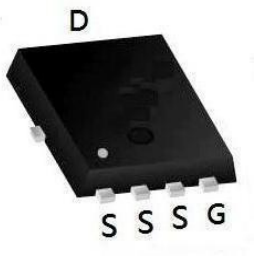
P-Ch 100V Fast Switching MOSFETs

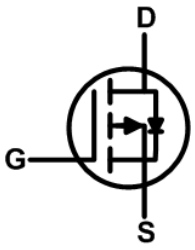
- ★ Super Low Gate Charge
- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

Product Summary

BVDSS	RDSON	ID
-100V	72mΩ	-18A

PDFN3333-8L Pin Configuration





Description

The XXWS18P10D is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The XXWS18P10D meet the RoHS and Green Product requirement 100% EAS guaranteed with full function reliability approved.

Absolute Maximum Ratings:

Symbol	Parameter		Value	Units
V_{DSS}	Drain-to-Source Voltage		-100	V
I_D	Continuous Drain Current	T_C = 25 °C	-18	A
	Continuous Drain Current	T_C = 100 ℃	-13	A
I_{DM}[a1]	Pulsed Drain Current		-80	A
E_{AS}[a2]	Single pulse avalanche energy		200	mJ
V_{GS}	Gate-to-Source Voltage		±20	V
P_D	Power Dissipation		80	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range		150, –55 to 150	℃
T_L	Maximum Temperature for Soldering		260	℃

Thermal Characteristics:

Symbol	Parameter	Value	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	1.56	℃/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	91	℃/W

Electrical Characteristics (TA= 25℃ unless otherwise specified):

Static Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	V_{GS}=0V, I_D=-250μA	-100	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=-100V, V_{GS}=0V	--	--	1	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=-20V, V_{DS}=0V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=+20V, V_{DS}=0V	--	--	-100	nA
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-1.5	-2.0	-2.5	V
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	V_{GS}=-10V, I_D=-10A	--	72	89	mΩ
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	V_{GS}=-4.5V, I_D=-5A	--	87	105	mΩ

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = -50V f = 1.0MHz	--	1305	--	pF
C_{oss}	Output Capacitance		--	97.5	--	
C_{rss}	Reverse Transfer Capacitance		--	9.1	--	
R_g	Gate resistance	V_{GS} = 0V, V_{DS} Open	--	75	--	Ω

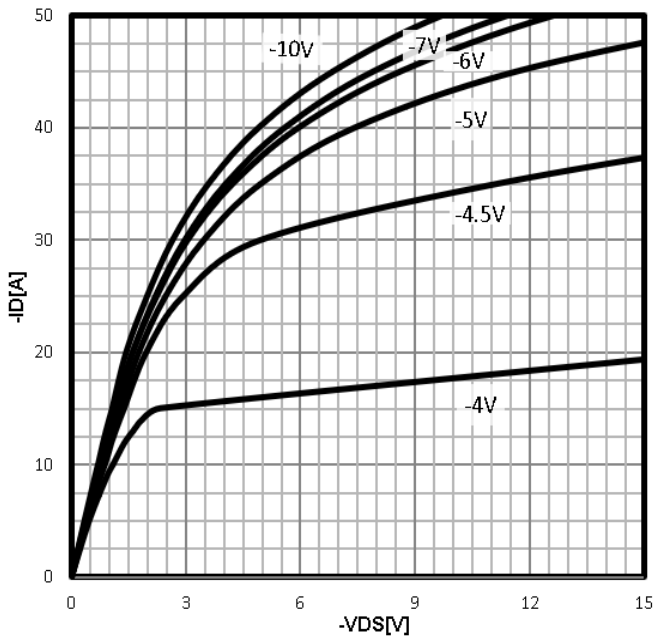
Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =-10A V_{DS} = -50V V_{GS} = -10V R_G = 5Ω	--	8.8	--	ns
tr	Rise Time		--	16	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	60	--	
t_f	Fall Time		--	41	--	
Q_g	Total Gate Charge	V_{GS} =-10V V_{DS} = -50V I_D =-10A	--	22.16	--	nC
Q_{gs}	Gate Source Charge		--	4.59	--	
Q_{gd}	Gate Drain Charge		--	4.53	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Value			Units
			Min.	Typ.	Max.	
V_{SD}	Diode Forward Voltage	I_S=-10A, V_{GS}=0V	--	--	-1.2	V
t_{rr}	Reverse Recovery time	I_S=-10A, V_{DD}=-50V dI/dt=100A/μs	--	30	--	ns
Q_{rr}	Reverse Recovery Charge		--	61	--	nC

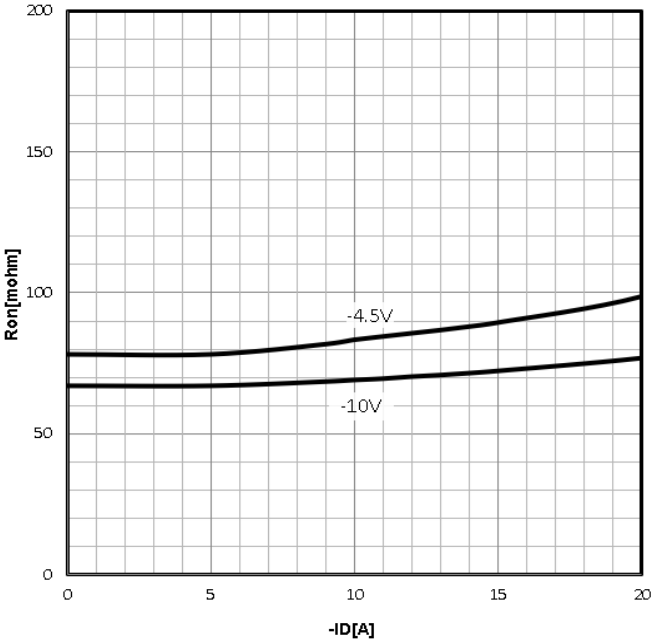
[a1]: Repetitive rating; pulse width limited by maximum junction temperature
[a2]: L=5mH, R_g=25Ω, Starting T_J=25 ℃

Characteristics Curve:

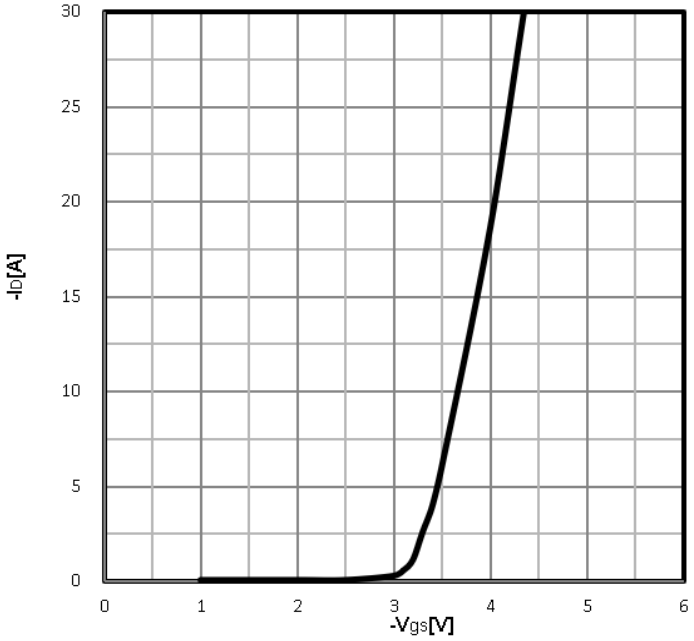
Typ. output characteristics
$-I_D=f(-V_{DS})$



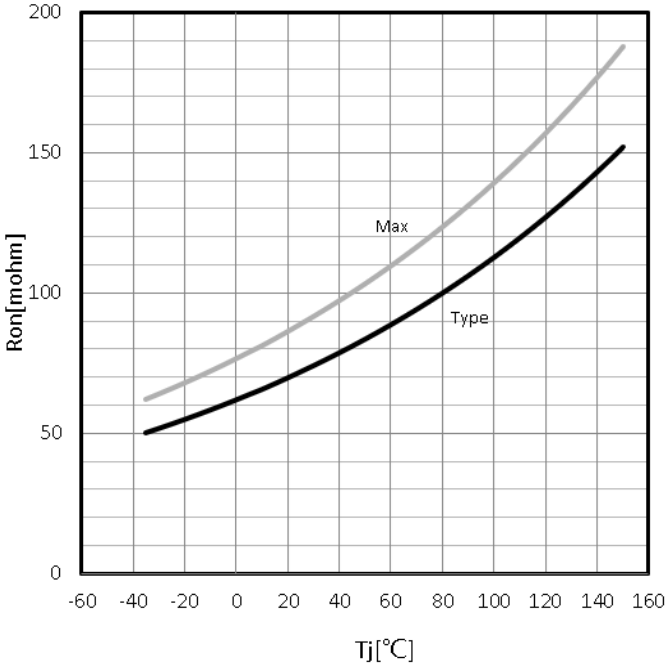
Typ. drain-source on resistance $R_{DS(on)}=f(-I_D)$



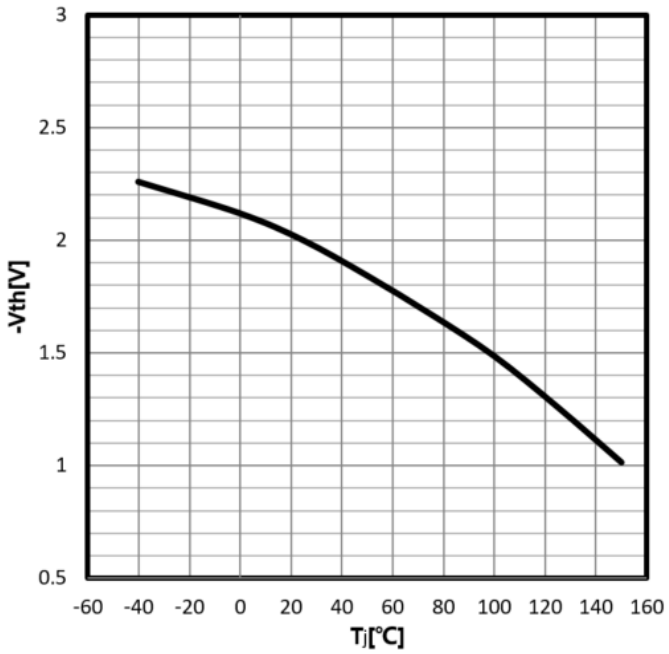
Typ. transfer characteristics
$-I_D=f(-V_{GS})$



Drain-source on-state resistance $R_{DS(on)}= f(T_j)$;
I_D=-10A; V_{GS}=-10V

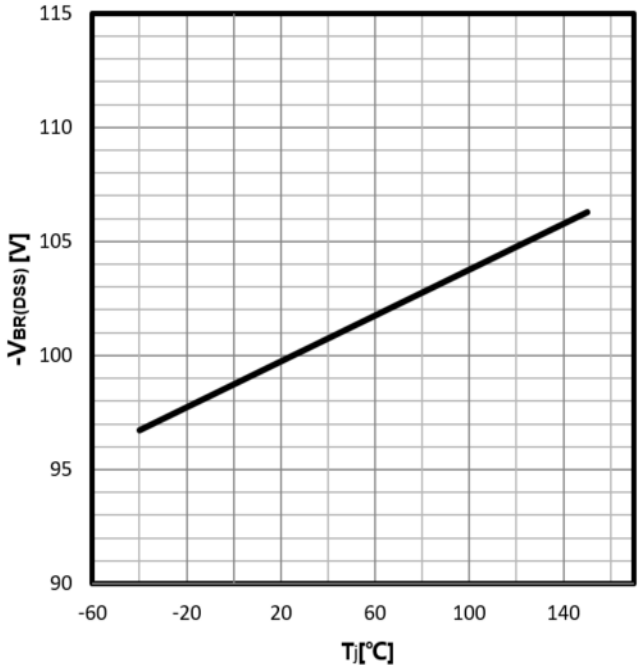


Gate Threshold Voltage $-V_{TH}=f(T_j)$; I_D=-250uA



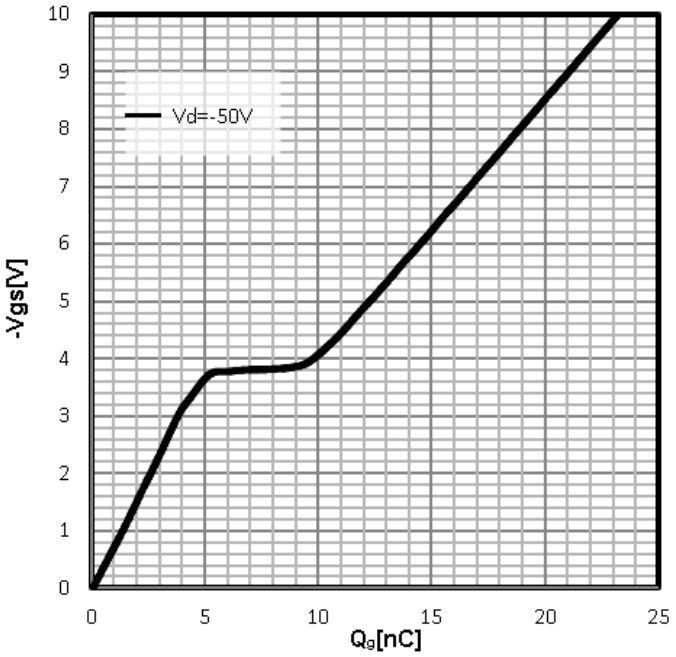
Drain-source breakdown voltage

$V_{BR(DSS)}=f(T_j)$; I_D=-250uA



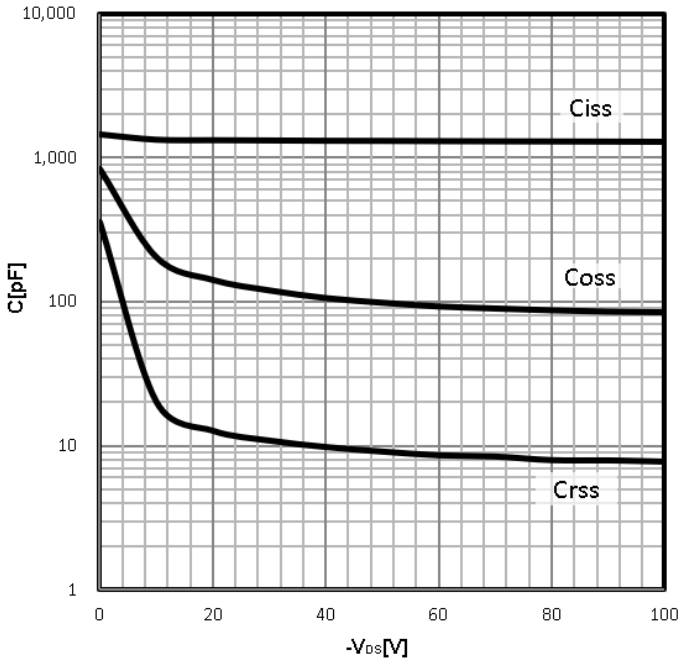
Typ. gate charge

$-V_{GS}=f(Q_g)$; I_D=-10A

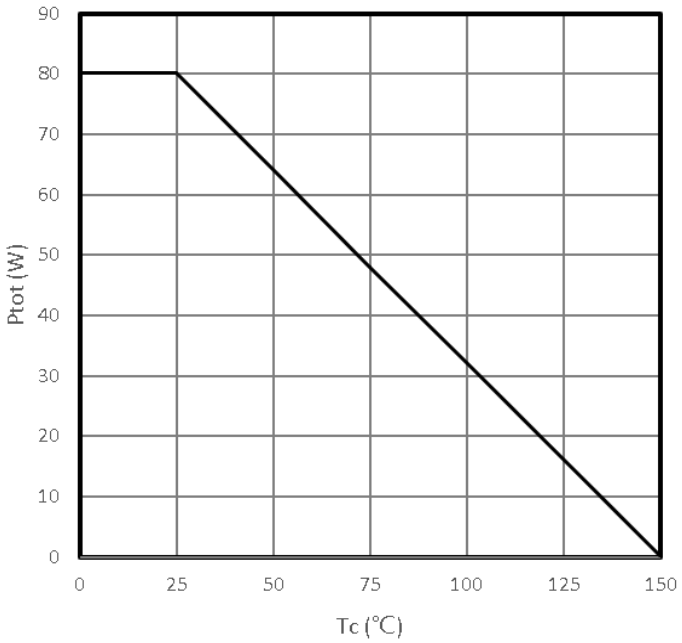


Typ. capacitances

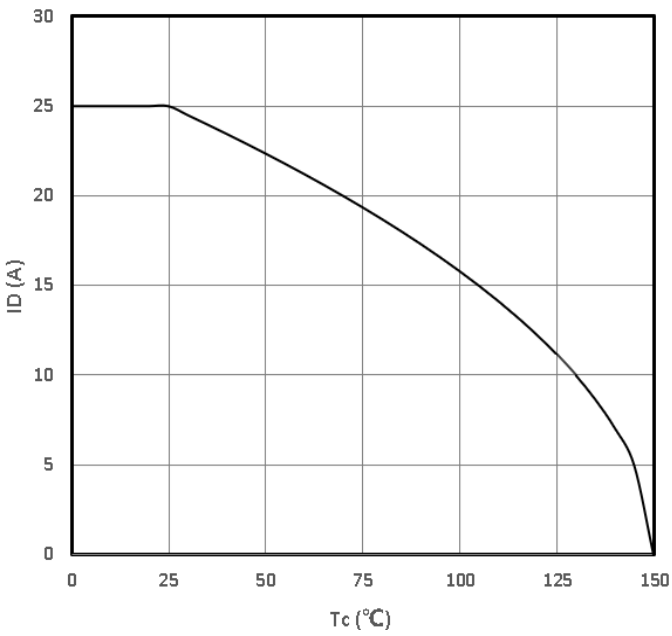
C =f(-V_{DS}); V_{GS}=0V; f =1MHz



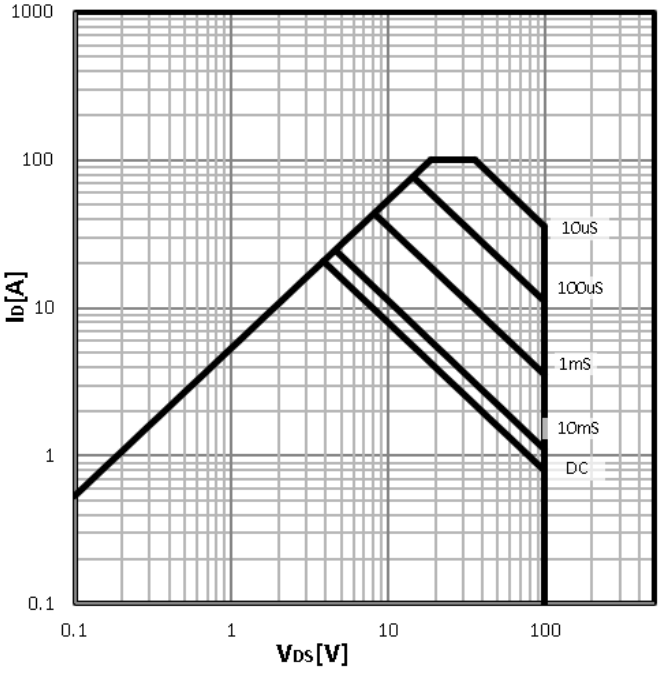
Power Dissipation
$P_{tot}=f(T_C)$



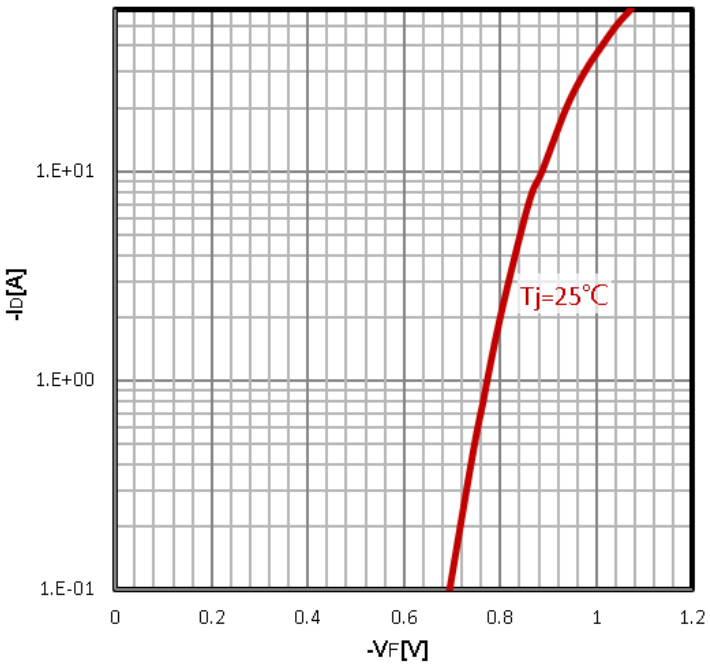
Maximum Drain Current
$-I_D=f(T_C)$



Safe operating area
$-I_D=f(-V_{DS})$

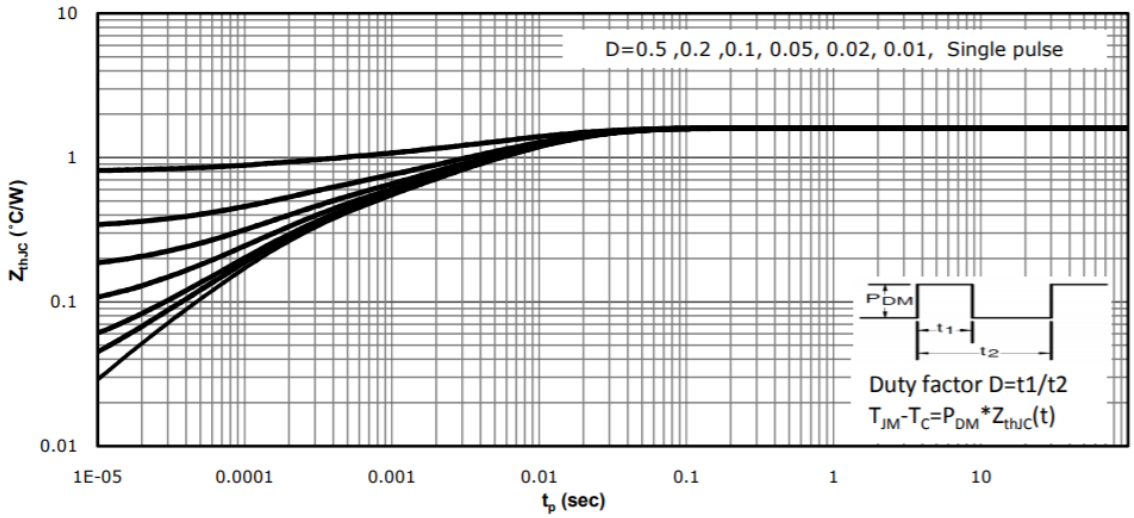


Body Diode Forward Voltage Variation
$-I_F=f(-V_{DS})$

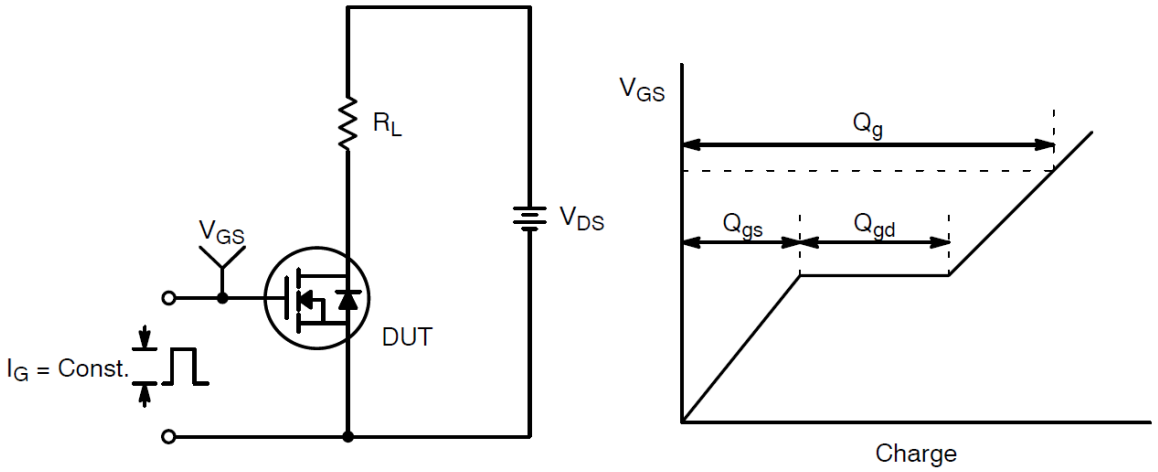


Max. transient thermal impedance

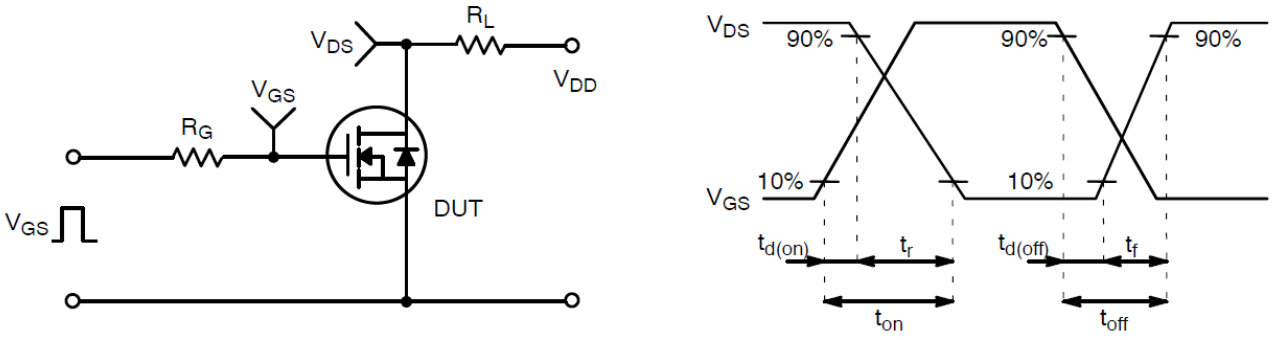
$Z_{thJC}=f(t_p)$



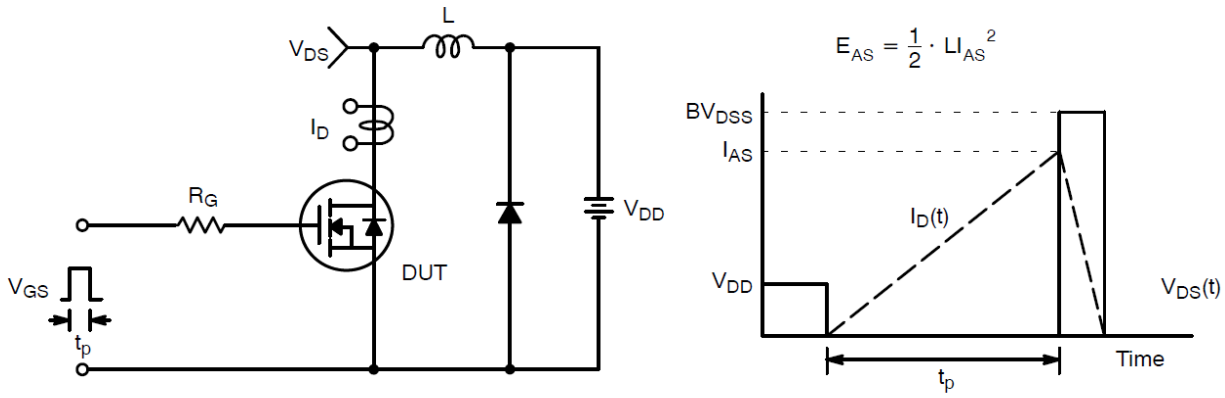
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

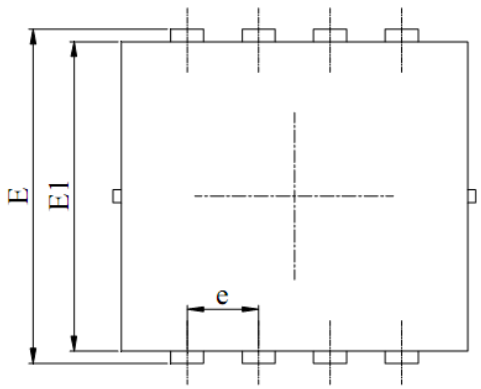


Resistive Switching Test Circuit & Waveforms

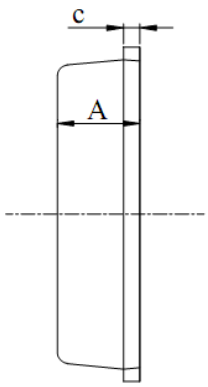


Unclamped Inductive Switching Test Circuit & Waveforms

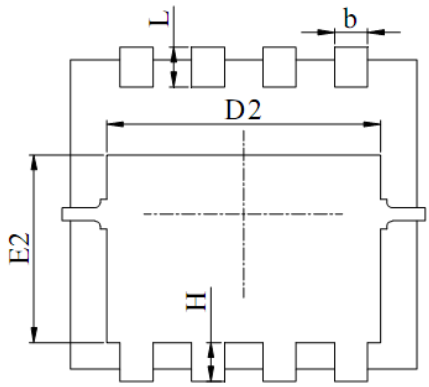
Package Mechanical Data-PDFN3333-8L-Single



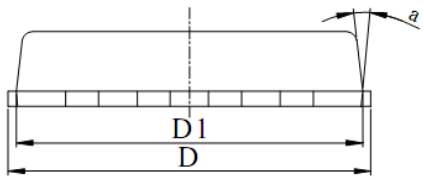
Top View



Side View



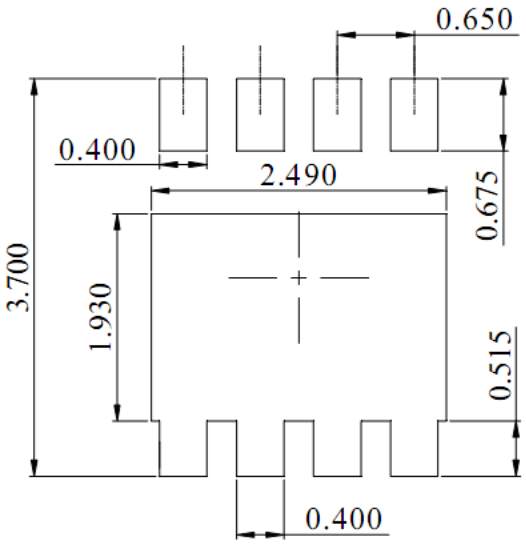
Bottom View



Front View

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMNESIONS IN MILLIMETER (ANNGLE IN DEGREE).
3. DIMENSIONS D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.20	0.25
D	3.00	3.15	3.25
D1	2.95	3.05	3.15
D2	2.39	2.49	2.59
E	3.20	3.30	3.40
E1	2.95	3.05	3.15
E2	1.70	1.80	1.90
e	0.65 BSC		
H	0.30	0.40	0.50
L	0.25	0.40	0.50
a	---	---	15°



DIMENSIONS:MILLIMETERS