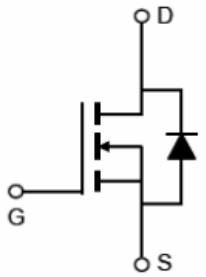
Main Product Characteristics:

V_{DSS}	150V
R_{DS}(on)	9.5mΩ (typ.)
I_D	100A

TO-263

Marking and pin Assignment



Schematic diagram

Features and Benefits:

- Advanced trench MOSFET process technology
- Special designed for PWM, load switching and general purpose applications
- Ultra low on-resistance with low gate charge
- High Power and current handing capability
- Fully Avalanche Rated

Description:

It utilizes the advanced trench processing techniques to achieve extremely low on resistance and low gate charge. These features combine to make this design an extremely efficient and reliable device for use in PWM, load switching and a wide variety of other applications.

Absolute max Rating:

Symbol	Parameter	Max.	Units
I_D @ TC = 25°C	Continuous Drain Current, V_{GS} @ 10V ①	100	A
I_{DM}	Pulsed Drain Current ②	390	
P_D @TC = 25°C	Power Dissipation ③	370	W
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy @ L=0.5mH	1600	mJ
T_J T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	°C

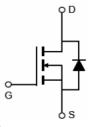
Thermal Resistance

Symbol	Characterizes	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-case ③	—	0.41	℃/W

Electrical Characterizes @T_A=25℃ unless otherwise specified

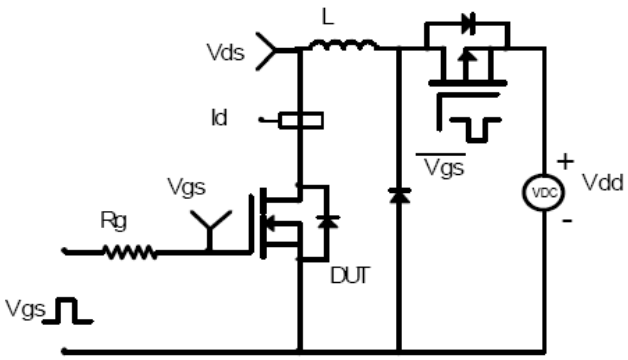
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
$V_{(BR)DSS}$	Drain-to-Source breakdown voltage	100	—	—	V	V_{GS} = 0V, I_D = 250μA
$R_{DS(on)}$	Static Drain-to-Source on-resistance	—	9.5	11	mΩ	V_{GS}=10V,I_D =40A
$V_{GS(th)}$	Gate threshold voltage	2.5	—	4.5	V	V_{DS} = V_{GS}, I_D =250μA
I_{DSS}	Drain-to-Source leakage current	—	—	1	μA	V_{DS} =150V,V_{GS} = 0V
I_{GSS}	Gate-to-Source forward leakage	—	—	100	nA	V_{GS} =20V
		—	—	-100		V_{GS} = -20V
Q_g	Total gate charge	—	140	—	nC	I_D = 40A,
Q_{gs}	Gate-to-Source charge	—	45	—		V_{DS}=75V,
Q_{gd}	Gate-to-Drain("Miller") charge	—	40	—		V_{GS} = 10V
$t_{d(on)}$	Turn-on delay time	—	33	—	ns	V_{GS}=10V, V_{DS}=75V,
t_r	Rise time	—	30	—		R_{GEN}=2.5Ω
$t_{d(off)}$	Turn-Off delay time	—	115	—		R_L=15Ω
t_f	Fall time	—	50	—		
C_{iss}	Input capacitance	—	7500	—	pF	V_{GS} = 0V
C_{oss}	Output capacitance	—	650	—		V_{DS} = 25V
C_{rss}	Reverse transfer capacitance	—	430	—		f = 1MHz

Source-Drain Ratings and Characteristics

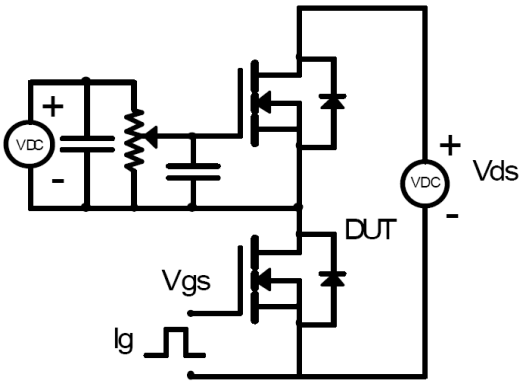
Symbol	Parameter	Min.	Typ.	Max.	Units	Conditions
I_S	Continuous Source Current (Body Diode)	—	—	100	A	MOSFET symbol showing the integral reverse p-n junction diode. 
V_{sd}	Diode Forward Voltage	—	—	1.2	V	I_S=40A, V_{GS}=0V
trr	Reverse Recovery Time	—	50	—	ns	I_S=40A,di/dt=100A/us
Qrr	Reverse Recovery Charge	—	80	—	nC	

Test circuits and Waveforms

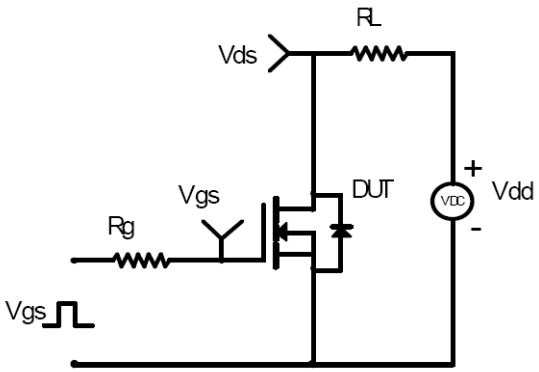
EAS Test Circuit:



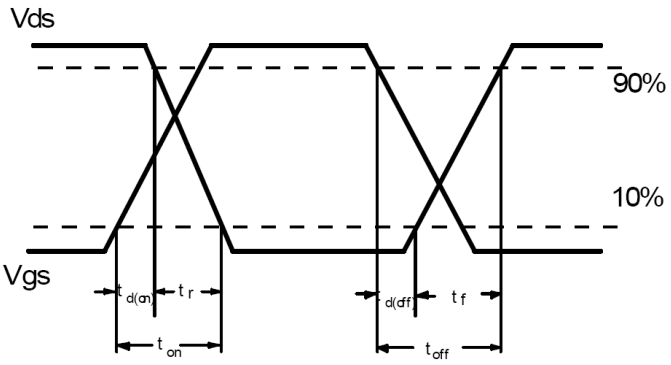
Gate charge test circuit:



Switching Time Test Circuit:



Switching Waveforms:



Notes:

①Calculated continuous current based on maximum allowable junction temperature.
②Repetitive rating; pulse width limited by max. junction temperature.
③The power dissipation PD is based on max. junction temperature, using junction-to-case thermal resistance.

Typical electrical and thermal characteristics

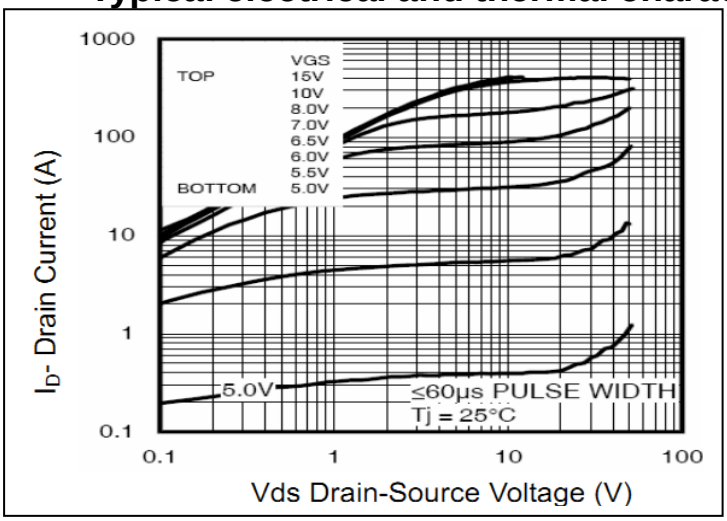


Figure 1: Typical Output Characteristics

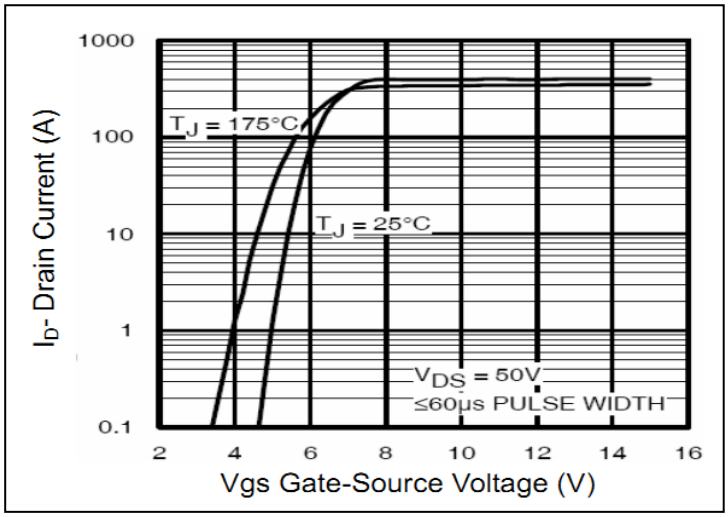


Figure 2: Transfer Characteristics

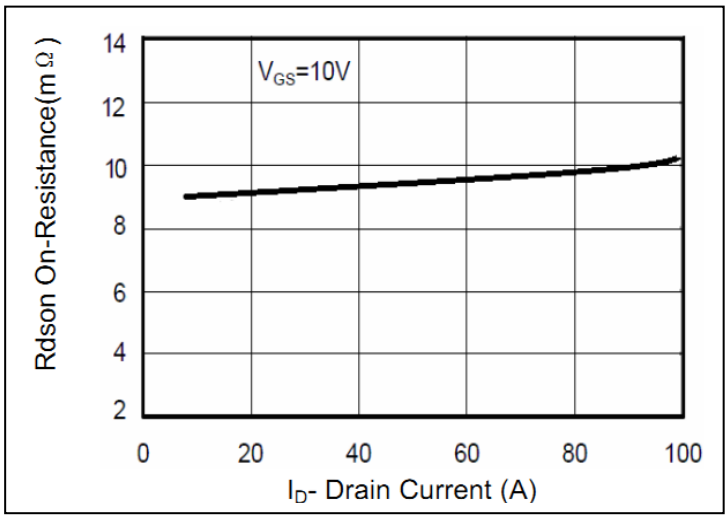


Figure 3: Rdson-Drain Current

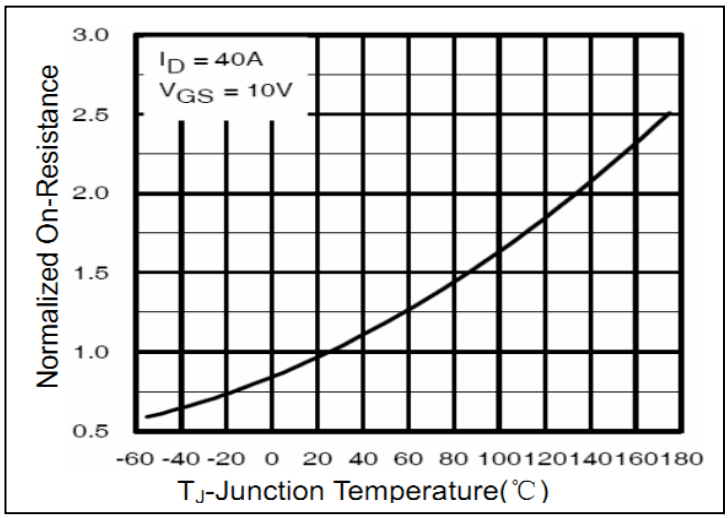


Figure 4: Rdson-Junction Temperature

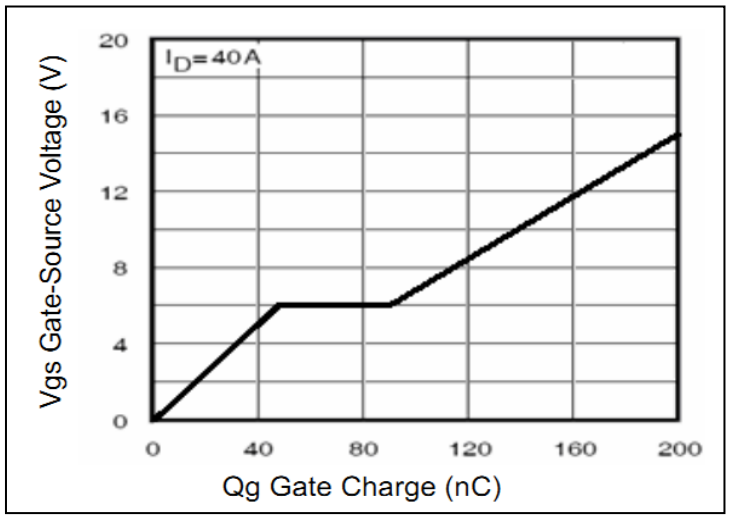


Figure 5: Gate Charge

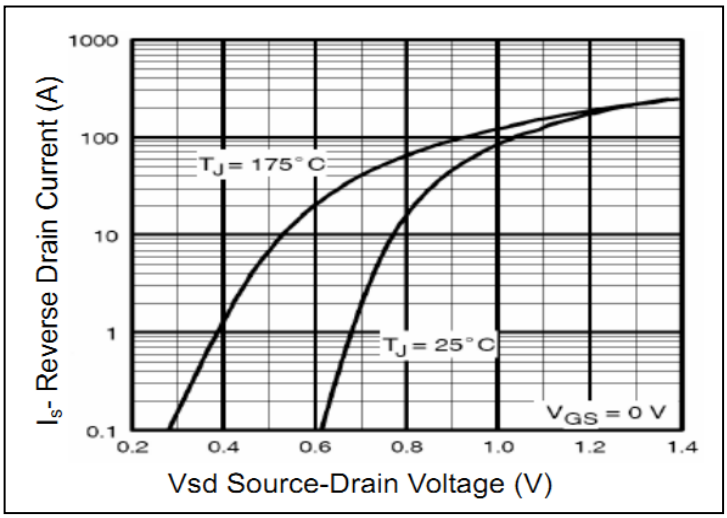


Figure 6: Source-Drain Diode Forward

Typical electrical and thermal characteristics

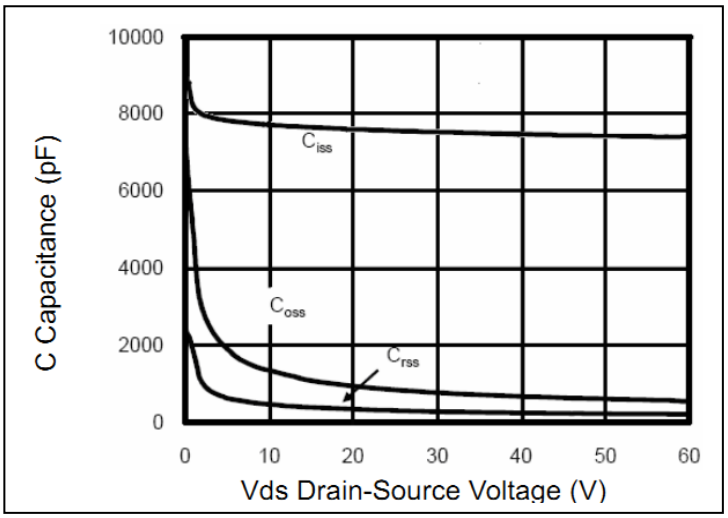


Figure 7: Capacitance vs Vds

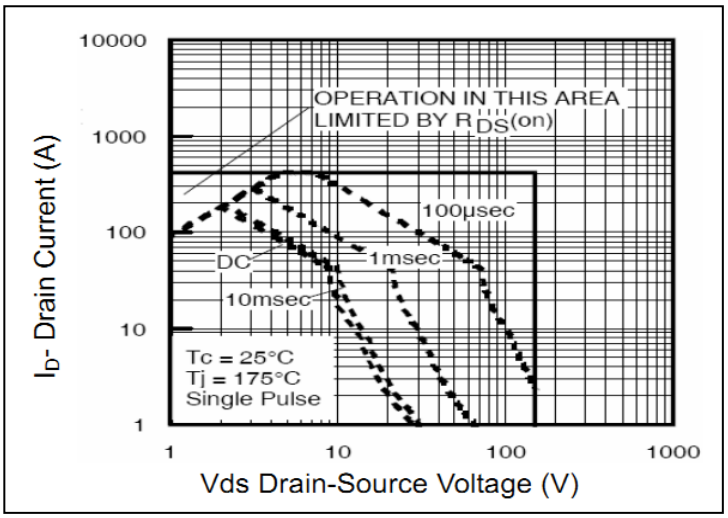


Figure 8: Safe Operation Area

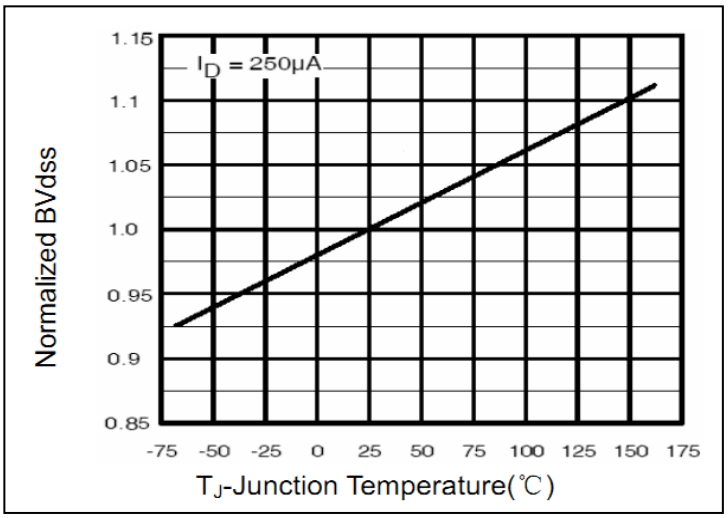


Figure 9: BVdss vs Junction Temperature

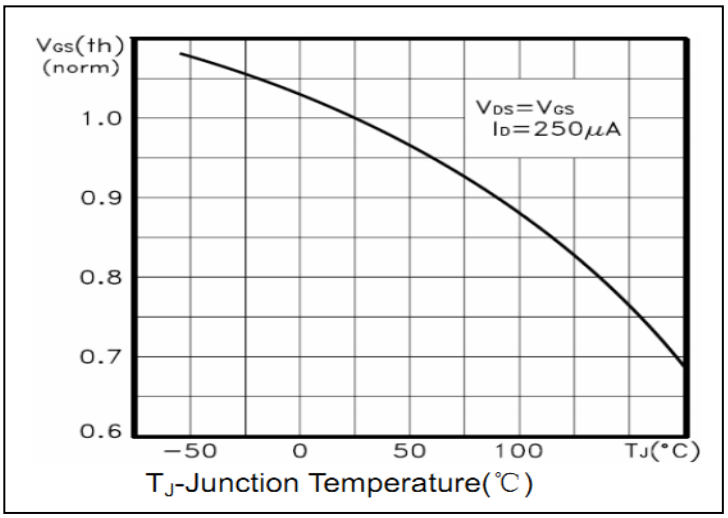


Figure 10: $V_{GS(th)}$ vs. Junction Temperature

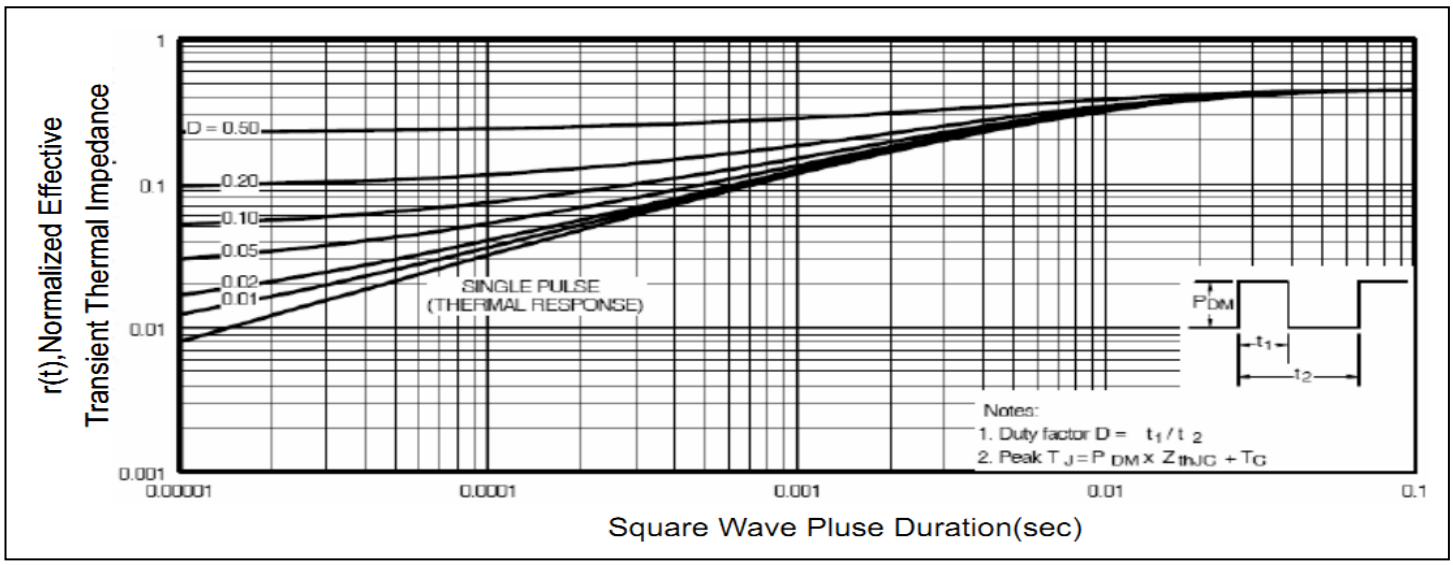
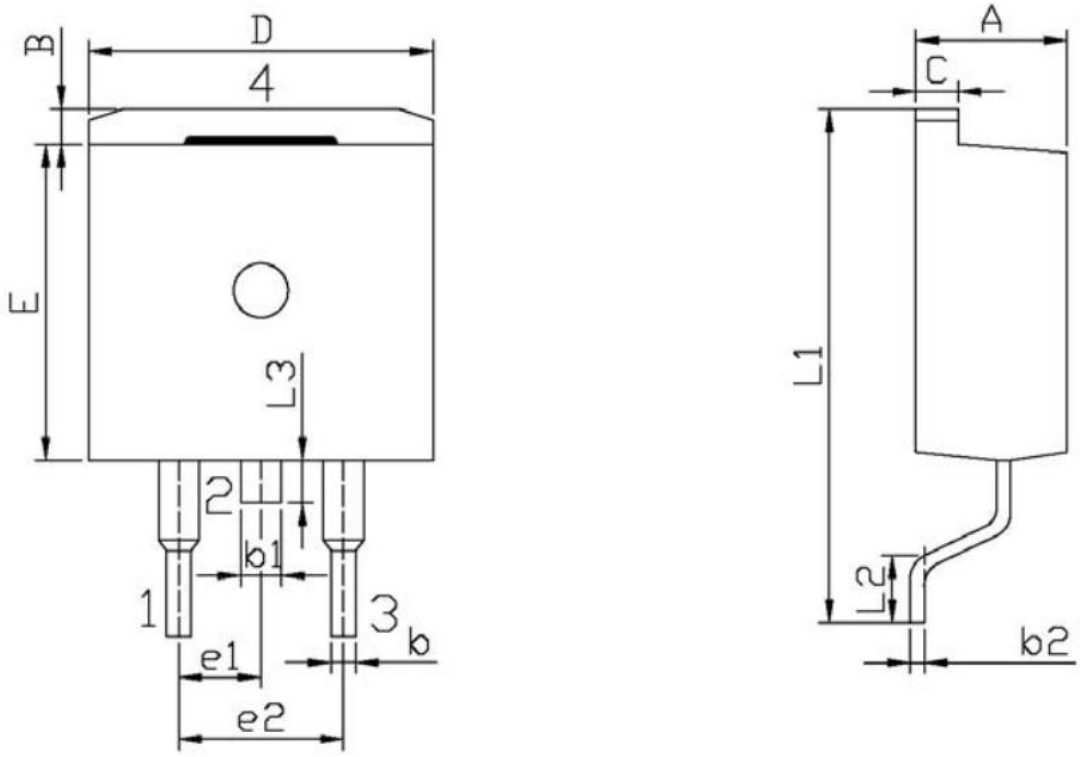


Figure 11: Normalized Maximum Transient Thermal Impedance

Mechanical Data：



单位：mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	4.30	4.70	E	9.00	9.40
B	1.00	1.40	e1	2.34	2.74
b	0.70	0.90	e2	4.88	5.28
b1	1.15	1.35	L1	15.00	16.00
b2	0.40	0.60	L2	2.24	2.84
C	1.20	1.40	L3	1.20	1.60
D	9.80	10.20			

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