SUGGESTED SOLDER PAD LAYOUT

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