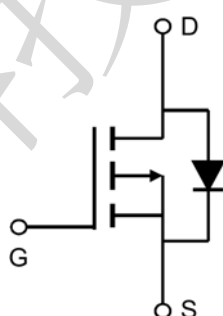
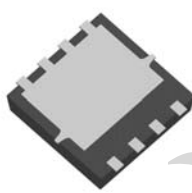


P-Channel Enhancement-Mode MOSFET (-40V, -48A)

PRODUCT SUMMARY

PRODUCT SUMMARY (P-Channel)		
V _{DSS}	I _D	R _{DS(on)} (mΩ) Typ.
-40V	-48A	11@ V _{GS} = -10V, I _D = -20A
		13.5@ V _{GS} = -4.5V, I _D = -15A

Features	Applications
- Super high density cell design for extremely low R_{DS(ON)} - Exceptional on-resistance and maximum DC current capability - High Current Capability - Lead (Pb) -free and halogen-free	- Load Switch - Battery Protection

PDFN3333-8L		Pin 1/2/3: Source PIN 4: Gate PIN 5/6/7/8: Drain 	TOP Marking
			 ET6405 XXXXXX
			XXXXXX:D/C

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

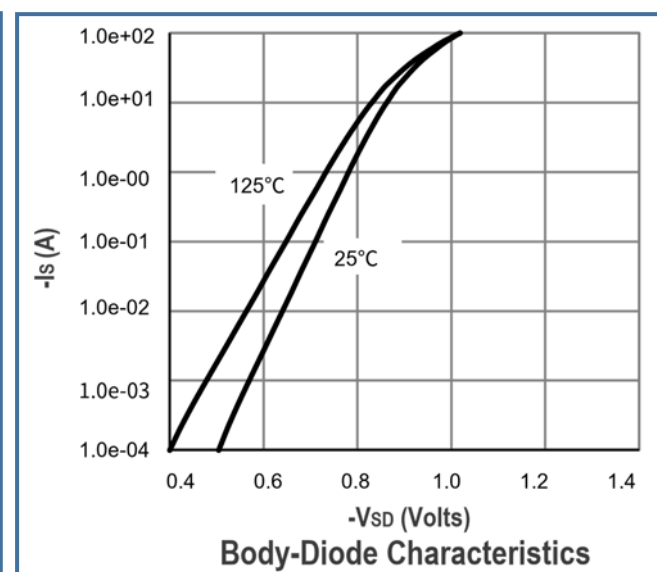
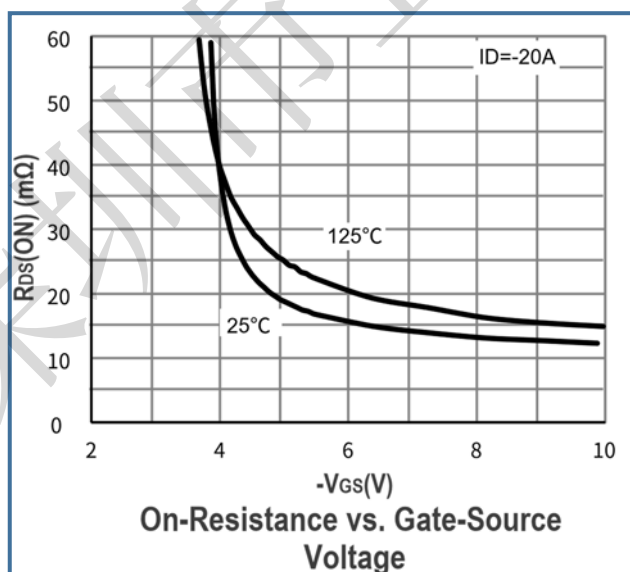
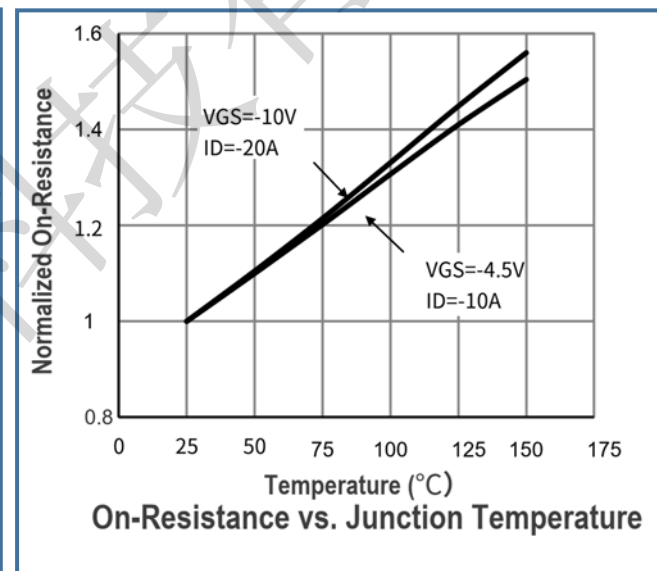
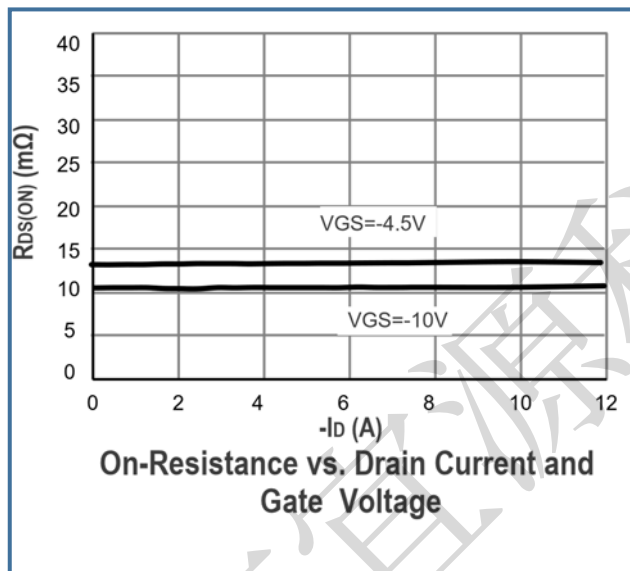
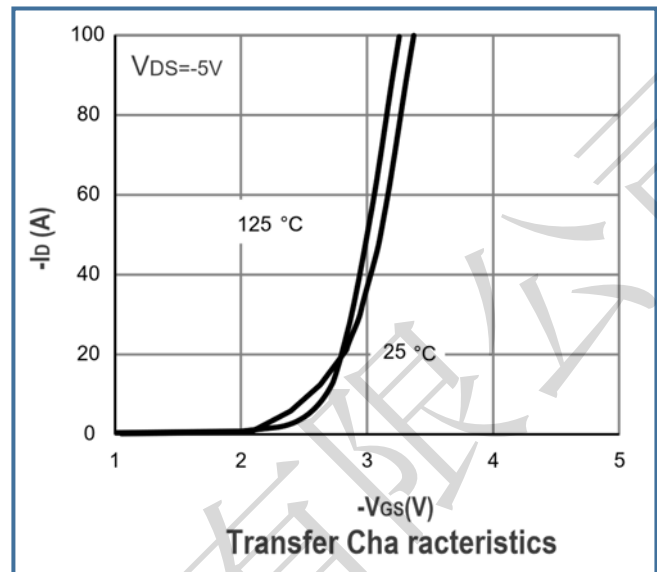
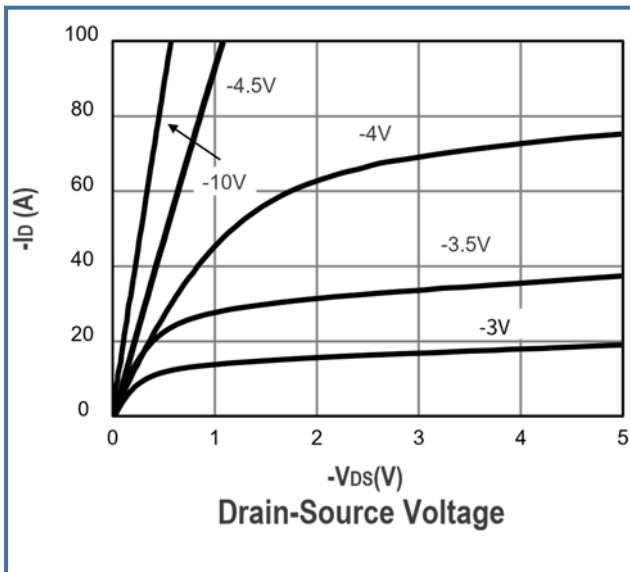
Symbol	Parameter	Max P	Units
V _{DS}	Drain-Source Voltage	-40	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current (Continuous)@T _A =25°C	-48	A
	Drain Current (Continuous)@T _A =75°C	-38	A
I _{DM}	Drain Current (Pulsed) ^a	-180	A
P _D	Total Power Dissipation @T _c =25°C	69	W
	Total Power Dissipation @T _c =75°C	27	W
E _{AS}	Avalanche energy L=0.5mH	80	mJ
T _j , T _{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R _{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	43	°C/W

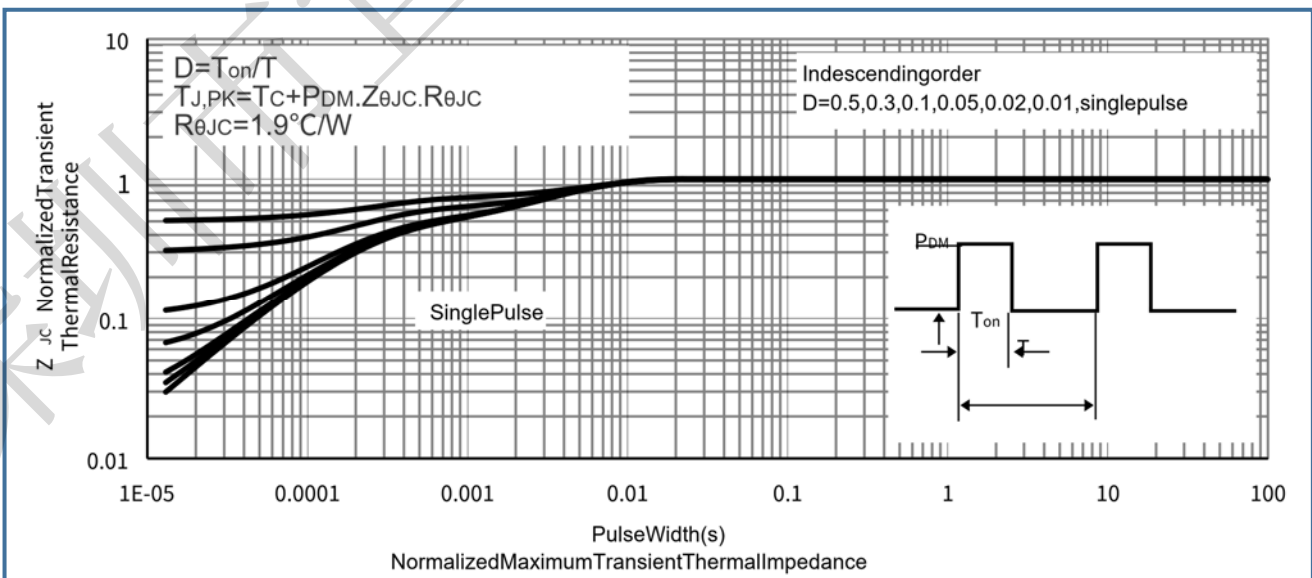
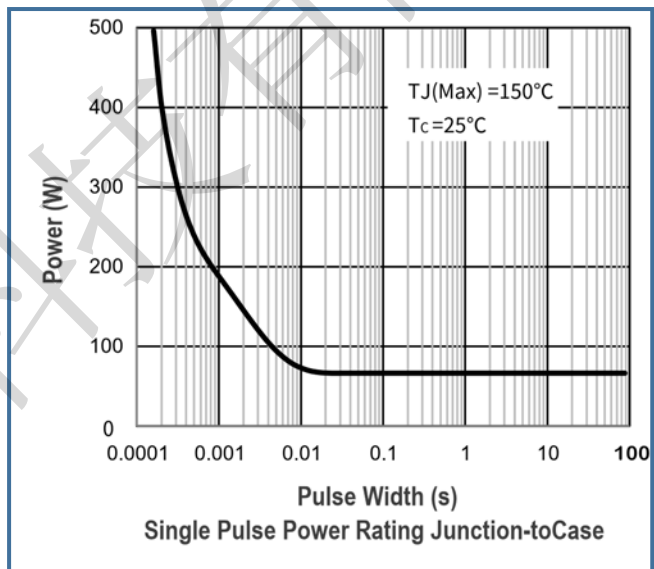
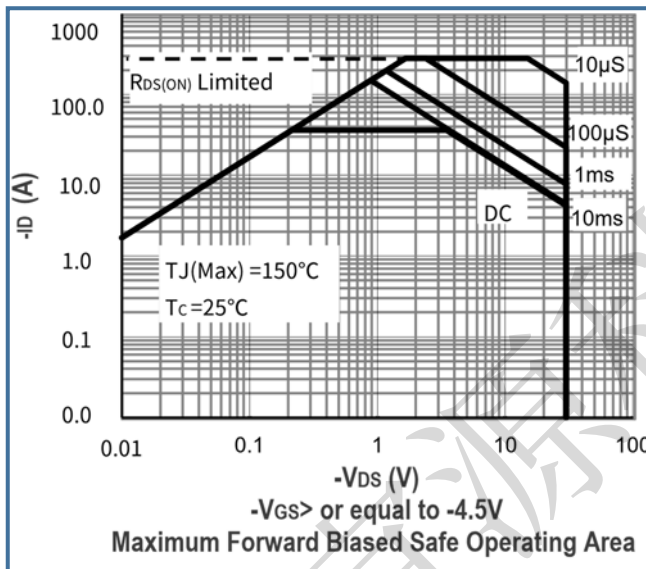
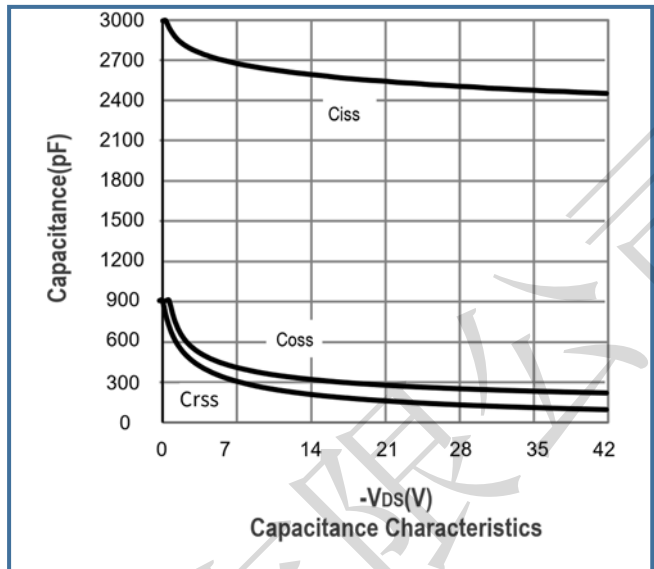
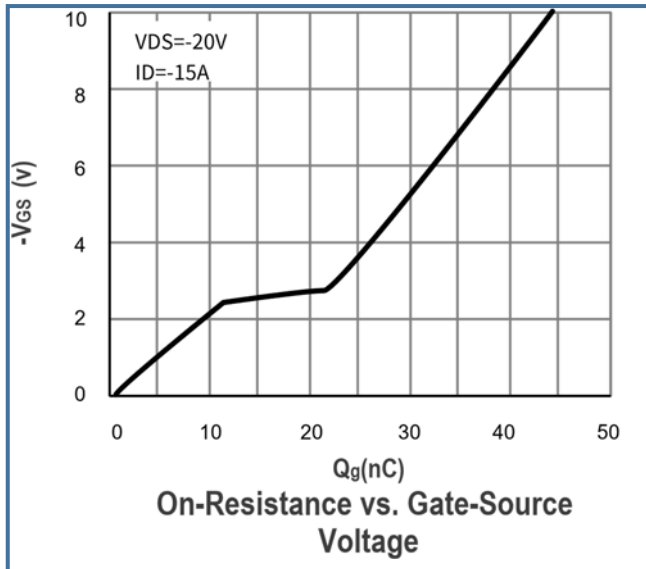
P-Channel Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-40	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-40V, V _{GS} =0V	-	-	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250uA	-1.0	-1.6	-2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A	-	11	16.5	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	13.5	22.5	
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-15A		50		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-20V, V _{GS} =-0V, f=1MHz	-	2435	-	PF
C _{oss}	Output Capacitance		-	255	-	
C _{rss}	Reverse Transfer Capacitance		-	170	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-20V, I _D =-15A, V _{GS} =-10V	-	43	-	nC
Q _{gs}	Gate-Source Charge		-	3.3	-	
Q _{gd}	Gate-Drain Charge		-	2.9	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =-20V, R _L =1.5Ω, V _{GEN} =-10V, R _G =3Ω	-	11	-	nS
t _r	Turn-on Rise Time		-	11	-	
t _{d(off)}	Turn-off Delay Time		-	57	-	
t _f	Turn-off Fall Time		-	18	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =-15A	-	0.85	-1.20	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	4.5	-	Ω

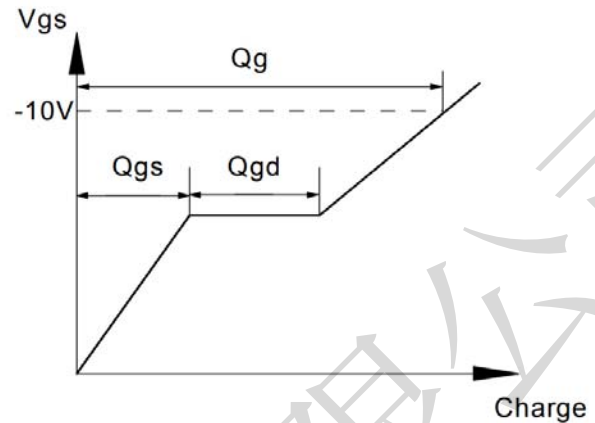
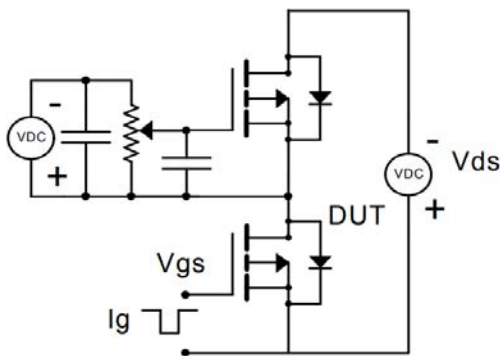
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

P-Channel Typical Characteristics Curves (Ta=25°C, unless otherwise note)

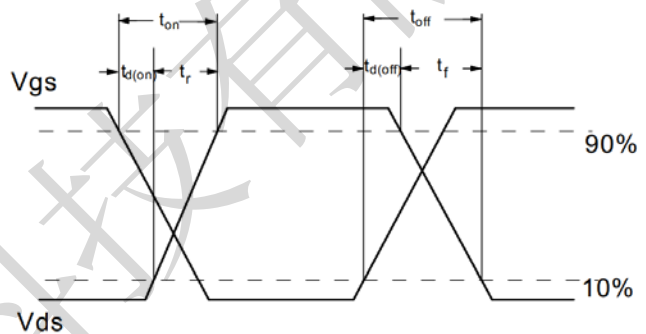
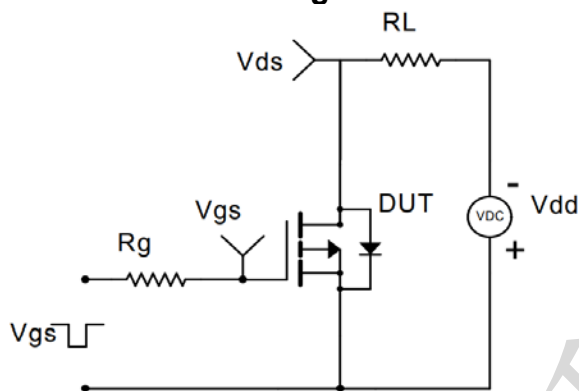




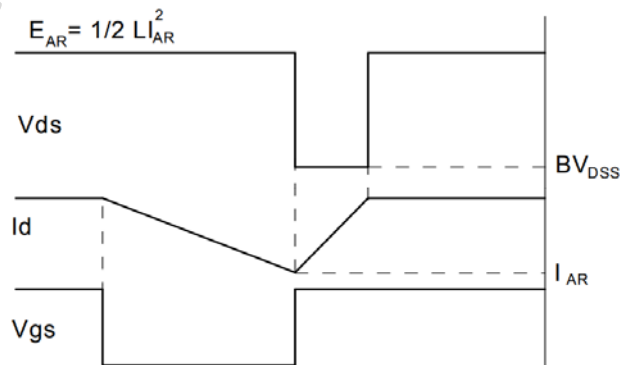
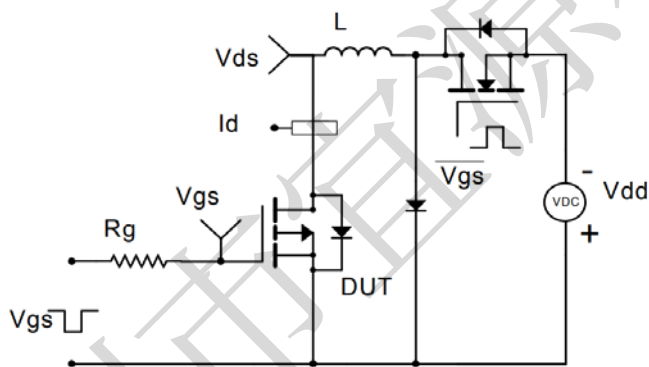
P Gate Charge Test Circuit & Waveforms



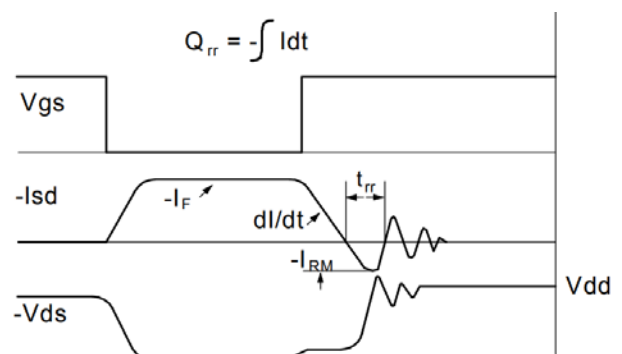
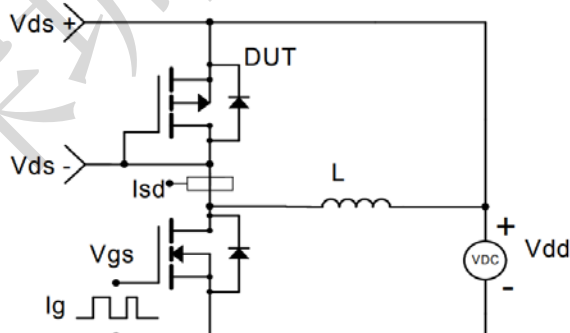
P Resistive Switching Test Circuit & Waveforms



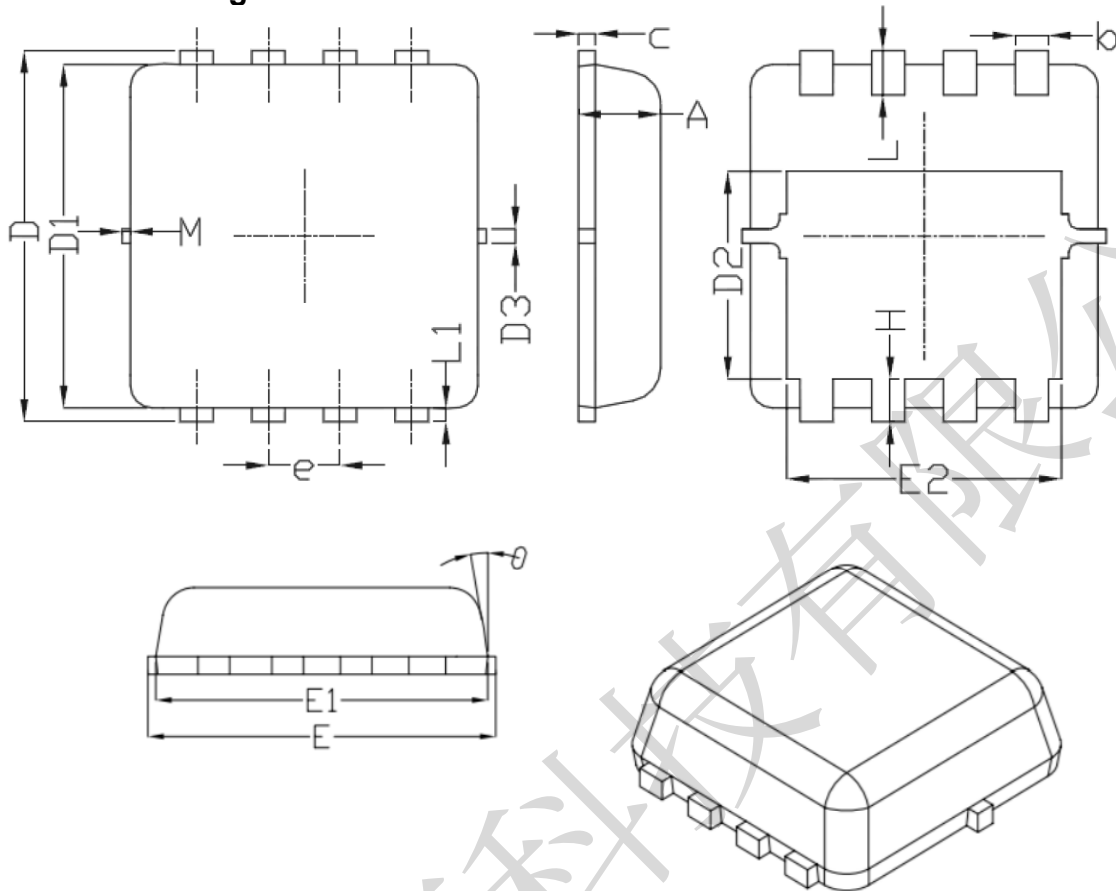
P Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



P Diode Recovery Test Circuit & Waveforms



PDFN3333-8L Package Outline Data



Symbol	Dimensions (unit : mm)		
	Min	TYP	Max
A	0.70	0.75	0.8
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.2
D2	1.78	1.88	1.98
D3	-	0.13	-
E	3.20	3.30	3.4
E1	3.00	3.15	3.2
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.5
L	0.30	0.40	0.5
L1	-	0.13	-
K	0.30	-	-
θ	-	10°	12°
M	*	*	0.15