

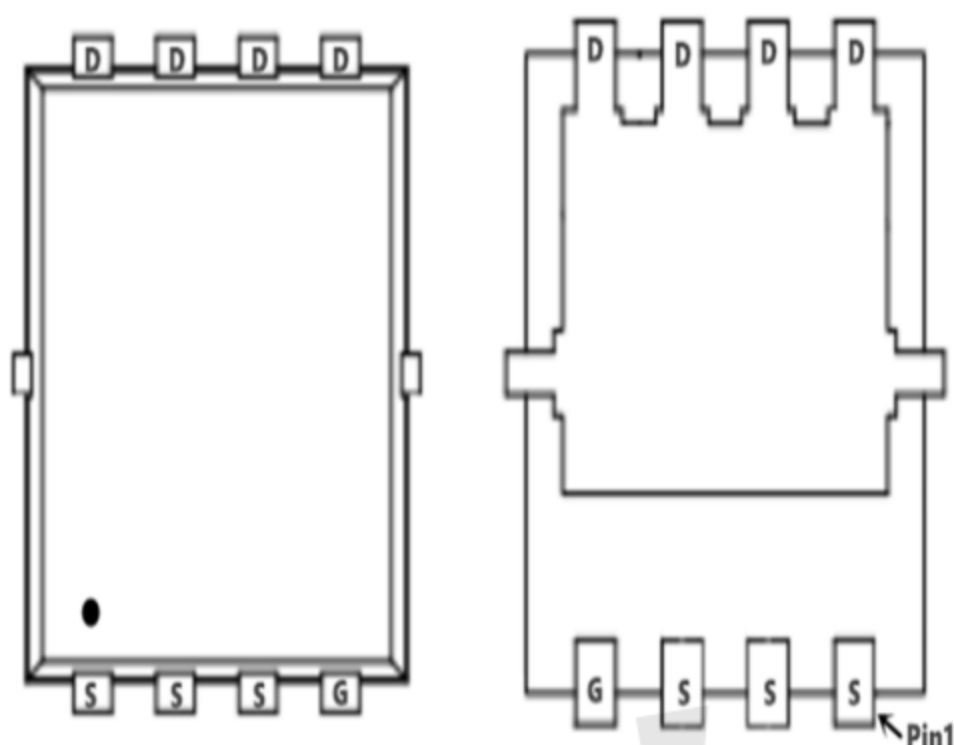
Product Summary

V_{DS} (V)	$R_{DS(on)}$ (m Ω)	I_D (A)
60	2.5 at $V_{GS} = 10$ V	130
	3.5 at $V_{GS} = 4.5$ V	105

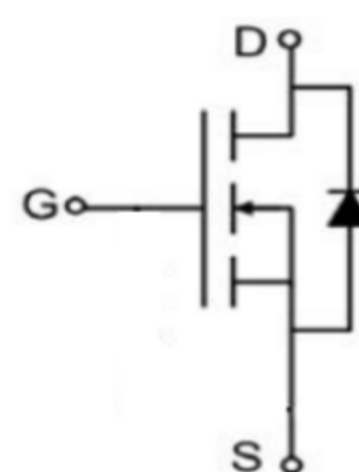
Applications

- ◆ Load/Power switch
- ◆ Interfacing, logic switching
- ◆ Battery management for ultra portable electronics

Package and Pin Configuration



Circuit diagram



PDFN5*6-8L

Absolute Maximum Ratings $T_C=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_C=25^\circ\text{C}$)	130	A
	Drain Current – Continuous ($T_C=100^\circ\text{C}$)	76	A
I_{DM}	Drain Current – Pulsed ¹	350	A
P_D	Power Dissipation ($T_C=25^\circ\text{C}$)	120	W
	Power Dissipation – Derate above 25°C	10	W/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	$^\circ\text{C/W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	0.9	$^\circ\text{C/W}$

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V$, $I_D=250\mu A$	60	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1mA$	---	0.01	---	V/ $^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V$, $V_{GS}=0V$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=60V$, $V_{GS}=0V$, $T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	$V_{GS}=10V$, $I_D=15A$	---	2.5	3.3	m Ω
		$V_{GS}=4.5V$, $I_D=10A$	---	3.5	5.0	m Ω
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.0	1.6	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	1.6	---	mV/ $^\circ\text{C}$
gfs	Forward Transconductance	$V_{DS}=10V$, $I_S=15A$	---	35	---	S

Dynamic and switching Characteristics

Q_g	Total Gate Charge ^{2, 3}	$V_{DS}=30V$, $V_{GS}=10V$, $I_D=10A$	---	30	---	nC
Q_{gs}	Gate-Source Charge ^{2, 3}		---	9.6	---	
Q_{gd}	Gate-Drain Charge ^{2, 3}		---	9.1	---	
$T_{d(on)}$	Turn-On Delay Time ^{2, 3}	$V_{DS}=30V$, $V_{GS}=10V$, $R_G=3.3\Omega$, $I_D=10A$	---	23	---	ns
T_r	Rise Time ^{2, 3}		---	7.2	---	
$T_{d(off)}$	Turn-Off Delay Time ^{2, 3}		---	80	---	
T_f	Fall Time ^{2, 3}		---	26	---	
C_{iss}	Input Capacitance	$V_{DS}=20V$, $V_{GS}=0V$, $F=1MHz$	---	5377	---	pF
C_{oss}	Output Capacitance		---	1670	---	
C_{rss}	Reverse Transfer Capacitance		---	78	---	

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	130	A
I_{SM}	Pulsed Source Current		---	---	250	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V$, $I_S=1A$, $T_J=25^\circ\text{C}$	---	---	1.3	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

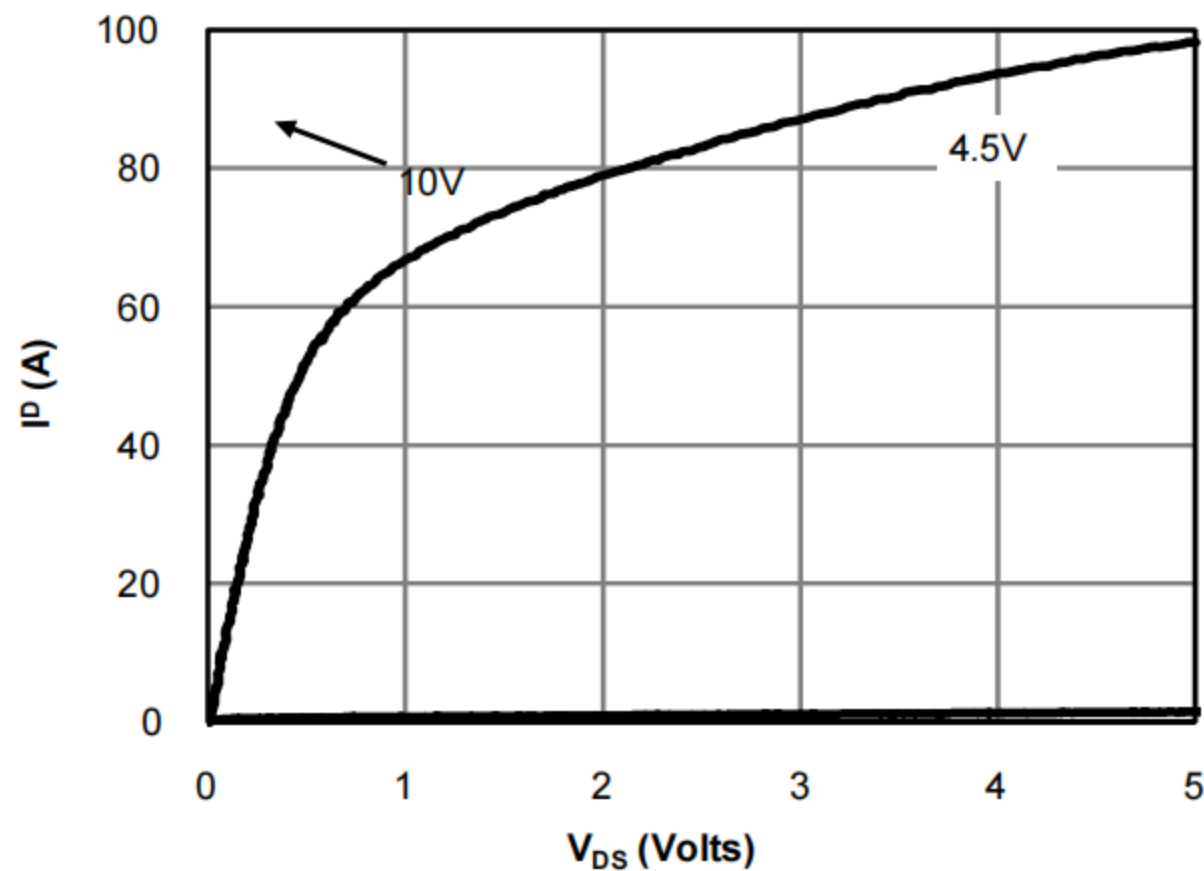


Fig 1: On-Region Characteristics (Note E)

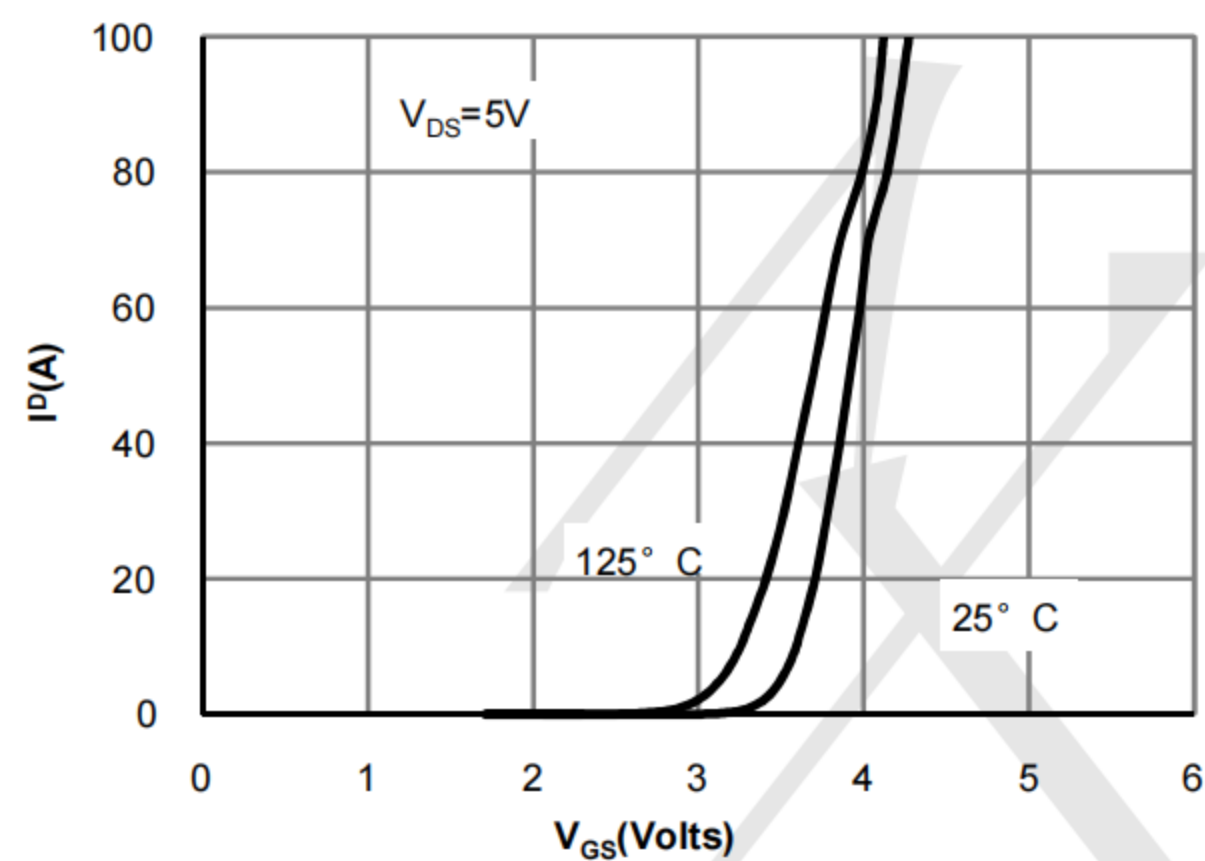


Figure 2: Transfer Characteristics (Note E)

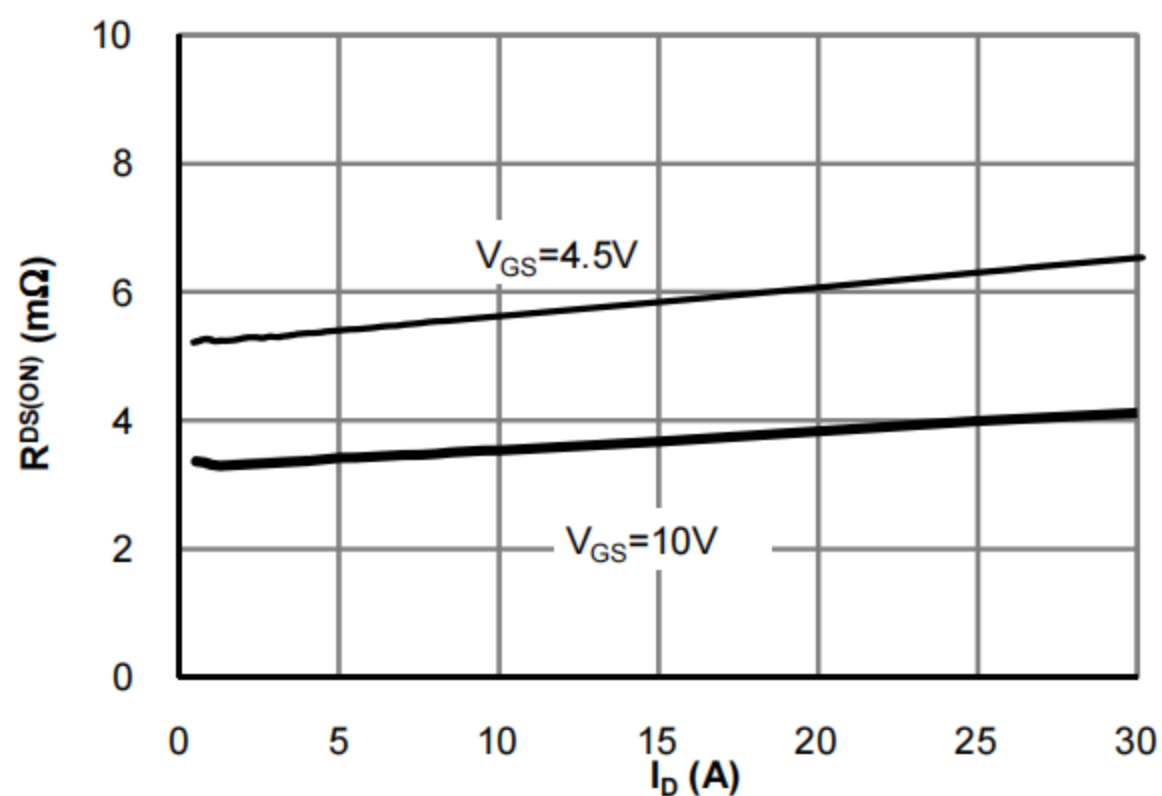


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

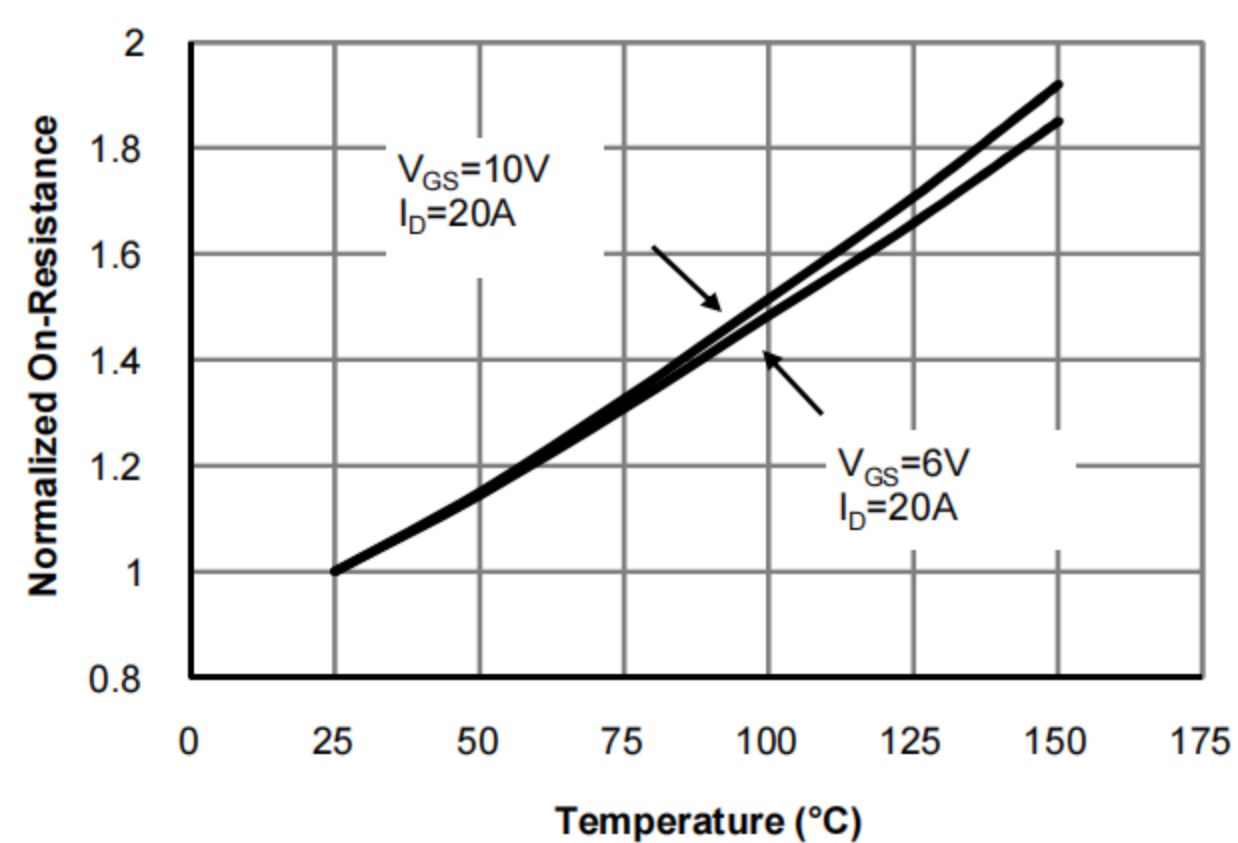


Figure 4: On-Resistance vs. Junction Temperature (Note E)

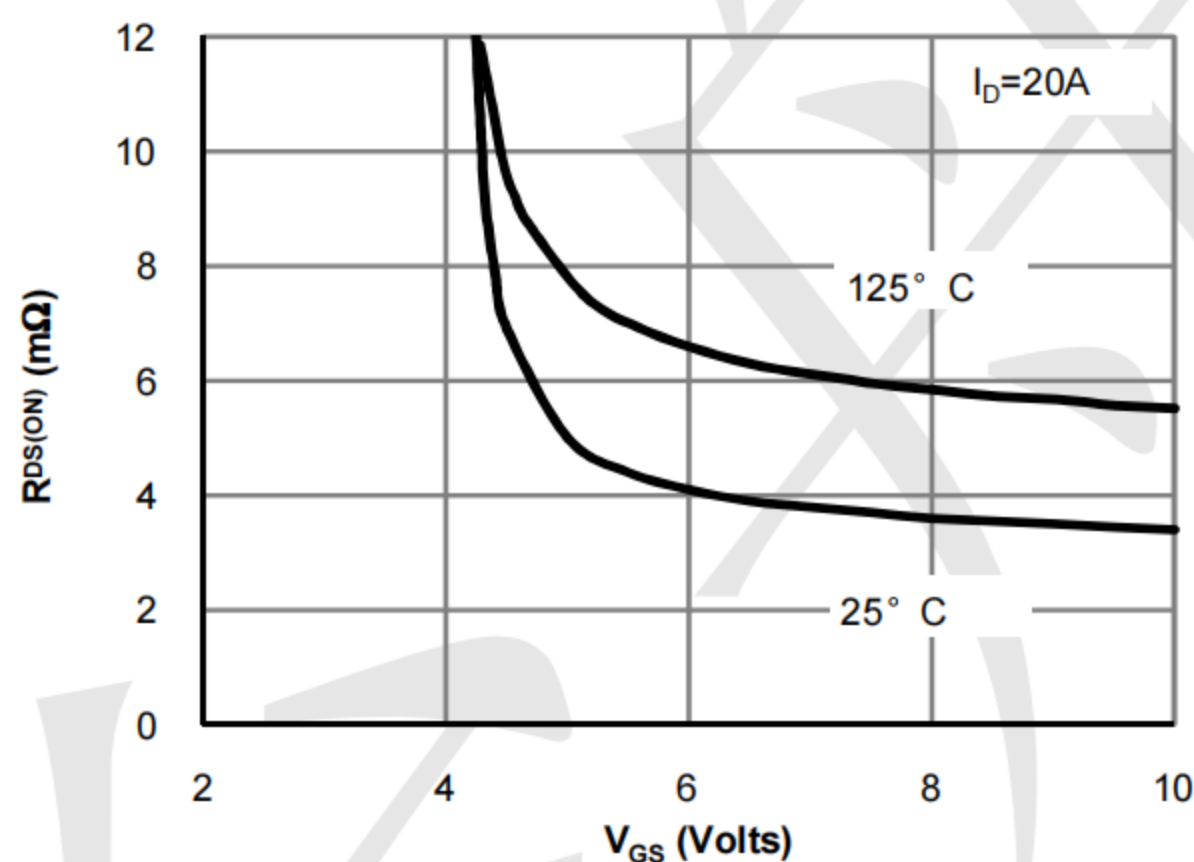


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

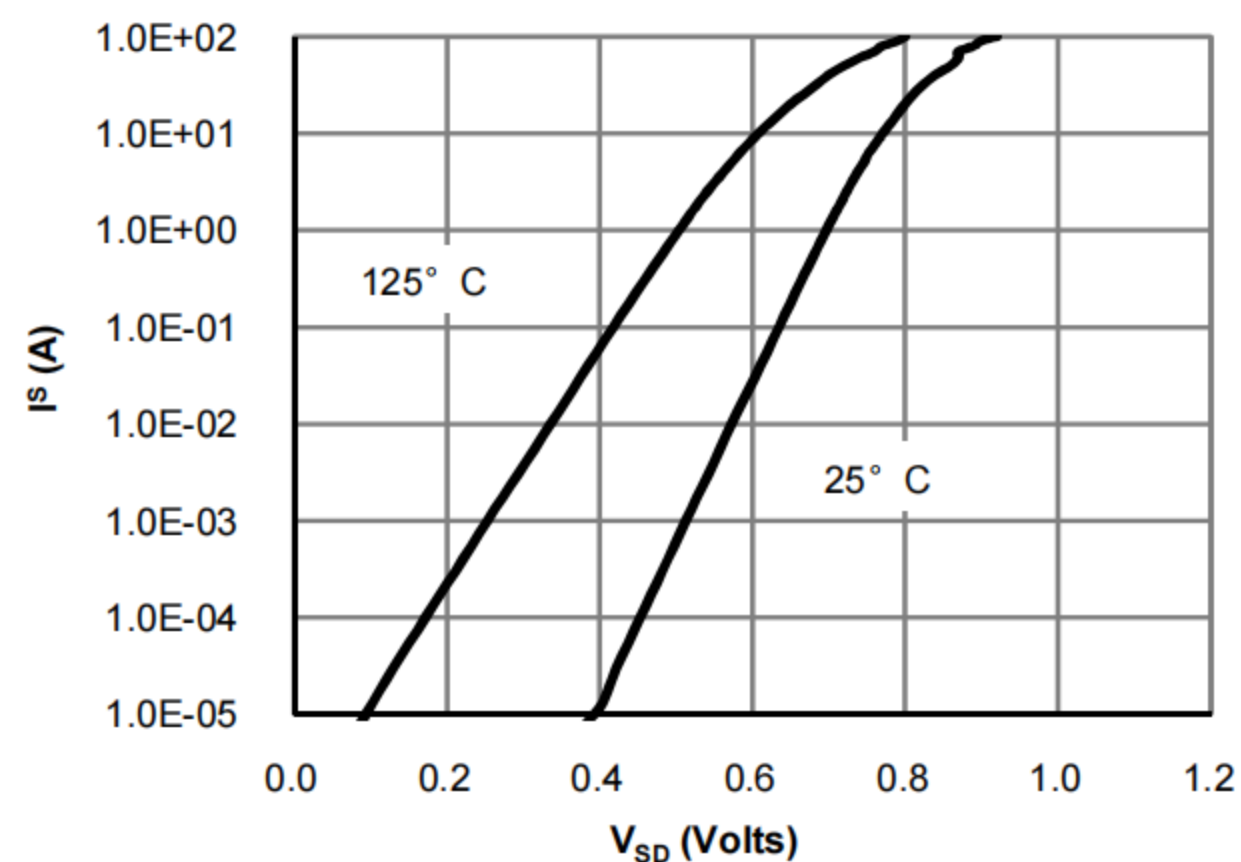


Figure 6: Body-Diode Characteristics (Note E)

(Note E)

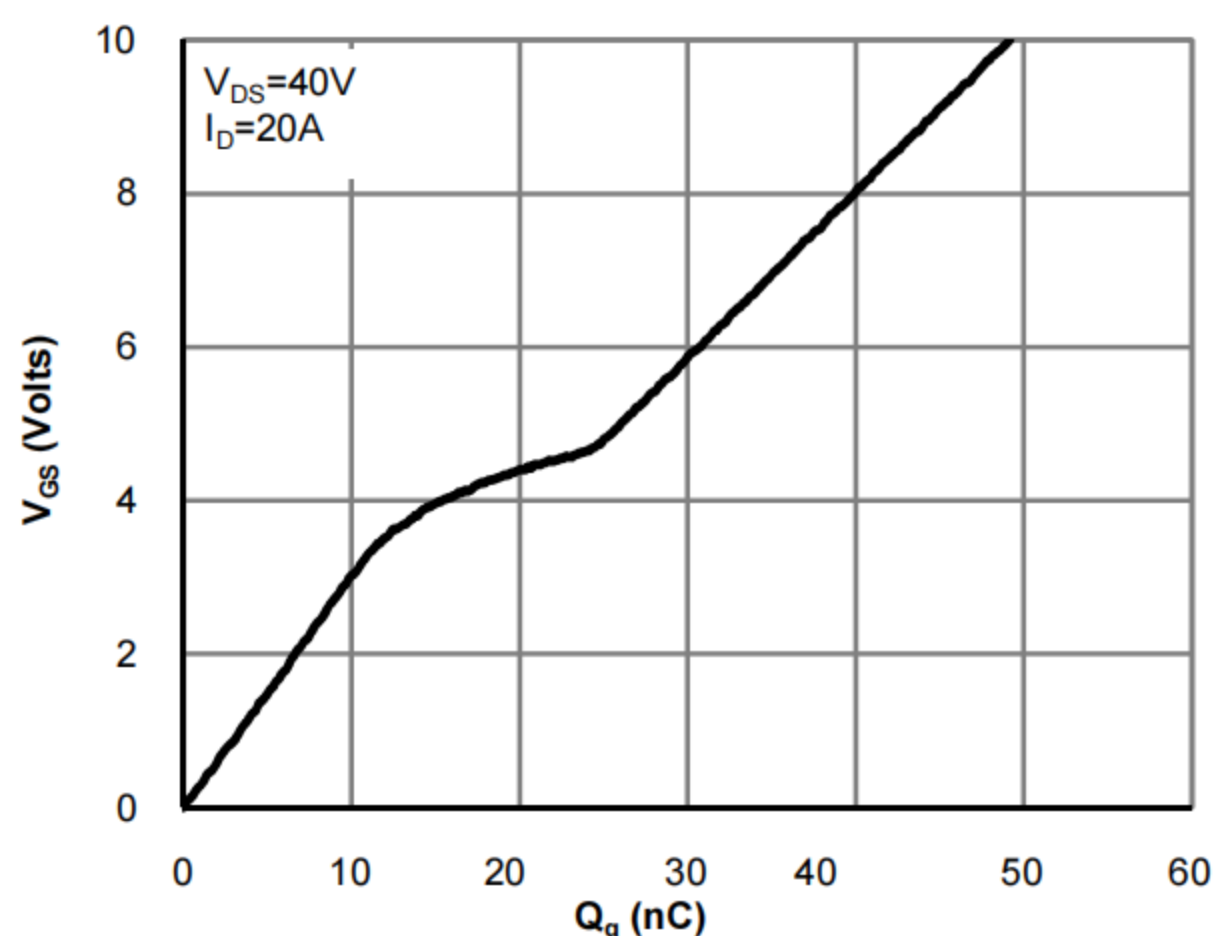


Figure 7: Gate-Charge Characteristics

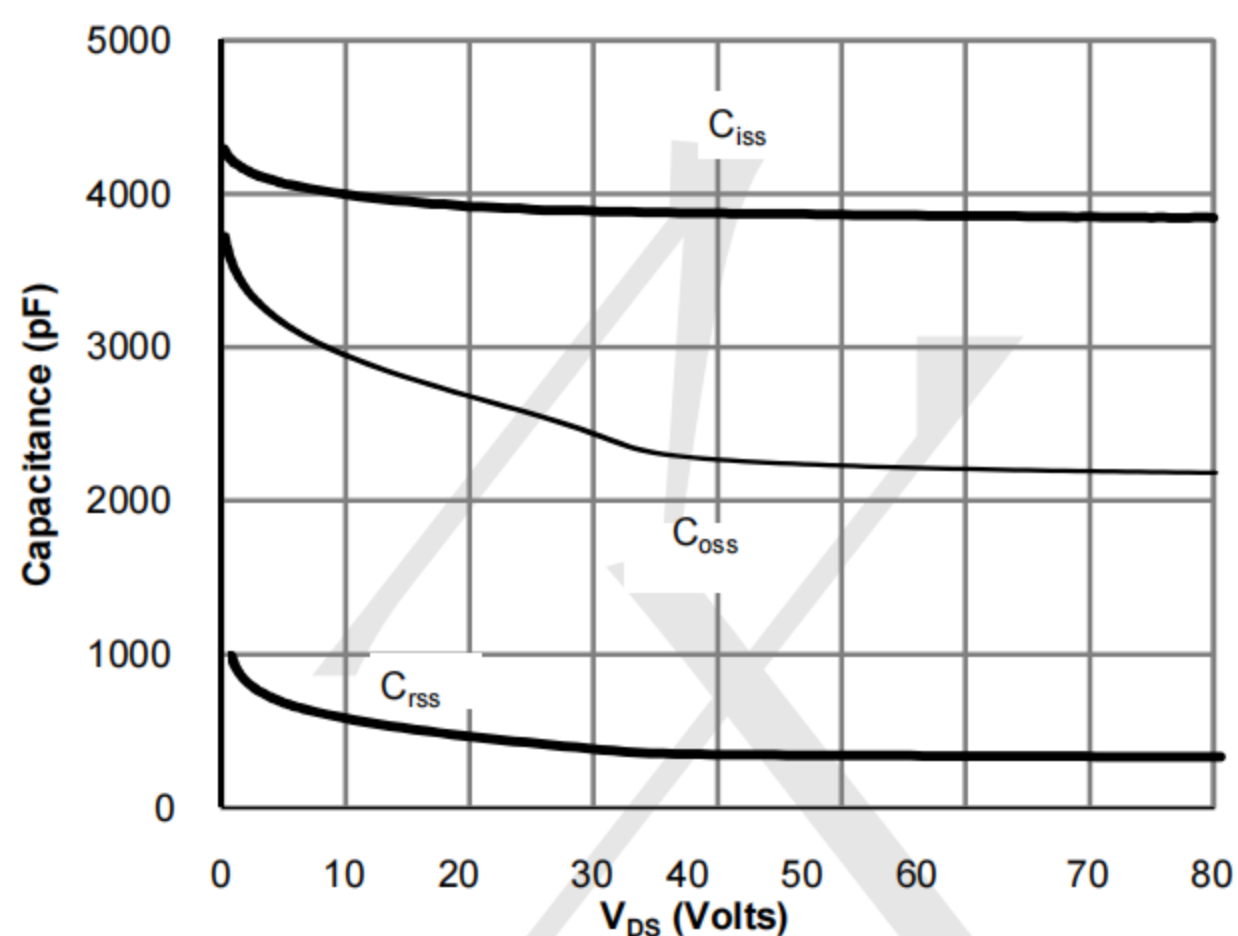


Figure 8: Capacitance Characteristics

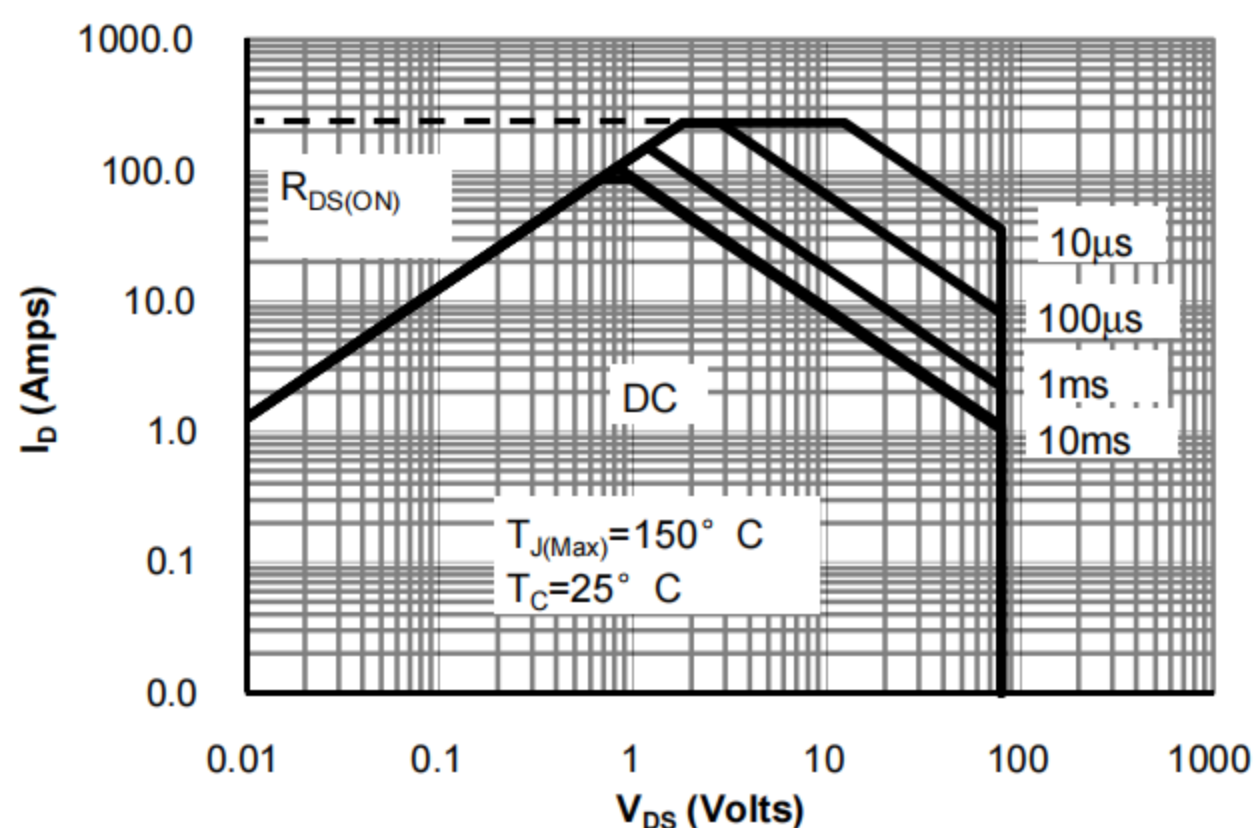


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

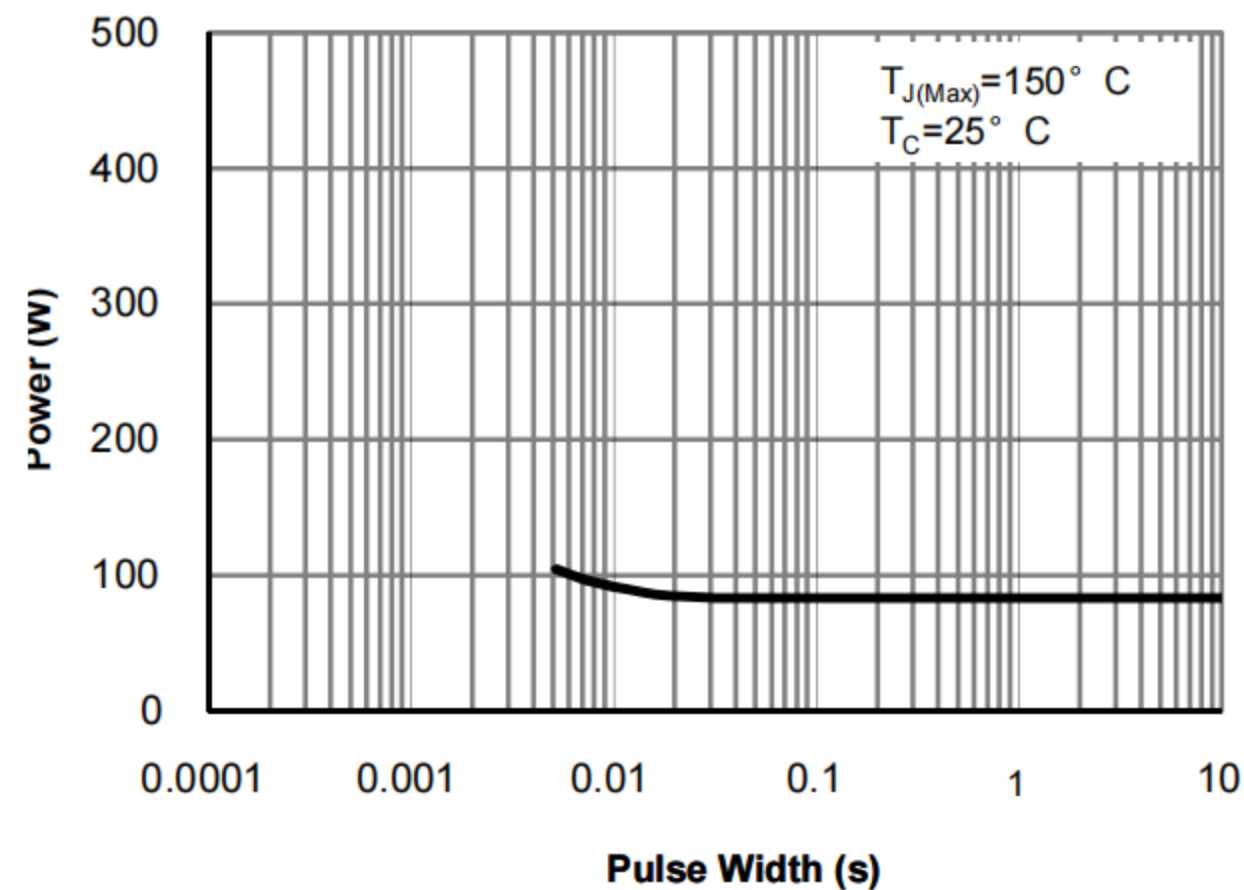


Figure 10: Single Pulse Power Rating Junction-to-Case (Note F)

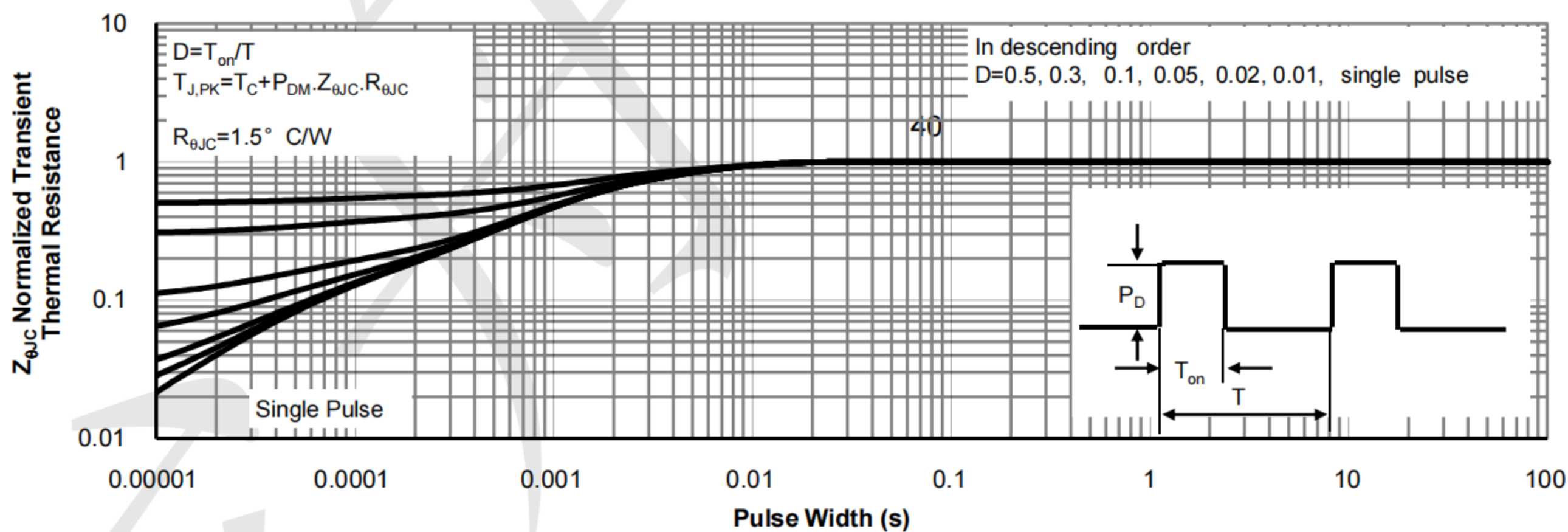
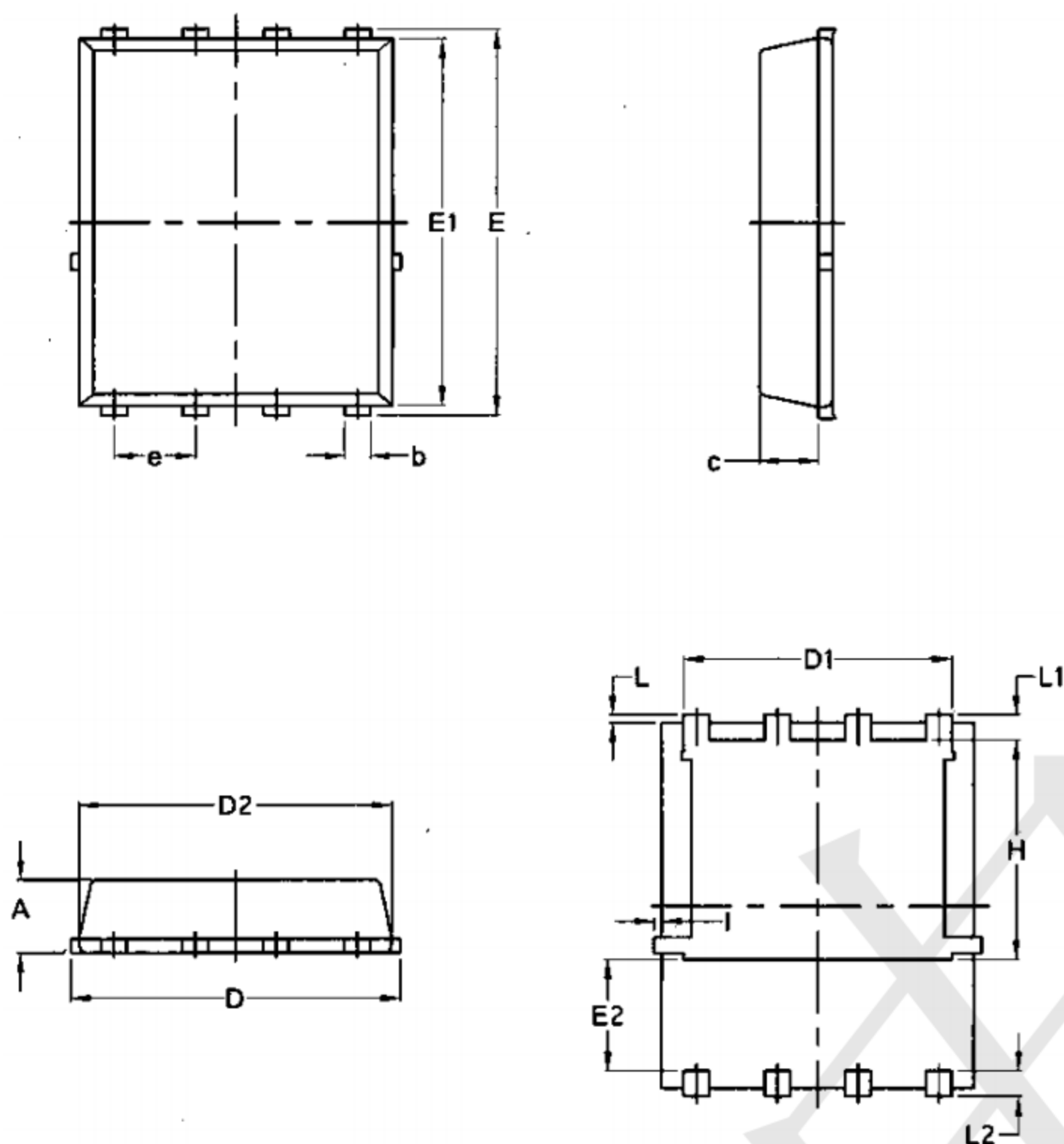


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Package Outline Dimensions PDFN5*6-8L



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
l	/	0.18	/	0.0070