

N-Channel 30V MOSFET

E030N2P0HL1

V_{DS} (V)	$R_{DS(on),max}$ (m Ω)	I_D (A)
30V	2 @ $V_{GS} = 10V$	180

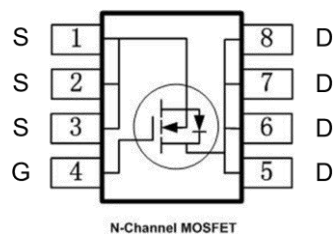
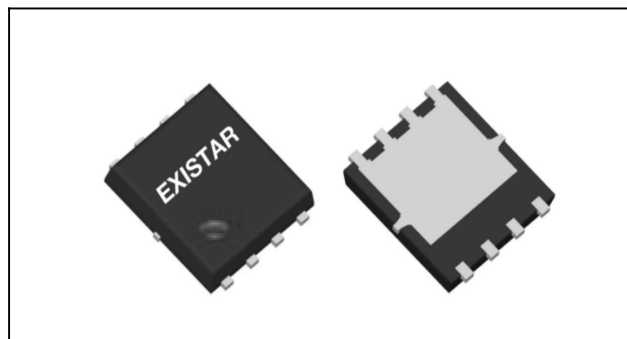
Features

- Low $R_{DS(on)}$ trench technology
- Low thermal impedance
- Fast switching speed
- 100% avalanche tested

Applications

- DC/DC conversion
- Power switch
- PD charger
- Moto driver

PDFN5X6



RoHS
COMPLIANT
HALOGEN
FREE

Package And Ordering Information

Ordering code	Package	Marking
E030N2P0HL1	PDFN5x6	E030N2P0HL1

Ordering Information

Package	Units/ Reel	Reels/ Inner Box	Units/ Inner Box
PDFN5x6	5000	1	5000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	30	V
ID, pulse	720	A
RDS(ON), max @ VGS=10V	2	mΩ
Qg	102	nC

Absolute Maximum Ratings at Tj=25°C Unless Otherwise Noted

Parameter		Symbol	Limit	Unit
Drain-source voltage		V _{DS}	30	V
Gate-source voltage		V _{GS}	±20	
Continuous drain current	T _C =25°C	I _D	180	A
	T _C =100°C		114	
Pulsed drain current		I _{D,pulse}	720	
Avalanche energy, single pulse		E _{AS}	361	mJ
Power dissipation	T _C =25°C	P _D	114	W
	T _A =25°C		2.6	
Operating junction and storage temperature range		T _J , T _{stg}	-55 to 150	°C

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	R _{θJC}	1.1	°C/W
Thermal resistance, junction-to-ambient	Steady state	R _{θJA}	48	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	V _{(BR)DSS}	30			V	V _{GS} = 0, I _D = 250 μA
Gate-source threshold voltage	V _{GS(th)}	1.2	1.7	2.3	V	V _{DS} = V _{GS} , I _D = 250 μA
Gate-body leakage	I _{GSS}			±100	nA	V _{DS} = 0 V, V _{GS} = ±20 V
Zero gate voltage drain current	I _{DSS}			1	μA	V _{DS} = 30 V, V _{GS} = 0 V
Drain-source on-resistance	R _{DS(on)}		1.6	2	mΩ	V _{GS} = 10 V, I _D = 30 A
Drain-source on-resistance	R _{DS(on)}		2.5	3.1	mΩ	V _{GS} = 4.5 V, I _D = 20 A
Forward transconductance	g _{fs}		54		S	V _{DS} = 5 V, I _D = 30 A

Gate resistance	R _g		2.3		Ω	f=1MHz
Gate Charge						
Total gate charge	Q _g		102		nC	V _{DS} = 15 V, I _D = 30 A, V _{GS} = 10 V
Gate-source charge	Q _{gs}		15			
Gate-drain charge	Q _{gd}		23			
Dynamic						
Turn-on delay time	t _{d(on)}		10		ns	V _{DS} = 15 V, I _D =30 A, V _{GS} = 10 V, R _{GEN} = 3 Ω
Rise time	t _r		81			
Turn-off delay time	t _{d(off)}		83			
Fall time	t _f		45			
Input capacitance	C _{iss}		5095		pF	V _{DS} =15 V, V _{GS} = 0 V, f = 100kHz
Output capacitance	C _{oss}		635			
Reverse transfer capacitance	C _{rss}		530			
Body Diode						
Diode forward voltage	V _{SD}		0.8	1	V	V _{GS} = 0 V, I _F = 30 A
Reverse recovery time	t _{rr}		25		ns	V _R = 25 V, I _S =30 A, di/dt = 100 A/μs
Reverse recovery charge	Q _{rr}		16		nC	

Electrical Characteristics Diagrams

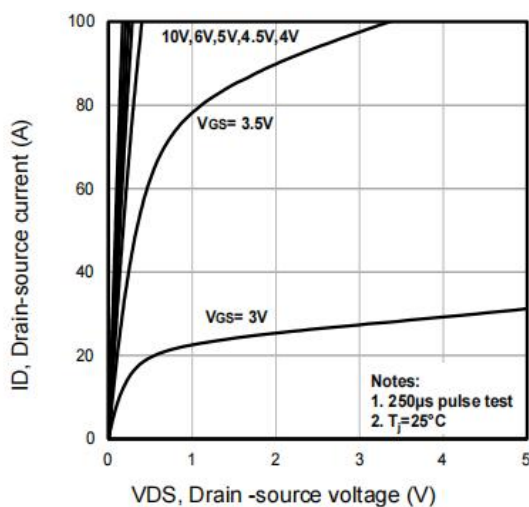


Fig1. Typical output characteristics

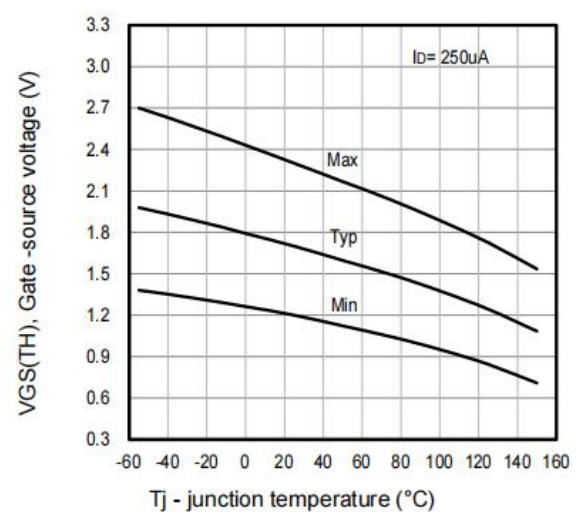


Fig2. Typical $V_{GS(TH)}$ gate-source voltage Vs. T_j

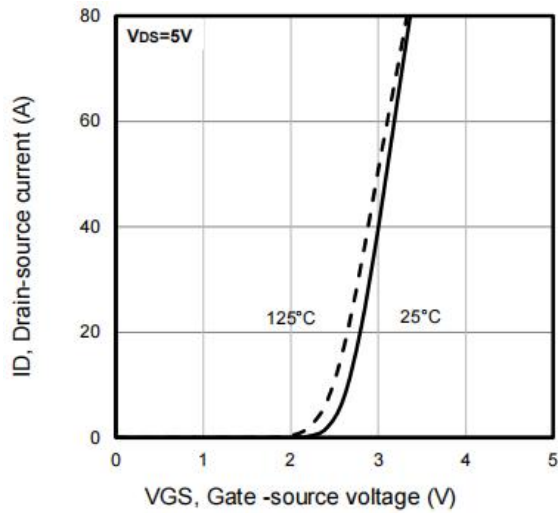


Fig3. Typical transfer characteristics

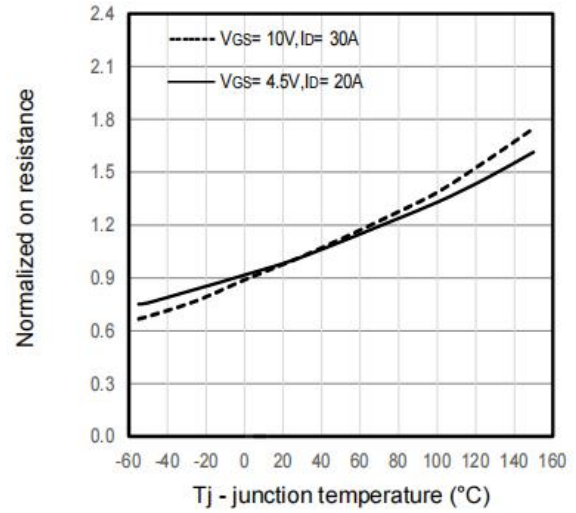


Fig4. Typical normalized on-resistance Vs. T_j

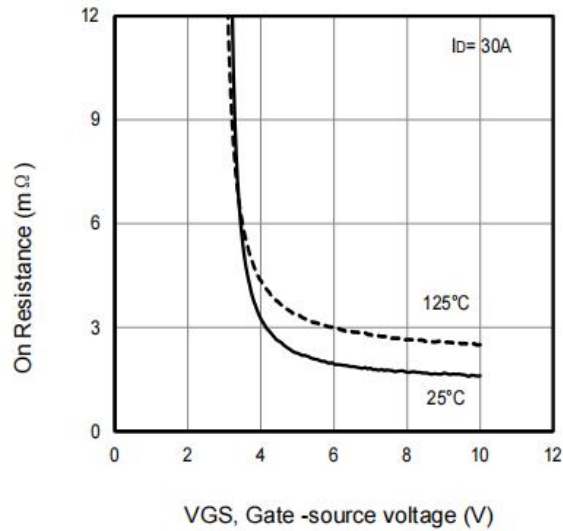


Fig5. Typical on resistance Vs gate-source voltage

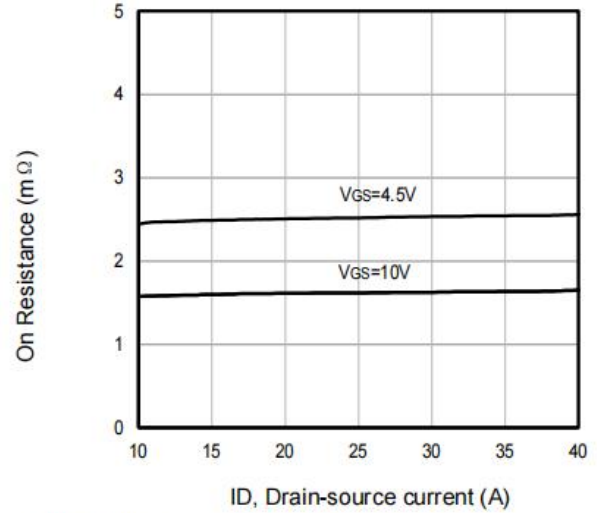


Fig6. Typical on resistance Vs drain current

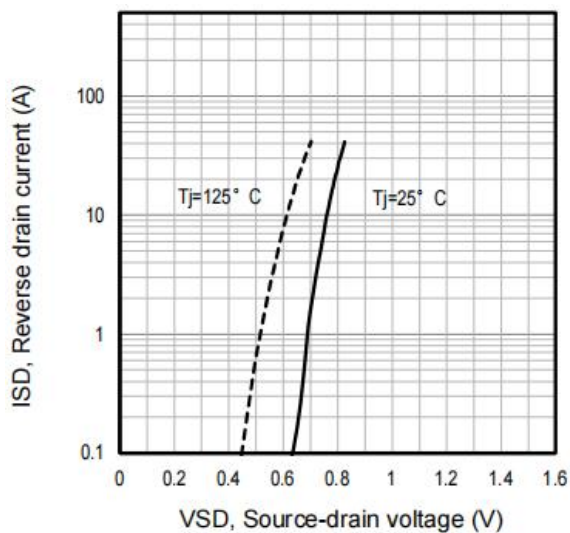


Fig7. Typical source-drain diode forward voltage

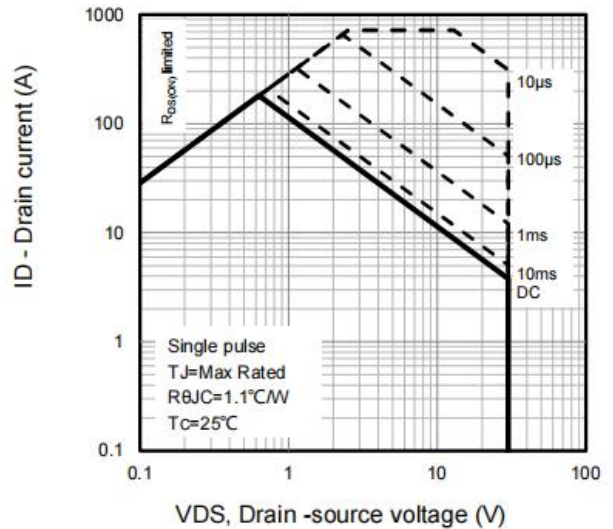


Fig8. Maximum safe operating area

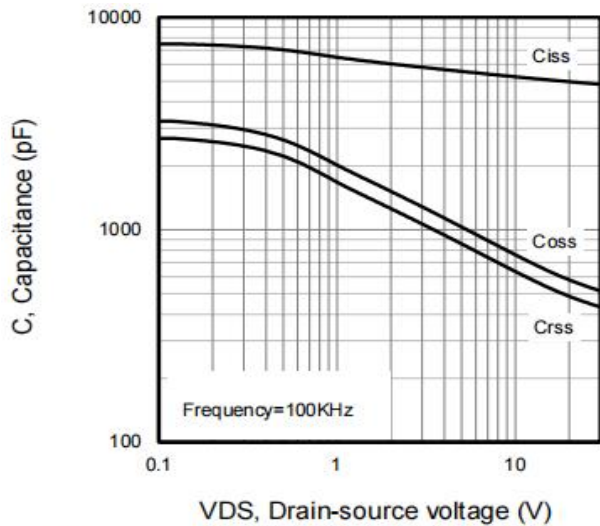


Fig9. Typical capacitance Vs. drain-source voltage

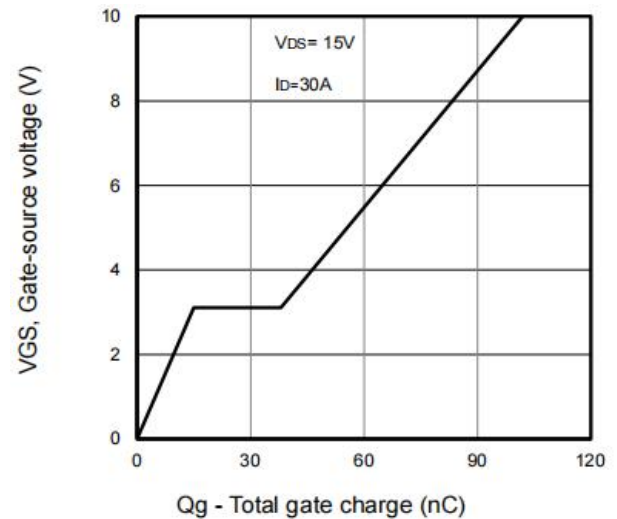


Fig10. Typical gate charge Vs. gate-source voltage

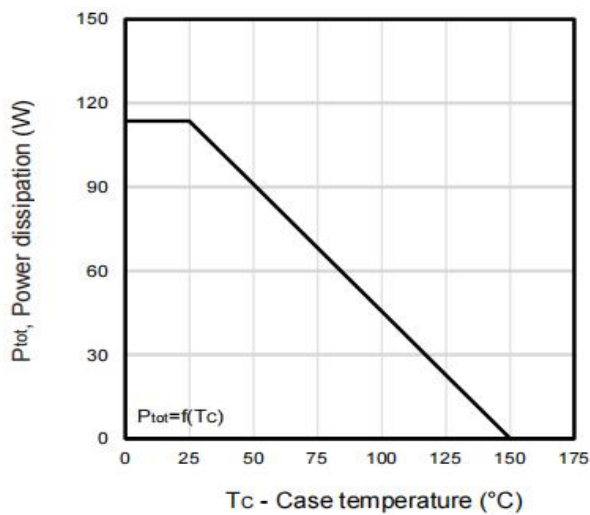


Fig11. Power dissipation Vs. case temperature

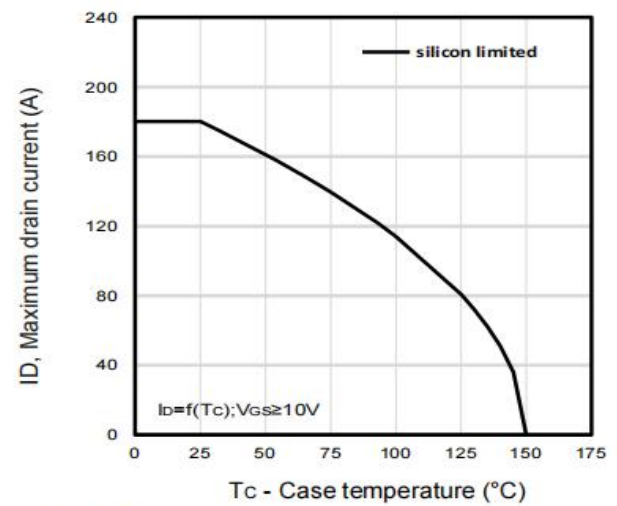


Fig12. Maximum drain current Vs. case temperature

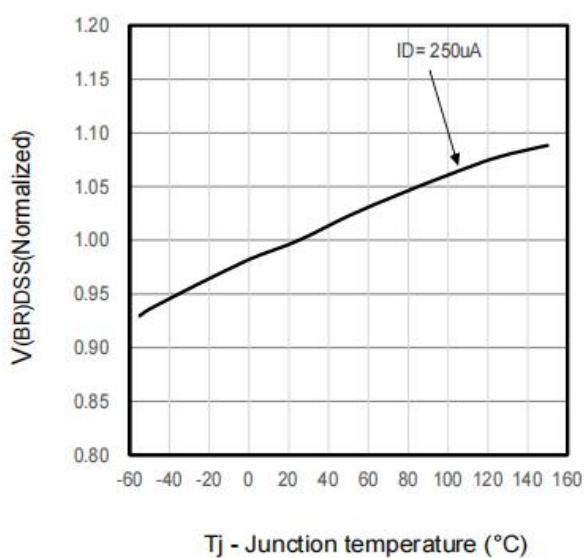


Fig13. Typical $V(BR)_{DSS}$ Vs T_j

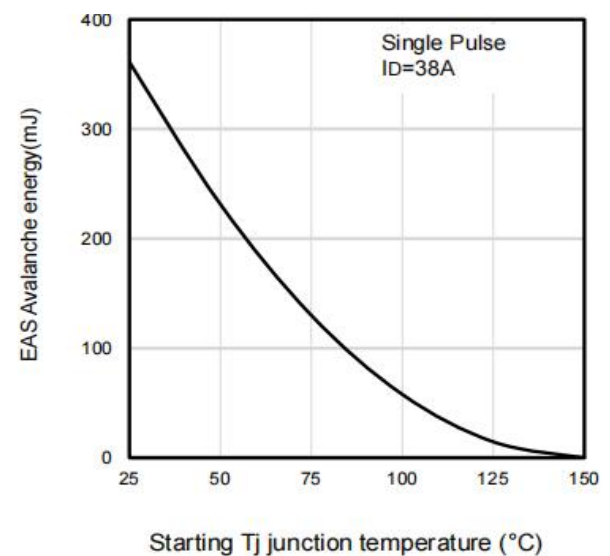


Fig14. Maximum avalanche energy vs temperature (°C)

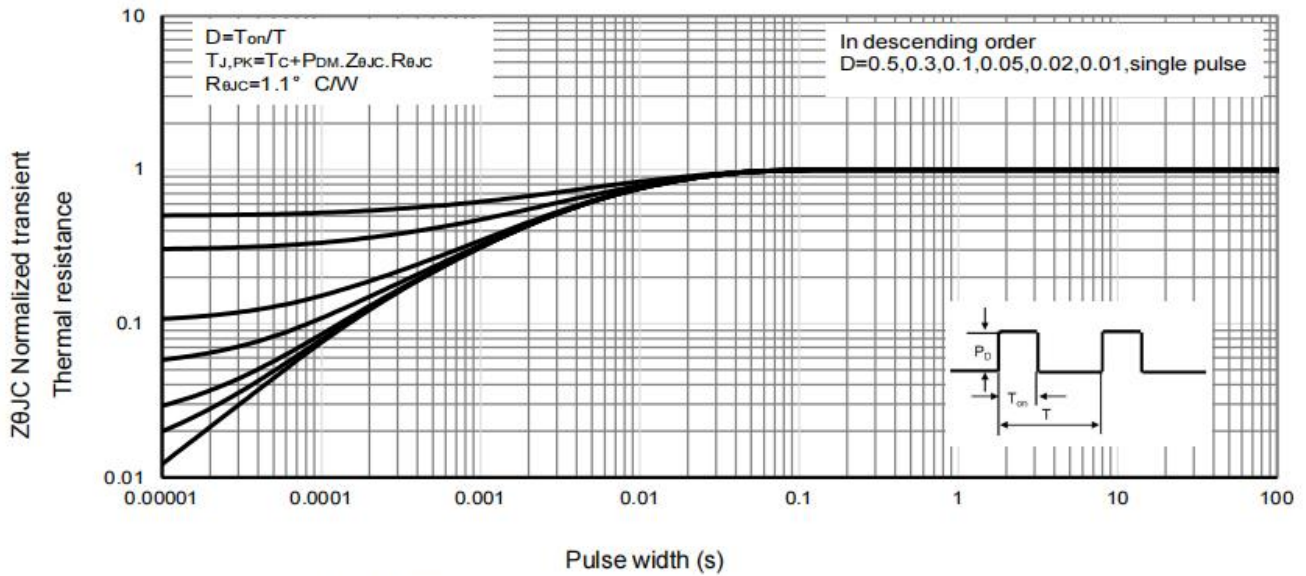


Fig15 . Normalized maximum transient thermal impedance

Test circuits and waveforms

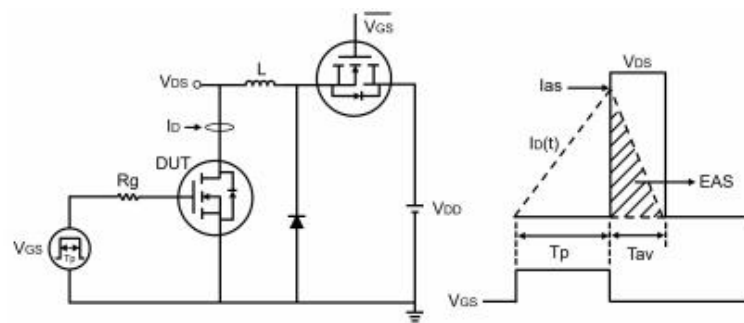


Fig16. Unclamped inductive test circuit and waveforms

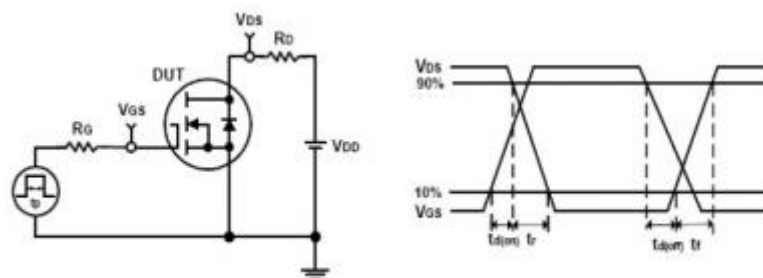
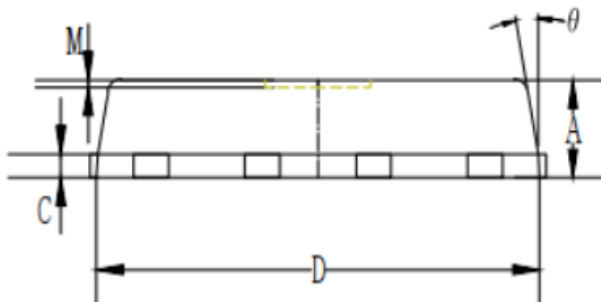
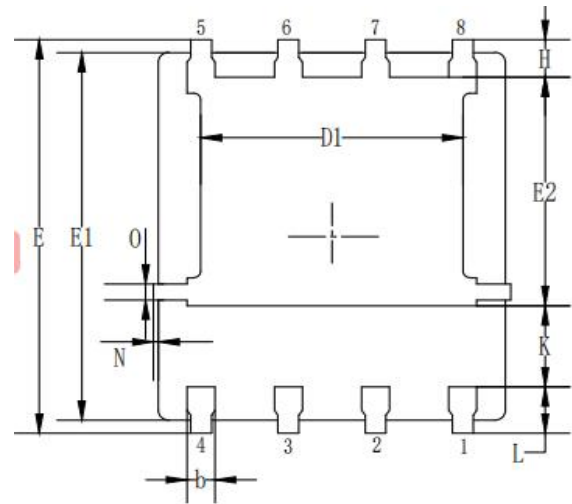
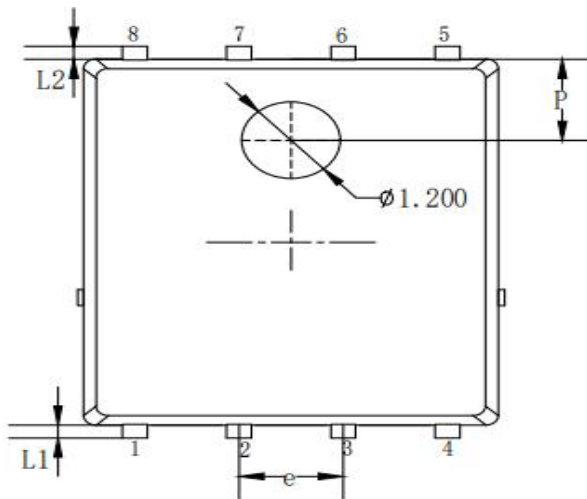


Fig17. Switching time test circuit and waveforms

Package Outline Dimensions



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.10
D1	3.72	3.82	3.92
E	6.00	6.15	6.25
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.69	0.75
L1/L2	0.10 ~ 0.20		
θ	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O	0.25 REF.		
P	1.28 REF.		

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