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IRLR2908TRPBF-TP

N-Channel Enhancement Mode MOSFET

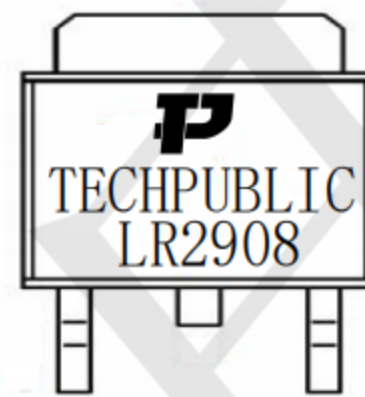
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Product Summary

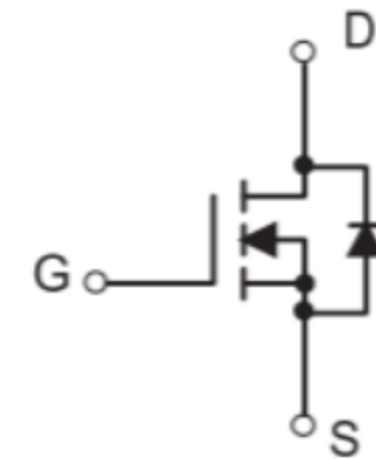
$V_{DS}$	100V
$I_D$ (at $V_{GS}=10V$ )	31A
$R_{DS(ON)}$ (at $V_{GS}=10V$ )	< 24m $\Omega$
$R_{DS(ON)}$ (at $V_{GS}=4.5V$ )	< 33m $\Omega$



Marking



Circuit Diagram



N-MOS

Absolute Maximum Ratings (Tamb=25°C unless otherwise specified)

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	$T_C=25^\circ C$	31
		$T_C=100^\circ C$	21.5
Pulsed Drain Current <sup>C</sup>	$I_{DM}$	80	A
Continuous Drain Current	$I_{DSM}$	$T_A=25^\circ C$	6.5
		$T_A=70^\circ C$	5
Avalanche Current <sup>C</sup>	$I_{AS}$	15	A
Avalanche energy L=0.1mH <sup>C</sup>	$E_{AS}$	11	mJ
Power Dissipation <sup>B</sup>	$P_D$	$T_C=25^\circ C$	53.5
		$T_C=100^\circ C$	26.5
Power Dissipation <sup>A</sup>	$P_{DSM}$	$T_A=25^\circ C$	2.5
		$T_A=70^\circ C$	1.6
Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to 175	$^\circ C$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient <sup>A</sup>	$R_{\theta JA}$	16	20	$^\circ C/W$
Maximum Junction-to-Ambient <sup>AD</sup>		Steady-State	41	50
Maximum Junction-to-Case	$R_{\theta JC}$	2.2	2.8	$^\circ C/W$



**Electrical Characteristics** (TA=25°C unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units	
<b>STATIC PARAMETERS</b>							
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	I <sub>D</sub> =250μA, V <sub>GS</sub> =0V	100			V	
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V T <sub>J</sub> =55°C			1 5	μA	
I <sub>GSS</sub>	Gate-Body leakage current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA	
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.6	2.15	2.7	V	
I <sub>D(ON)</sub>	On state drain current	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	80			A	
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =20A T <sub>J</sub> =125°C		18.5 33	24 42	mΩ	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =18A		24.5	33	mΩ	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =5V, I <sub>D</sub> =20A		40		S	
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =1A, V <sub>GS</sub> =0V		0.72	1	V	
I <sub>S</sub>	Maximum Body-Diode Continuous Current				31	A	
<b>DYNAMIC PARAMETERS</b>							
C <sub>iss</sub>	Input Capacitance	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, f=1MHz		1190		pF	
C <sub>oss</sub>	Output Capacitance				95		pF
C <sub>rss</sub>	Reverse Transfer Capacitance				7		pF
R <sub>g</sub>	Gate resistance	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	0.5	1.1	1.7	Ω	
<b>SWITCHING PARAMETERS</b>							
Q <sub>g</sub> (10V)	Total Gate Charge	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =20A		16.5	25	nC	
Q <sub>g</sub> (4.5V)	Total Gate Charge				7	12	nC
Q <sub>gs</sub>	Gate Source Charge				4.5		nC
Q <sub>gd</sub>	Gate Drain Charge				2.5		nC
t <sub>D(on)</sub>	Turn-On DelayTime	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, R <sub>L</sub> =2.5Ω, R <sub>GEN</sub> =3Ω		7		ns	
t <sub>r</sub>	Turn-On Rise Time				8		ns
t <sub>D(off)</sub>	Turn-Off DelayTime				20		ns
t <sub>f</sub>	Turn-Off Fall Time				3		ns
t <sub>rr</sub>	Body Diode Reverse Recovery Time	I <sub>F</sub> =20A, di/dt=500A/μs		30		ns	
Q <sub>rr</sub>	Body Diode Reverse Recovery Charge	I <sub>F</sub> =20A, di/dt=500A/μs		145		nC	



Typical Performance Characteristics ( $T_A=25^\circ\text{C}$  unless otherwise Specified)

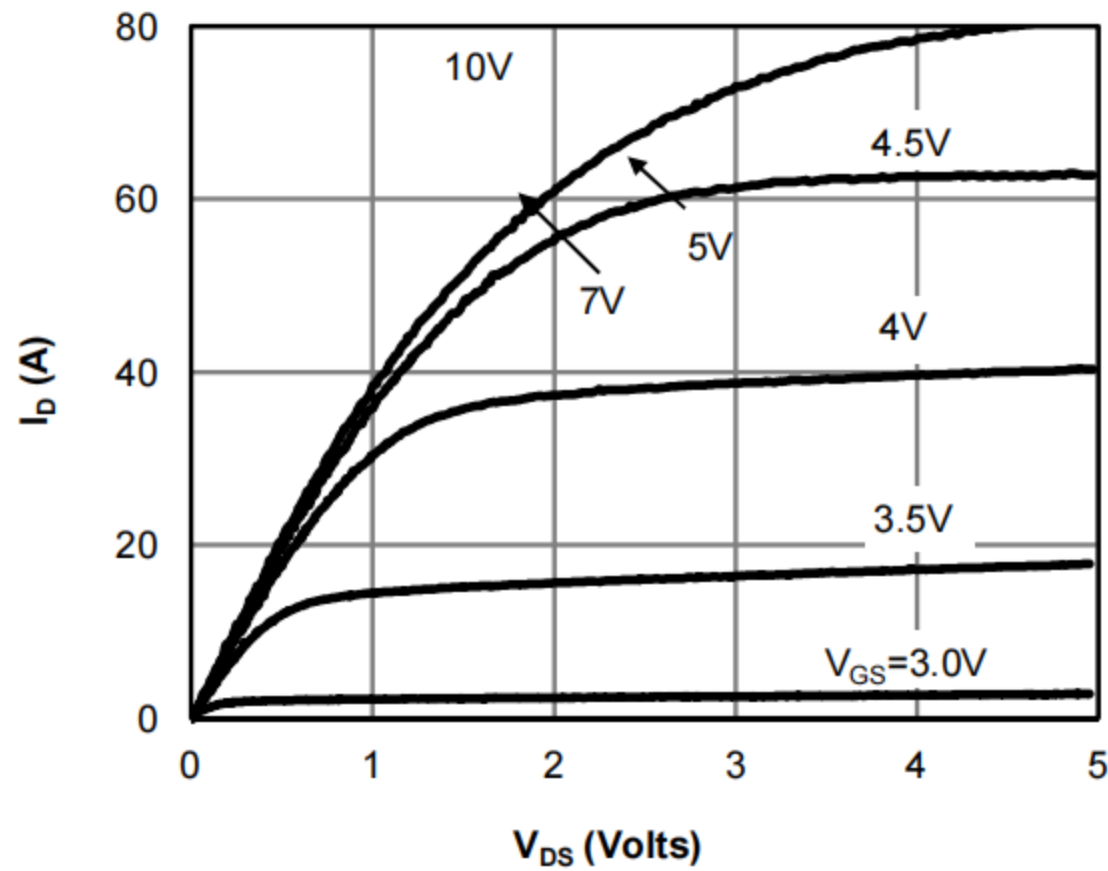


Fig 1: On-Region Characteristics (Note E)

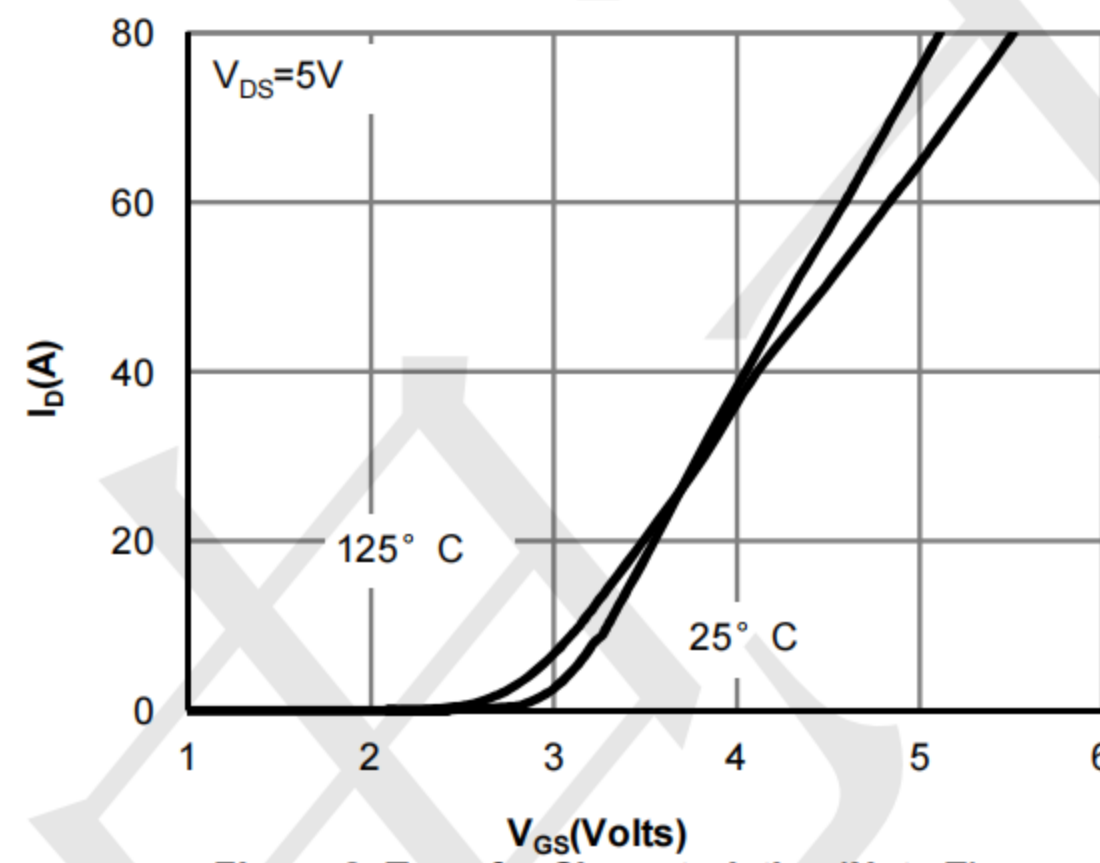


Figure 2: Transfer Characteristics (Note E)

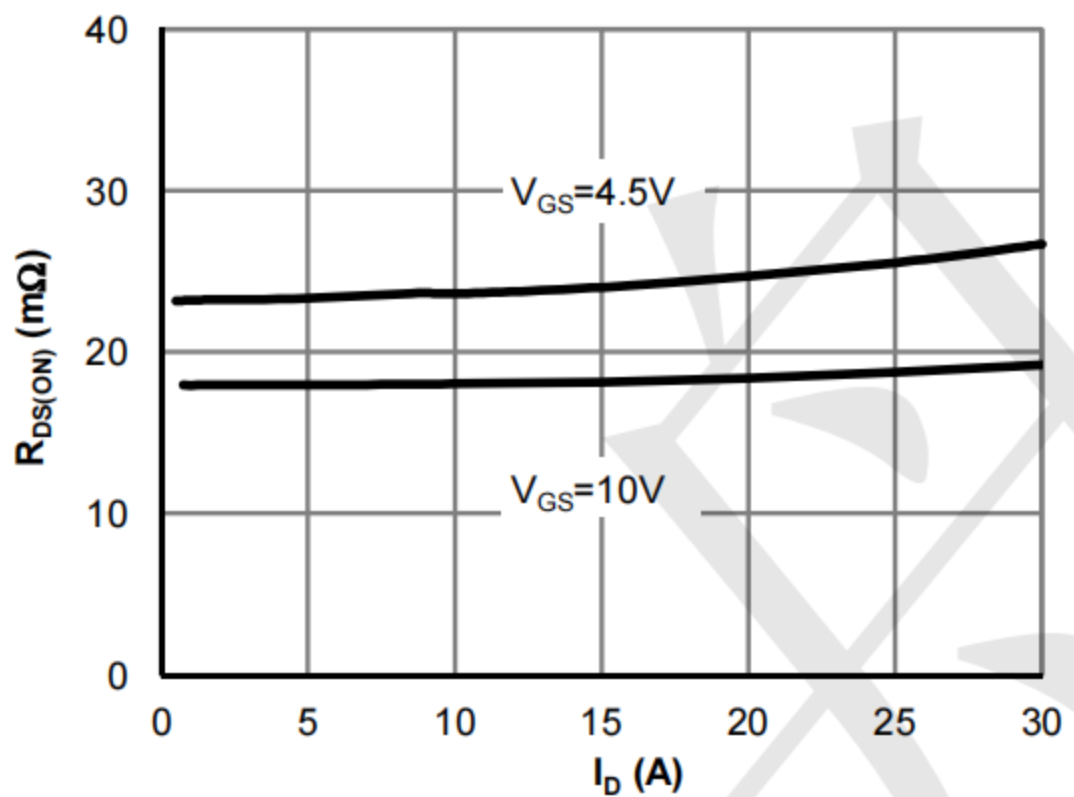


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

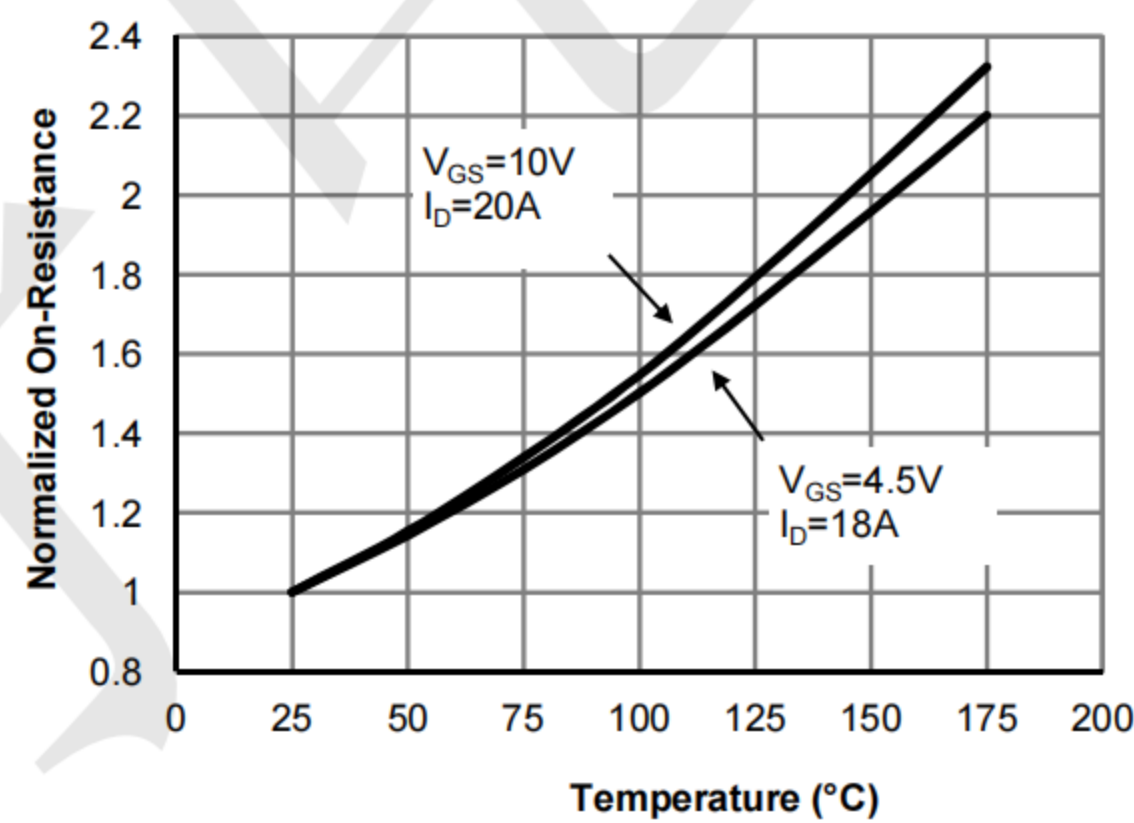


Figure 4: On-Resistance vs. Junction Temperature (Note E)

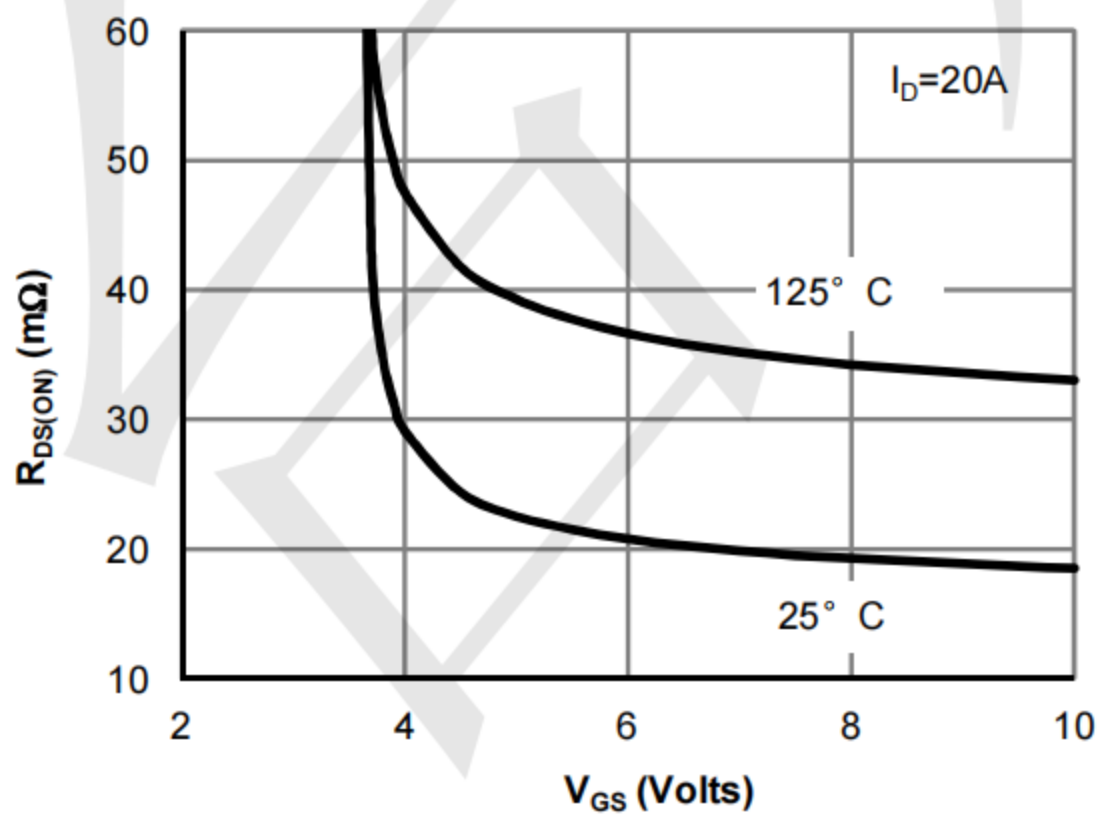


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

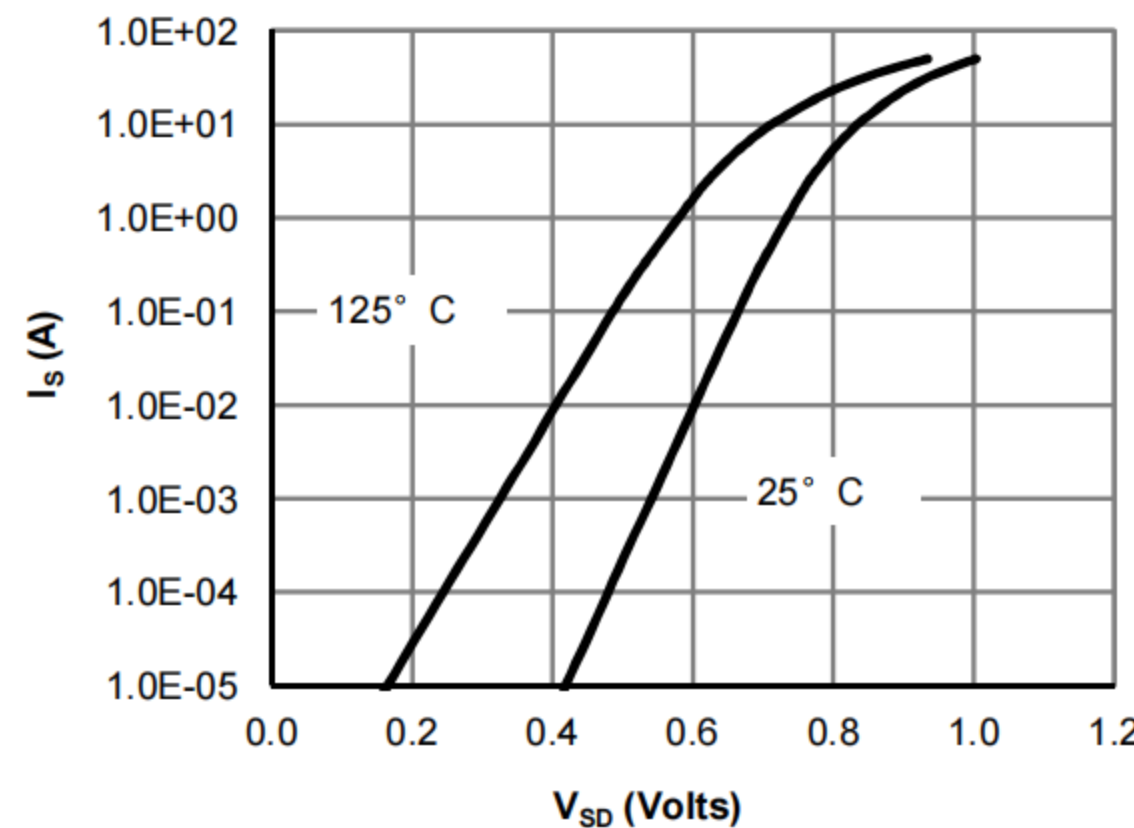


Figure 6: Body-Diode Characteristics (Note E)



Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)

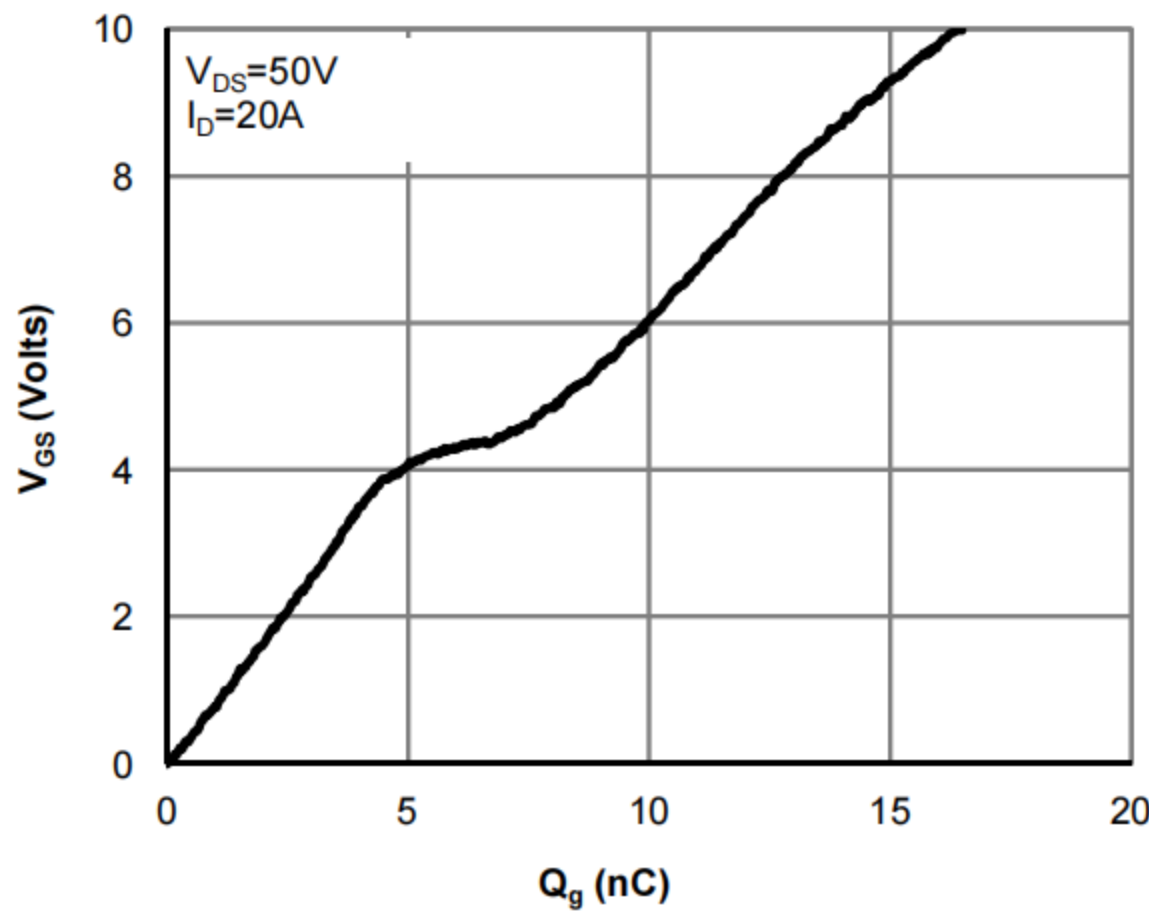


Figure 7: Gate-Charge Characteristics

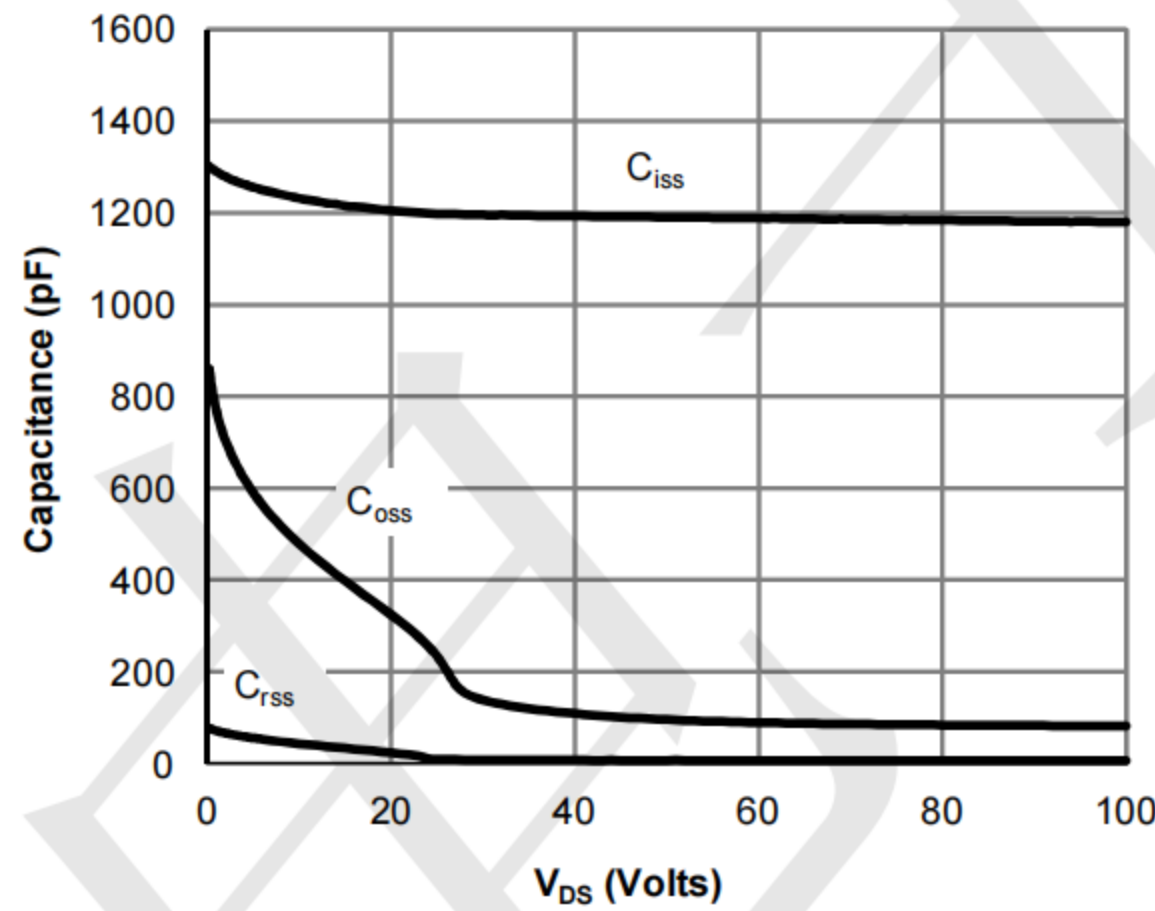


Figure 8: Capacitance Characteristics

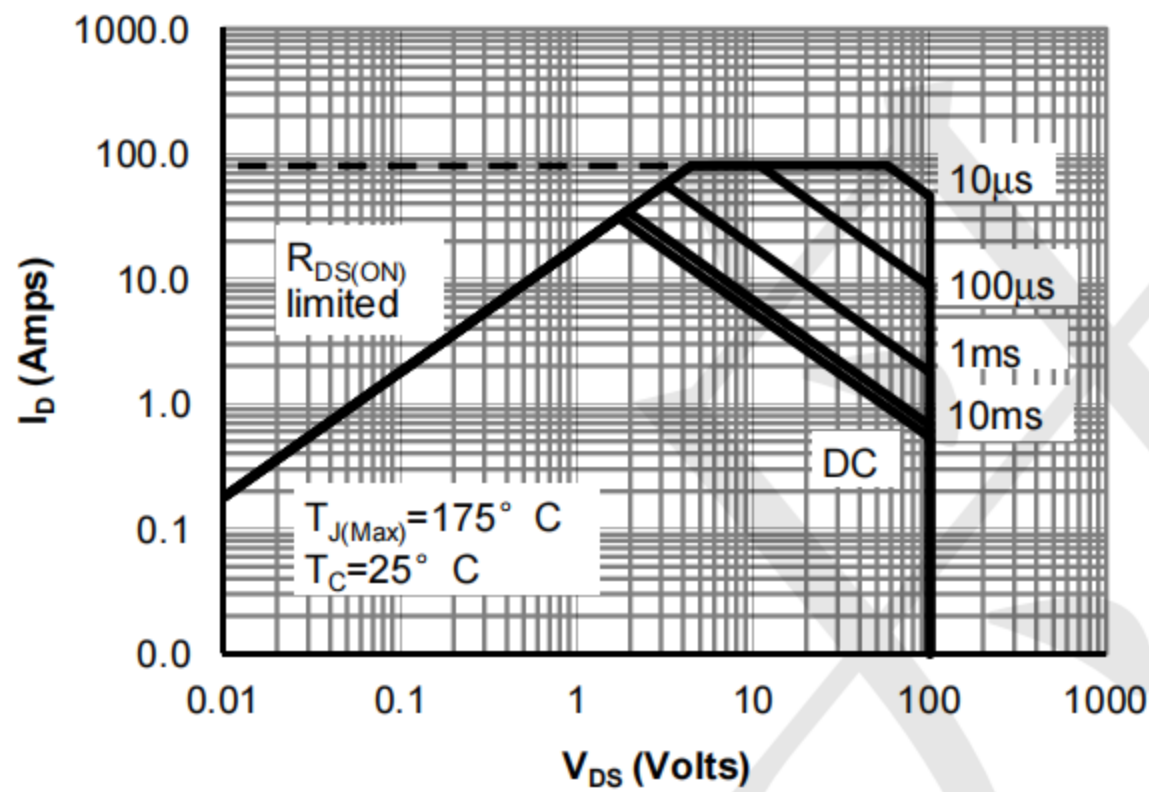


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

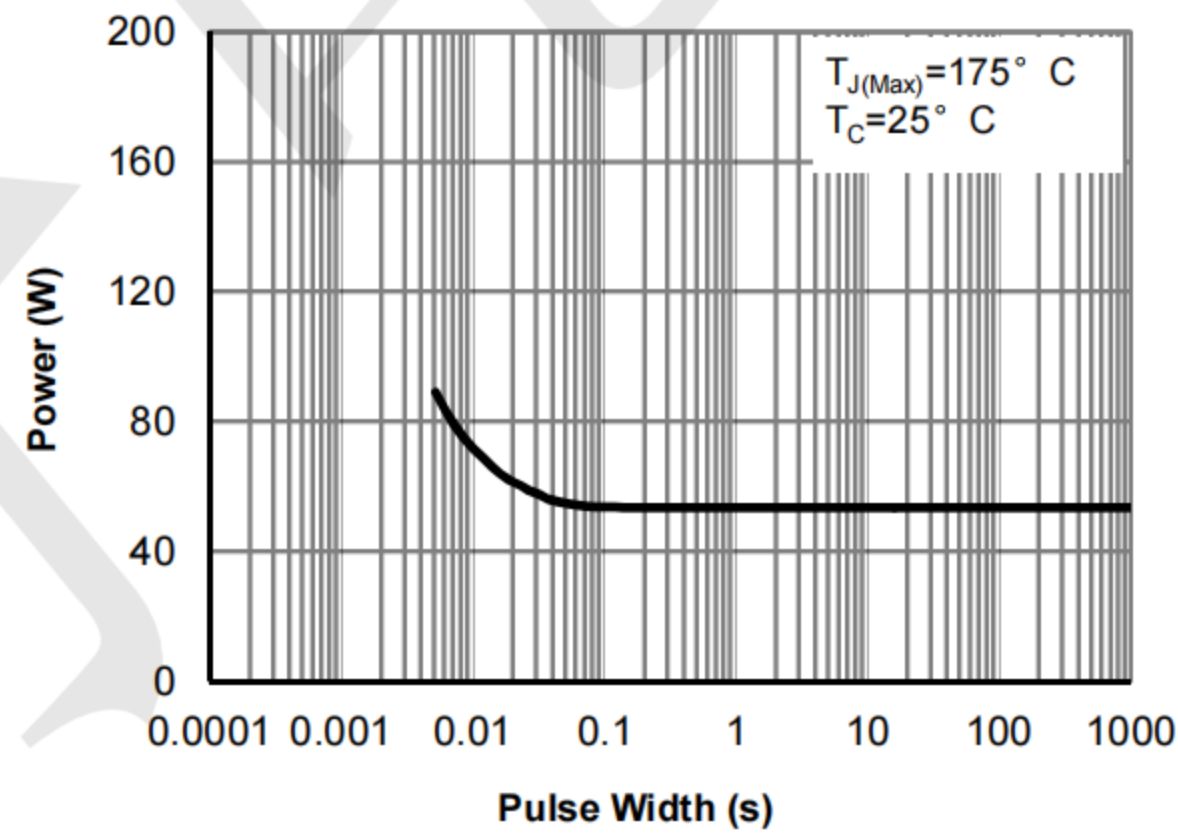


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

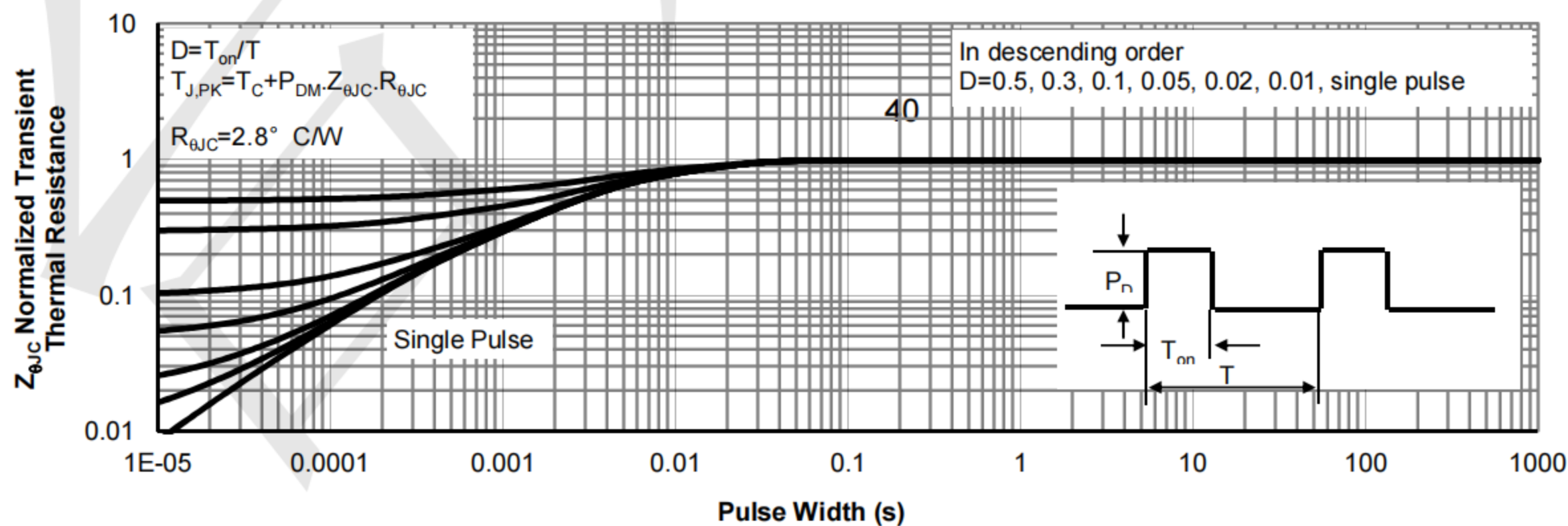


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)



Typical Performance Characteristics (T<sub>A</sub>=25°C unless otherwise Specified)

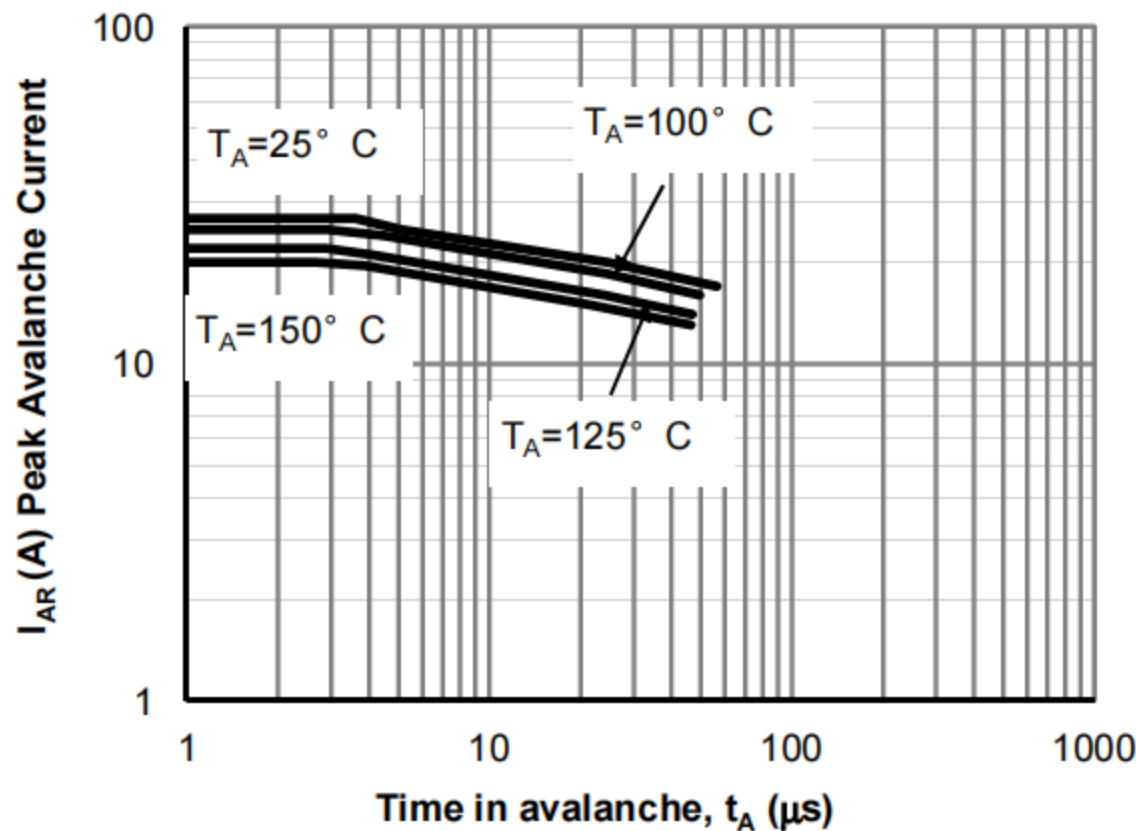


Figure 12: Single Pulse Avalanche capability (Note C)

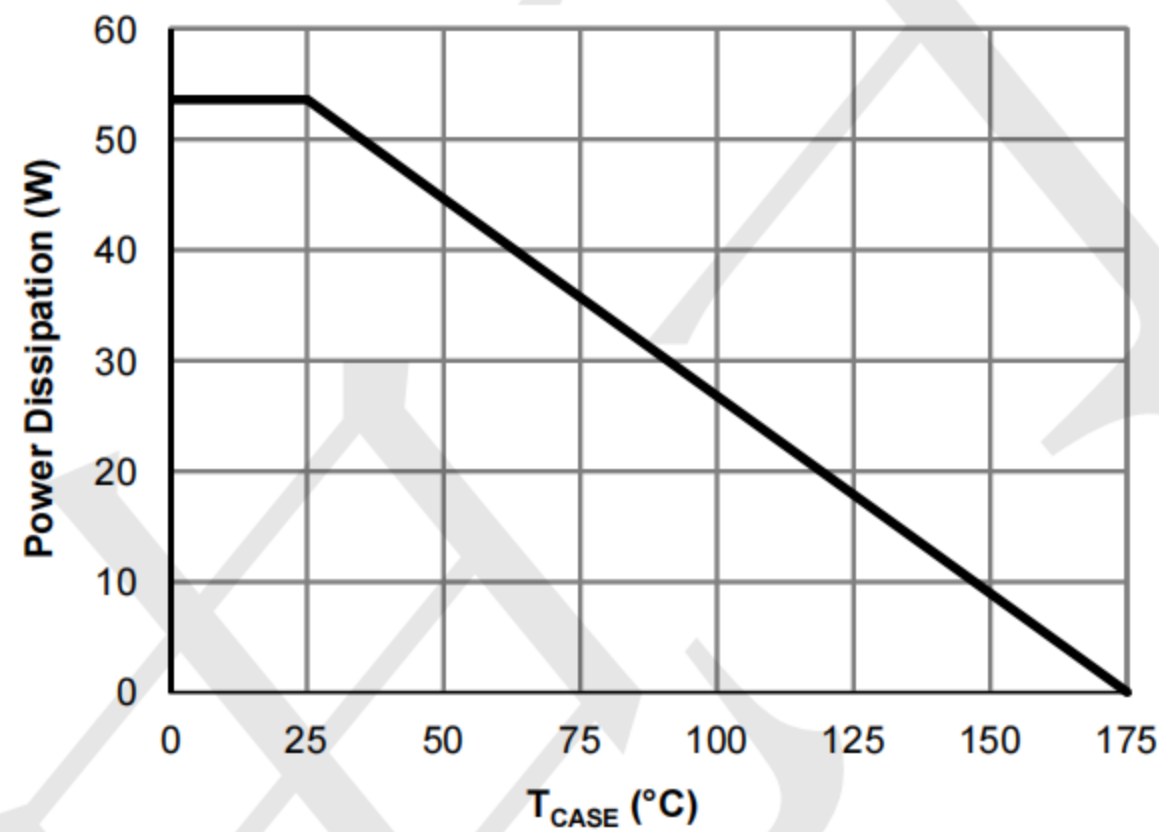


Figure 13: Power De-rating (Note F)

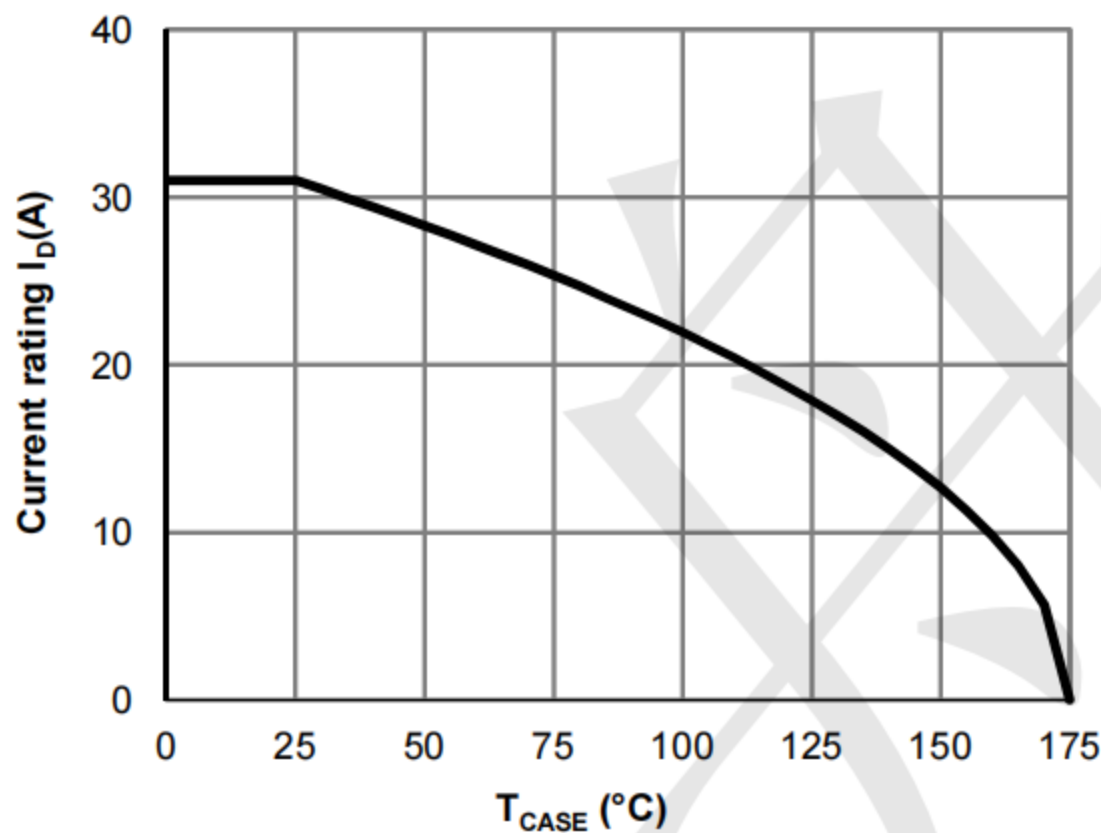


Figure 14: Current De-rating (Note F)

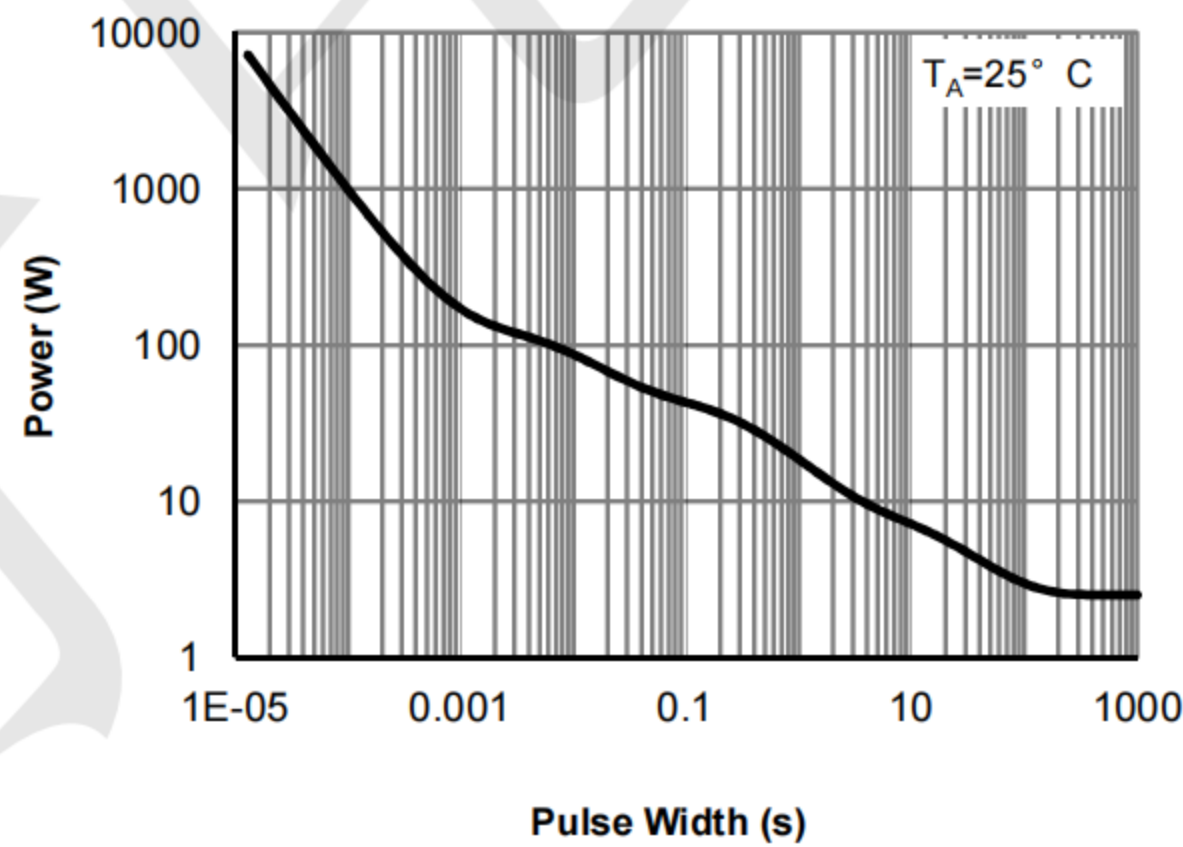


Figure 15: Single Pulse Power Rating Junction-to-Ambient (Note H)

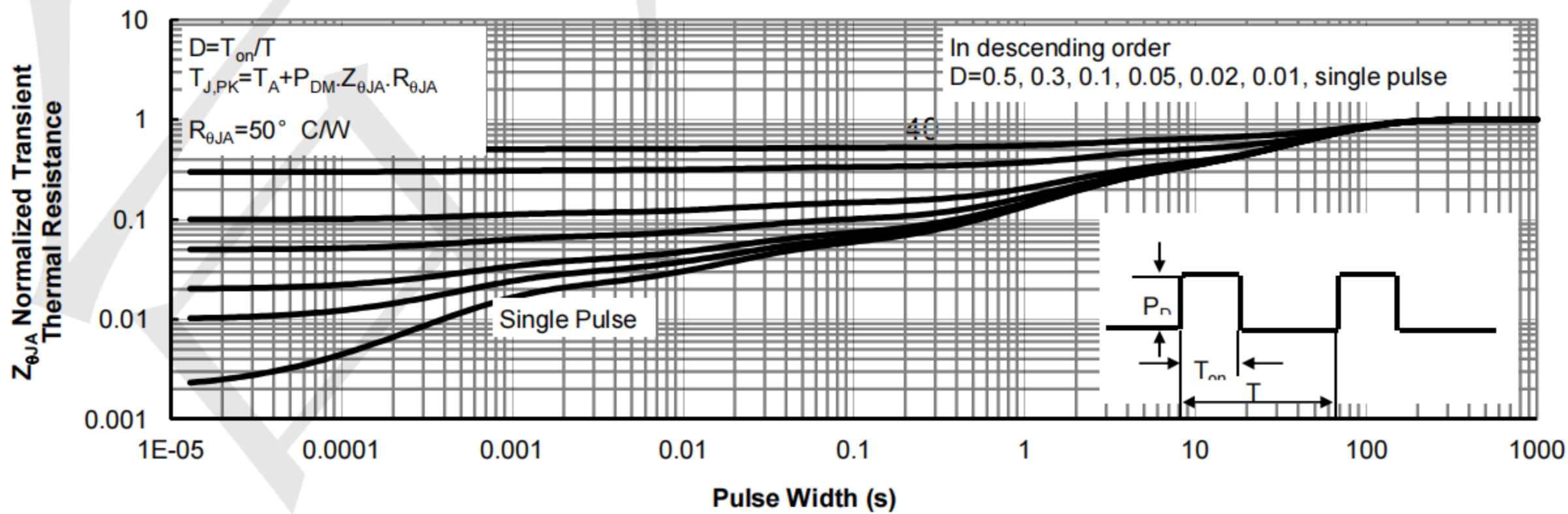
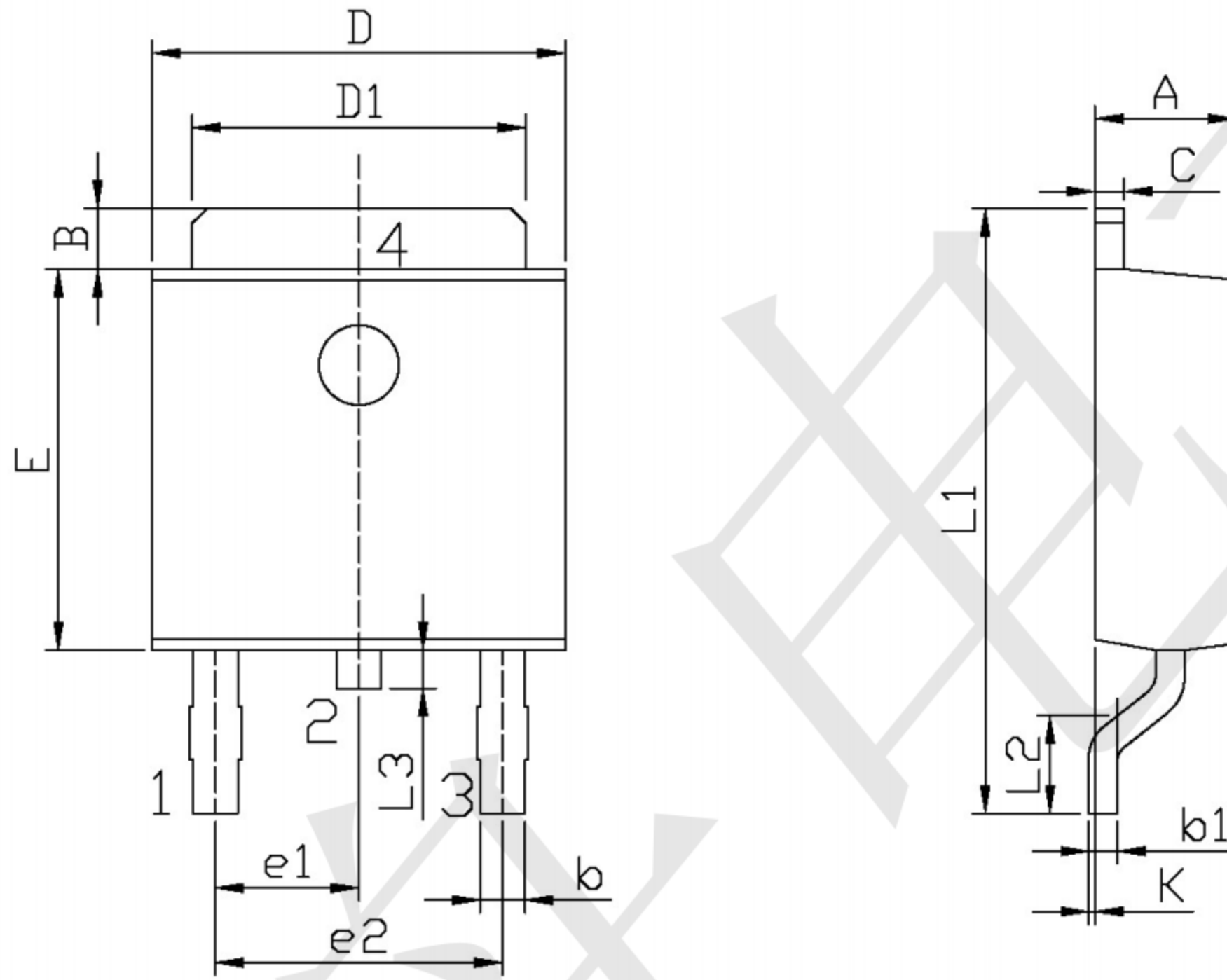


Figure 16: Normalized Maximum Transient Thermal Impedance (Note H)



Outline Drawing - TO-252 (unit:mm)



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10

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