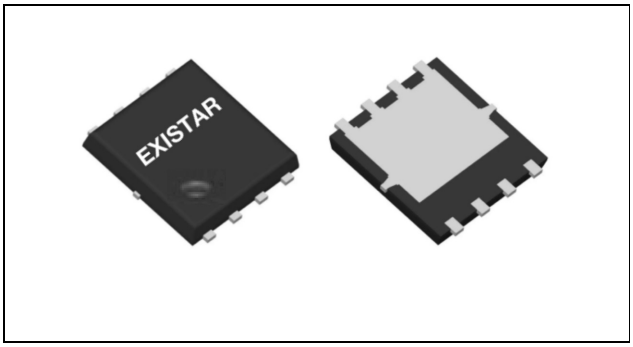
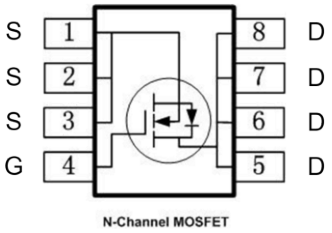
N-Channel 100V MOSFET

E100N8P5HL1

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
100V	8.5 @ V_{GS} = 10V	45

PDFN5X6





Pb-free
RoHS COMPLIANT
HALOGEN FREE

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

Package And Ordering Information

Ordering code	Package	Marking
E100N8P5HL1	PDFN5x6	E100N8P5HL1

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)	100	V
ID, pulse	180	A
RDS(ON), max @ VGS=10V	8	mΩ
Qg	37.8	nC

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

Parameter		Symbol	Limit	Unit
Drain-source voltage		V_{DS}	100	V
Gate-source voltage		V_{GS}	±20	
Continuous drain current	T_C=25°C	I_D	45	A
	T_C=100°C		22	
Pulsed drain current		$I_{D,pulse}$	180	
Avalanche energy, single pulse		E_{AS}	240	mJ
Power dissipation	T_C=25°C	P_D	31	W
	T_A=25°C		-	
Operating junction and storage temperature range		T_J, T_{stg}	-55 to +150	℃

Thermal Characteristics

Parameter		Symbol	Max.	Unit
Thermal resistance, junction-to-case	Steady state	$R_{\theta JC}$	4	°C/W
Thermal resistance, junction-to-ambient	Steady state	$R_{\theta JA}$	62	

Electrical Characteristics at Tj=25°C unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Static						
Drain to source breakdown voltage	$V_{(BR)DSS}$	100			V	V_{GS} = 0, I_D = 250 μA
Gate-source threshold voltage	$V_{GS(th)}$	1.2		2.5	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} = 80 V, V_{GS} = 0 V
Drain-source on-resistance	$R_{DS(on)}$		7.7	8.5	mΩ	V_{GS} = 10 V, I_D = 15 A
Drain-source on-resistance	$R_{DS(on)}$		10.1	11.5	mΩ	V_{GS} = 4.5 V, I_D = 10 A

Forward transconductance	gfs		30		S	V_{DS} = 5 V, I_D = 10 A
Gate resistance	Rg		0.6		Ω	f=1MHz
Gate Charge						
Total gate charge	Qg		37.8		nC	V_{DS} = 50 V, I_D = 15 A, V_{GS} = 10 V
Gate-source charge	Qgs		5.5			
Gate-drain charge	Qgd		10.9			
Dynamic						
Turn-on delay time	$t_{d(on)}$		14.4		ns	V_{DS} = 50 V, I_D =15 A, V_{GS} = 10 V, R_{GEN} =3.3 Ω
Rise time	t_r		15.6			
Turn-off delay time	$t_{d(off)}$		15.2			
Fall time	t_f		3.8			
Input capacitance	C_{iss}		1684		pF	V_{DS} =50 V, V_{GS} = 0 V, f = 1MHz
Output capacitance	C_{oss}		306			
Reverse transfer capacitance	C_{rss}		24			
Body Diode						
Diode forward voltage	V_{SD}			1.2	V	V_{GS} = 0 V, I_F = 20 A
Reverse recovery time	t_{rr}		40		ns	V_R= 50 V, I_S =15 A, di/dt = 100 A/μs
Reverse recovery charge	Q_{rr}		39		nC	

Electrical Characteristics Diagrams

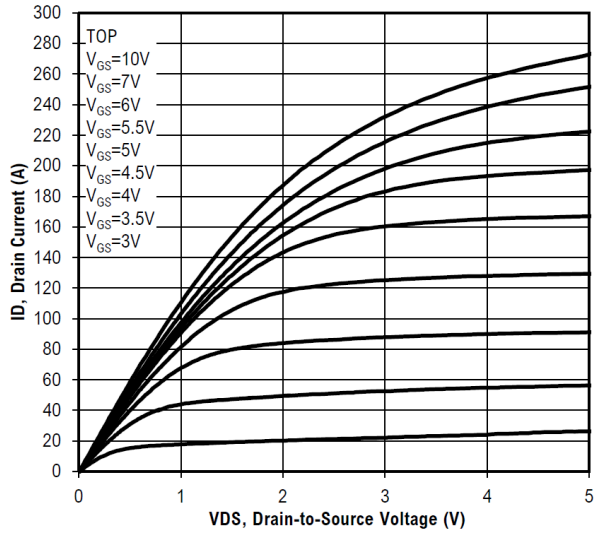


Figure 1. On-Region Characteristics

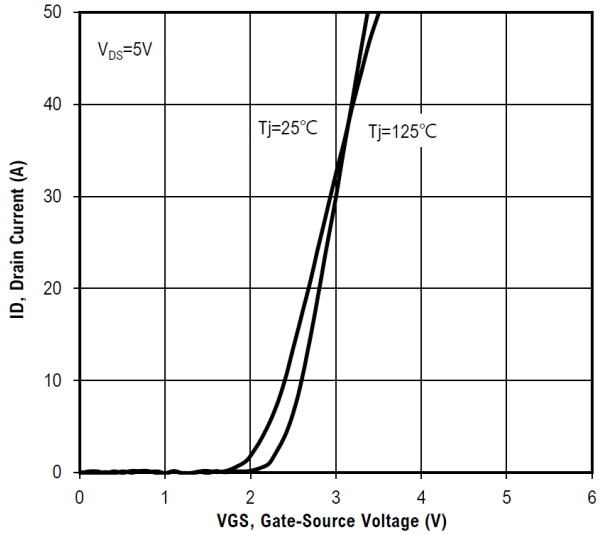


Figure 2. Transfer Characteristics

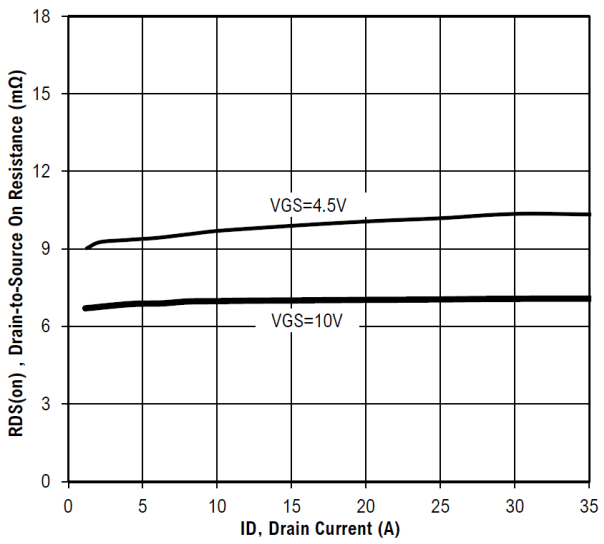


Figure 3. On-Resistance vs. Drain Current and Gate

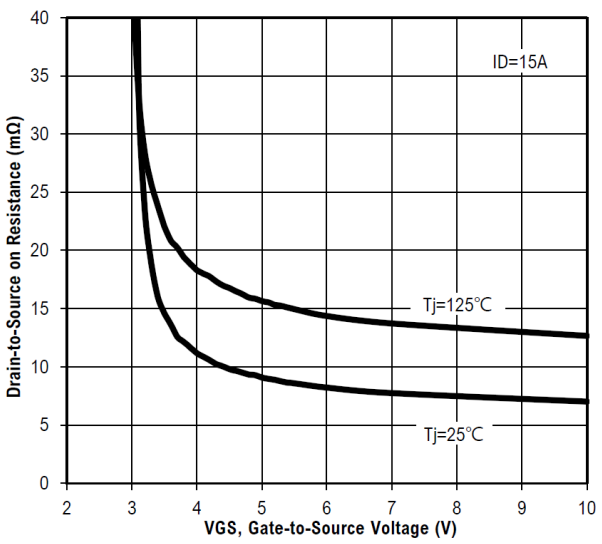


Figure 4. On-Resistance vs. Gate-Source Voltage

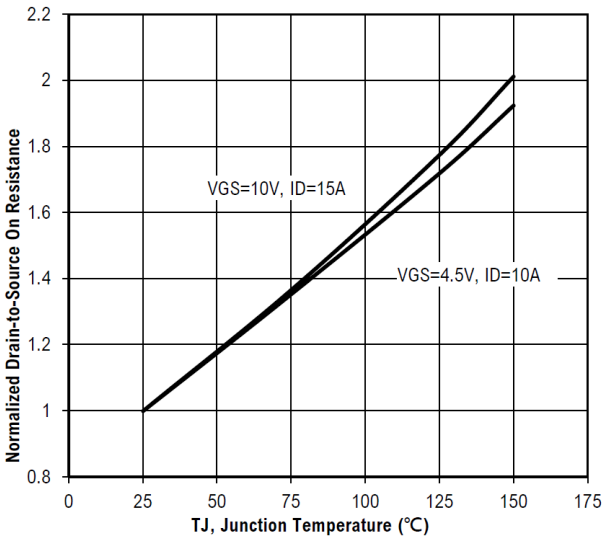


Figure 5. On-Resistance vs. Junction Temperature

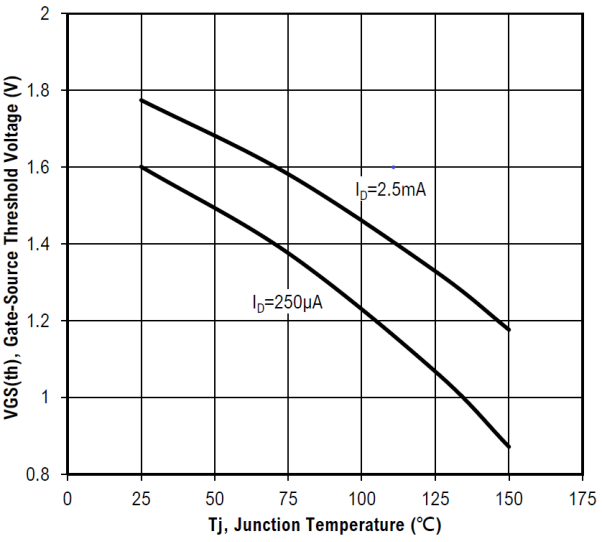


Figure 6. Gate Threshold Voltage

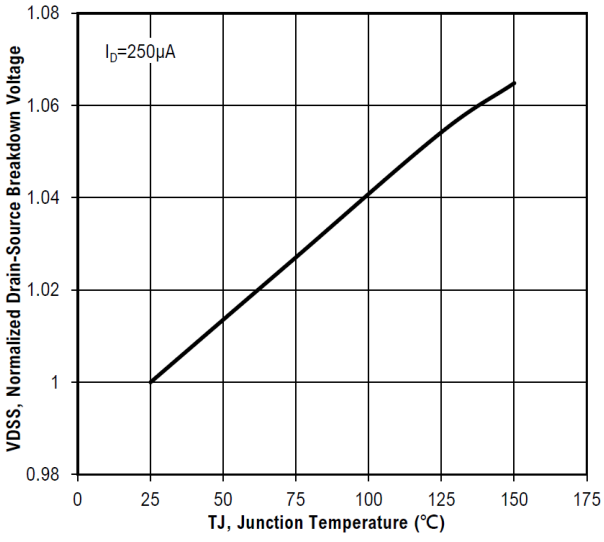


Figure 7. Drain-source breakdown voltage vs. Junction Temperature

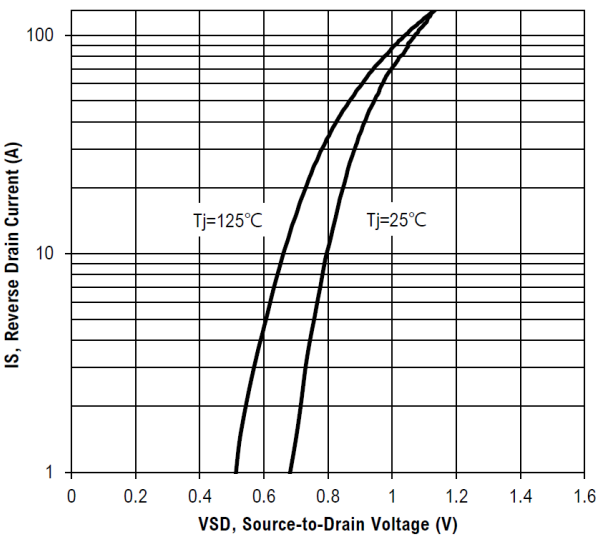


Figure 8. Body-Diode Characteristics

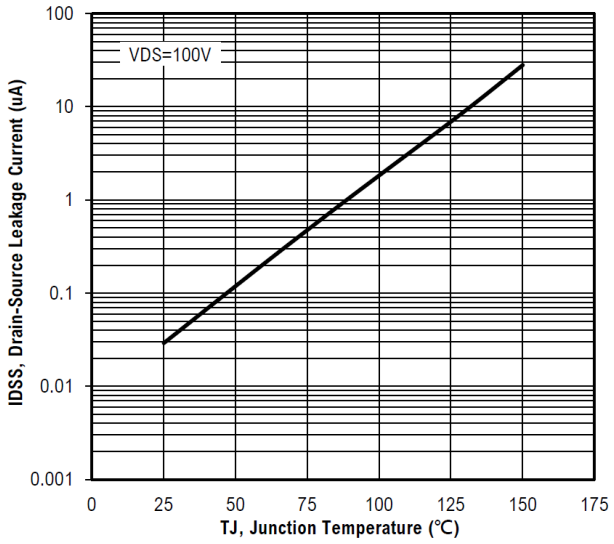


Figure 9. Zero Gate Voltage Drain Current vs. Junction Temperature

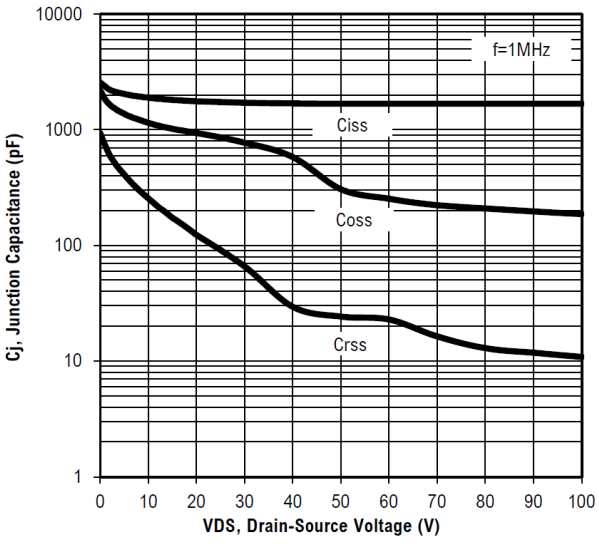


Figure 10. Capacitance vs. Drain to Source Voltage

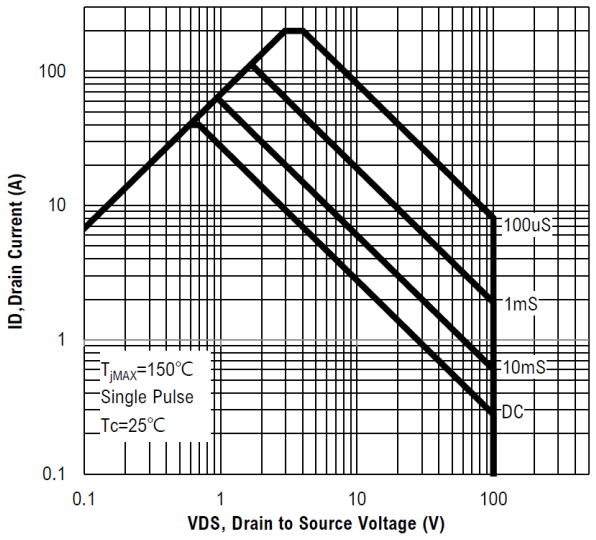


Figure 11. Maximum Forward Biased Safe Operating Area

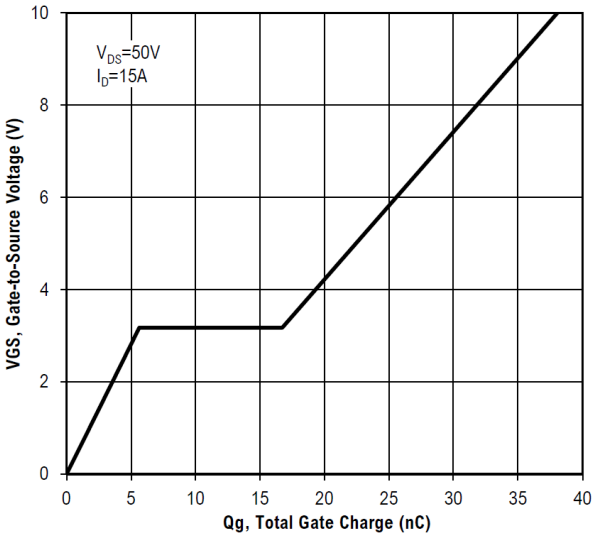


Figure 12. Gate-Charge Characteristics

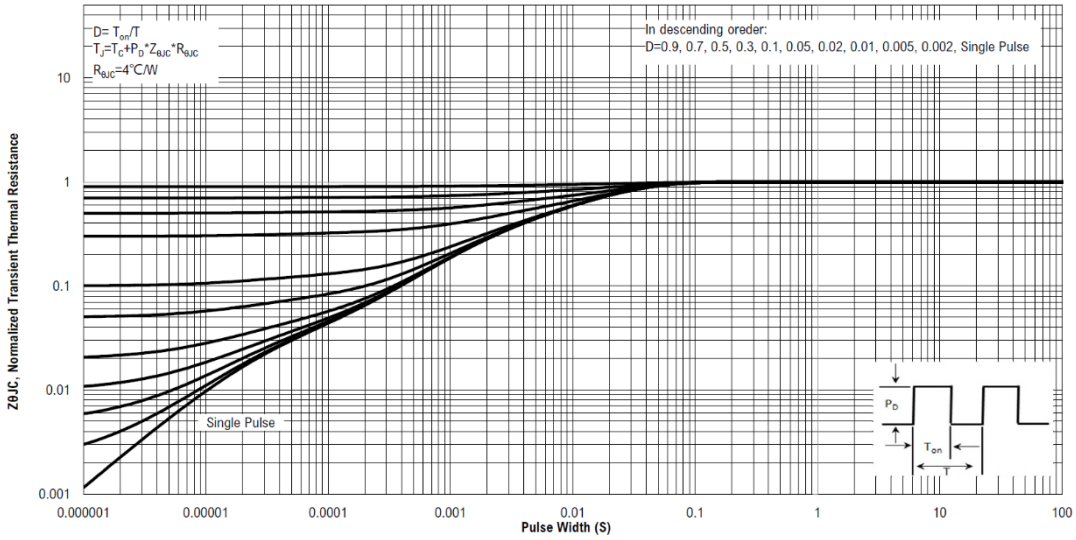


Figure 13. Transient Thermal Resistance

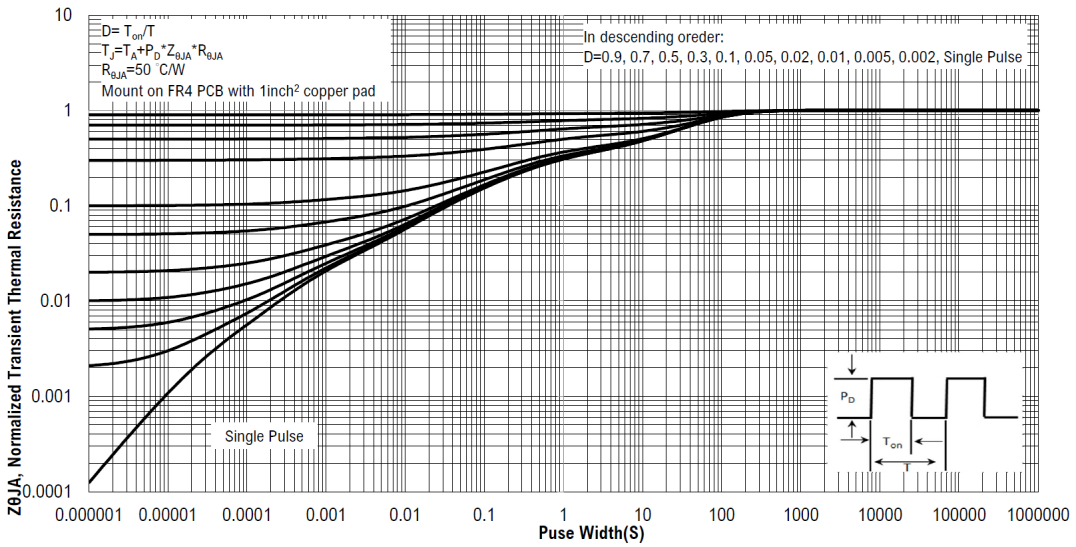
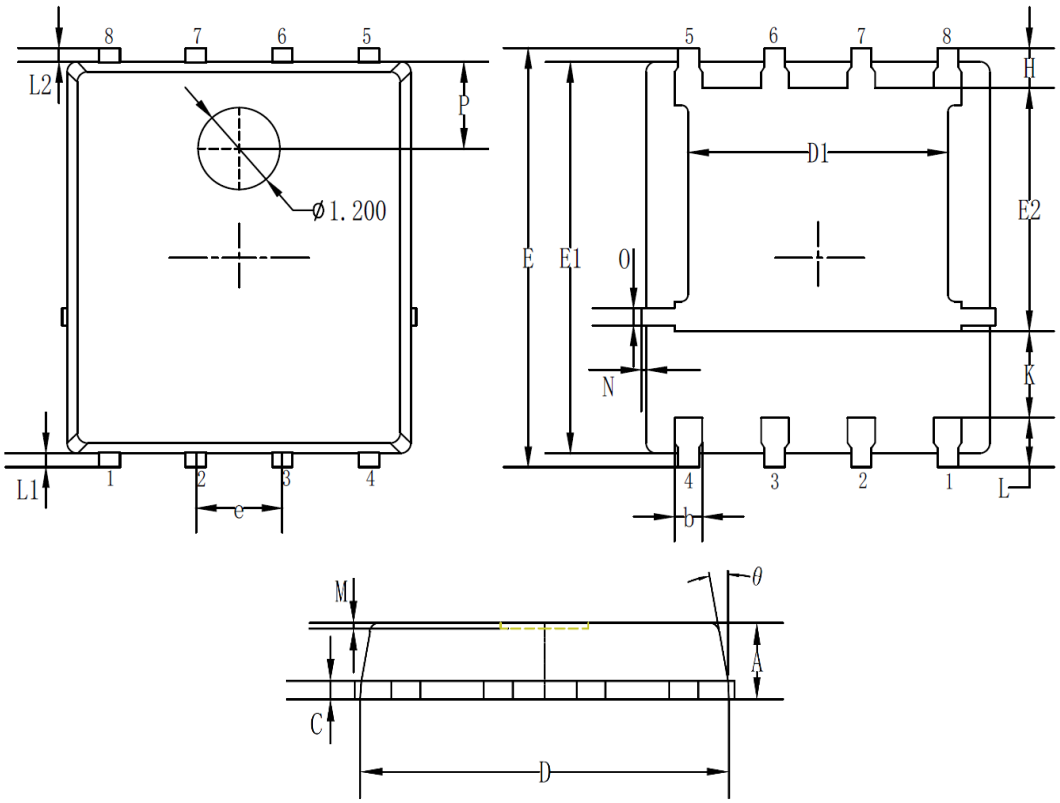


Figure 14. Transient Thermal Resistance

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	5.20
D1	3.72	3.82	3.92
E	0.60	6.15	6.30
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	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	–	0.15
O	0.25 REF.		
P	1.28 REF.		

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