



iMN007N08T

N-Channel Enhancement Mode MOSFET

Datasheet

1. Product Information

1.1 Features

- Advanced Trench Cell Design
- Surface-mounted Package
- RoHS Compliant and Halogen Free



1.2 Package Type

TOLLA-8L / TOLLB-8L

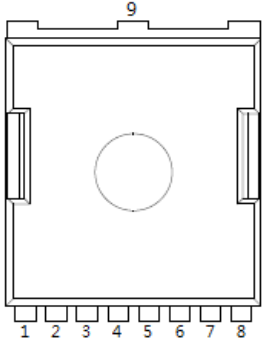
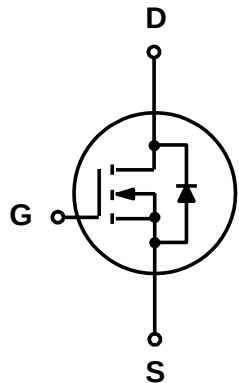
1.3 Quick Reference

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Limiting Values						
P _{tot}	Total Power Dissipation	T _C = 25 °C	-	-	450	W
I _{DS}	Drain-Source Current	T _C = 25 °C, V _{GS} = 10 V	-	-	500	A
		T _C = 100 °C, V _{GS} = 10 V			355	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0 V, I _{DS} = 250 μA	80	-	-	V
V _{GS(th)}	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	0.7	0.9	mΩ
		V _{GS} = 6 V, I _{DS} = 30 A		1.1	1.5	

2. Ordering Code & Marking Information

Ordering Code	Marking Information
iMN007N08T	XXXXXX N007N08T XXXXXX X = Date Code

3. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)		
2~8	Source(S)		
9	Drain(D)		

4. Limiting Values

Symbol	Parameter		Rating	Unit
V_{DS}	Drain-Source Voltage		80	V
V_{GS}	Gate-Source Voltage		± 20	
I_{DS}	Drain-Source Current	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	500	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	355	
I_{DM} ^{Note1}	Pulsed Drain-Source Current	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	1800	A
I_S	Diode Forward Current	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 0\text{ V}$	500	
E_{AS}	Single Pulsed Avalanche Energy	$L = 1.0\text{ mH}, V_{DD} = 50\text{ V}$	3042	mJ
P_{tot}	Total Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	450	W
$R_{\theta JA}$ ^{Note2}	Thermal Resistance- Junction to Ambient		40	$^{\circ}\text{C} / \text{W}$
$R_{\theta JC}$	Thermal Resistance- Junction to Case		0.33	
T_{stg}	Storage Temperature		- 55 ~ 175	$^{\circ}\text{C}$
T_J	Junction Temperature		175	

5. 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	80	-	-	V
V _{GS(th)}	Gate-Source Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	
I _{DSS}	Drain-Source Leakage Current	V _{DS} = 64 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate-Source Leakage Current	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 100	nA
R _{DS(ON)}	Drain-Source On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	0.7	0.9	mΩ
		V _{GS} = 6 V, I _{DS} = 30 A	-	1.1	1.5	
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr} ^{Note3}	Reverse Recovery Time	I _{DS} = 50 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	137	-	nS
Q _{rr} ^{Note3}	Reverse Recovery Charge		-	369	-	nC
Dynamic Characteristics ^{Note3}						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 40 V Frequency = 1 MHz	-	20427	-	pF
C _{oss}	Output Capacitance		-	2566	-	
C _{rss}	Reverse Transfer Capacitance		-	611	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 40 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 0.8 Ω, I _{DS} = 50 A	-	47	-	nS
t _r	Turn-on Rise Time		-	122	-	
t _{d(off)}	Turn-off Delay Time		-	226	-	
t _f	Turn-off Fall Time		-	126	-	
Gate Charge Characteristics ^{Note3}						
Q _g	Total Gate Charge	V _{DS} = 40 V, V _{GS} = 10 V, I _{DS} = 50 A	-	338	-	nC
Q _{gs}	Gate-Source Charge		-	100	-	
Q _{gd}	Gate-Drain Charge		-	74	-	

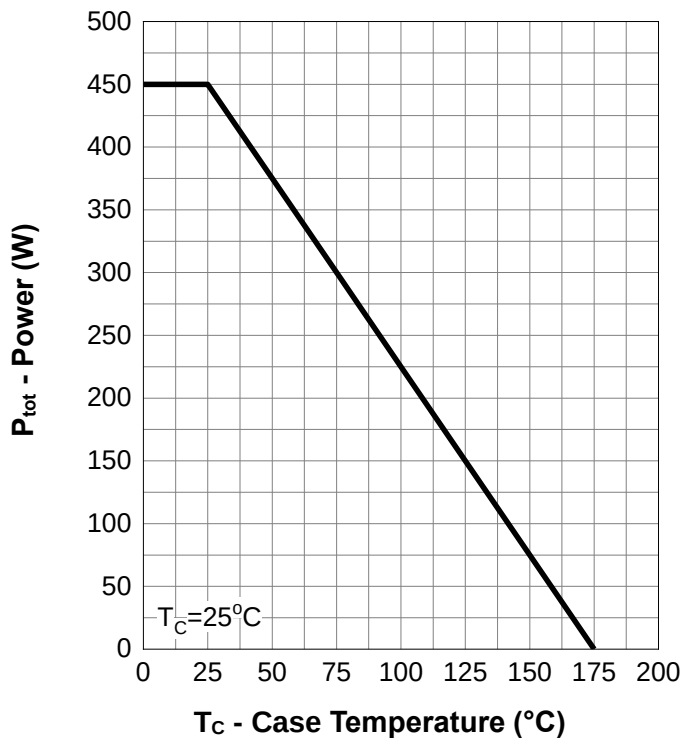
Note 1 : Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.

Note 2 : Surface Mounted on 1 in² pad area, t ≤ 10 sec.

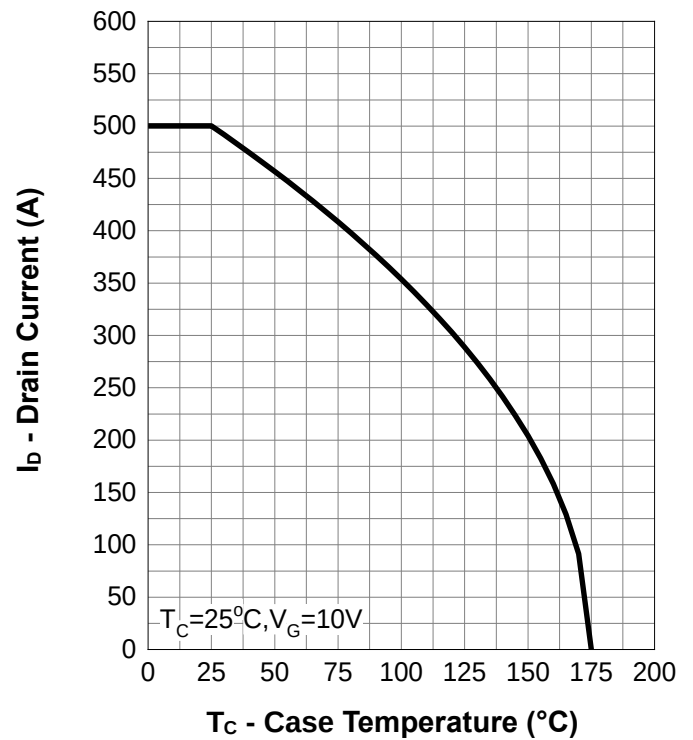
Note 3 : Guaranteed by design, not subject to production testing.

6. Typical Characteristics

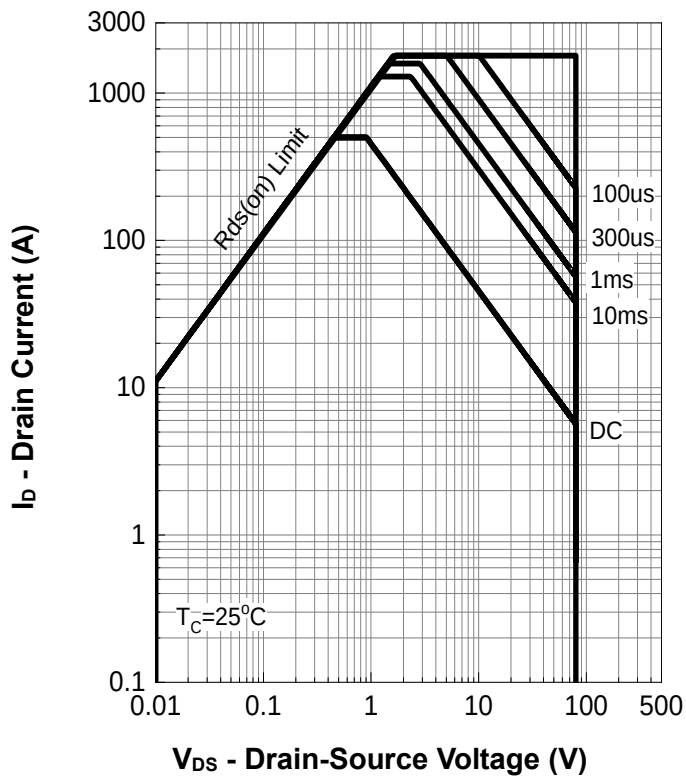
Power Capability



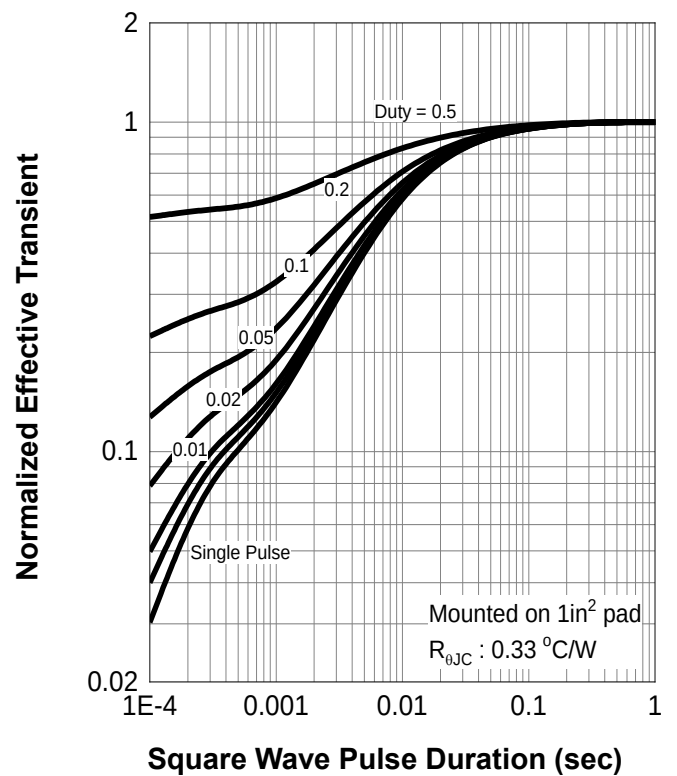
Current Capability



Safe Operating Area

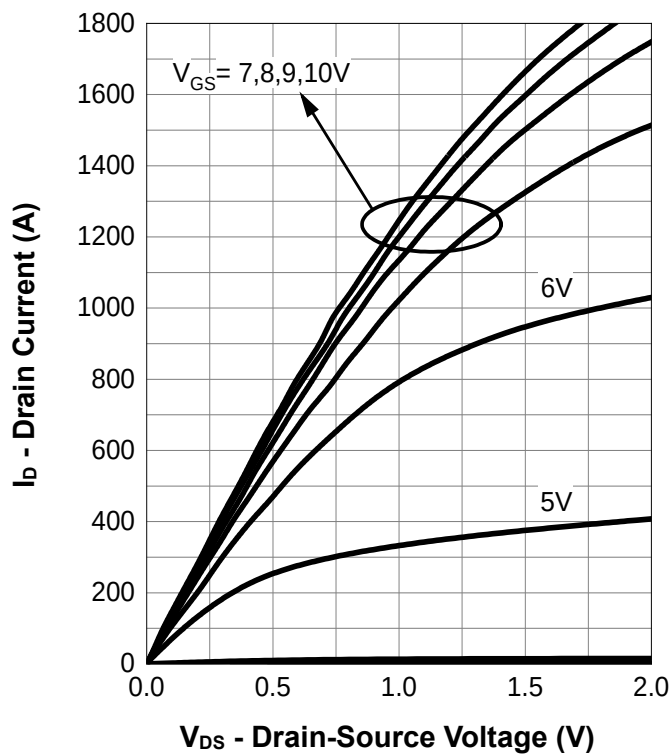


Transient Thermal Impedance

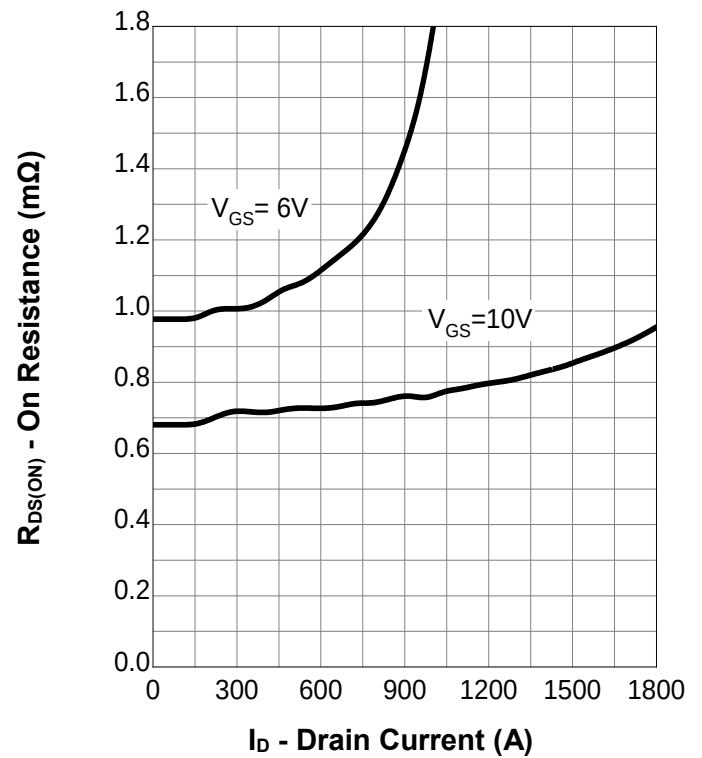


6. Typical Characteristics (cont.)

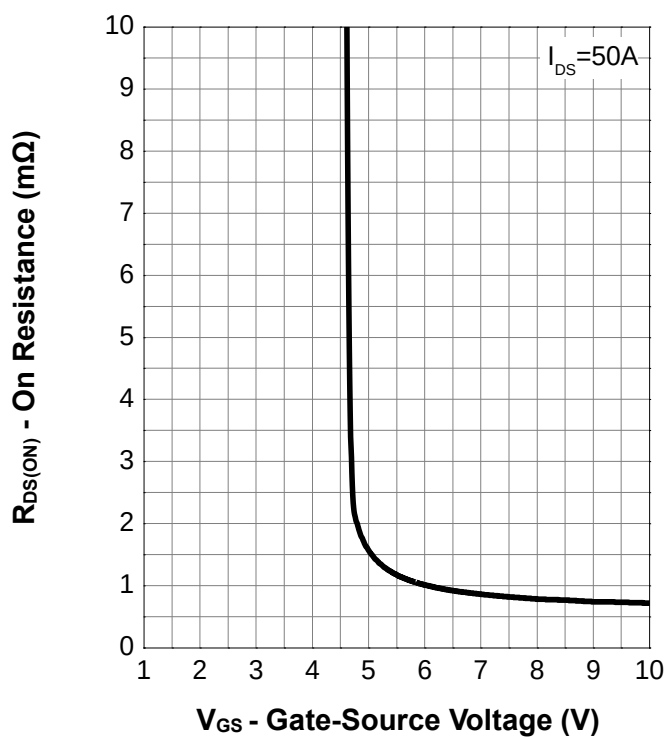
Output Characteristics



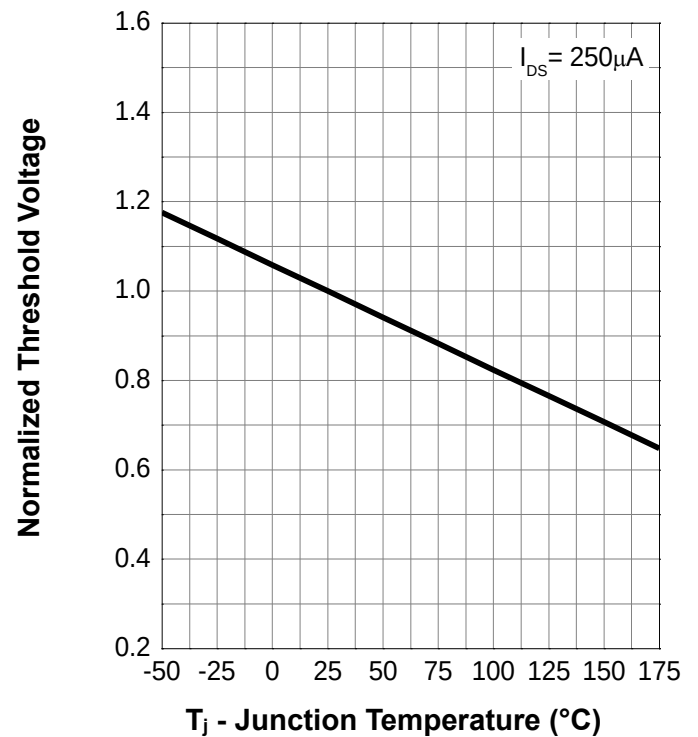
On Resistance



Transfer Characteristics

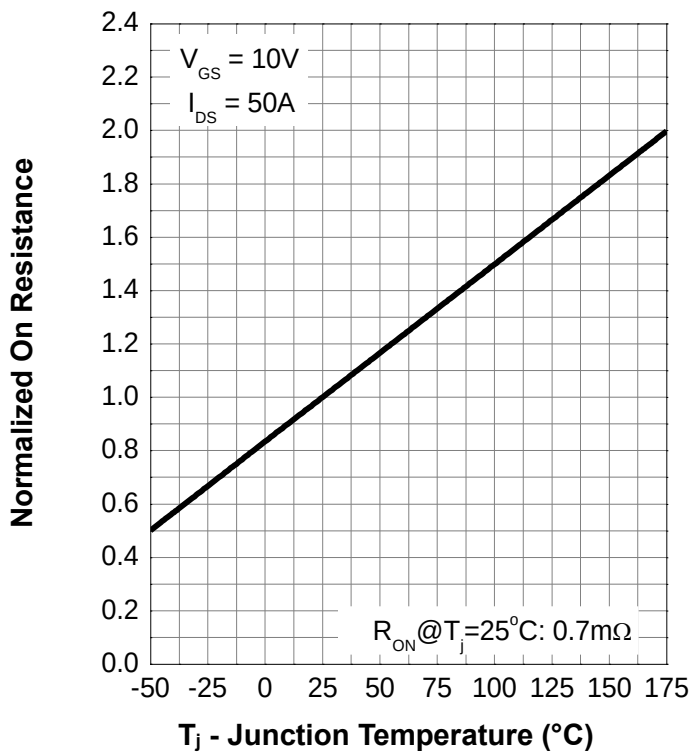


Normalized Threshold Voltage

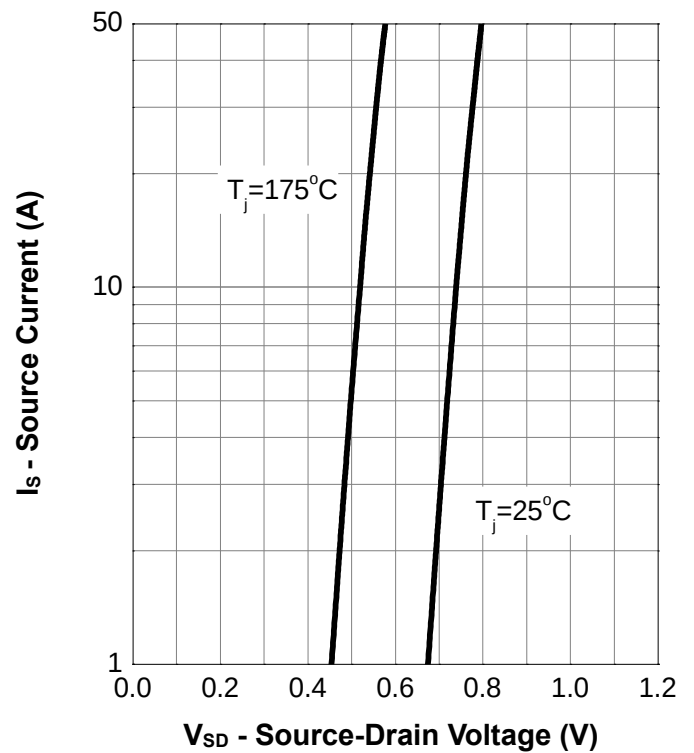


6. Typical Characteristics (cont.)

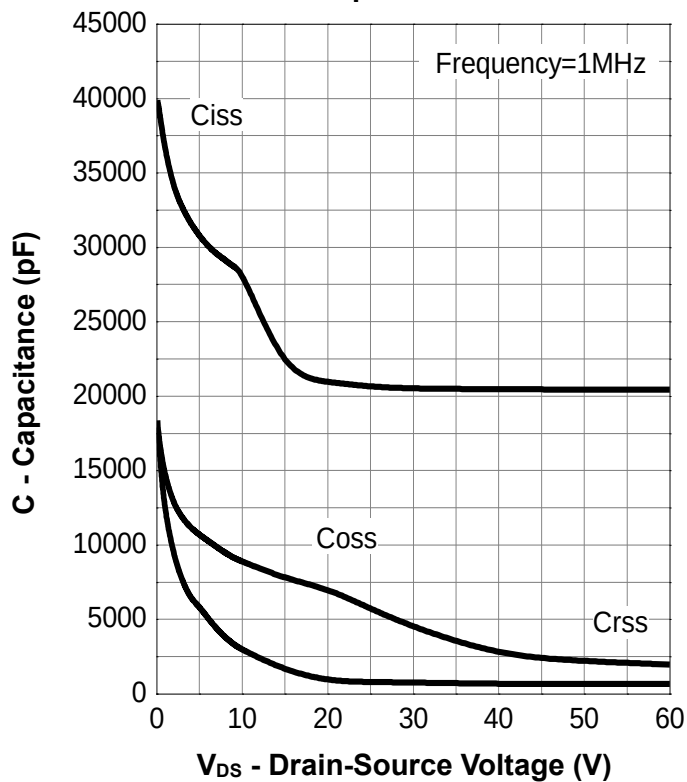
Normalized On Resistance



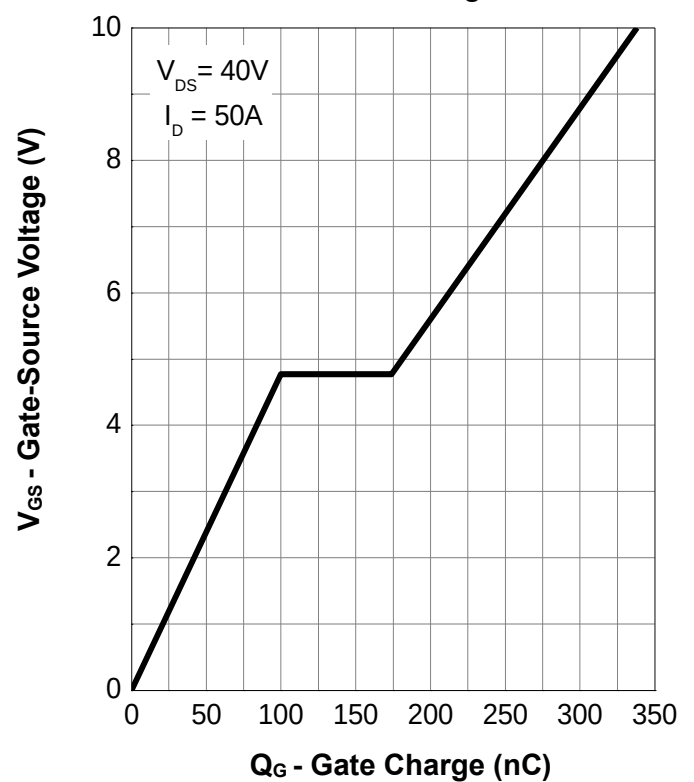
Diode Forward Current



Capacitance



Gate Charge



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