iH6N70F

N-Channel Enhancement Mode MOSFET

Preliminary Datasheet

1. Product Information

1.1 Features

- Low Thermal Resistance
- RoHS Compliant and Halogen Free
- Fast Switching Speed



1.2 Package Type

TO220F-3L

1.3 Quick Reference

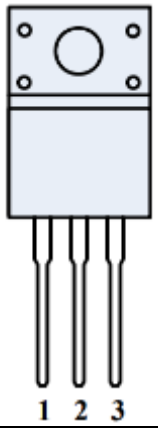
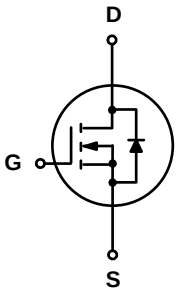
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Limiting Values						
P_{tot}	Total Power Dissipation	T_C = 25 ℃	-	-	33	W
I_D	Drain Current	T_C = 25 ℃, V_{GS} = 10 V	-	-	6	A
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown	V_{GS} = 0 V, I_{DS} = 250 μA	700	-	-	V
$R_{DS(ON)}$	On-State Resistance	V_{GS} = 10 V, I_{DS} = 3.0 A	-	-	2.4	Ω

2. Ordering Code & Marking Information

Ordering Code	Marking Information
iH6N70F	iH6N70F XXXXXX X: Date Code

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3. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate		
2	Drain		
3	Source		

4. Limiting Values

Symbol	Parameter		Rating	Unit
V_{DS}	Drain-Source Voltage		700	V
V_{GS}	Gate-Source Voltage		± 30	V
I_D	Drain Current	T_C = 25 ℃, V_{GS} = 10 V	6	A
I_{DM} Note1	Pulsed Source Current	T_C = 25 ℃, V_{GS} = 10 V	24	A
I_S	Diode Forward Current	T_C = 25 ℃, V_{GS} = 0 V	6	A
P_{tot}	Total Power Dissipation	T_C = 25 ℃	33	W
E_{AS}	Single Pulsed Avalanche Energy	L = 30 mH, V_{DD} = 50 V	108	mJ
$R_{\theta JA}$	Thermal Resistance- Junction to Ambient		62.5	℃ / W
$R_{\theta JC}$	Thermal Resistance- Junction to Case		3.78	℃ / W
T_{stg}	Storage Temperature		-55~150	℃
T_J	Junction Temperature		150	℃

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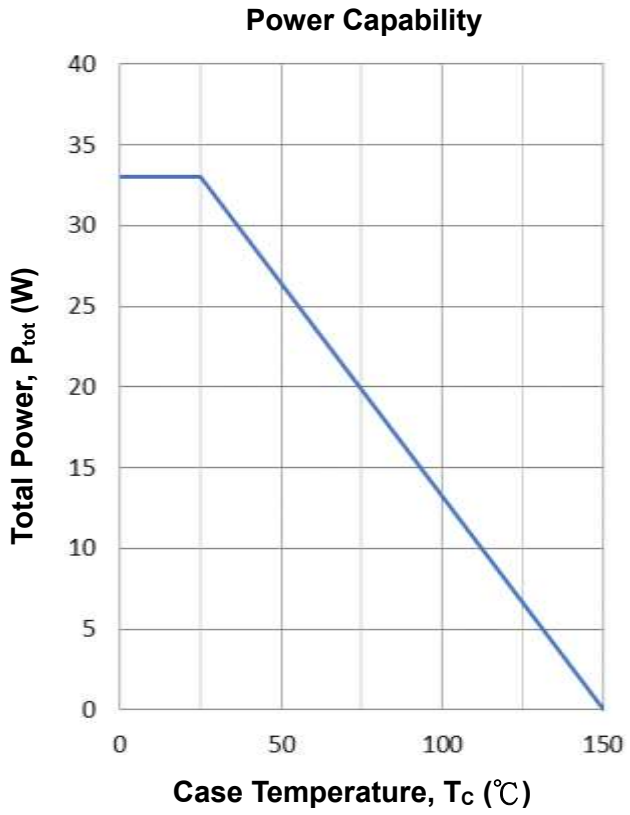
5. Electrical Characteristics (T_A = 25 °C Unless Otherwise Noted)

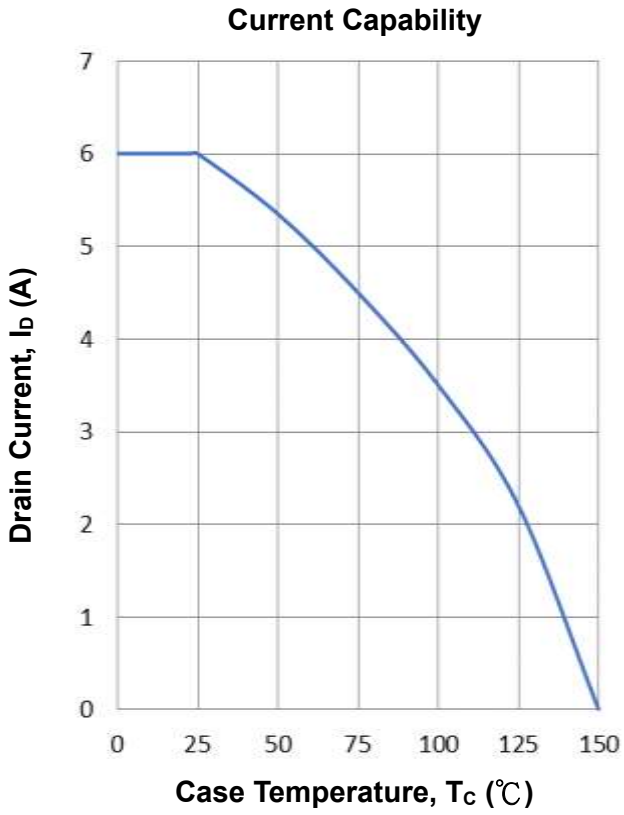
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS} = 0 V, I_{DS} = 250 μA	700	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS} = V_{GS} , I_{DS} = 250 μA	2	-	4	
I_{DSS}	Drain Leakage Current	V_{DS} = 640V , V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS} = 0V , V_{GS} = ± 30 V	-	-	±100	nA
$R_{DS(ON)}$	On-State Resistance	V_{GS} = 10 V, I_{DS} = 3.0 A	-	-	2.4	Ω
Diode Characteristics						
V_{SD}	Diode Forward Voltage	I_{SD} = 6 A, V_{GS} = 0 V	-	-	1.4	V
t_{rr} Note2	Reverse Recovery Time	I_{DS} = 6 A, V_{GS} = 0 V,V_R=560V	-	290	-	nS
Q_{rr} Note2	Reverse Recovery Charge	dI_{SD}/dt = 100A/μs	-	2.73	-	μC
Dynamic Characteristics Note2						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 25 V, Frequency =1MHz	-	730	-	pF
C_{iss}	Input Capacitance		-	68	-	
C_{iss}	Input Capacitance		-	7.5	-	
t_d(on)	Turn–on Delay Time	V_{DS} = 100 V, V_{GEN} = 10 V, R_G = 25 Ω , I_{DS} = 6 A	-	9.5	-	ns
t_r	Turn–on Rising Time		-	17	-	
t_d(off)	Turn–off Delay Time		-	58	-	
t_f	Turn–off Falling Time		-	31	-	
Gate Charge Characteristics Note2						
Q_g	Total Gate Charge	V_{DS} = 560 V, V_{GS} = 10 V, I_{DS} = 6 A	-	25	-	nC
Q_{gs}	Gate-Source Charge		-	8	-	
Q_{gd}	Gate-Drain Charge		-	6	-	

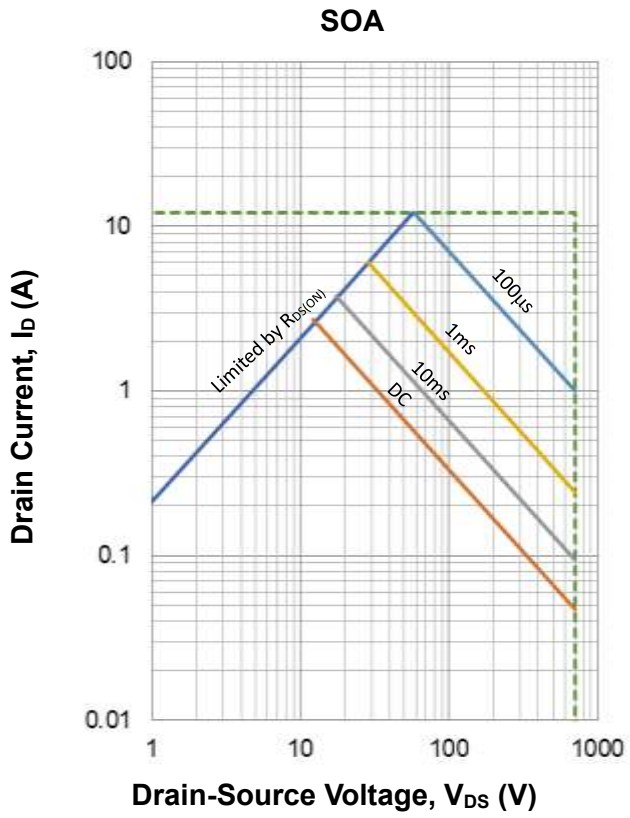
Note 1: Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2 %.
Note 2: Guaranteed by design, not subject to production testing.

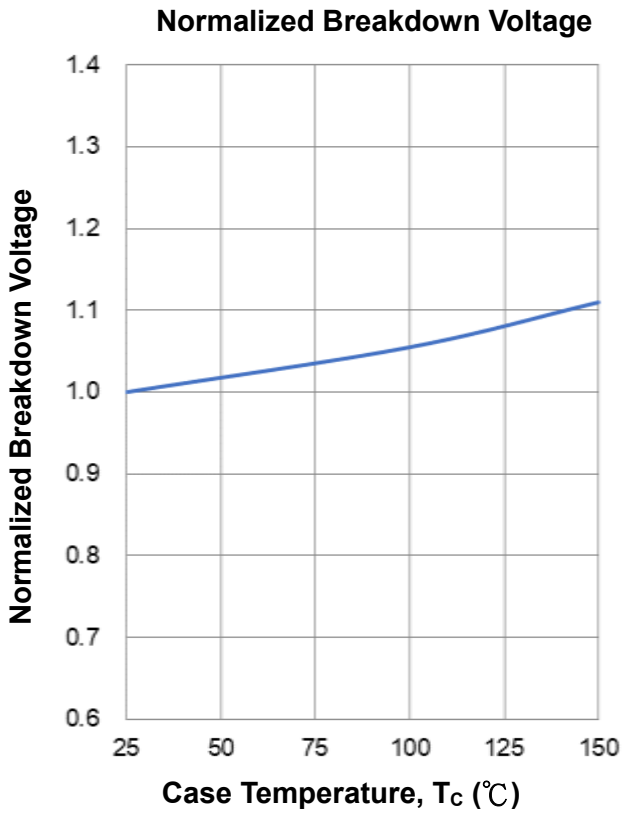
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6. Typical Characteristics





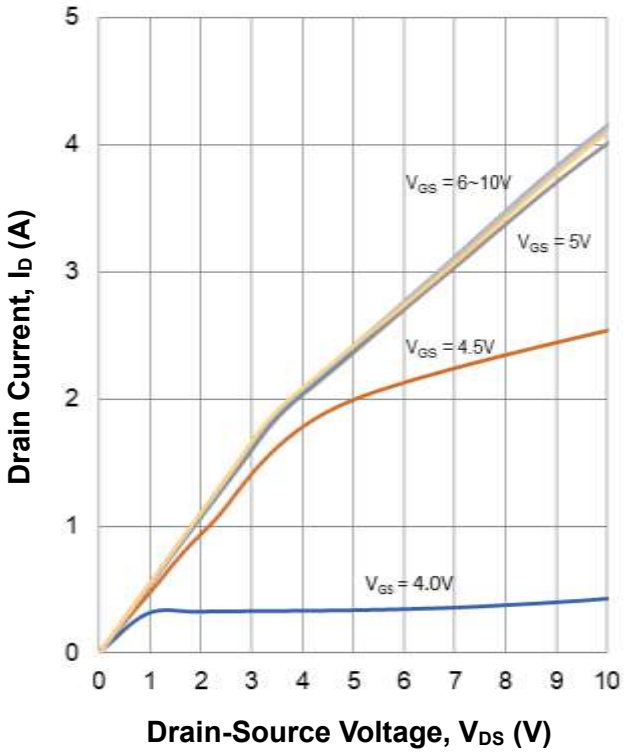




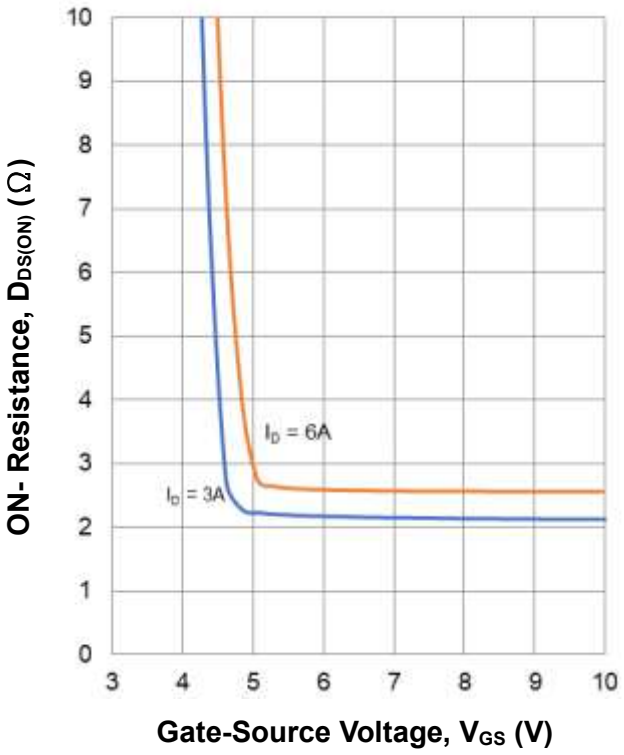
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6. Typical Characteristics (Cont.)

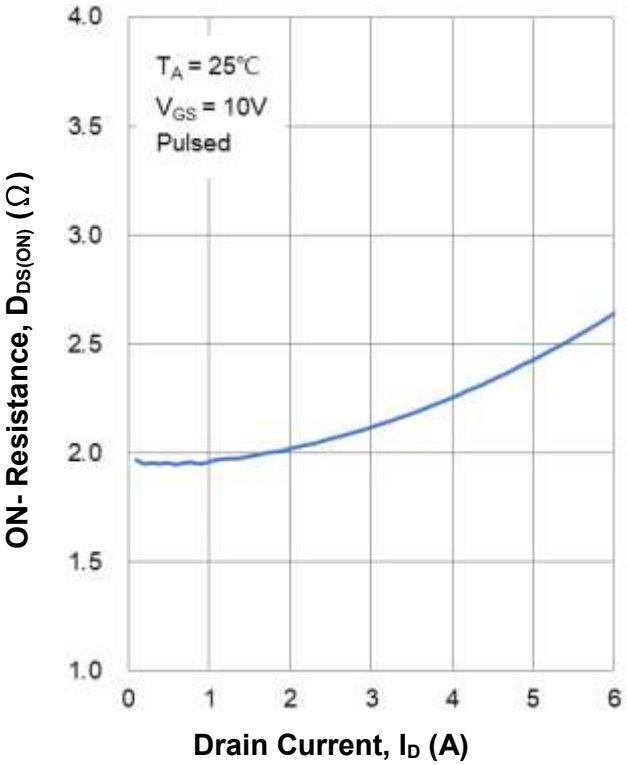
Output Characteristics



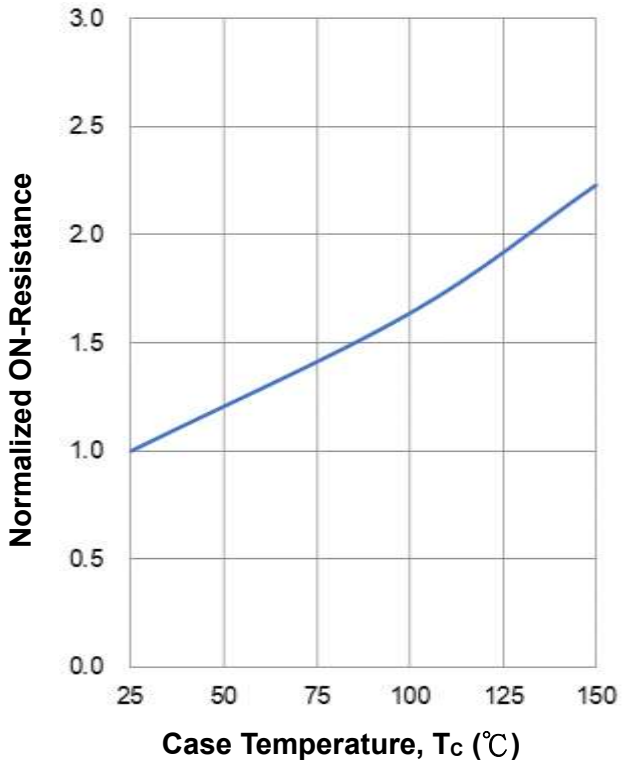
ON-Resistance vs. Gate-Source Voltage



ON-Resistance vs. Drain Current

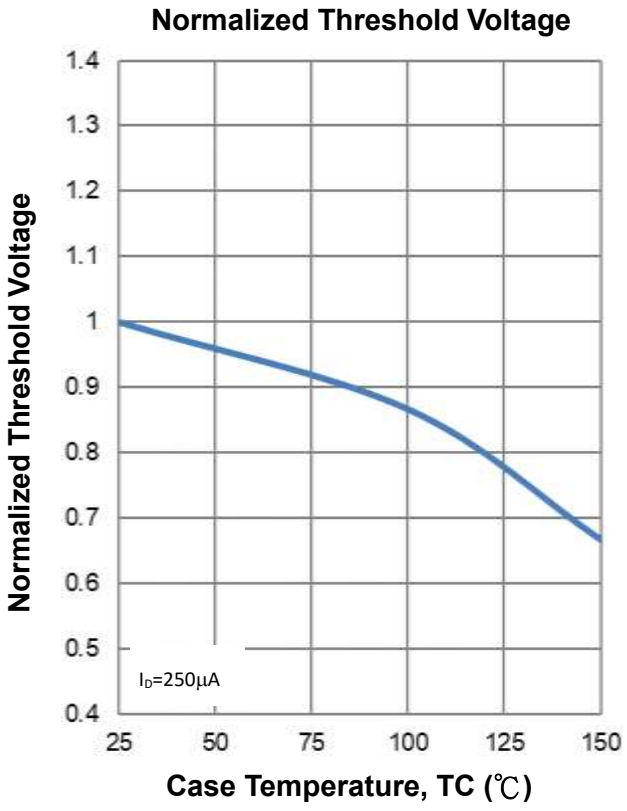


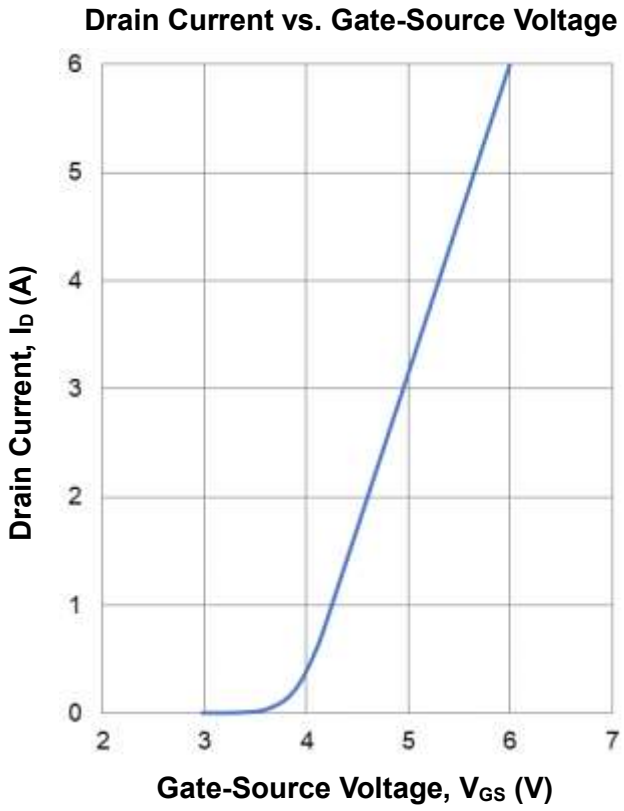
Normalized ON-Resistance

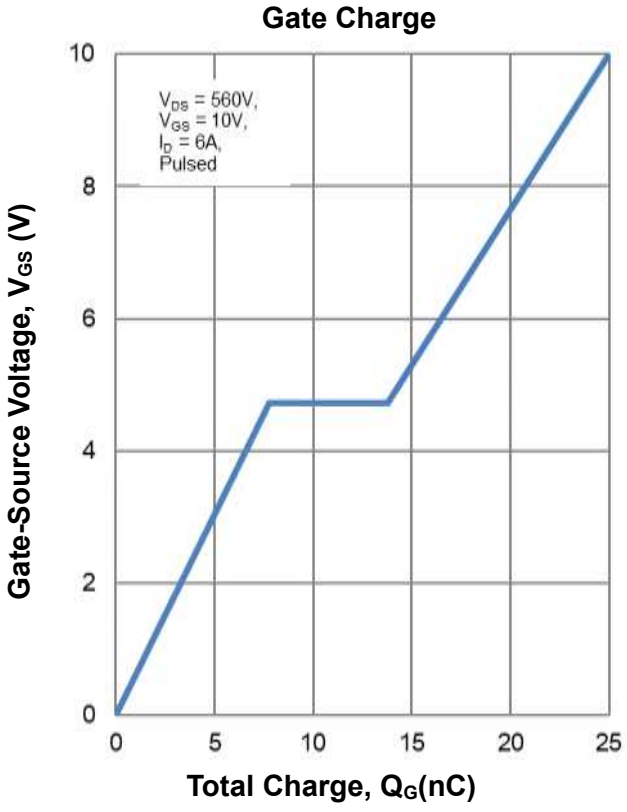


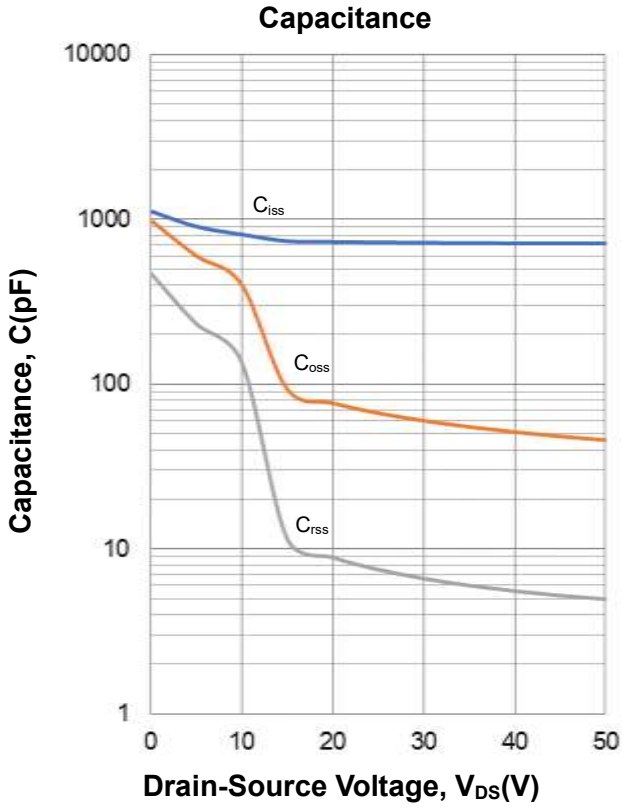
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6. Typical Characteristics (Cont.)



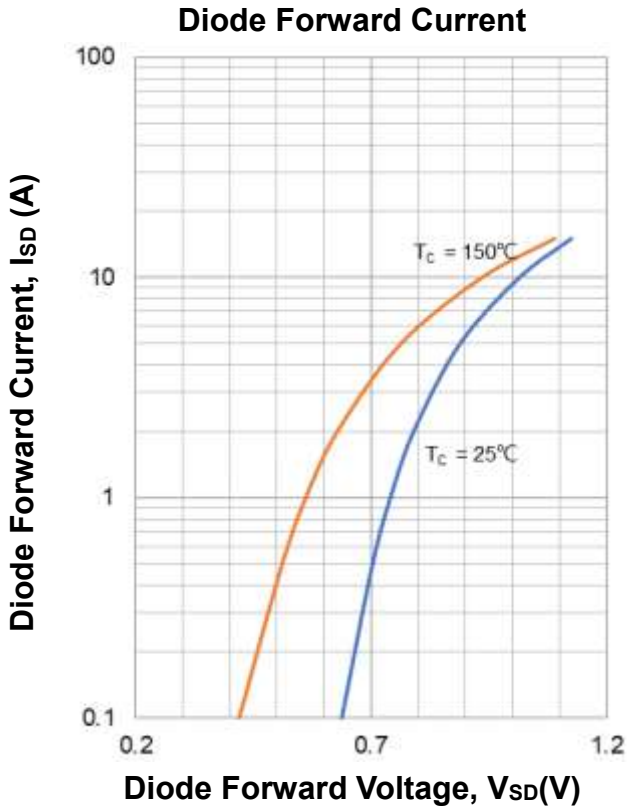






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6. Typical Characteristics (Cont.)



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