

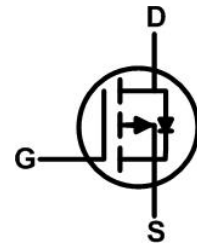
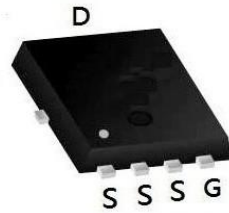


- ★ 100% EAS Guaranteed
- ★ Green Device Available
- ★ Super Low Gate Charge
- ★ Excellent CdV/dt effect decline
- ★ Advanced high cell density Trench technology

Product Summary

BVDSS	RDSON	ID
-40V	10mΩ	-30A

PDFN3333-8L Pin Configuration



Description

The XXW30P04D 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 XXW30P04D meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Absolute Maximum Ratings (T_A= 25°C, unless otherwise noted)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	-40	V
Gate-Source Voltage		V _{GS}	±20	V
Continuous Drain Current	T _C =25°C	I _D	-30	A
	T _C =100°C		-20	
Pulsed Drain Current ¹		I _{DM}	-120	A
Single Pulse Avalanche Energy ²		EAS	80	mJ
Total Power Dissipation	T _C =25°C	P _D	21	W
Operating Junction and Storage Temperature Range		T _J , T _{STG}	-55 to 150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction-to-Ambient ³	R _{θJA}	64.3	°C/W
Thermal Resistance from Junction-to-Case	R _{θJC}	6	°C/W

Electrical Characteristics (T_J = 25°C, unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit	
Static Characteristics							
Drain-Source Breakdown Voltage	V_{(BR)DSS}	V _{GS} = 0V, I _D = -250μA	-40	-	-	V	
Gate-body Leakage current	I_{GSS}	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	V _{DS} = -40V, V _{GS} = 0V	T _J =25°C	-	-	1	μA
			T _J =100°C	-	-	5	
Gate-Threshold Voltage	V_{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	-1.0	-1.6	-2.5	V	
Drain-Source On-Resistance ⁴	R_{DS(on)}	V _{GS} = -10V, I _D = -16A	-	10	13	mΩ	
		V _{GS} = -4.5V, I _D = -12A	-	14.2	20		
Forward Transconductance ⁴	g_{fs}	V _{DS} = -10V, I _D = -16A	-	44	-	S	
Dynamic Characteristics⁵							
Input Capacitance	C_{iss}	V _{DS} = -20V, V _{GS} = 0V, f = 1MHz	-	3050	-	pF	
Output Capacitance	C_{oss}		-	282	-		
Reverse Transfer Capacitance	C_{rss}		-	230	-		
Gate Resistance	R_g	f = 1MHz	-	9	-	Ω	
Switching Characteristics⁵							
Total Gate Charge	Q_g	V _{GS} = -10V, V _{DS} = -20V, I _D = -16A	-	28	-	nC	
Gate-Source Charge	Q_{gs}		-	8	-		
Gate-Drain Charge	Q_{gd}		-	8.5	-		
Turn-on Delay Time	t_{d(on)}	V _{GS} = -10V, V _{DD} = -15V, R _G = 3Ω, I _D = -16A	-	38	-	ns	
Rise Time	t_r		-	31	-		
Turn-off Delay Time	t_{d(off)}		-	90	-		
Fall Time	t_f		-	9.2	-		
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴	V_{SD}	I _S = -1A, V _{GS} = 0V	-	-	-1.2	V	
Continuous Source Current	T _C =25°C I_S	-	-	-	-30	A	

Notes:

1. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C.
2. The EAS data shows Max. rating . The test condition is V_{DD}= -25V, V_{GS}= -10V, L=0.1mH, I_{AS}= -40A.
3. The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper, The value in any given application depends on the user's specific board design.
4. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
5. This value is guaranteed by design hence it is not included in the production test..

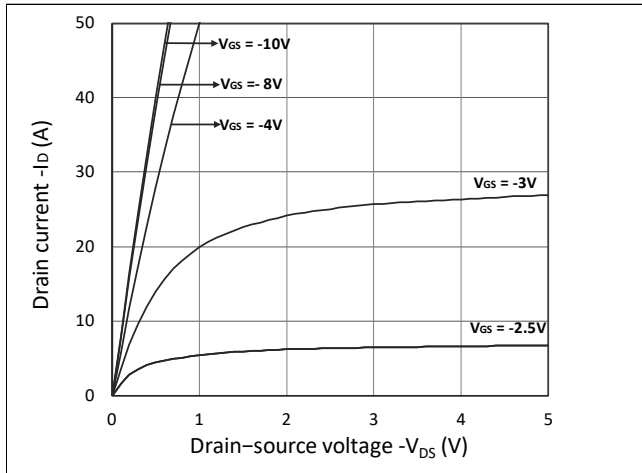
Typical Characteristics


Figure 1. Output Characteristics

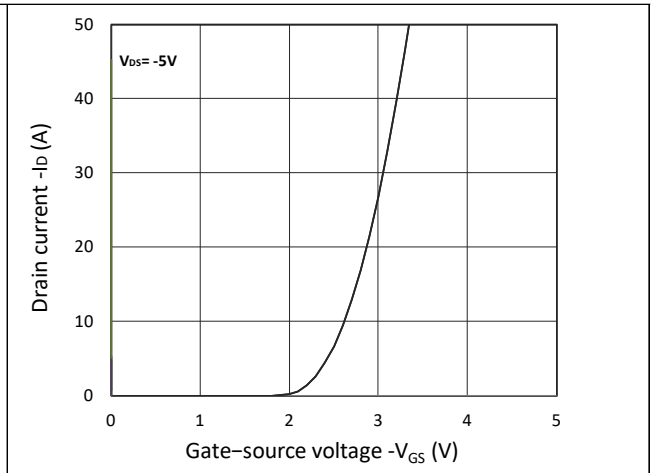


Figure 2. Transfer Characteristics

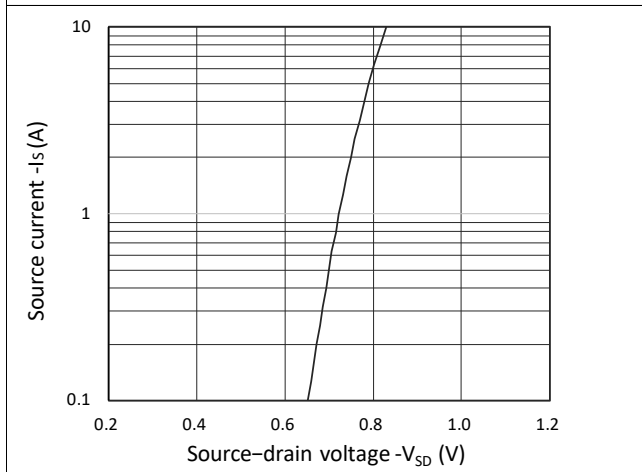
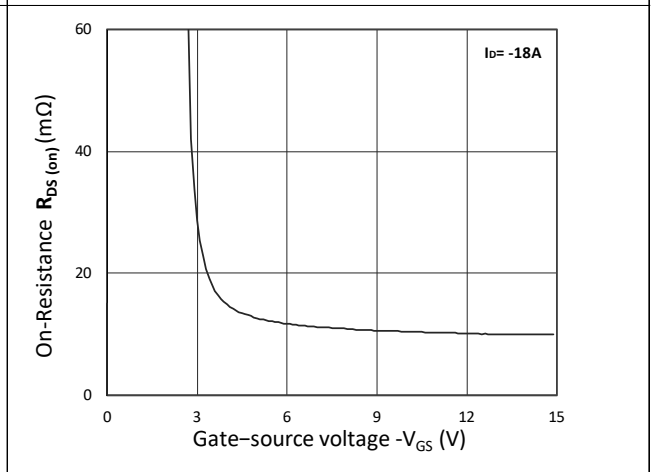
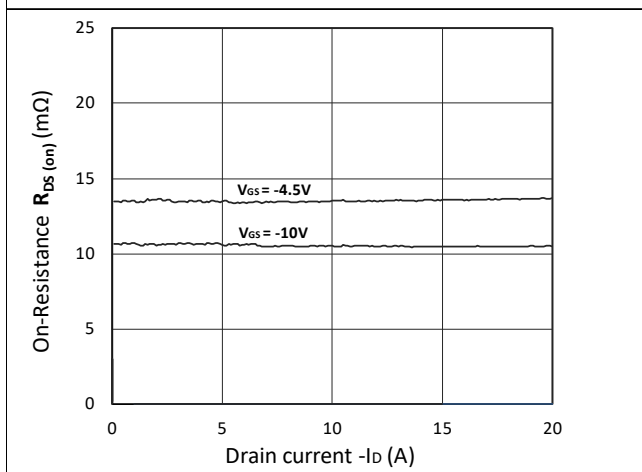
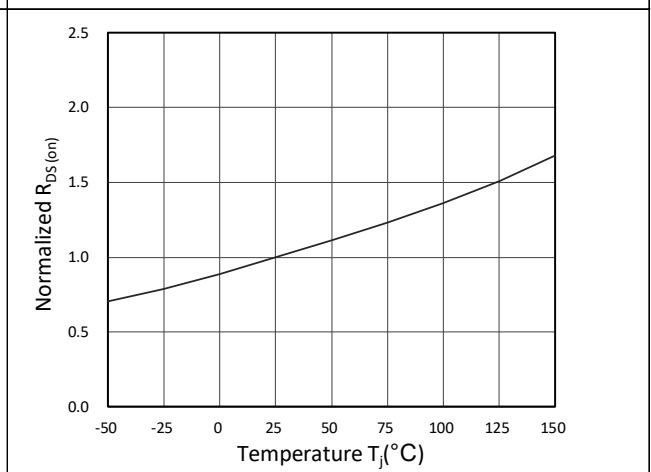


Figure 3. Forward Characteristics of Reverse


 Figure 4. $R_{DS(ON)}$ vs. V_{GS}

 Figure 5. $R_{DS(ON)}$ vs. I_D

 Figure 6. Normalized $R_{DS(ON)}$ vs. Temperature

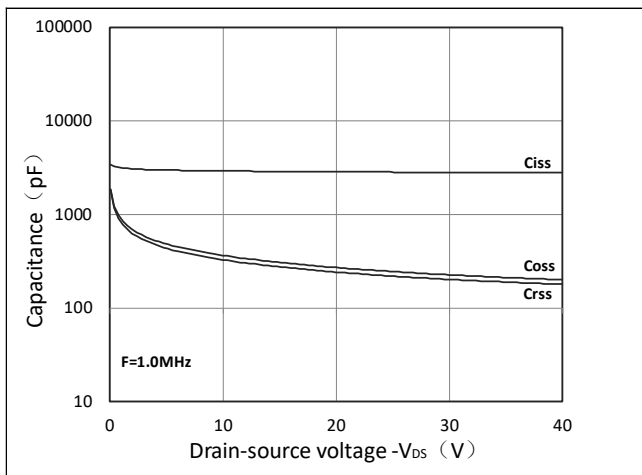


Figure 7. Capacitance Characteristics

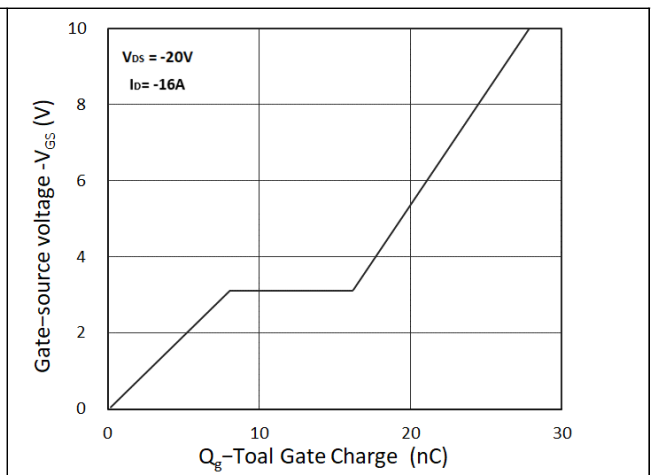


Figure 8. Gate Charge Characteristics

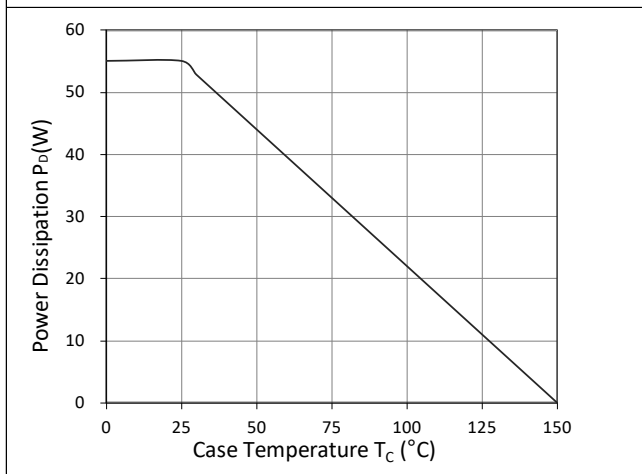


Figure 9. Power Dissipation

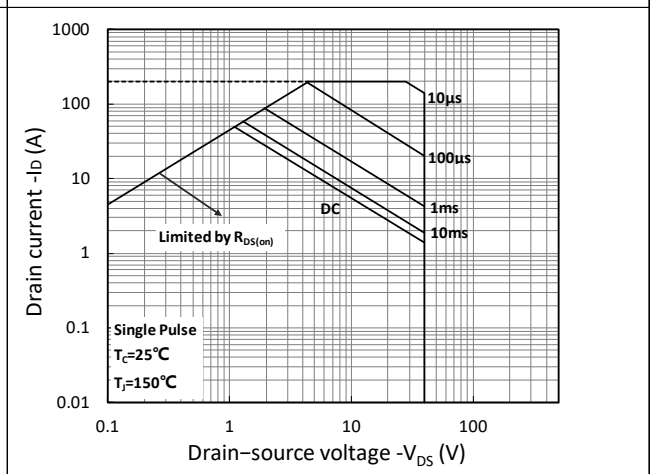


Figure 10. Safe Operating Area

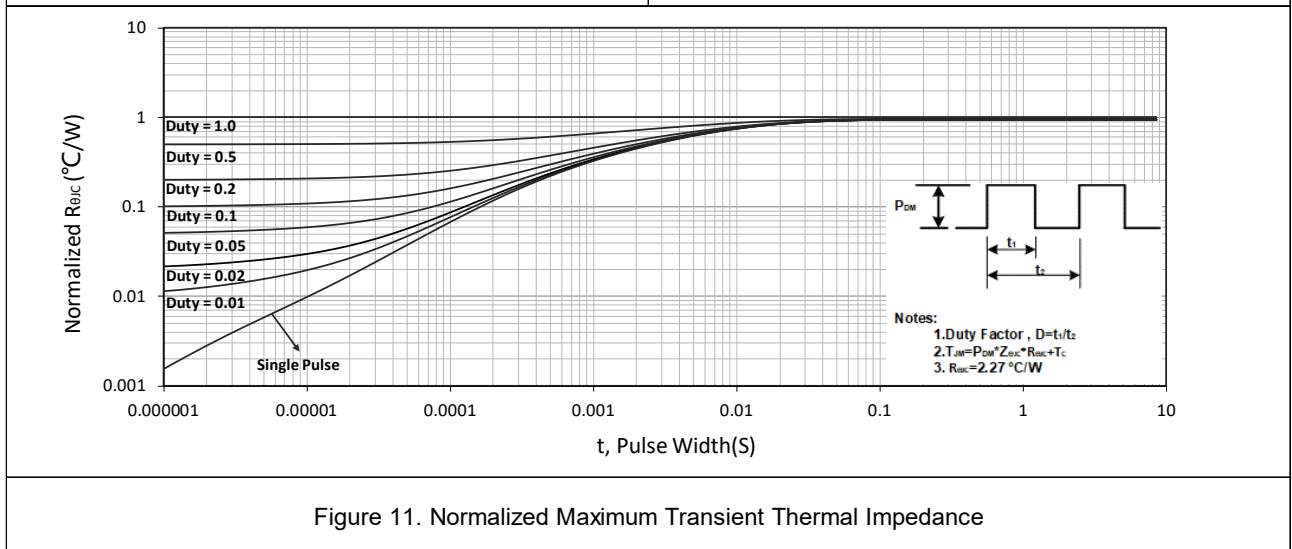
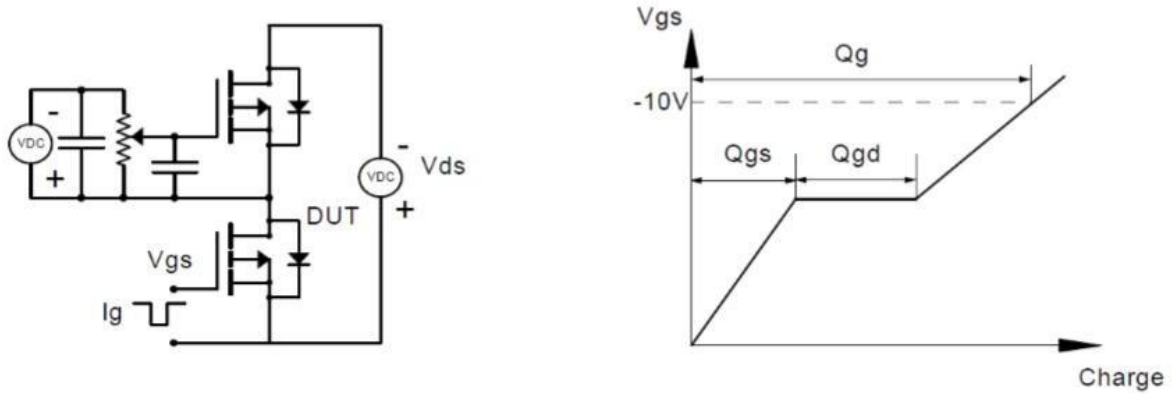
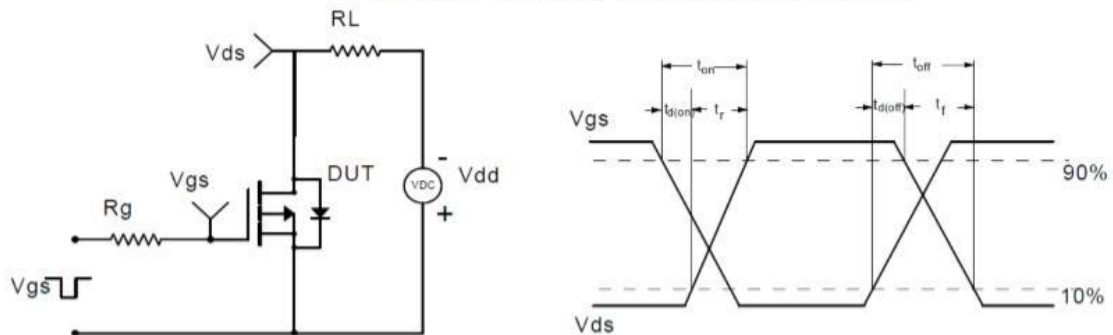
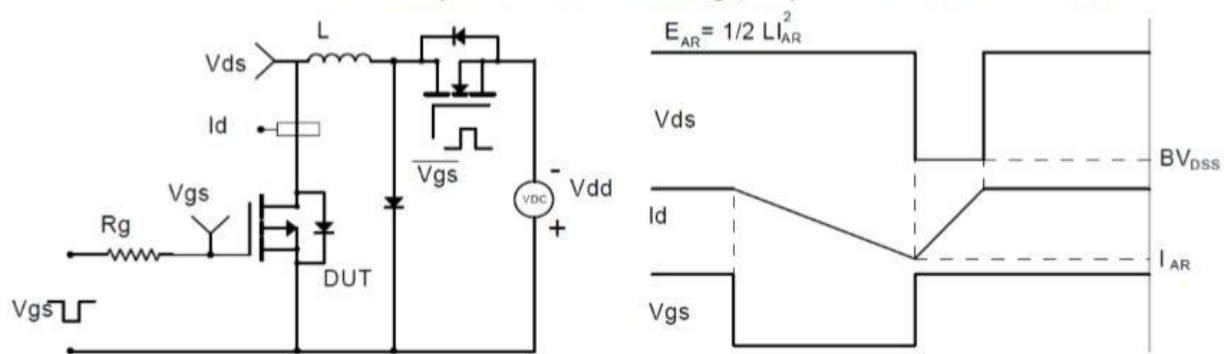
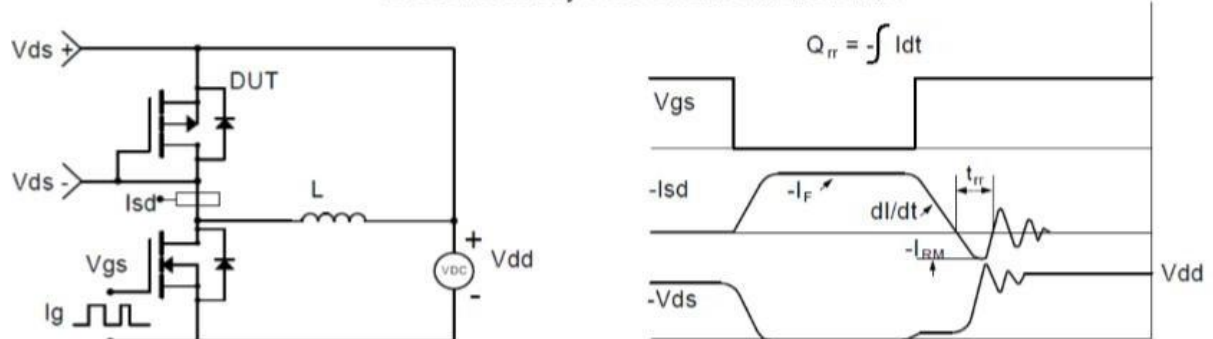
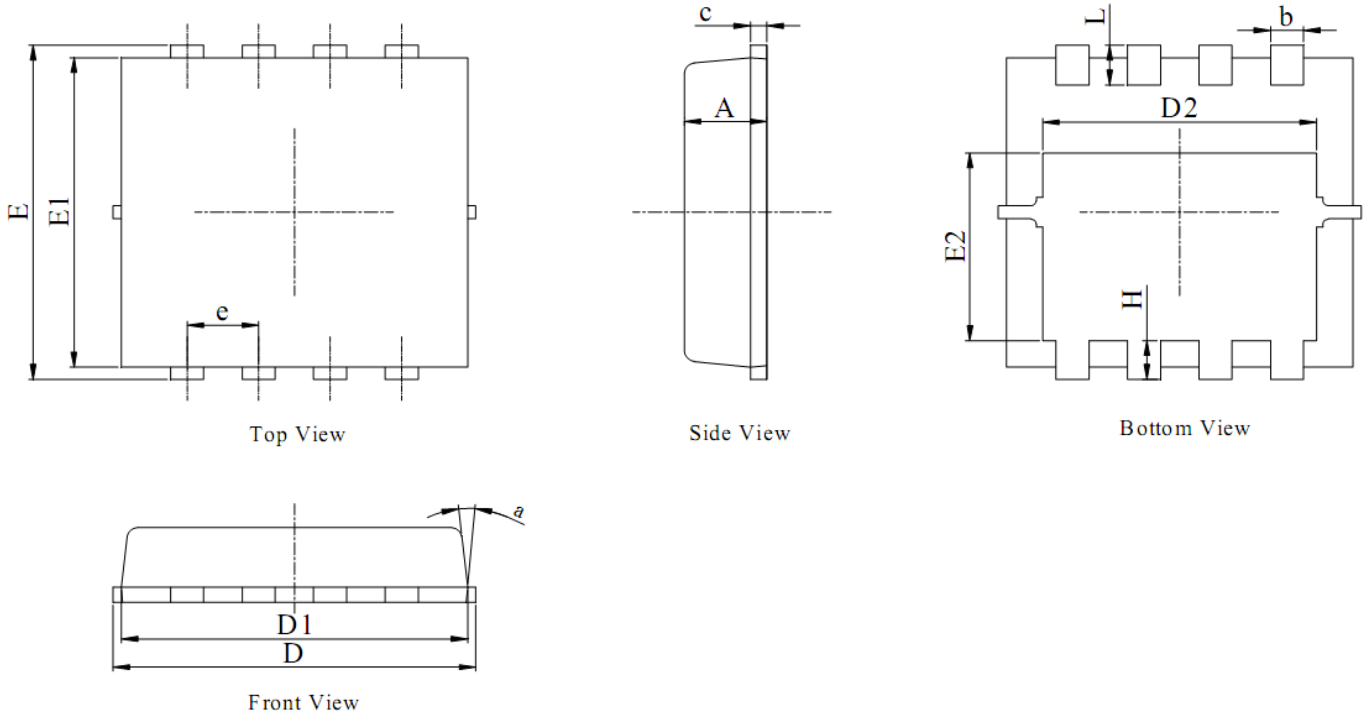


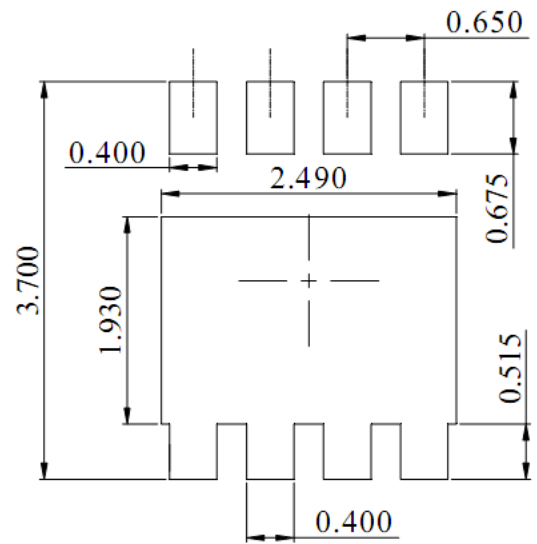
Figure 11. Normalized Maximum Transient Thermal Impedance

Test Circuit
Gate Charge Test Circuit & Waveform

Resistive Switching Test Circuit & Waveforms

Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

Diode Recovery Test Circuit & Waveforms


Package Mechanical Data-PDFN3333-8L-Single

NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M,1994.
2. ALL DIMENSIONS IN MILLIMETER (ANGLE 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