

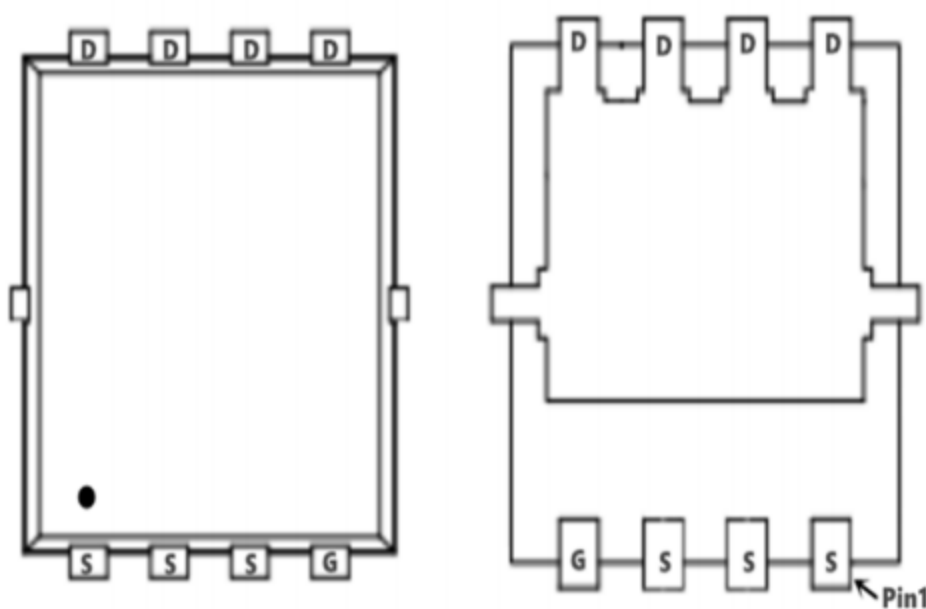
Product Summary

- $V_{DS} = 40V$
- $I_D = 60A$ ($V_{GS} = 10V$)
- $R_{DS(ON)} = 5.5 m\Omega$ @ $V_{GS} = 10V$
- $R_{DS(ON)} = 6.0 m\Omega$ @ $V_{GS} = 4.5V$

Application

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Package and Pin Configuration



PDFN5*6-8L

Circuit diagram



Marking: M4060N

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

Symbol	Parameter	Steady State	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹	60	A
I_{DM}	Pulsed Drain Current ²	300	A
I_S	Continuous Source Current (Diode Conduction) ¹	60	A
E_{AS}	Single Pulse Drain-Source Avalanche Energy ³	110	mJ
P_D	Maximum Power Dissipation	$T_A = 25^\circ C$	2
		$T_C = 25^\circ C$	89
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55~150	$^\circ C$

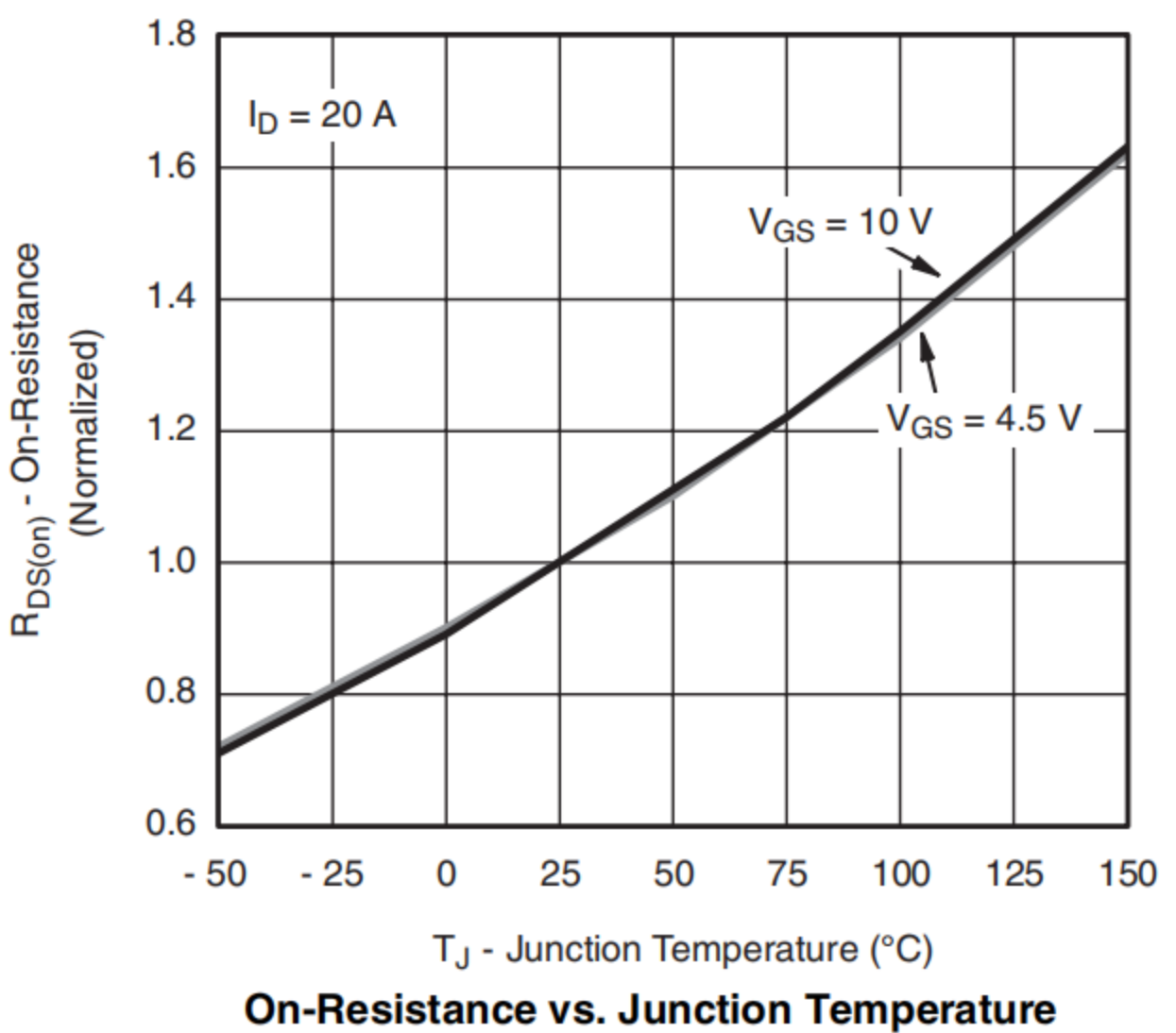
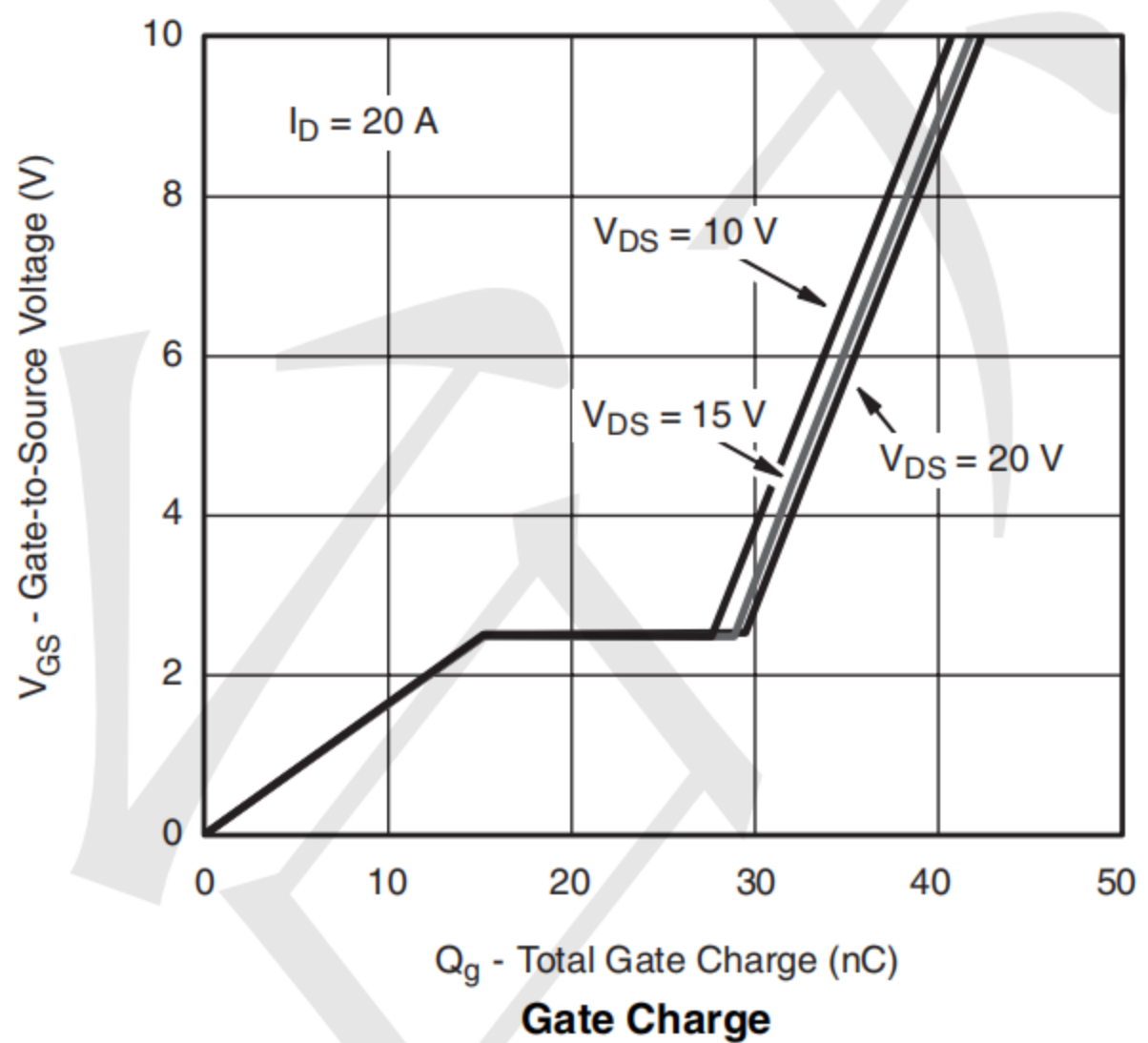
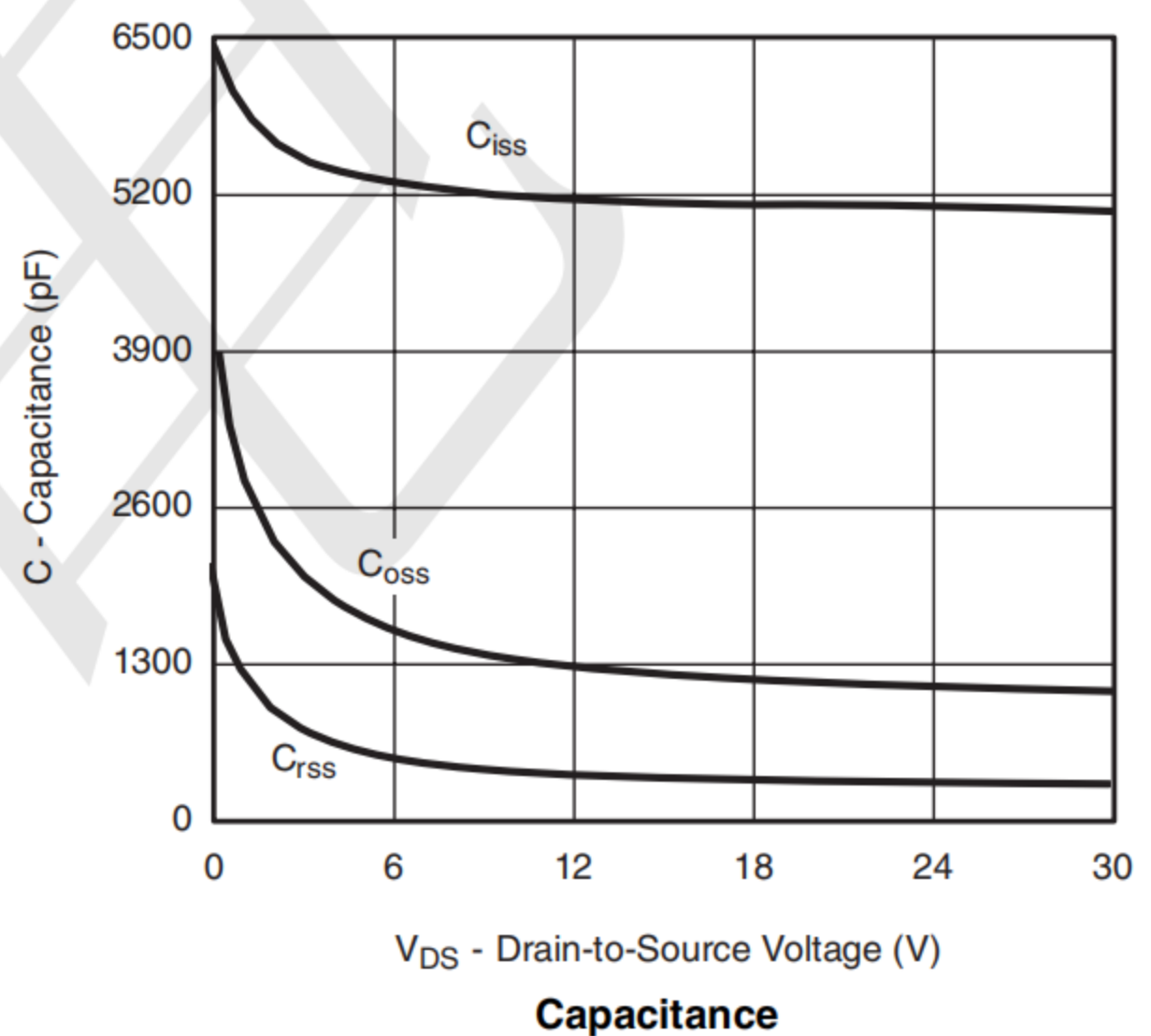
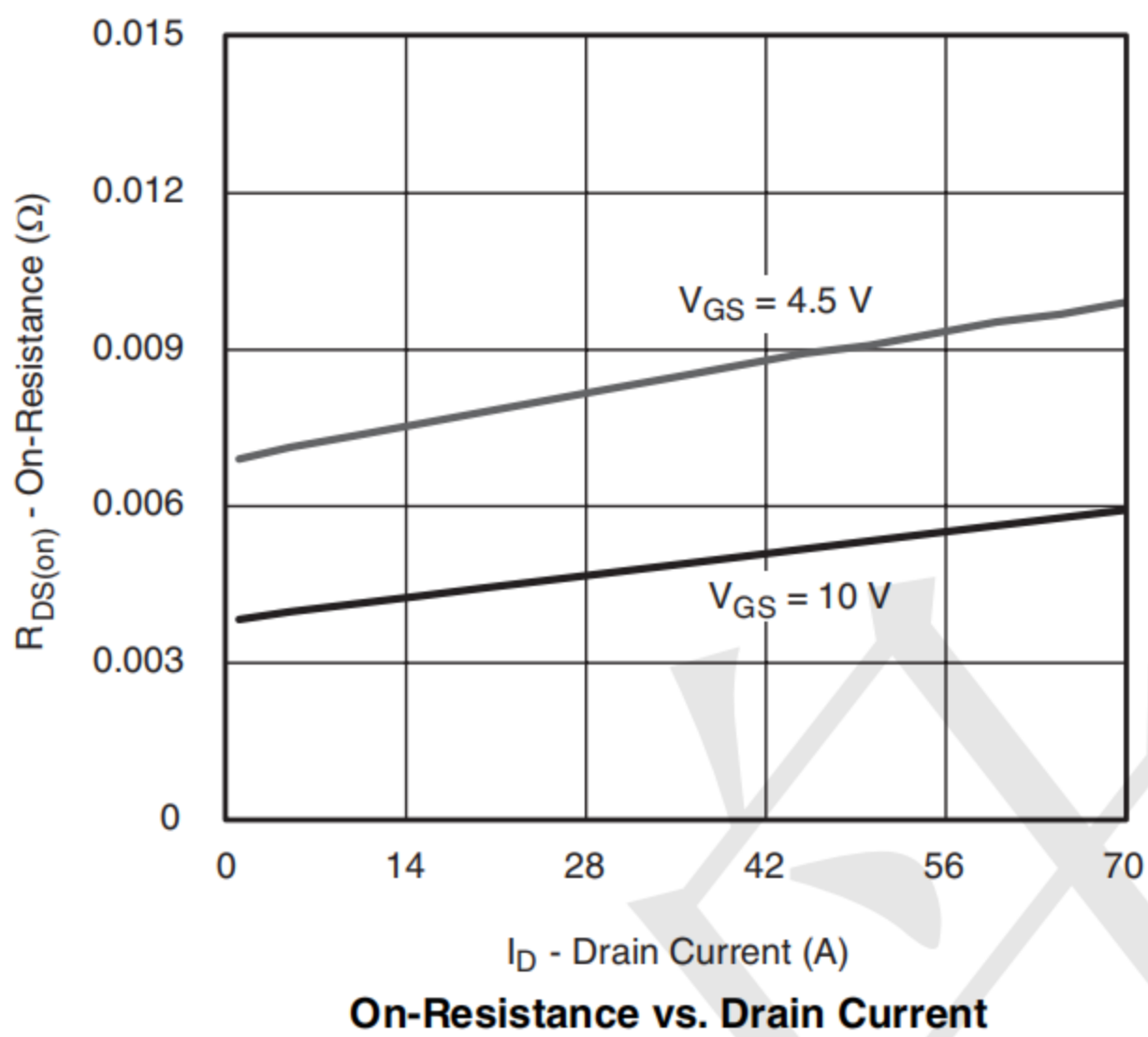
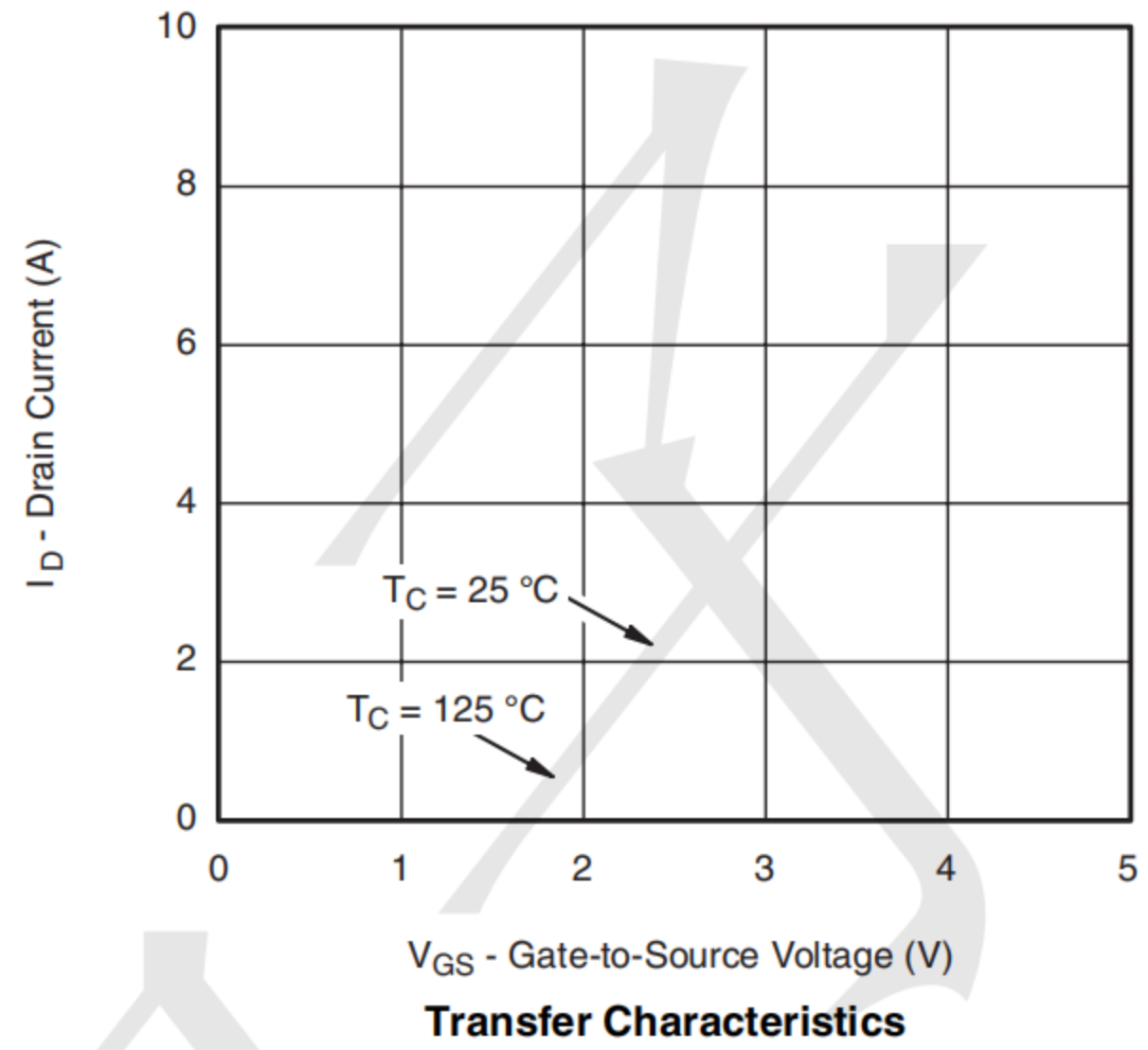
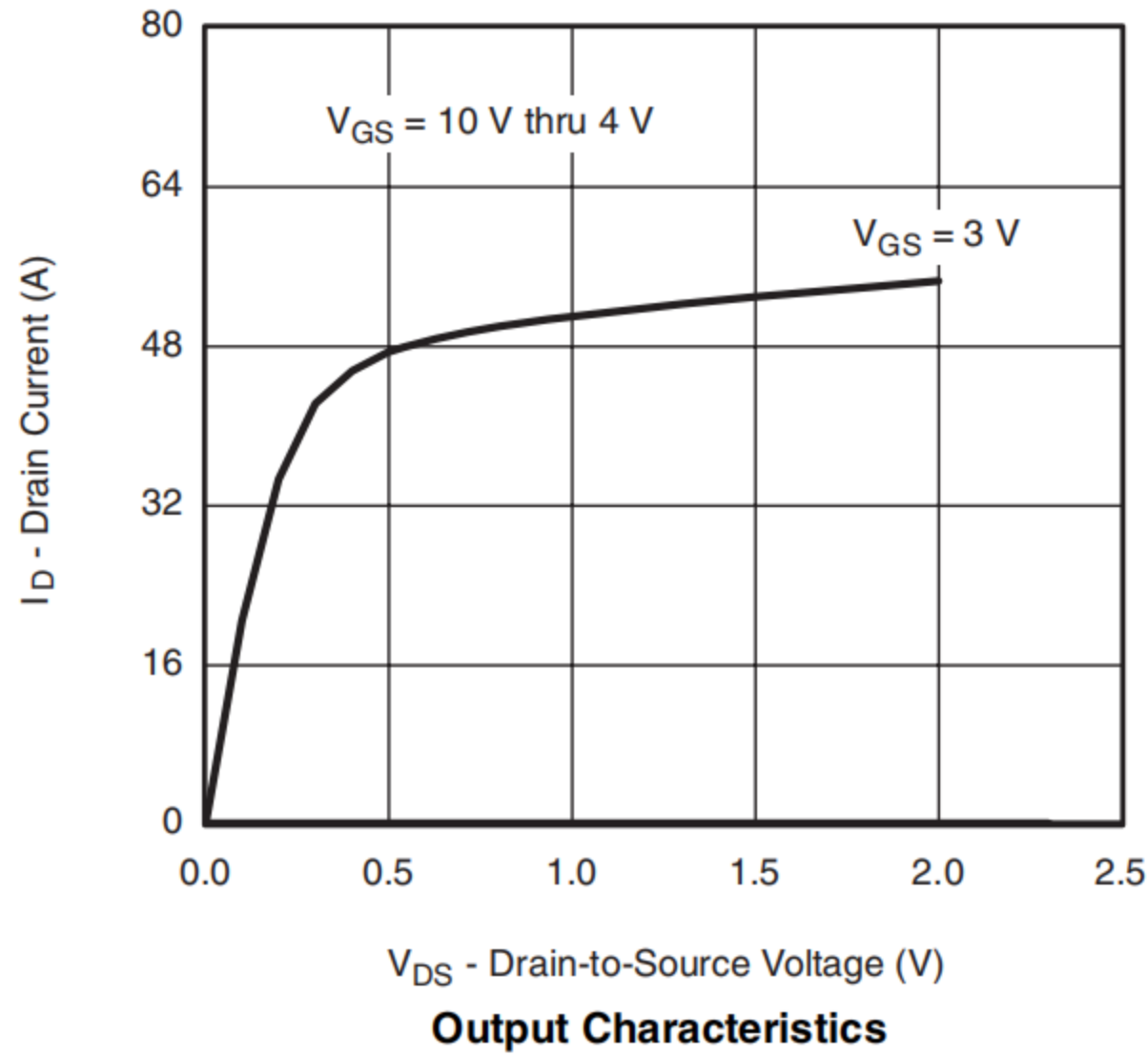
Thermal Characteristics

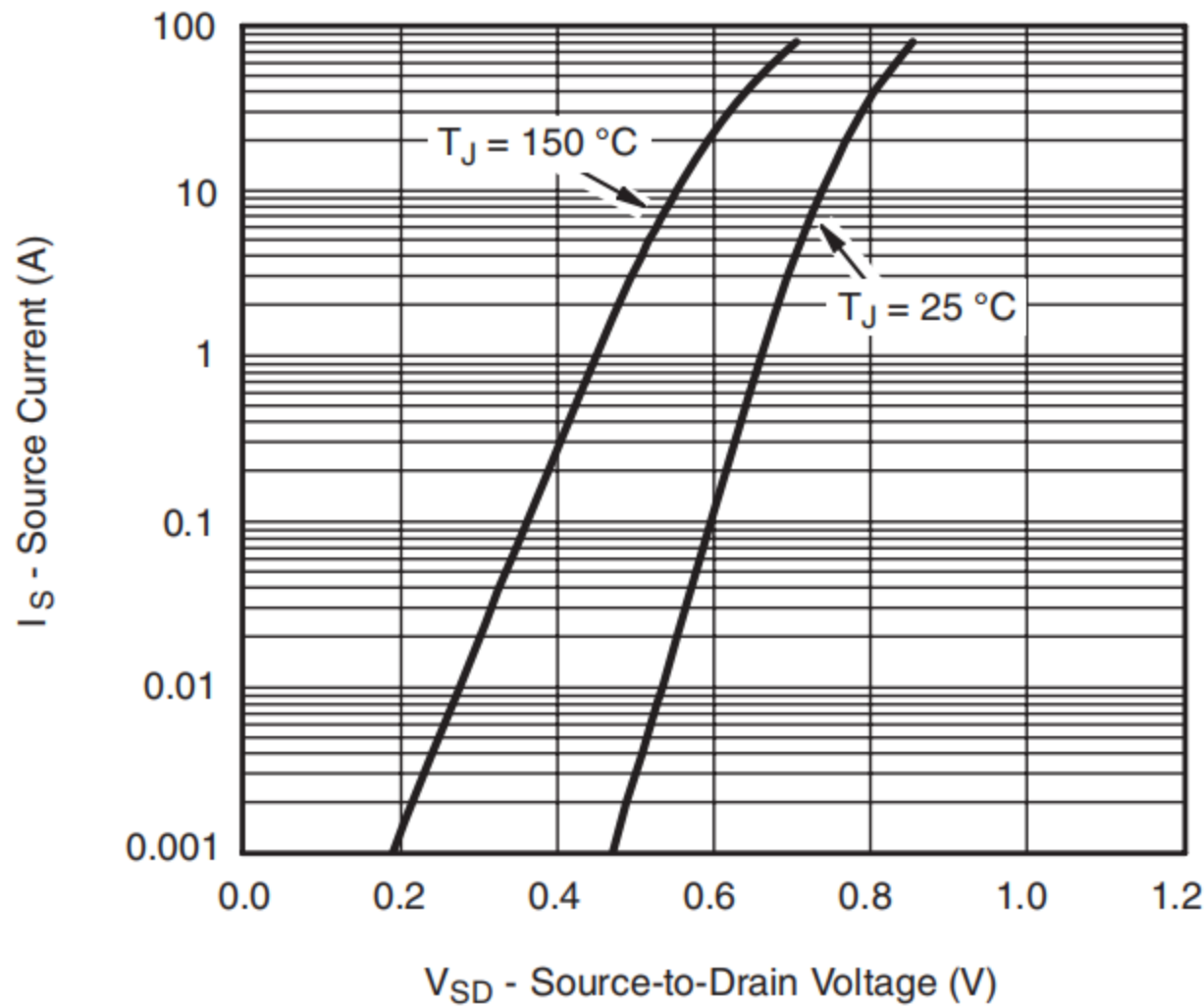
Symbol	Parameter	Typical	Maximum	Unit
R_{thJA}	Maximum Junction-to-Ambient	-	62.5	$^\circ C/W$
R_{thJC}	Maximum Junction-to-Case	-	1.4	

Electrical Characteristics (T =25°C unless otherwise specified)

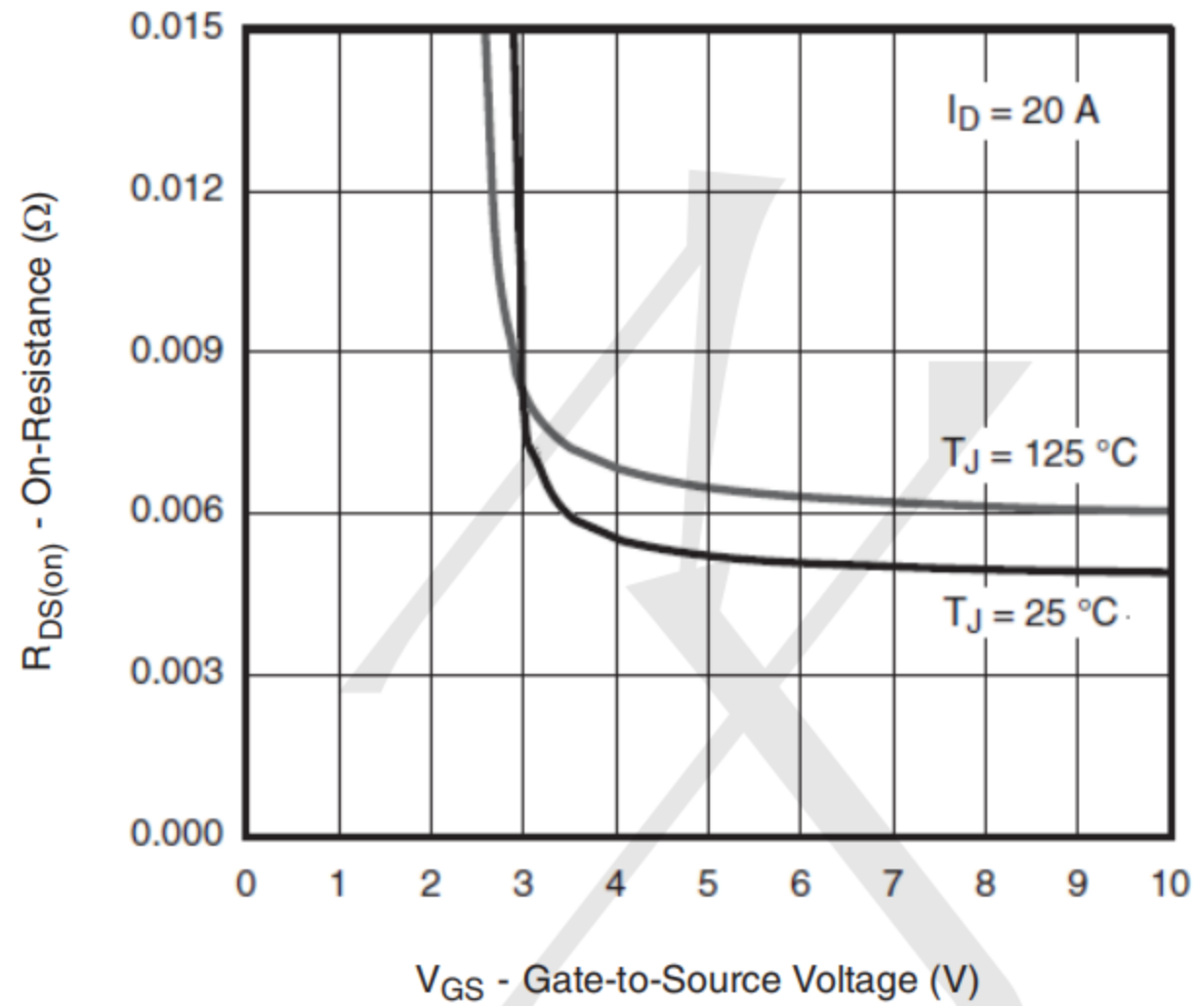
Symbol	Parameter	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	40	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 250μA	1	1.8	2.2	V
I _{GSS}	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 32V, V _{GS} = 0V	-	-	1	μA
		V _{DS} = 32V, V _{GS} = 0V, T _J = 85°C	-	-	30	
R _{DS(on)}	Drain Source On State Resistance ^a	V _{GS} = 10V, I _D = 60A	-	5.5	6.5	mΩ
		V _{GS} = 4.5V, I _D = 30A	-	6.0	8.0	
V _{SD}	Diode Forward Voltage ^a	V _{GS} = 0V, I _S = 40A	-	0.82	1.3	V
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{DS} = 15V, V _{GS} = 0V, f = 1MHz	-	5120	-	pF
C _{oss}	Output Capacitance		-	1210	-	
C _{rss}	Reverse Transfer Capacitance		-	390	-	
Q _g	Total Gate Charge	V _{DS} = 15V, V _{GS} = 10V, I _D = 20A	-	41	-	nC
Q _{gs}	Gate-Source Charge		-	15	-	
Q _{gd}	Gate-Drain Charge		-	12	-	
t _{d(on)}	Turn-On Delay Time	V _{DD} = 15V, V _{GS} = 4.5V I _D = 20A, R _{GEN} = 3Ω	-	22	-	nSec
t _r	Rise Time		-	35	-	
t _{d(off)}	Turn-Off Delay Time		-	50	-	
t _f	Fall Time		-	27	-	
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A, di/dt= 100A/μA, T _J =25°C	-	33	-	nSec

Typical Electrical and Thermal Characteristic Curves

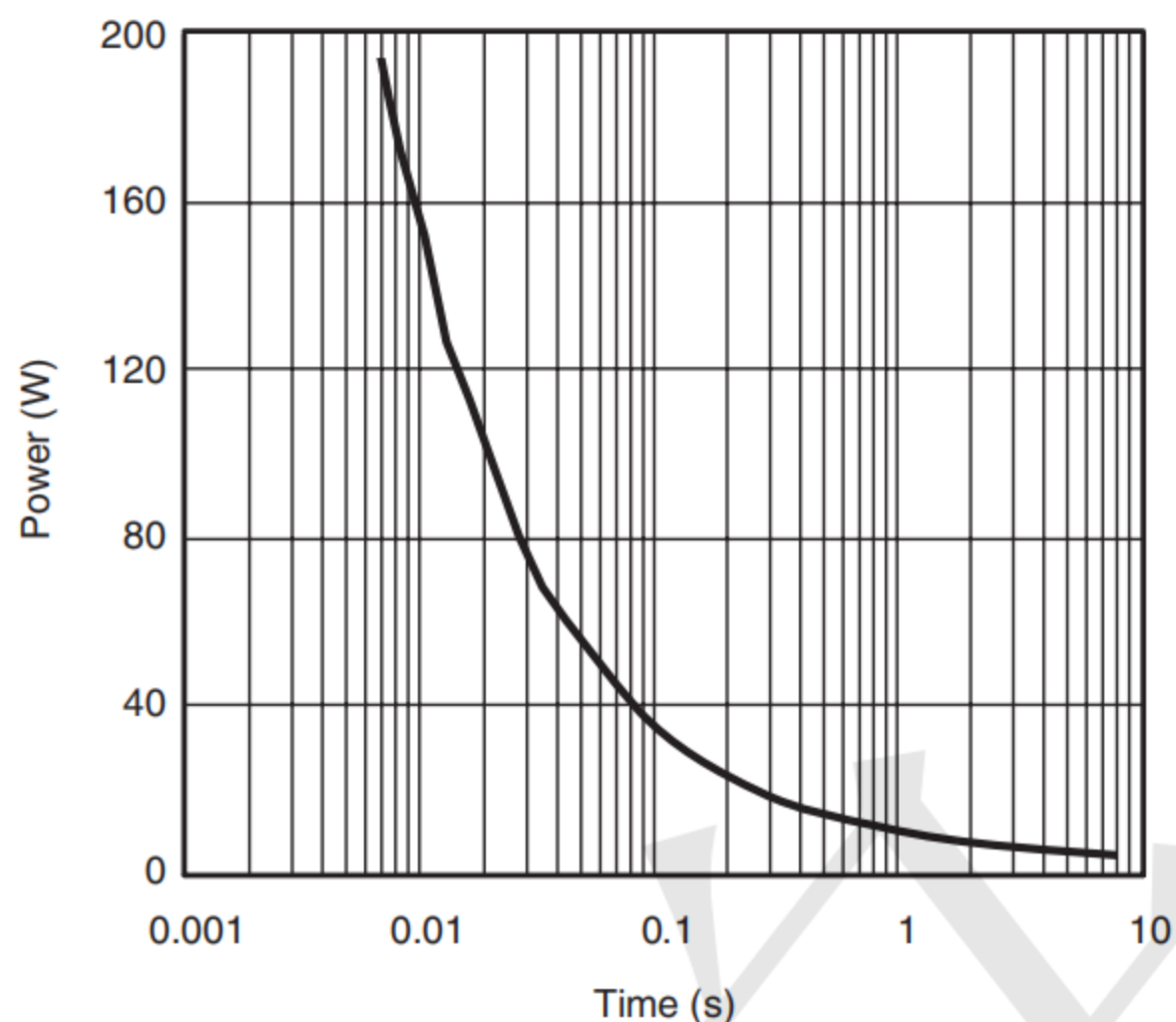




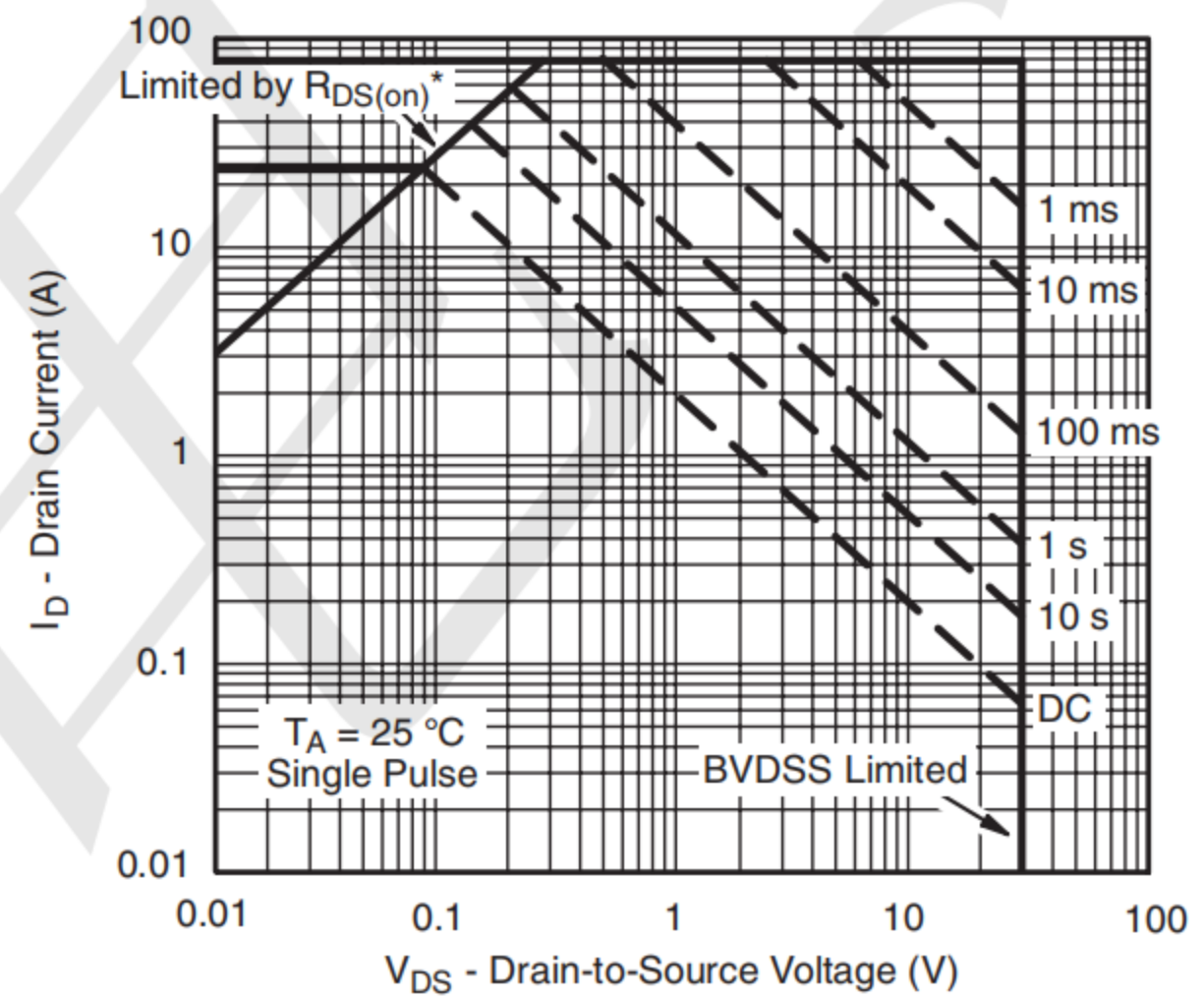
Source-Drain Diode Forward Voltage



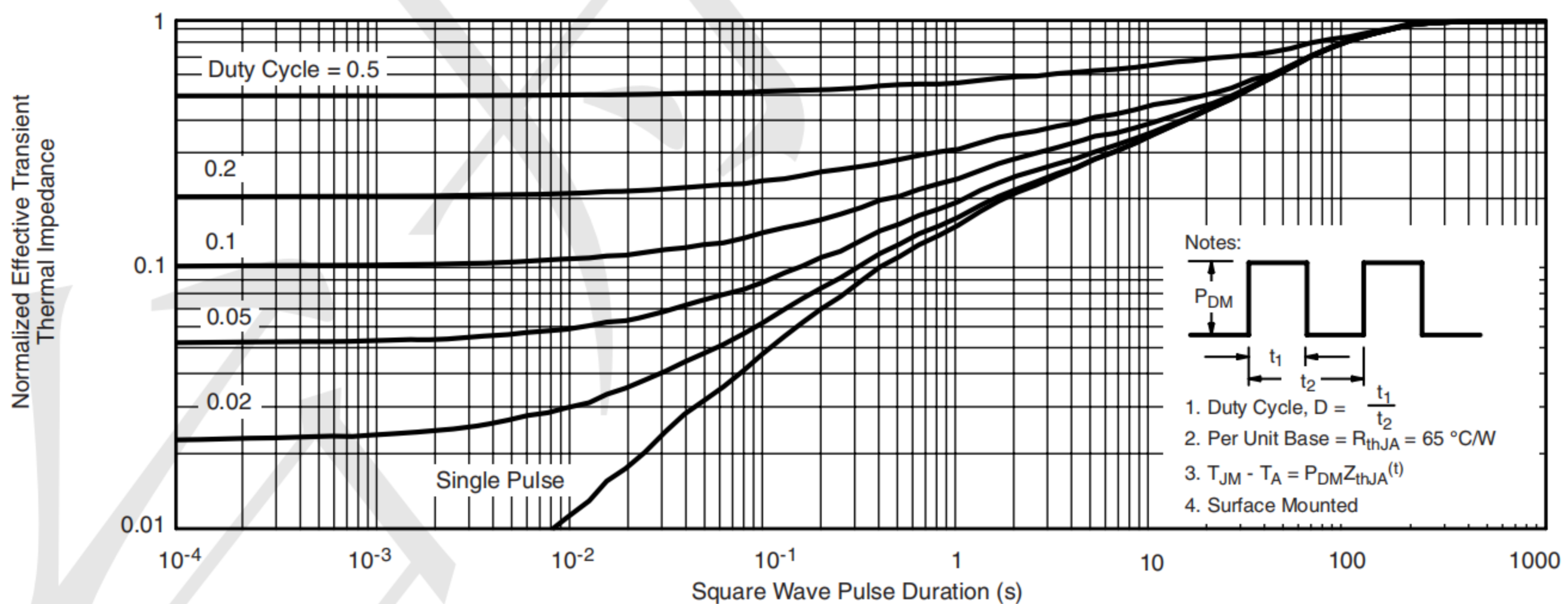
On-Resistance vs. Gate-to-Source Voltage



Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

- Notes:
- Duty Cycle, $D = \frac{t_1}{t_2}$
 - Per Unit Base = $R_{thJA} = 65 \text{ }^\circ\text{C/W}$
 - $T_{JM} - T_A = P_{DM} Z_{thJA}^{(t)}$
 - Surface Mounted



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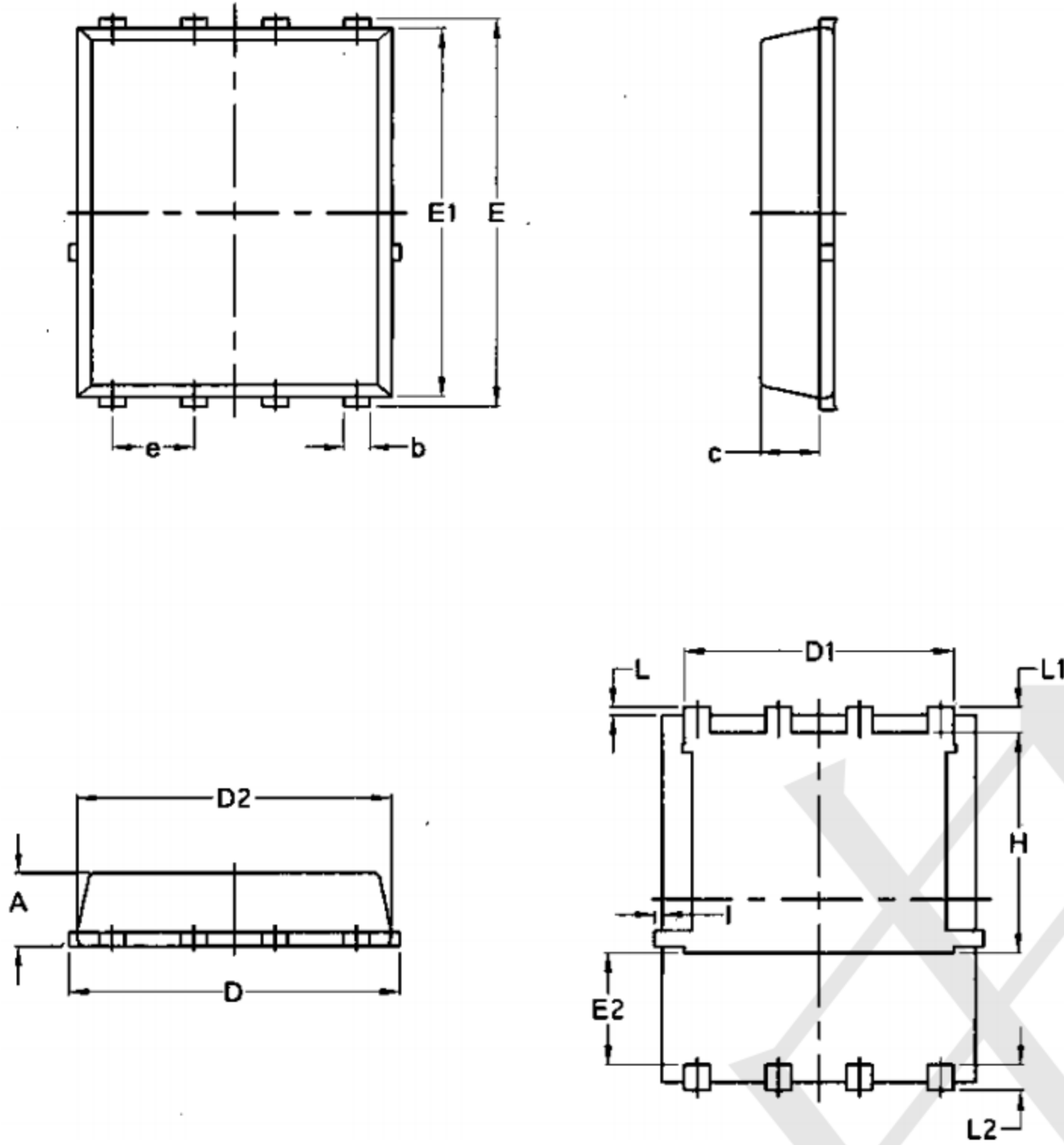
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SIR422DP

40V N-Channel MOSFET

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Package Outline Dimensions PDFN5*6-8L



Symbol	Common			
	mm		Inch	
	Min	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
I	/	0.18	/	0.0070

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