Dual N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☑ Surface-mounted package
- ☑ Advanced trench cell design
- ☑ Extremely low threshold voltage

1.2 Applications

- ☑ Portable appliances
- ☑ Battery management

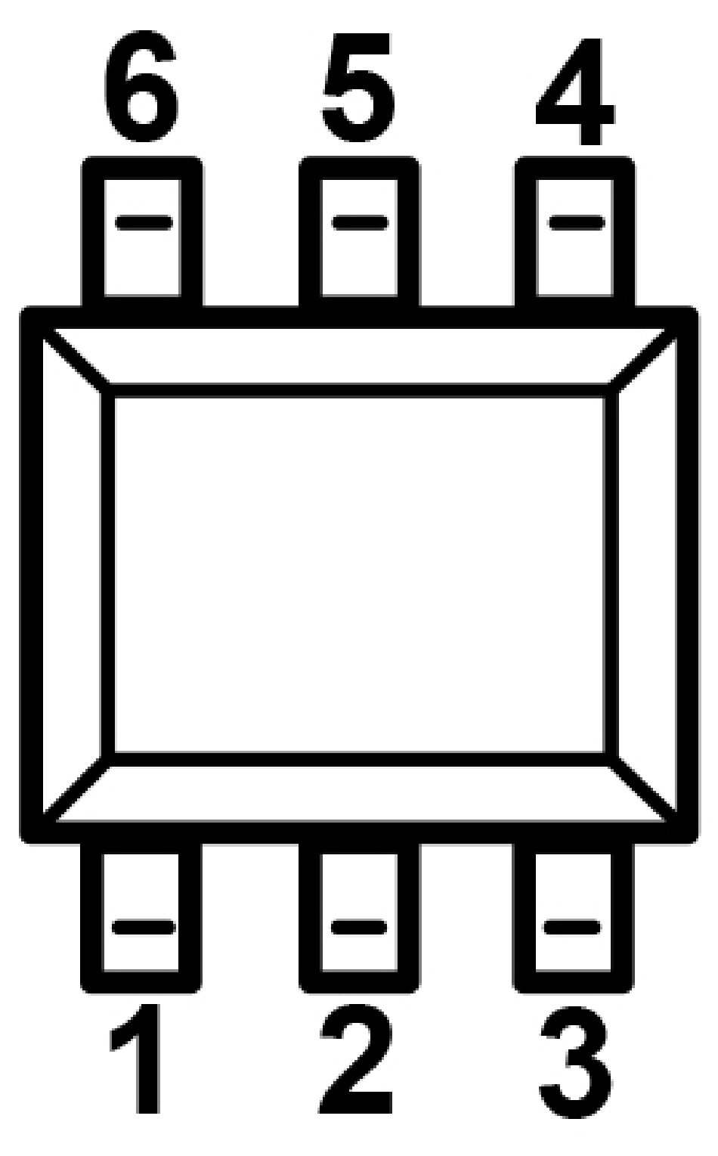
1.3 Quick reference

- ☑ $BV \geqq 16$ V
- ☑ $P_{tot} \leqq 0.83$ W
- ☑ $I_D \leqq 5$ A
- ☑ $R_{DS(ON)} \leqq 22\ m\Omega$ @ $V_{GS} = 4.5$ V
  $R_{DS(ON)} \leqq 33\ m\Omega$ @ $V_{GS} = 2.5$ V

2. Pin Description

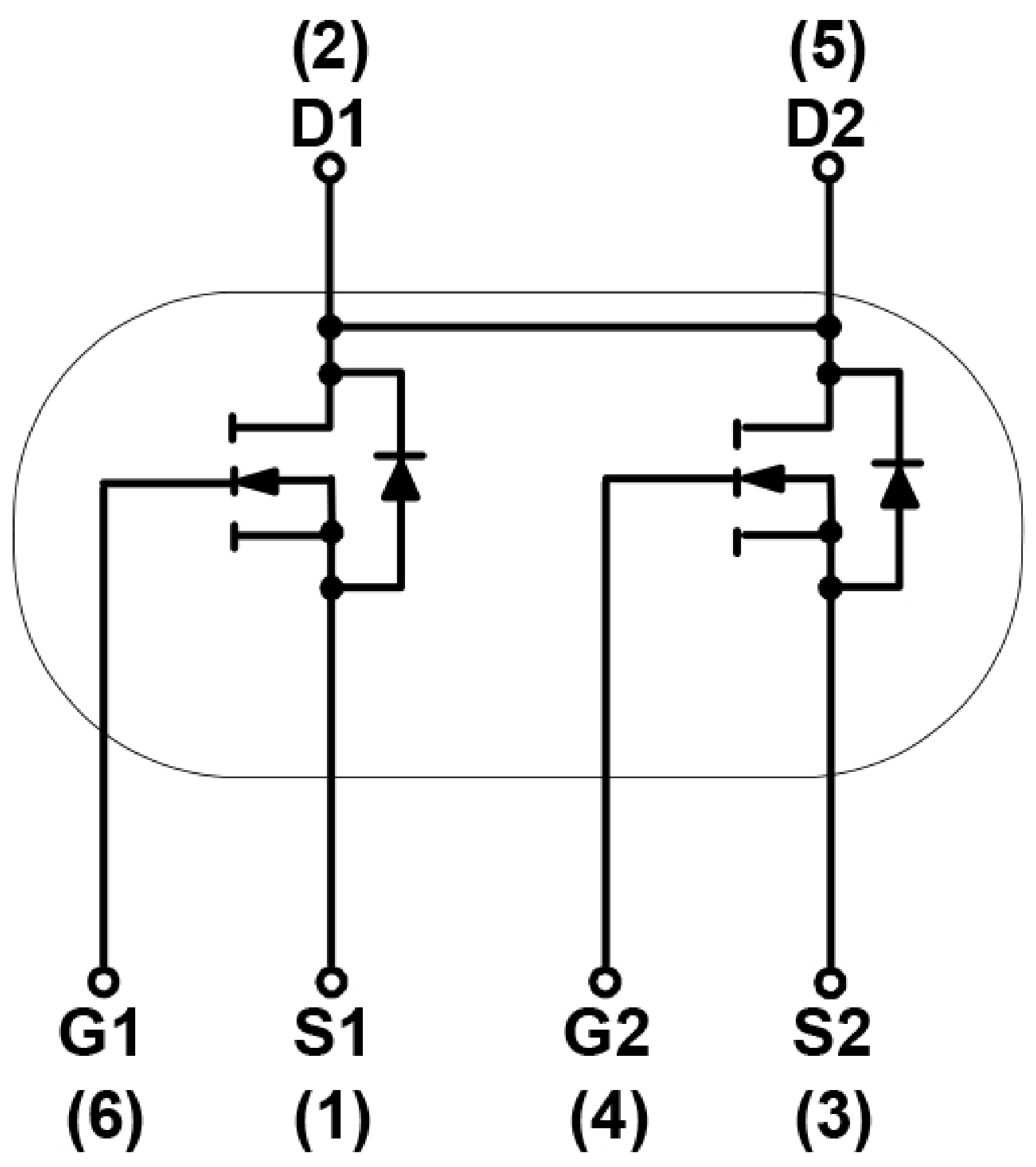
Pin	Description
1	Source(S1)
2	Drain(D1)
3	Source(S2)
4	Gate(G2)
5	Drain(D2)
6	Gate(G1)

Simplified Outline



Top View
TSOT23-6L

Symbol



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_A = 25 ℃	-	16	V
V_{GS}	Gate-Source Voltage	T_A = 25 ℃	-	± 12	V
I_D*	Drain Current	T_A = 25 ℃, V_{GS} = 4.5 V	-	5	A
I_{DM}*,**	Pulsed Drain Current	T_A = 25 ℃, V_{GS} = 4.5 V	-	20	A
P_{tot}*	Total Power Dissipation	T_A = 25 ℃	-	0.83	W
		T_A = 100 ℃	-	0.3	
T_{stg}	Storage Temperature		- 55	150	℃
T_J	Junction Temperature		-	150	℃
I_S*	Diode Forward Current	T_A = 25 ℃	-	1	A
$R_{\theta JA}$*	Thermal Resistance- Junction to Ambient		-	150℃	/ W

4. Marking Information

Product Name	Marking
8205S	8205S : Date Code

5. Ordering Code

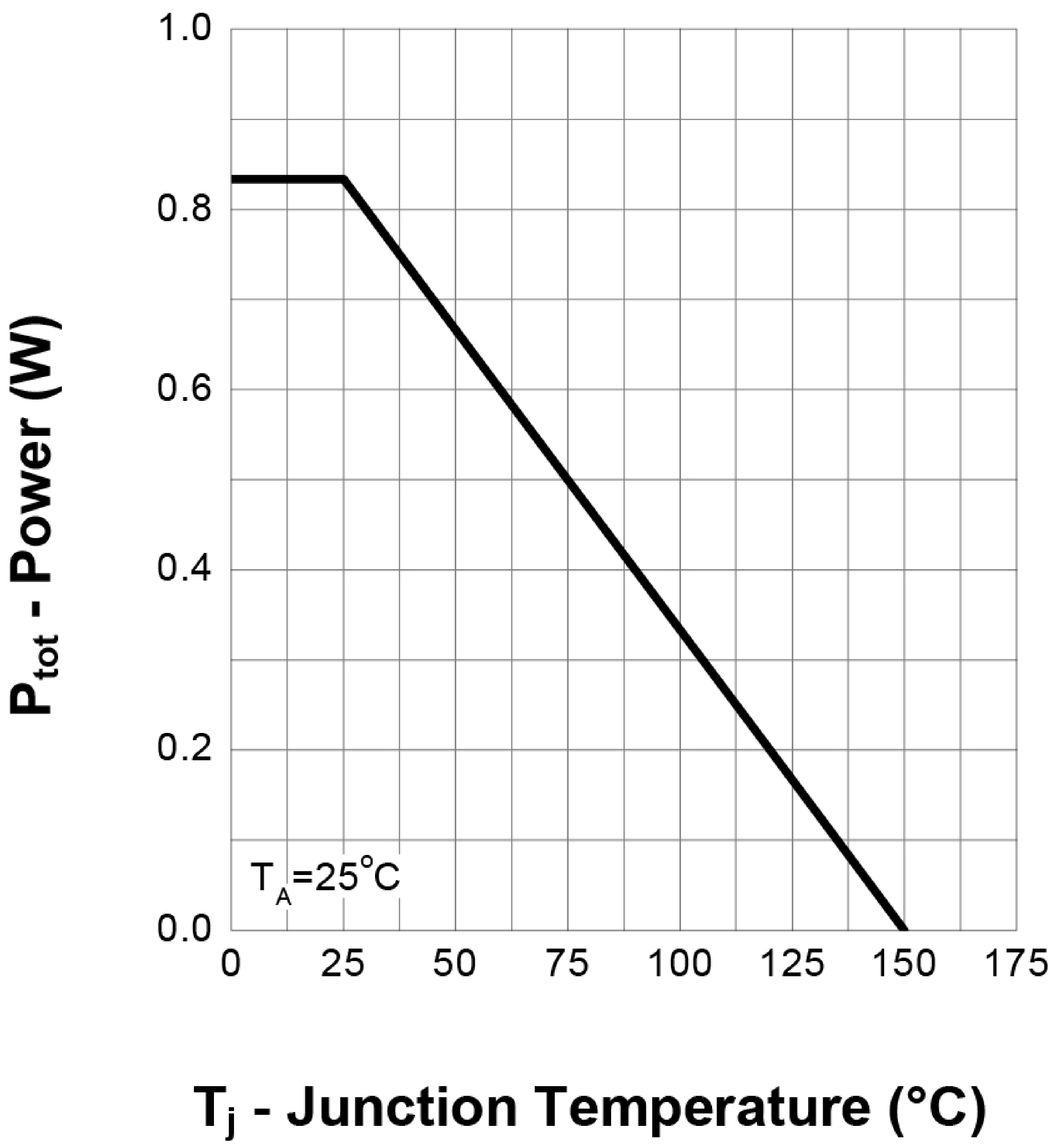
8205 □ Assembly Material	Assembly Material G: Halogen and Lead Free Device

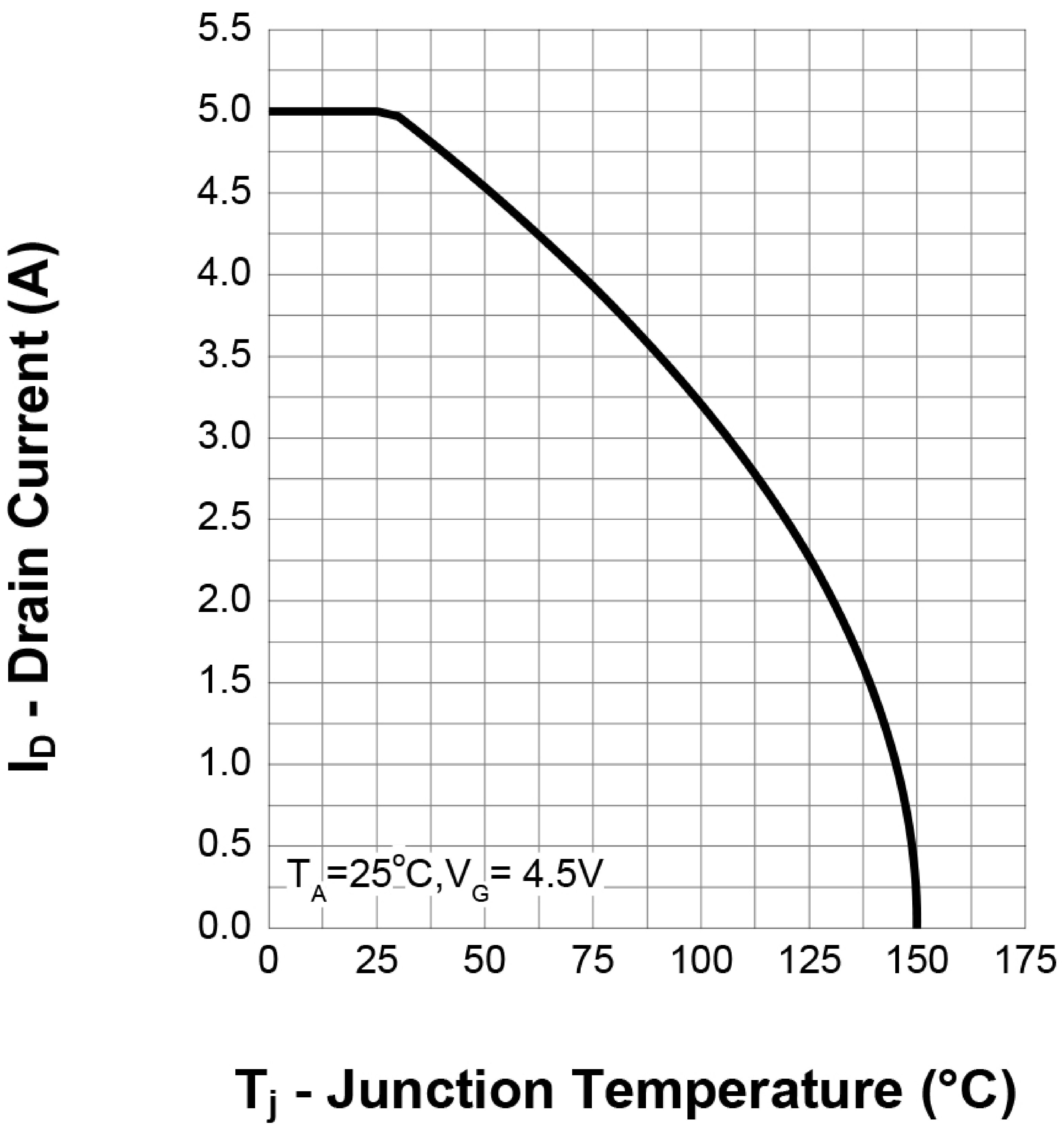
6. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

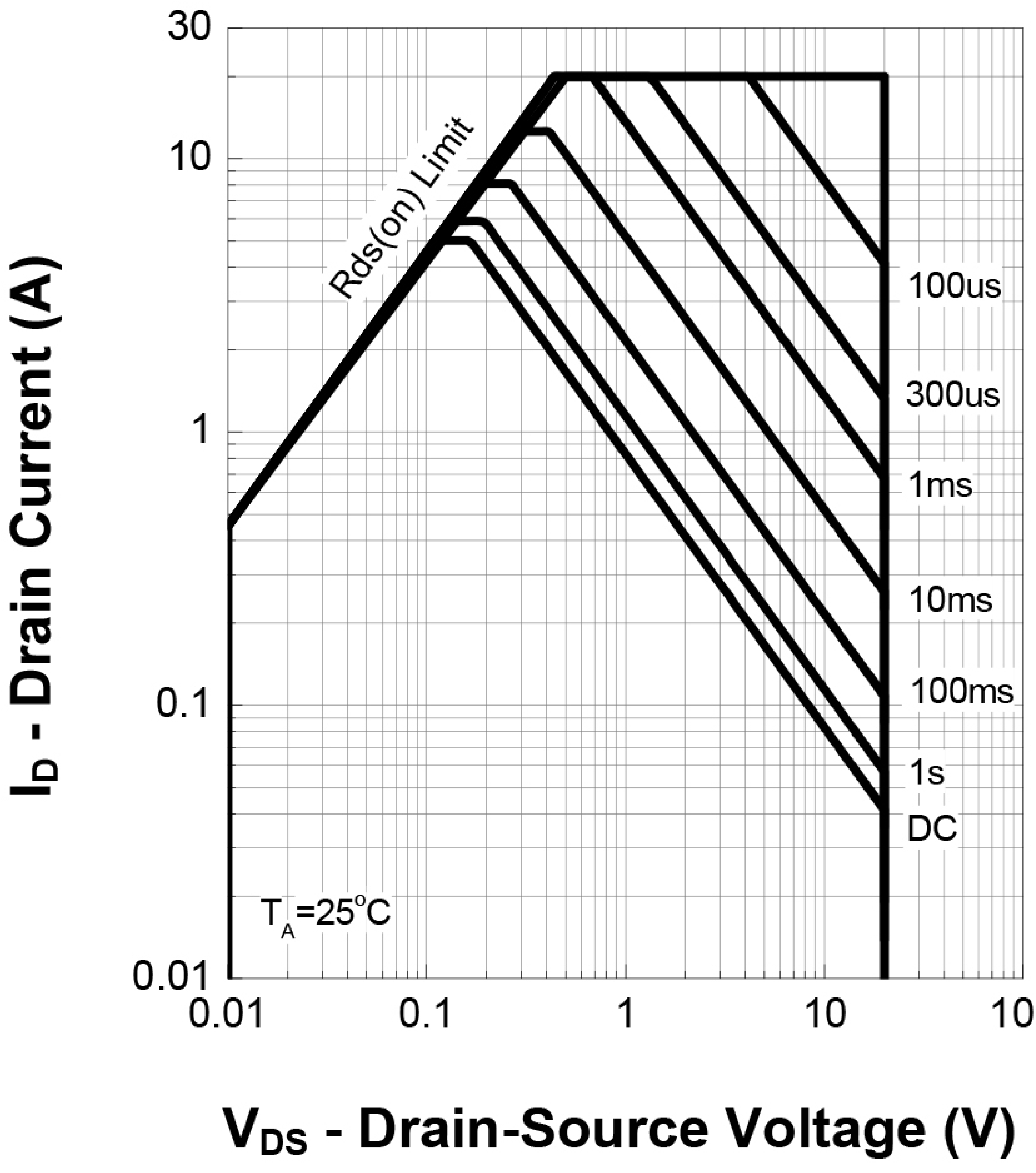
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	16	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	0.5	-	1.0	V
I_{DSS}	Drain Leakage Current	V_{DS} = 16 V, V_{GS} = 0 V	-	-	1	μA
		T_J = 85 °C	-	-	30	μA
I_{GSS}	Gate Leakage Current	V_{GS} = ± 10 V, V_{DS} = 0 V	-	-	± 100	nA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS} = 4.5 V, I_{DS} = 5 A	-	21	22	mΩ
		V_{GS} = 2.5 V, I_{DS} = 3 A	-	24	33	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = 1 A, V_{GS} = 0 V	-	-	1.3	V
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 10 V Frequency = 1 MHz	-	417	-	pF
C_{oss}	Output Capacitance		-	90	-	
C_{rss}	Reverse Transfer Capacitance		-	74	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 10 V, V_{GEN} = 4.5 V, R_G = 6 Ω, R_L = 1.6 Ω, I_{DS} = 5 A	-	6	-	ns
t_r	Turn-on Rise Time		-	56	-	
t_d(off)	Turn-off Delay Time		-	23	-	
t_f	Turn-off Fall Time		-	13	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{GS} = 4.5 V, V_{DS} = 10 V, I_{DS} = 5 A	-	6.7	-	nC
Q_{gs}	Gate-Source Charge		-	1.2	-	
Q_{gd}	Gate-Drain Charge		-	2	-	

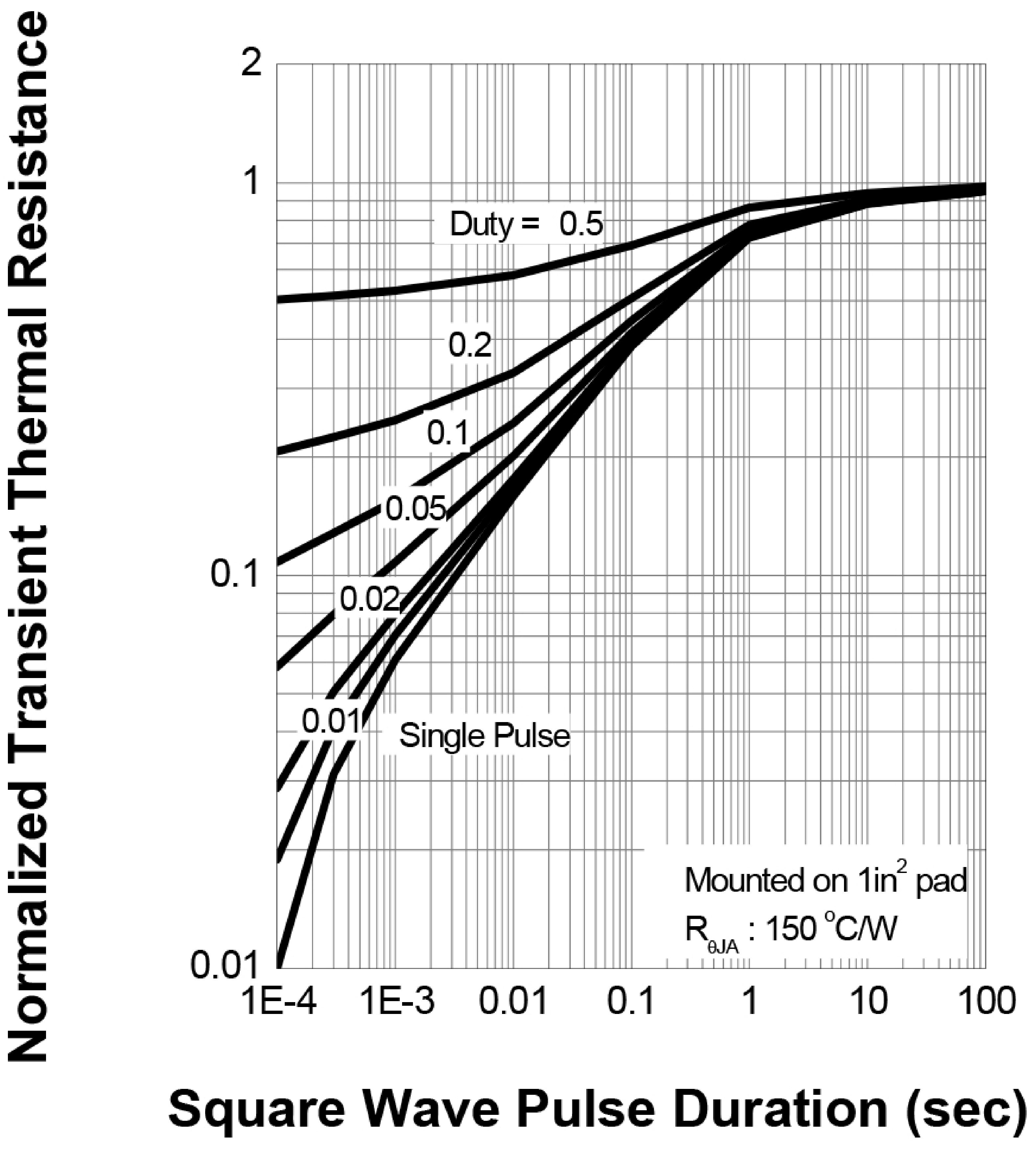
7. Typical Characteristics

N-channel:


Power Capability


Current Capability

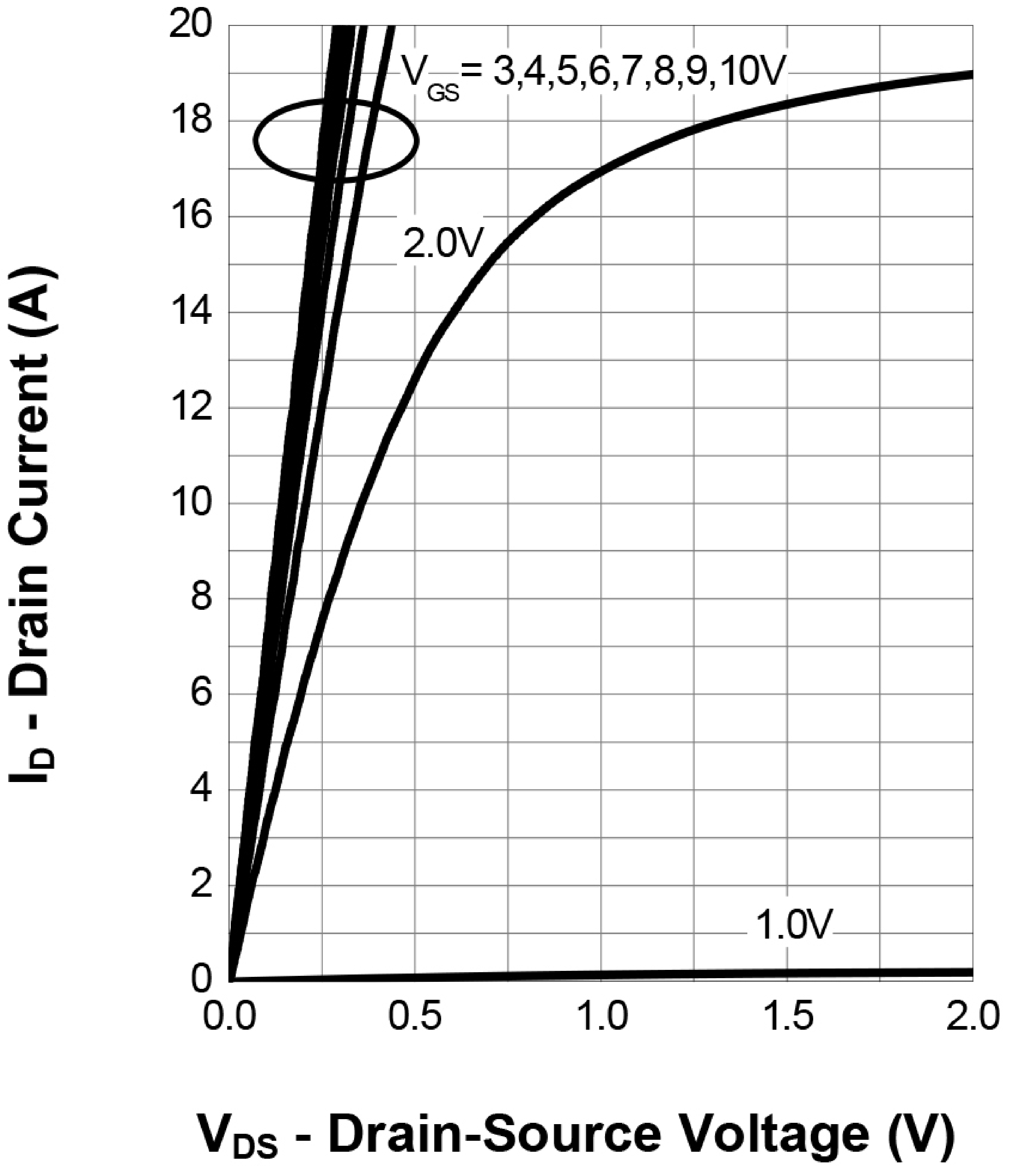

Safe Operation Area


Transient Thermal Impedance

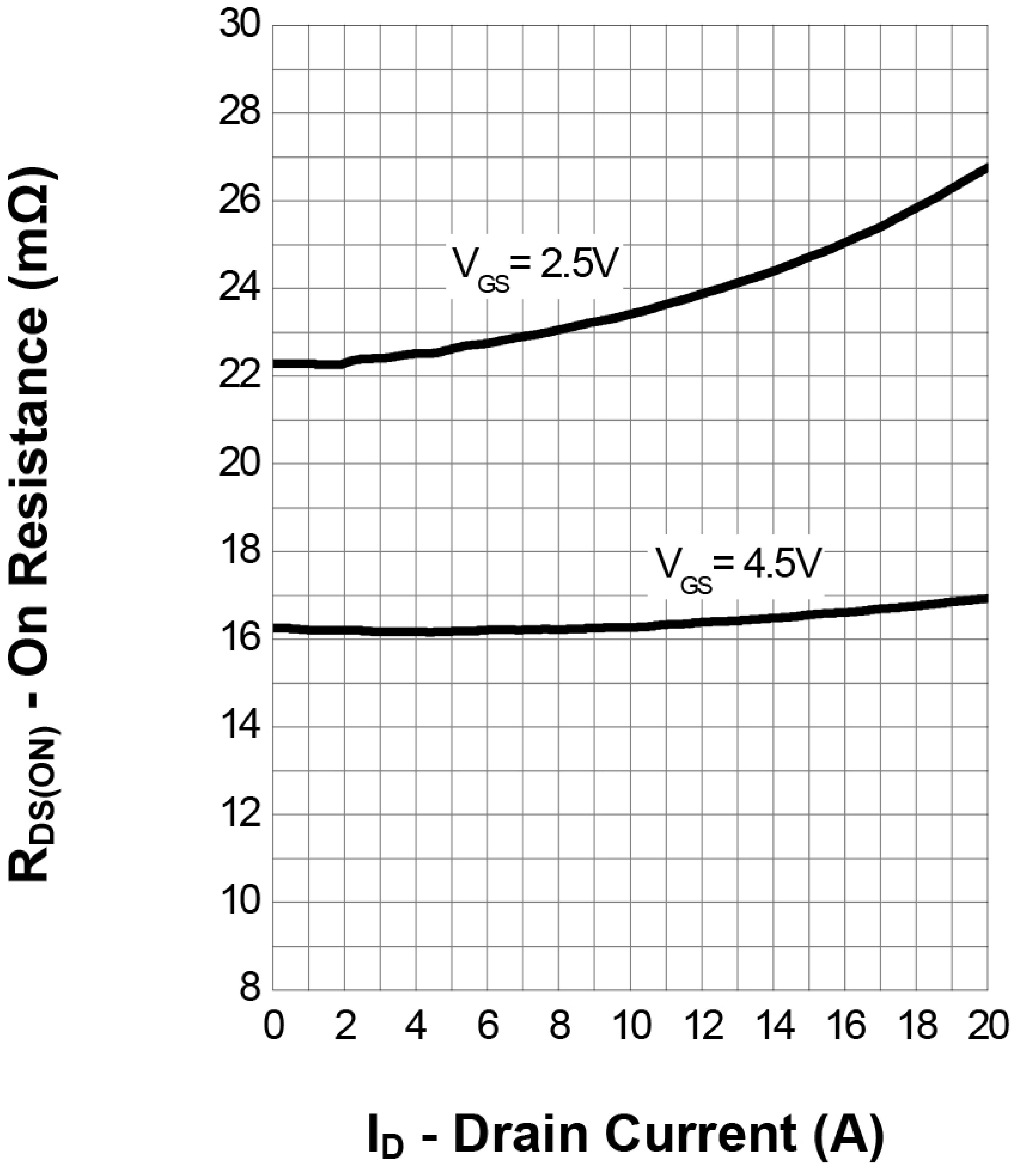
7. Typical Characteristics (cont.)

N-channel:

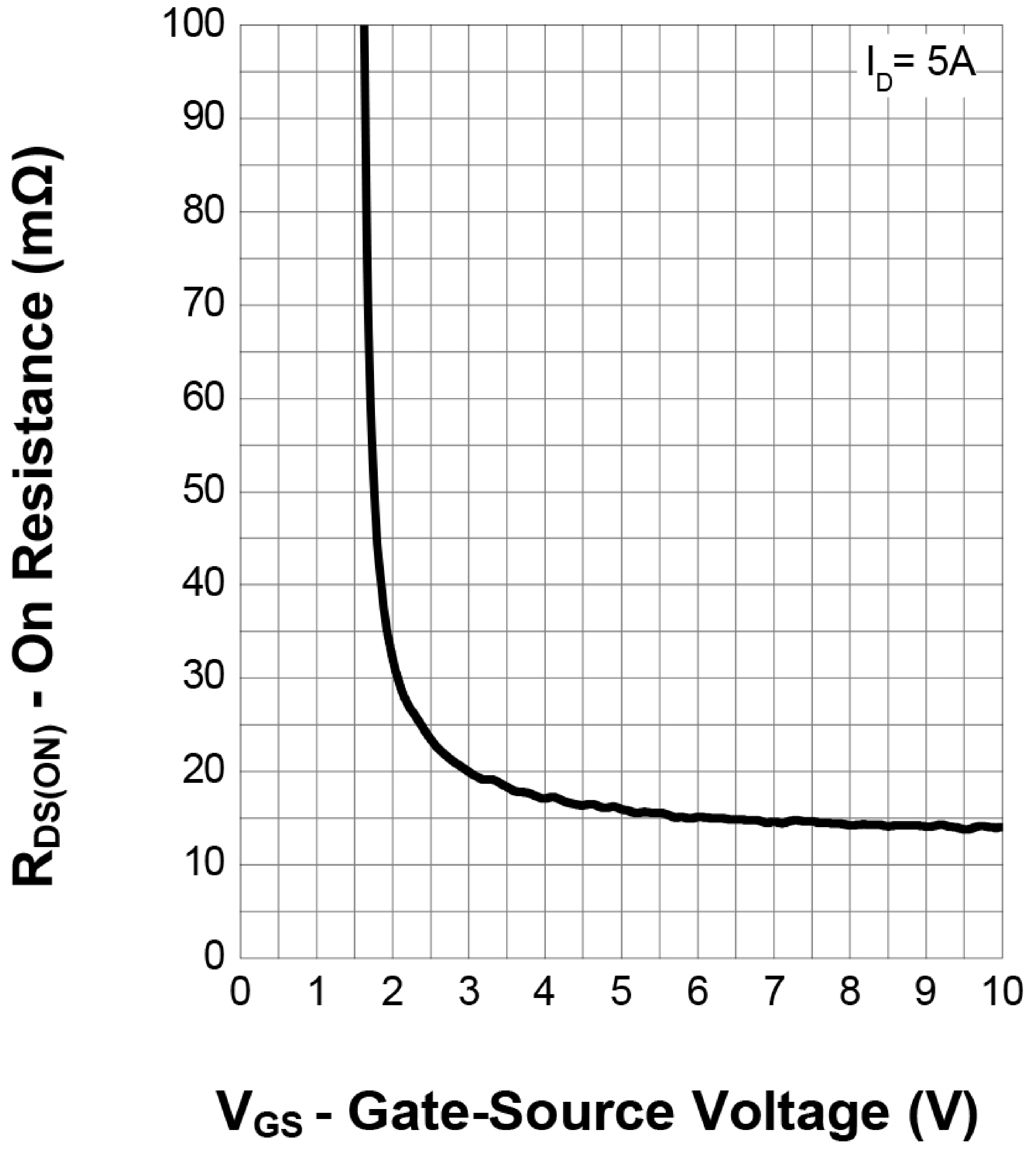
Output Characteristics



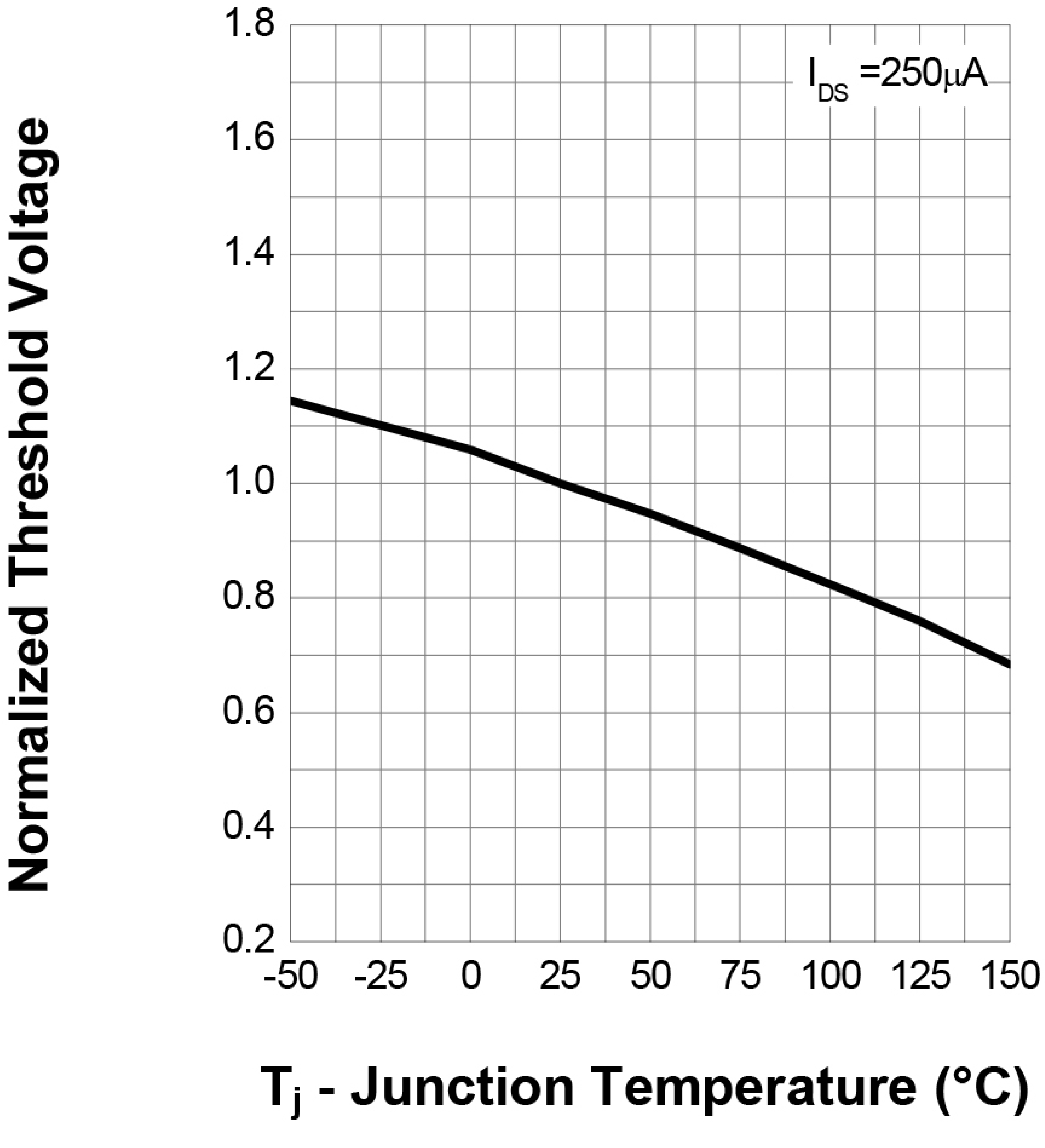
On Resistance



Transfer Characteristics

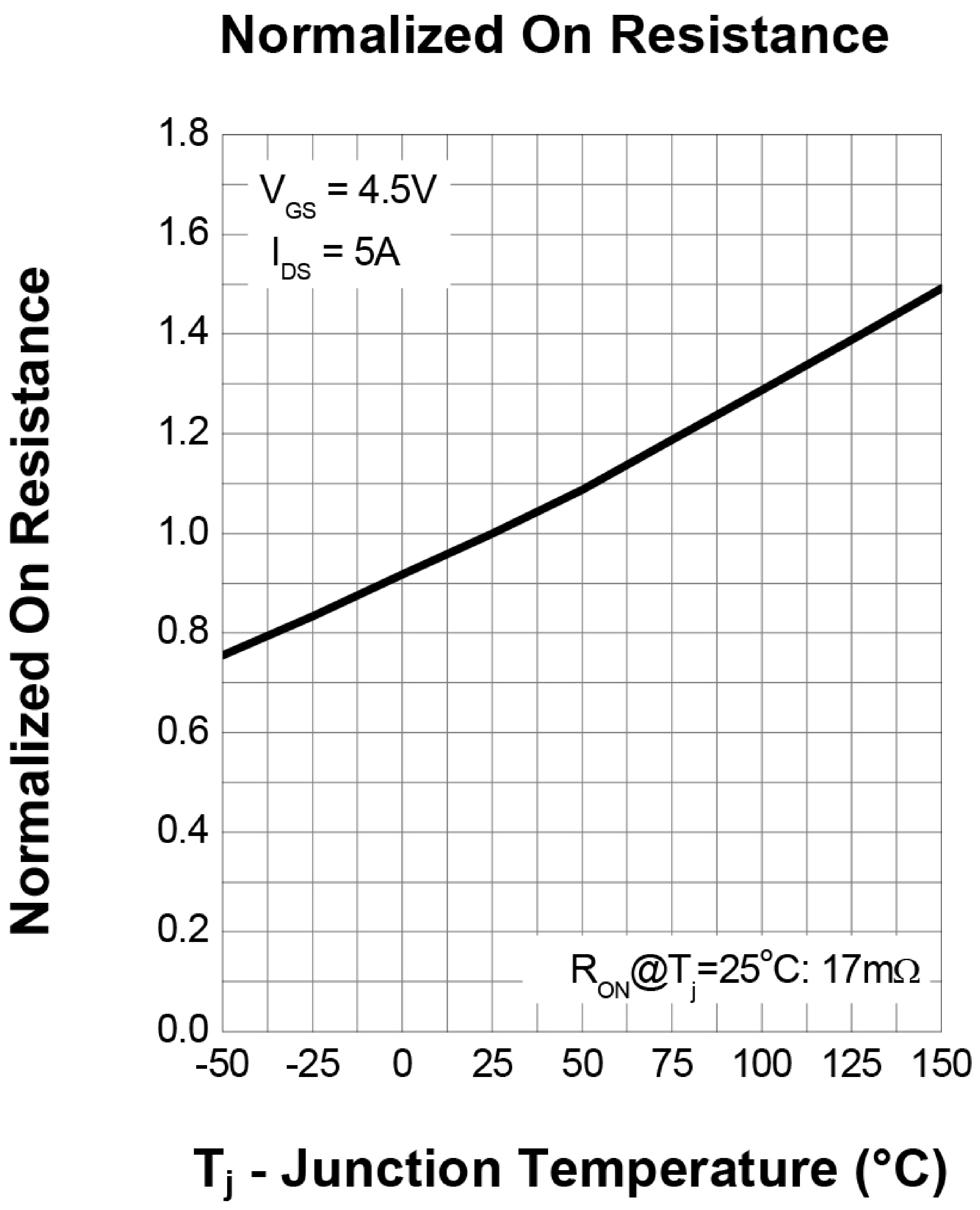


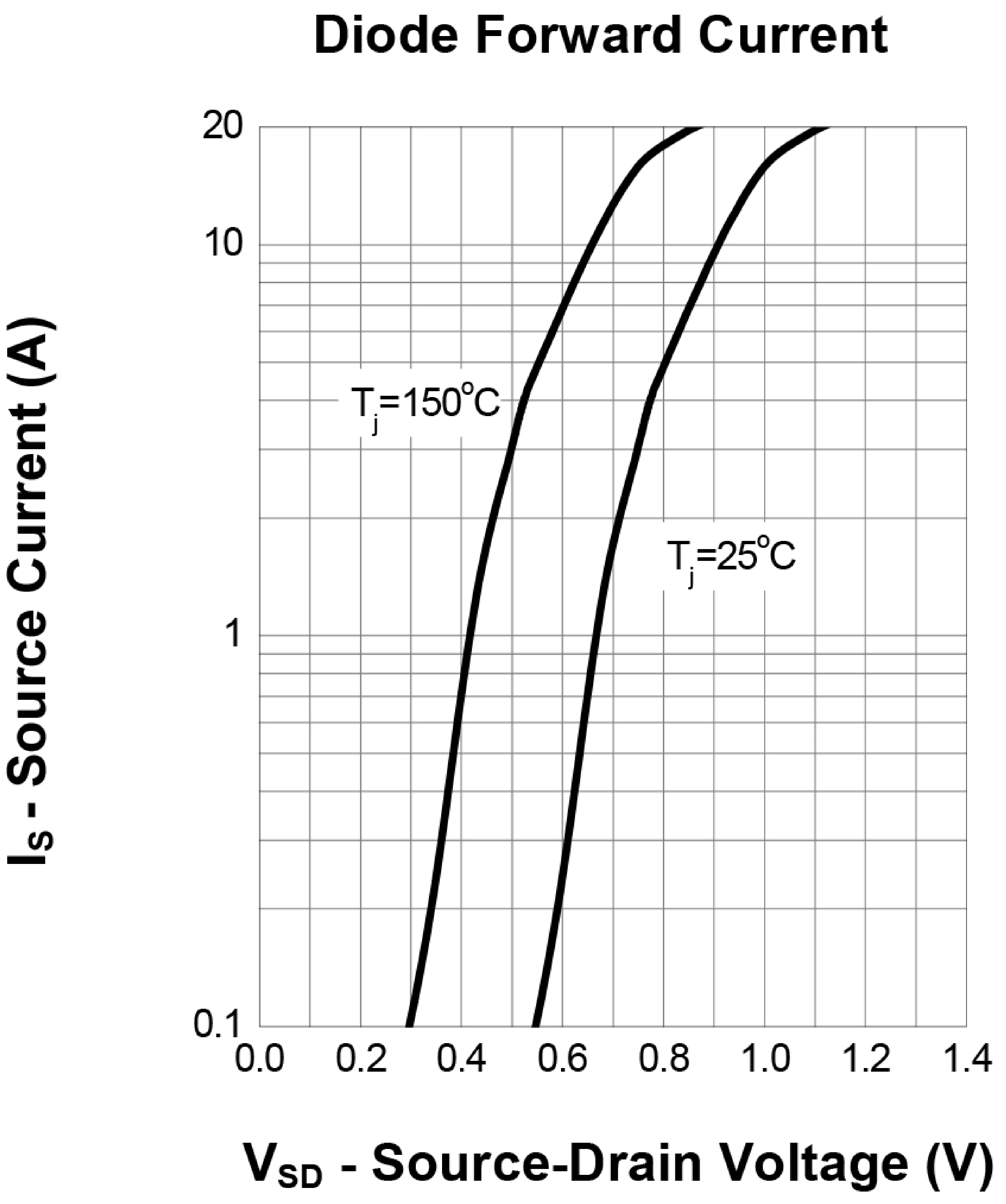
Normalized Threshold Voltage

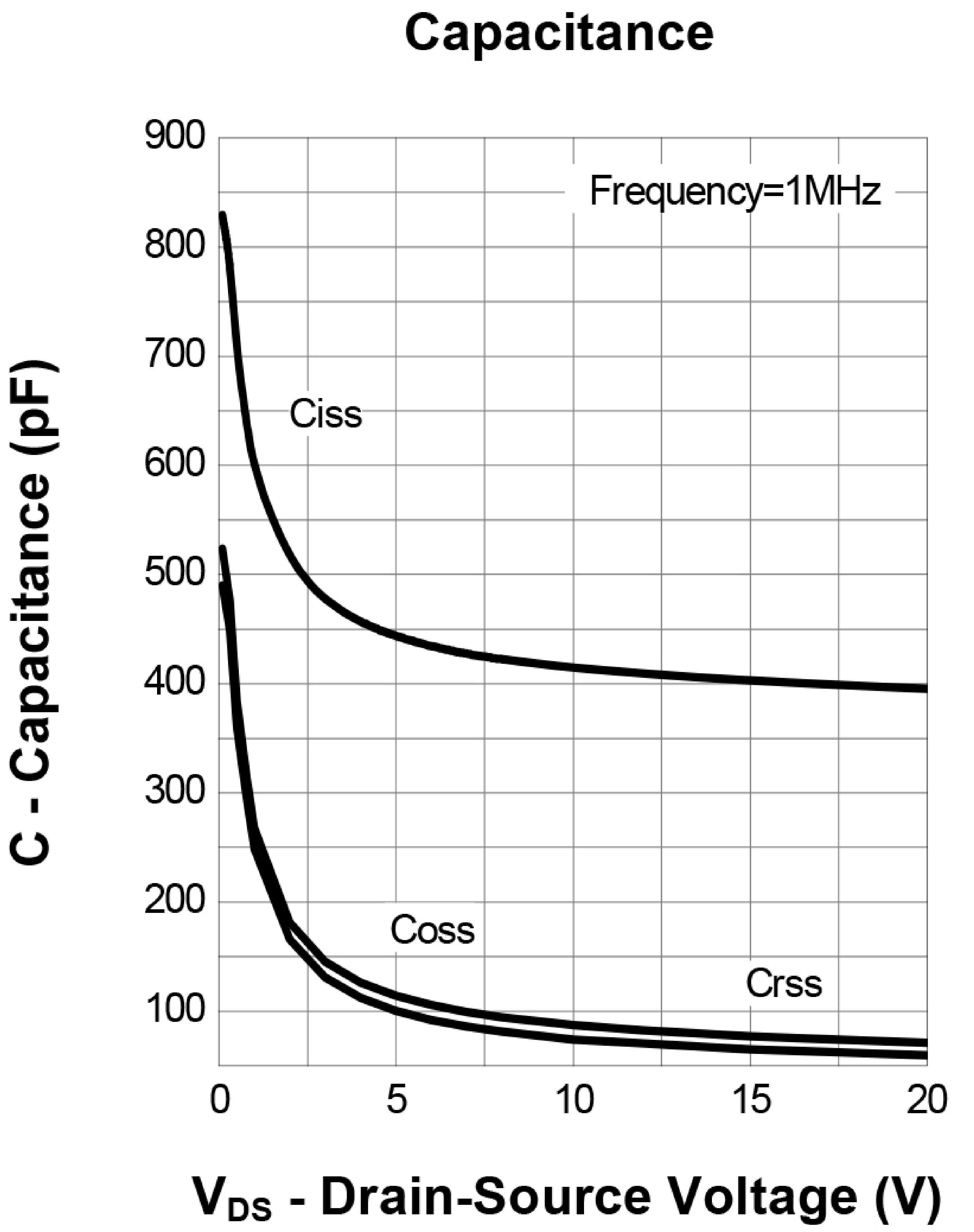


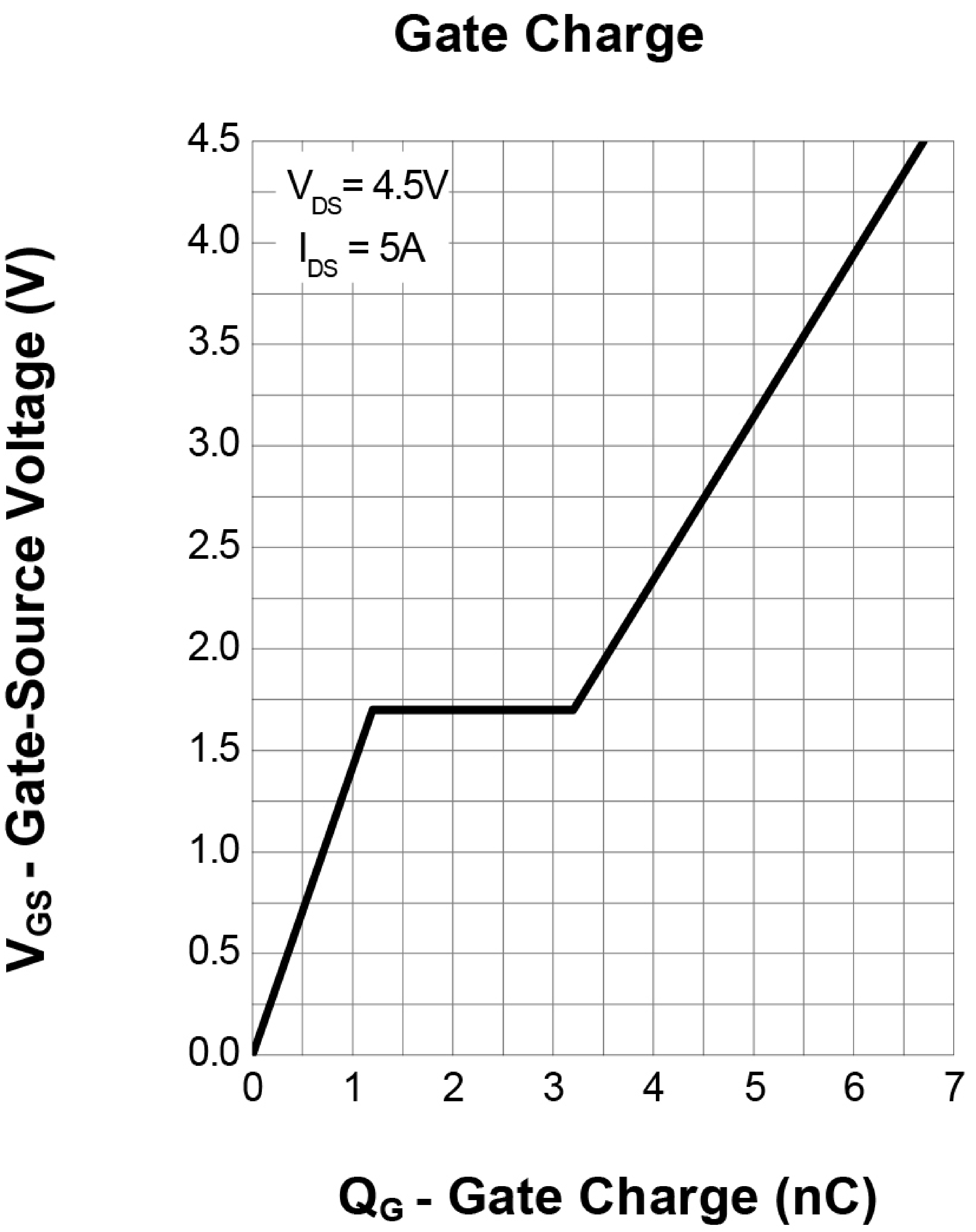
7. Typical Characteristics (cont.)

N-channel:



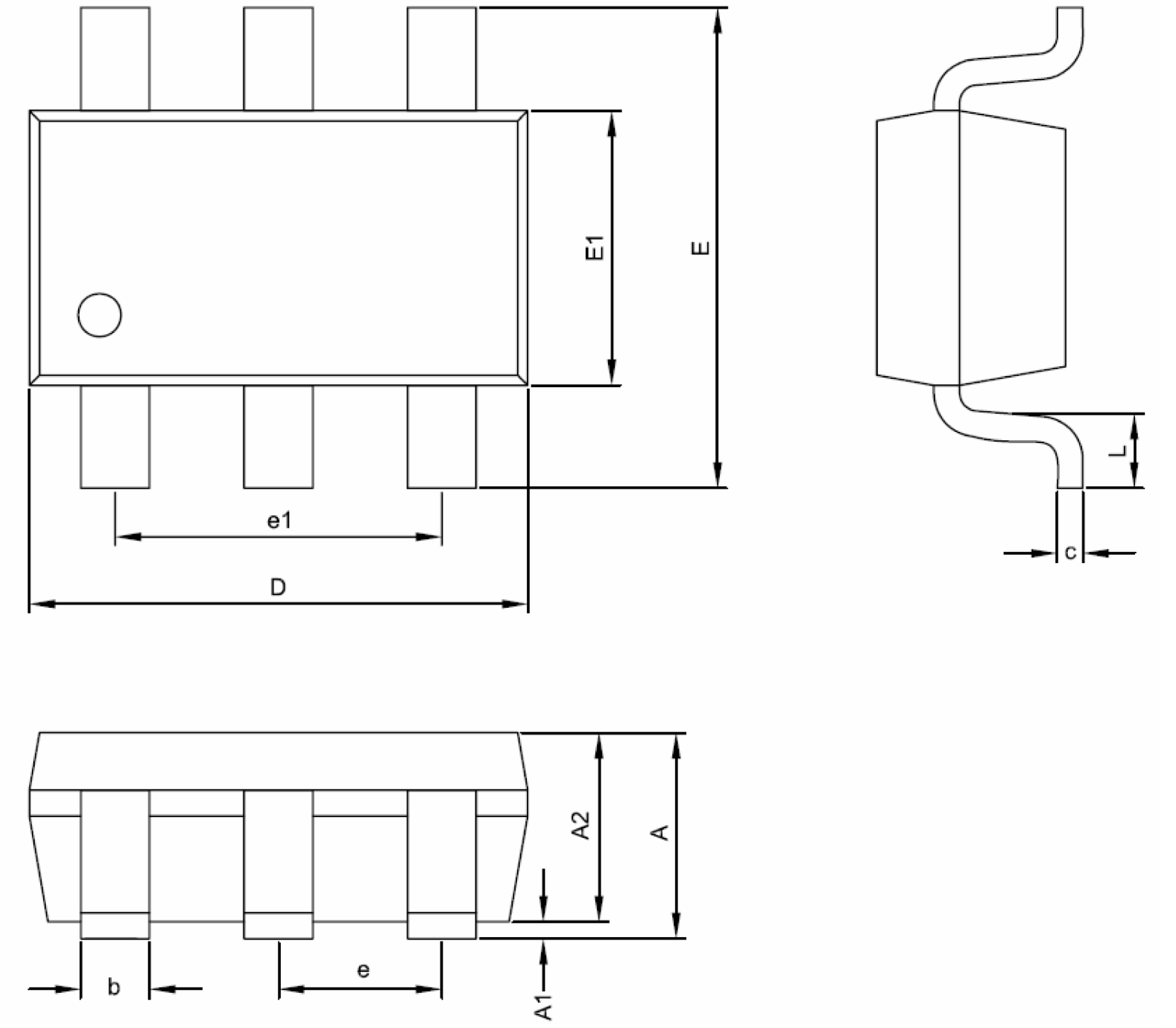






8.Package Dimensions

TSOT23-6L



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	—	0.90
A1	0.00	0.10
A2	0.70	0.80
D	2.90 BSC	
E	2.80 BSC	
E1	1.50	1.70
c	0.08	0.25
b	0.30	0.51
e	0.95 BSC	
e1	1.90 BSC	
L	0.30	0.60