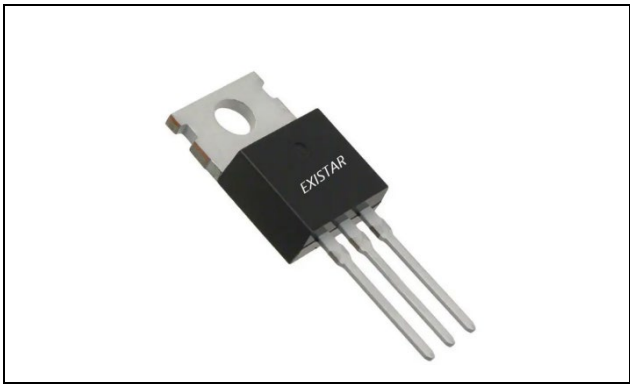
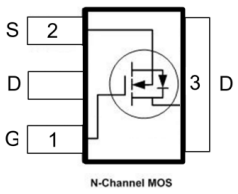
N-Channel 100V MOSFET

E100N6P0AL1

V_{DS} (V)	$R_{DS(on),max}$ (mΩ)	I_D (A)
100V	6 @ V_{GS} = 10V	62

TO220





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
E100N6P0AL1	TO220	E100N6P0AL1

Ordering Information

Package	Packing	MOQ
TO220	Tube	1000

Key Performance Parameters

Parameter	Value	Unit
VDS, min @ Tj(max)	100	V
ID, pulse	248	A
RDS(ON), max @ VGS=10V	6	mΩ
Qg	56.1	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	62	A
	T_C=100°C		40	
Pulsed drain current		$I_{D,pulse}$	248	
Avalanche energy, single pulse		E_{AS}	144	mJ
Power dissipation	T_C=25°C	P_D	41	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	$R_{\theta JC}$	3	°C/W
Thermal resistance, junction-to-ambient	Steady state	$R_{\theta JA}$	50	

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	1.8	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	$R_{DS(on)}$		5.4	6	mΩ	V_{GS} = 10 V, I_D = 20 A
Drain-source on-resistance	$R_{DS(on)}$		7.5	8.5	mΩ	V_{GS} = 4.5 V, I_D = 15 A
Forward transconductance	gfs		60		S	V_{DS} = 5 V, I_D = 15 A

Gate resistance	Rg		0.7		Ω	f=1MHz
Gate Charge						
Total gate charge	Qg		56.1		nC	V_{DS} = 50 V, I_D = 30 A, V_{GS} = 10 V
Gate-source charge	Qgs		9.7			
Gate-drain charge	Qgd		16.9			
Dynamic						
Turn-on delay time	$t_{d(on)}$		19.6		ns	V_{DS} = 50 V, I_D =20 A, V_{GS} = 10 V, R_{GEN} =3.3 Ω
Rise time	t_r		20.8			
Turn-off delay time	$t_{d(off)}$		18.8			
Fall time	t_f		4.8			
Input capacitance	C_{iss}		2551		pF	V_{DS} =50 V, V_{GS} = 0 V, f = 1MHz
Output capacitance	C_{oss}		495			
Reverse transfer capacitance	C_{rss}		34			
Body Diode						
Diode forward voltage	V_{SD}			1.2	V	V_{GS} = 0 V, I_F = 20 A
Reverse recovery time	t_{rr}		47		ns	V_R= 50 V, I_S =20 A, di/dt = 100 A/μs
Reverse recovery charge	Q_{rr}		55		nC	

Electrical Characteristics Diagrams

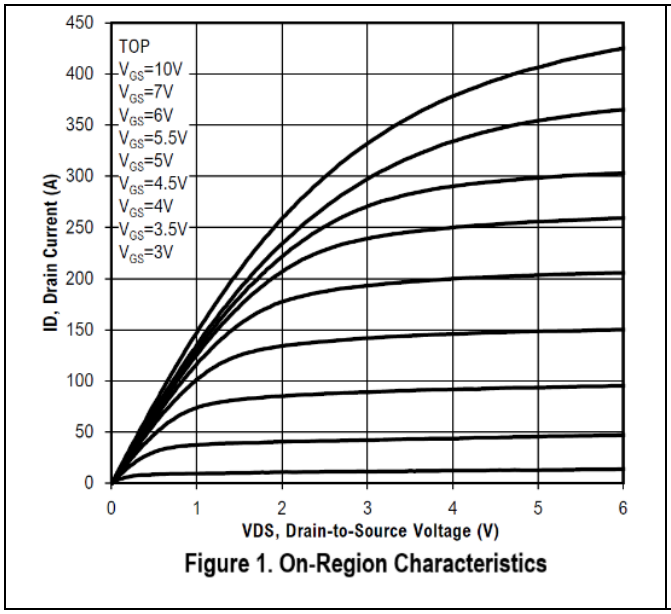


Figure 1. On-Region Characteristics

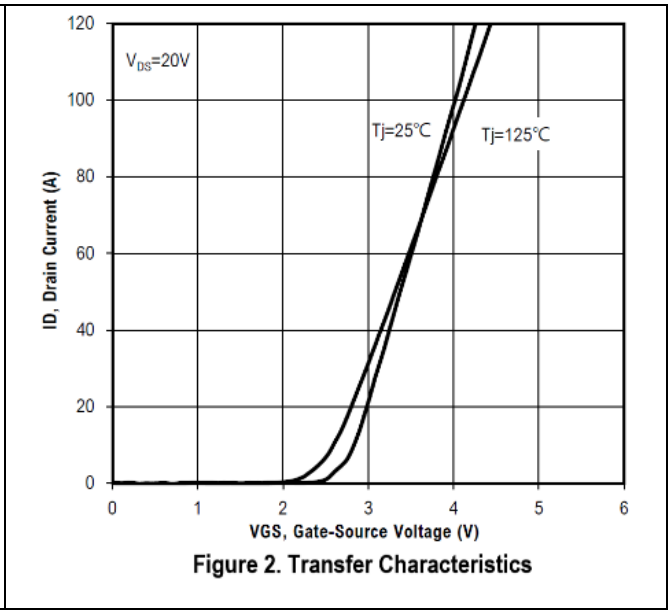


Figure 2. Transfer Characteristics

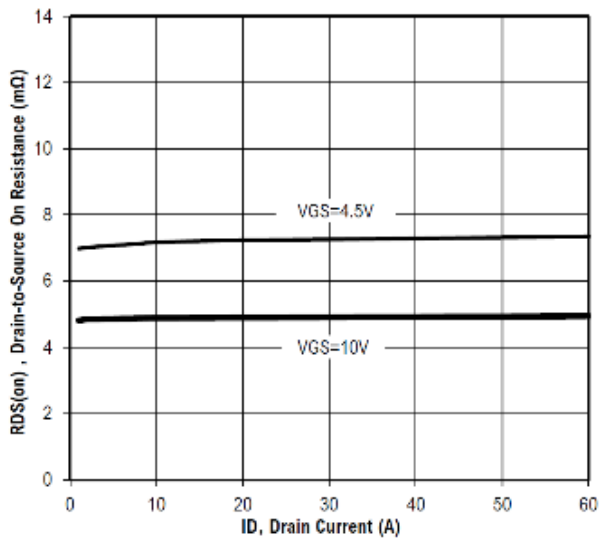


Figure 3. On-Resistance vs. Drain Current and Gate

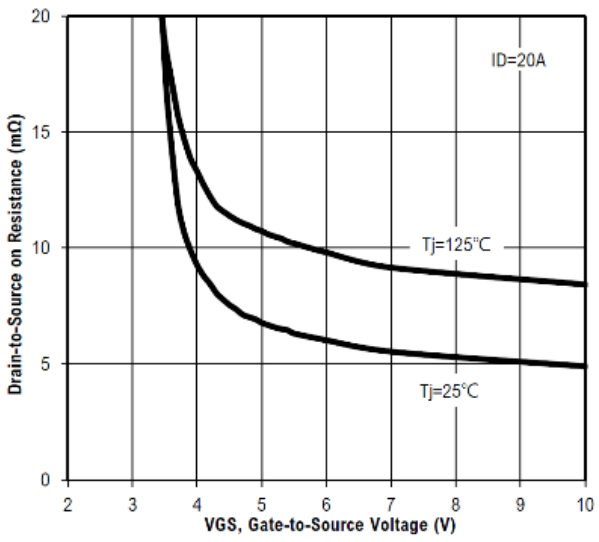


Figure 4. On-Resistance vs. Gate-Source Voltage

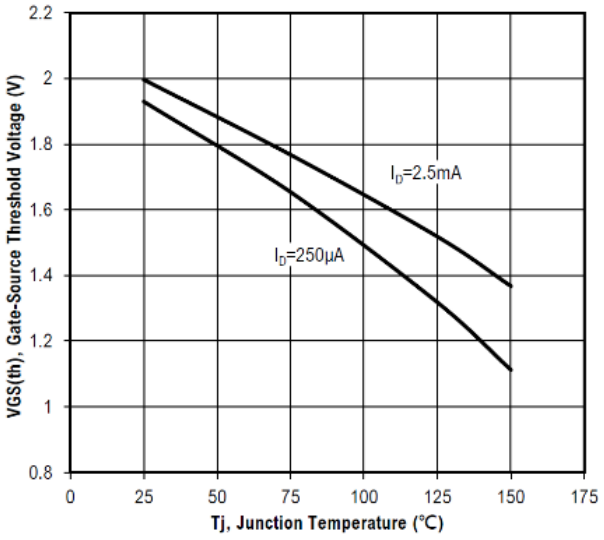


Figure 5. Gate Threshold Voltage

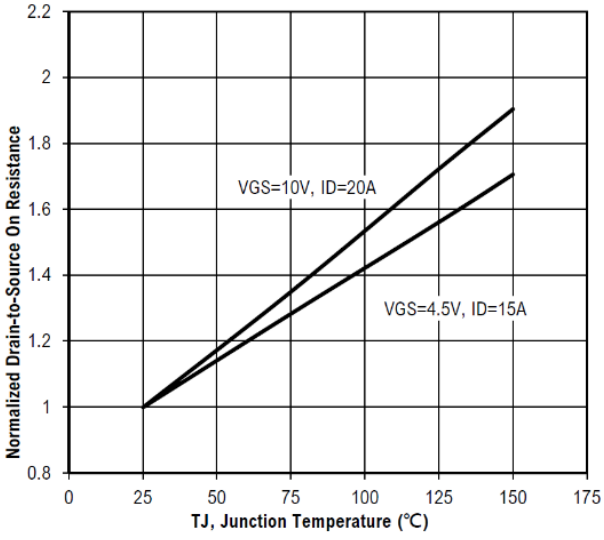


Figure 6. On-Resistance vs. Junction Temperature

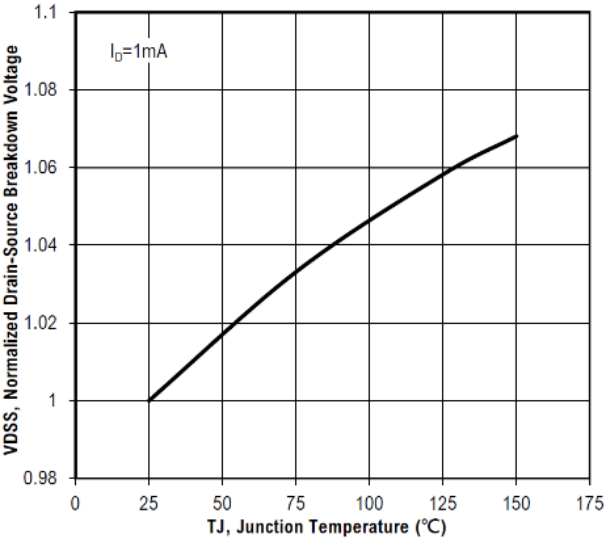


Figure 7. Drain-source breakdown voltage vs. Junction Temperature

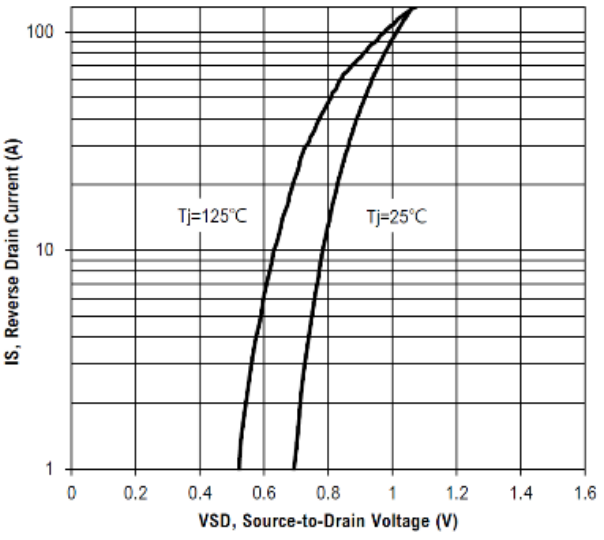


Figure 8. Body-Diode Characteristics

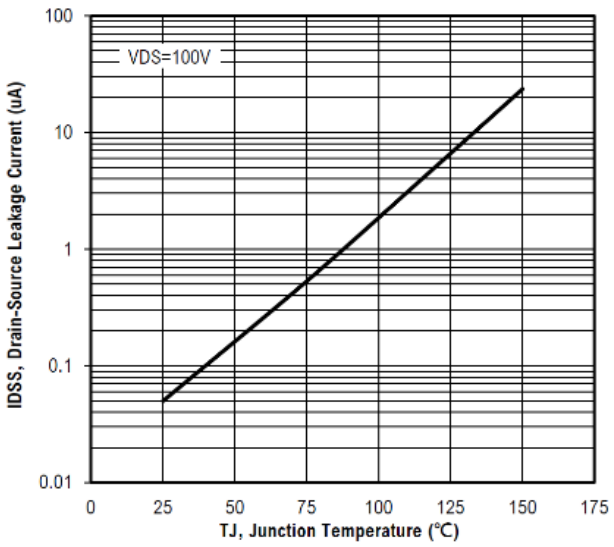


Figure 9. Zero Gate Voltage Drain Current vs. Junction Temperature

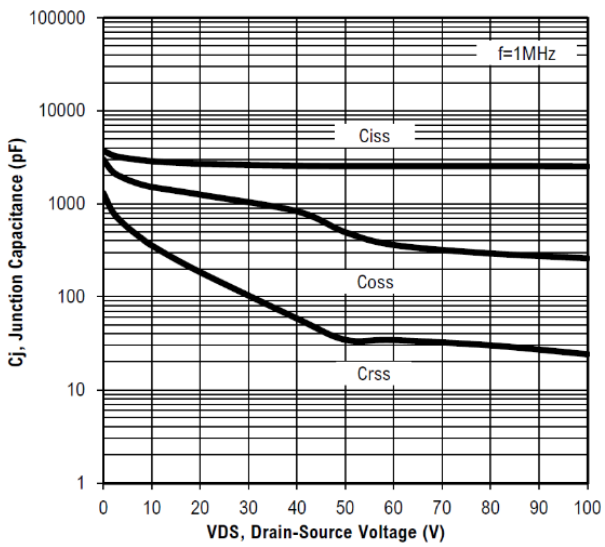


Figure 10. Capacitance vs. Drain to Source Voltage

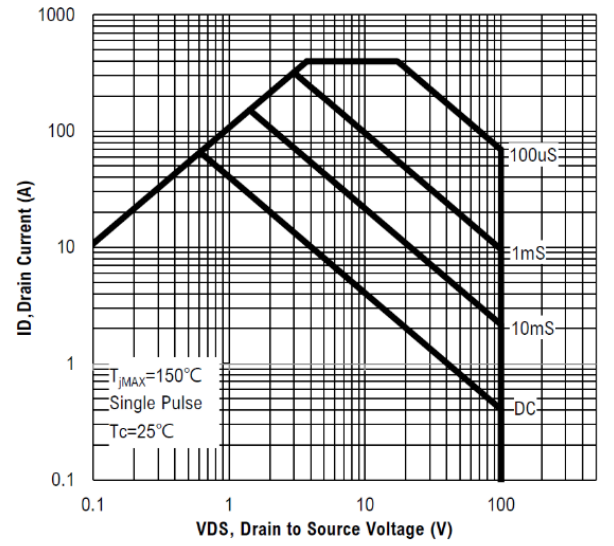


Figure 11. Maximum Forward Biased Safe Operating Area

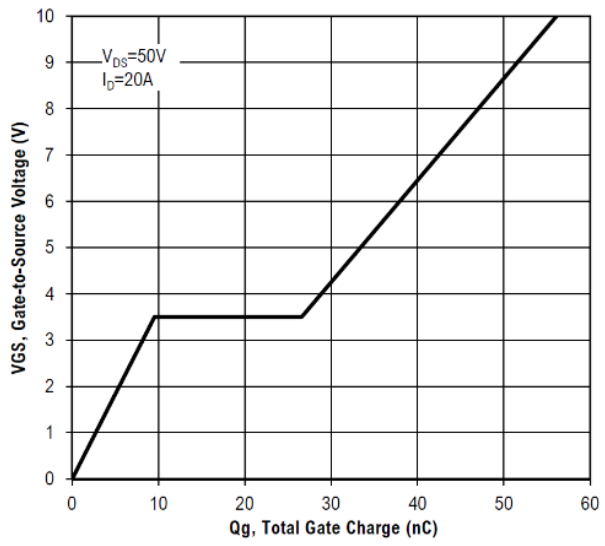


Figure 12. Gate-Charge Characteristics

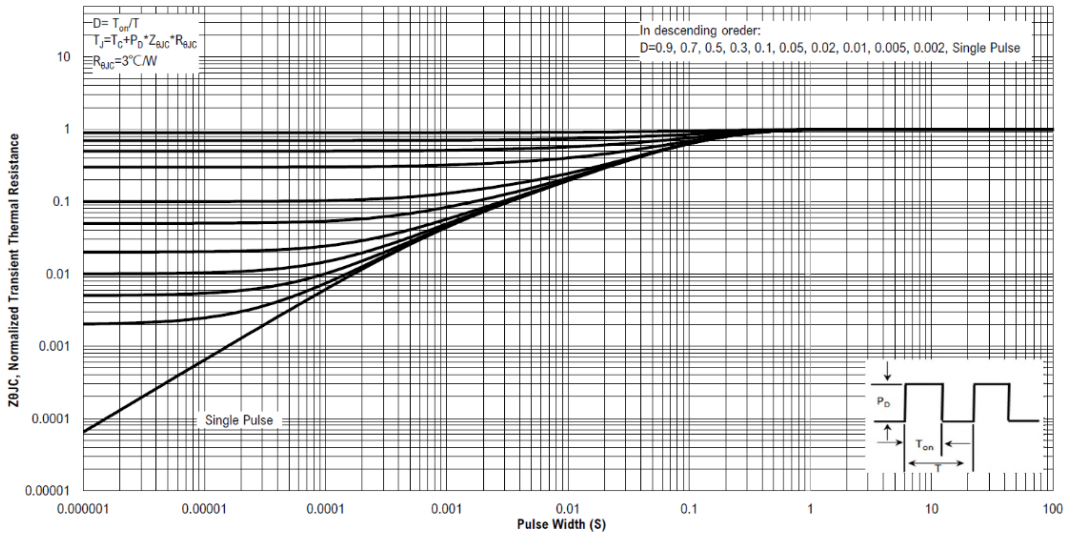


Figure 13. Transient Thermal Resistance

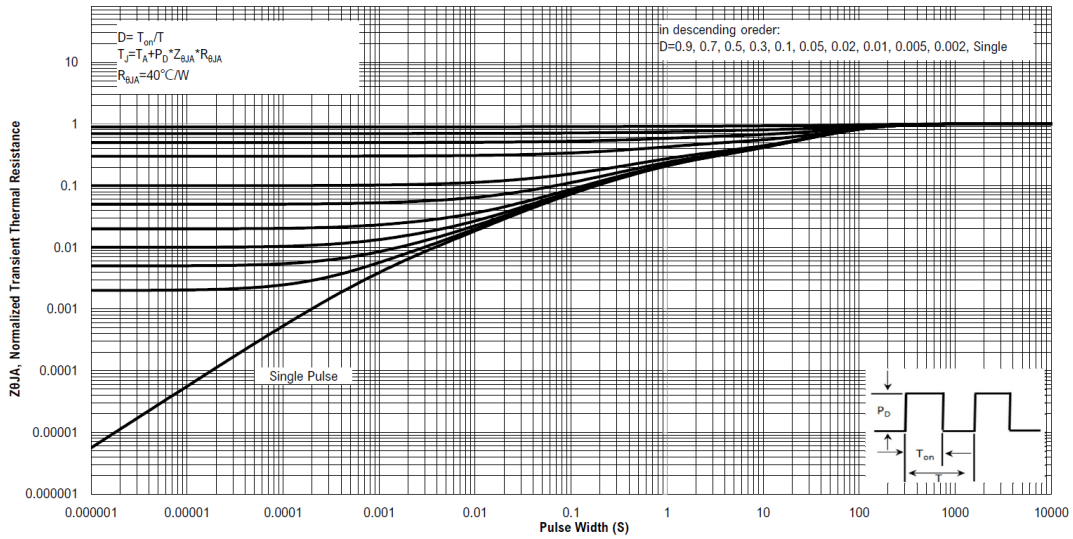
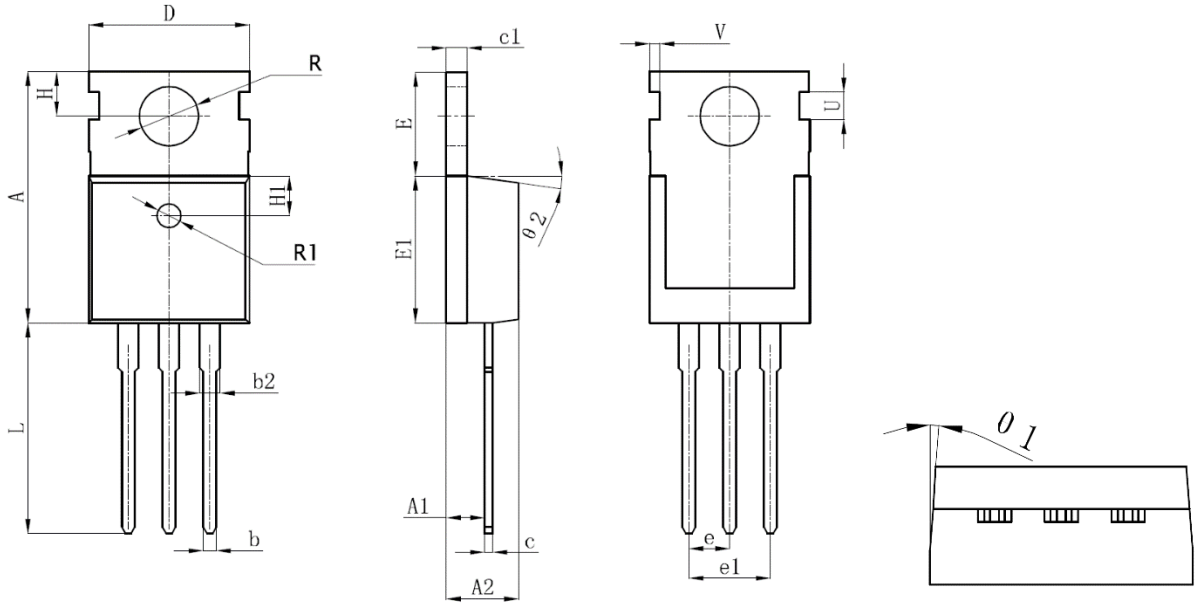


Figure 14. Transient Thermal Resistance

Package Outline Dimensions



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	15.400	15.600	15.800
A1	2.350	2.400	2.500
A2	4.400	4.500	4.700
b	0.700	0.800	0.900
b2	1.180	1.310	1.440
c	0.480	0.500	0.560
c1	1.290	1.300	1.320
D	9.800	10.000	10.200
E	6.400	6.500	6.600
E1	9.000	9.100	9.200
e	2.420	2.540	2.660
e1	4.840	5.080	5.320
H	2.730	2.800	2.870
H1	2.400	2.500	2.600
L	12.750	13.100	13.450
R	3.500	3.600	3.630
R1	1.400	1.500	1.600
U	1.650	1.750	1.850
V	0.580	0.680	0.780
θ1	2°	2.5°	3°
θ2	6.5°	7°	7.5°

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