iM7117

N-Channel Enhancement Mode MOSFET

Datasheet

1. Product Information

1.1 Features

- Advanced Trench Cell Design
- RoHS Compliant and Halogen Free
- Reliable and Rugged



1.2 Package Type

TOLL-8L

1.3 Quick Reference

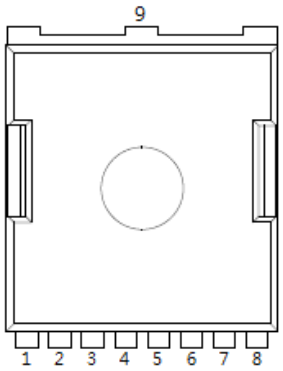
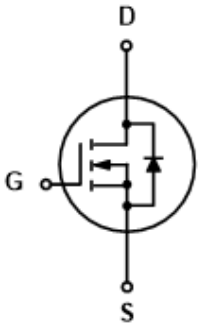
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Limiting Values						
P_{tot}	Total Power Dissipation	T_C = 25 ℃	-	-	240	W
I_D	Drain Current	T_C = 25 ℃, V_{GS} = 10 V	-	-	148	A
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown	V_{GS} = 0 V, I_{DS} = 250 μA	150	-	-	V
$R_{DS(ON)}$	On-State Resistance	V_{GS} = 10 V, I_{DS} = 50 A	-	4.1	5.1	mΩ

2. Ordering Code & Marking Information

Ordering Code	Marking Information
iM7117	iM7117 XXXXX X : Date Code

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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		150	V
V_{GS}	Gate-Source Voltage		± 20	V
I_D	Drain Current	T_C= 25 ℃, V_{GS} = 10 V	148	A
		T_C= 100 ℃, V_{GS} = 10 V	94	A
I_{DM} Note1	Pulsed Source Current	T_C = 25 ℃, V_{GS} = 10 V	520	A
I_S	Diode Forward Current	T_C = 25 ℃, V_{GS} = 0 V	148	A
E_{AS}	Single Pulsed Avalanche Energy	L= 1.0 mH, V_{DD} = 75 V	1568	mJ
P_{tot}	Total Power Dissipation	T_C = 25 ℃	240	W
$R_{\theta JA}$ Note2	Thermal Resistance- Junction to Ambient		46	℃ / W
$R_{\theta JC}$	Thermal Resistance- Junction to Case		0.52	℃ / 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)

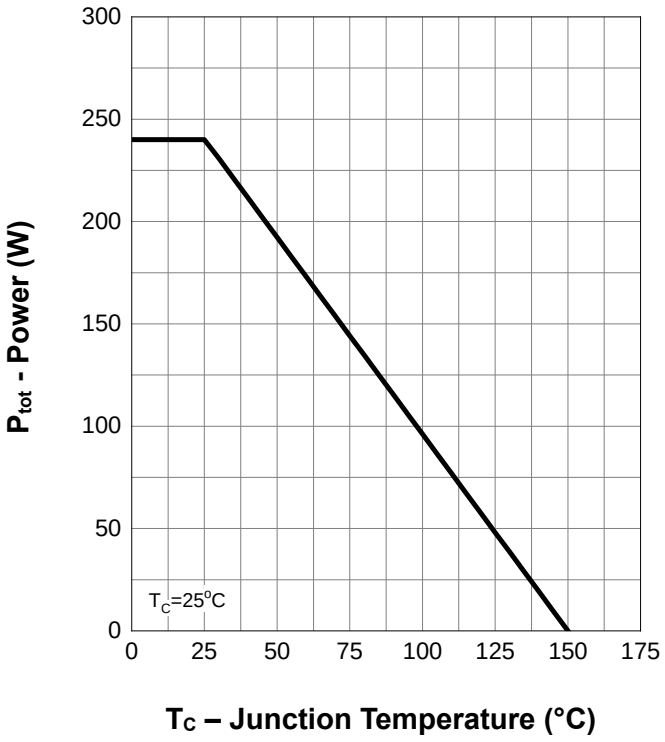
Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown	V_{GS} = 0 V, I_{DS} = 250 μA	150	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS} = 250 μA	3	-	5	V
I_{DSS}	Drain Leakage Current	V_{DS} = 120 V, V_{GS} = 0 V	-	-	1	μA
I_{GSS}	Gate Leakage Current	V_{DS} = 0 V, V_{GS} = ± 25 V	-	-	±100	nA
$R_{DS(ON)}$	On-State Resistance	V_{GS} = 10 V, I_{DS} = 50 A	-	4.1	5.1	mΩ
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	-	126	-	nS
Q_{rr} Note3	Reverse Recovery Charge	dI_{SD}/dt = 100 A/μs	-	552	-	nC
Dynamic Characteristics Note3						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = 75 V Frequency = 1 MHz	-	5535	-	pF
C_{oss}	Output Capacitance		-	751	-	
C_{rss}	Reverse Transfer Capacitance		-	8	-	
t_d(on)	Turn-on Delay Time	V_{DS} = 75 V, V_{GEN} = 10 V, R_G = 3.9 Ω, R_L = 1.5 Ω, I_{DS} = 50 A	-	26	-	nS
t_r	Turn-on Rise Time		-	89	-	
t_d(off)	Turn-off Delay Time		-	58	-	
t_f	Turn-off Fall Time		-	54	-	
Gate Charge Characteristics Note3						
Q_g	Total Gate Charge	V_{DS} =75 V, V_{GS} = 10 V, I_{DS} = 50A	-	99	-	nC
Q_{gs}	Gate-Source Charge		-	40	-	
Q_{gd}	Gate-Drain Charge		-	25	-	

Note 1: Pulse test; pulse width ≤ 300 μs, duty cycle ≤ 2%.
Note 2: Surface Mounted on 1 in^2 pad area, t ≤ 10 sec.
Note 3: Limited by bonding wire.

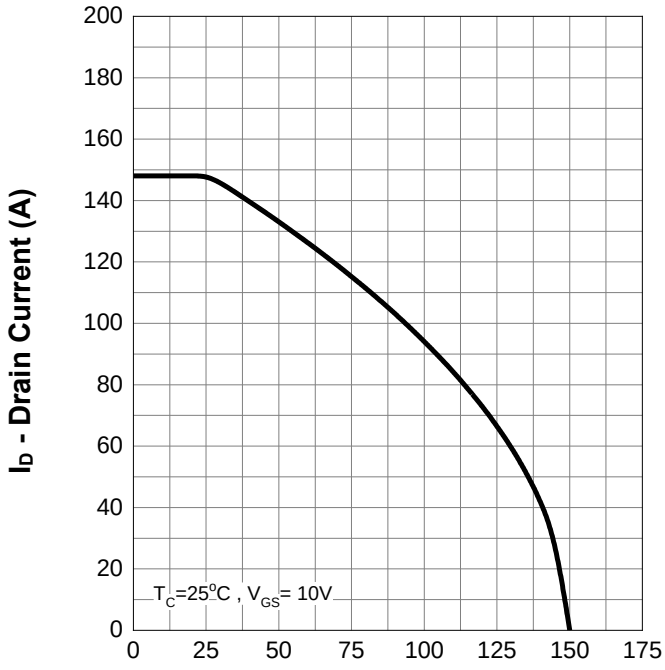
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6. Typical Characteristics

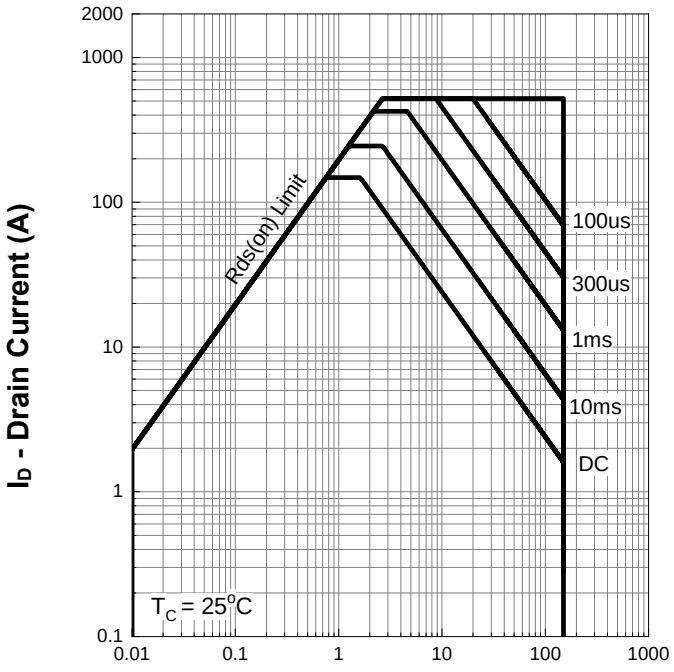
Power Capability



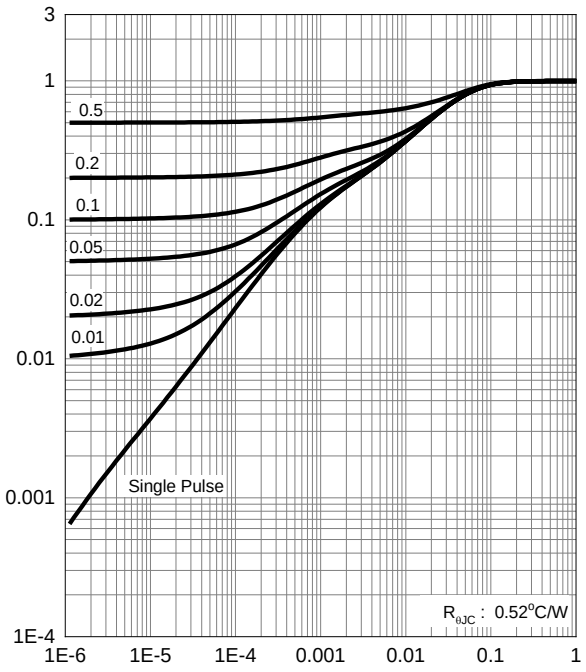
Current Capability



Safe Operating Area



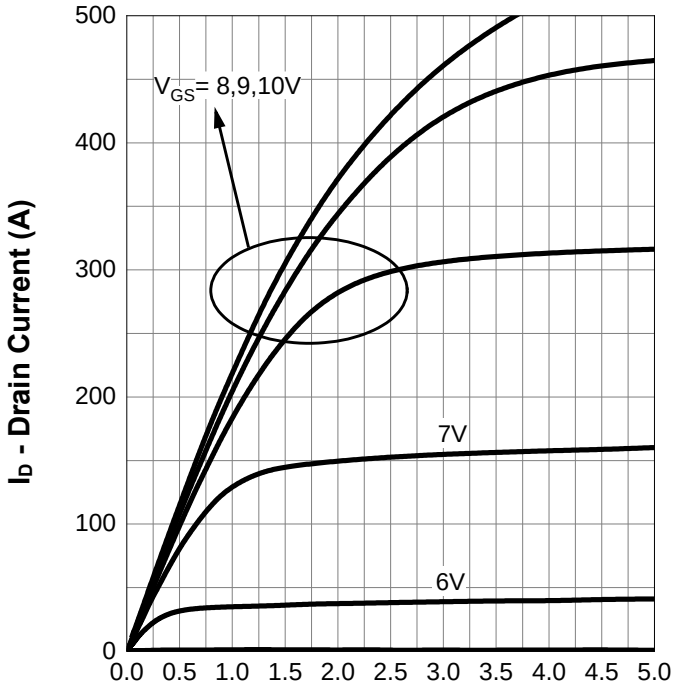
Transient Thermal Impedance



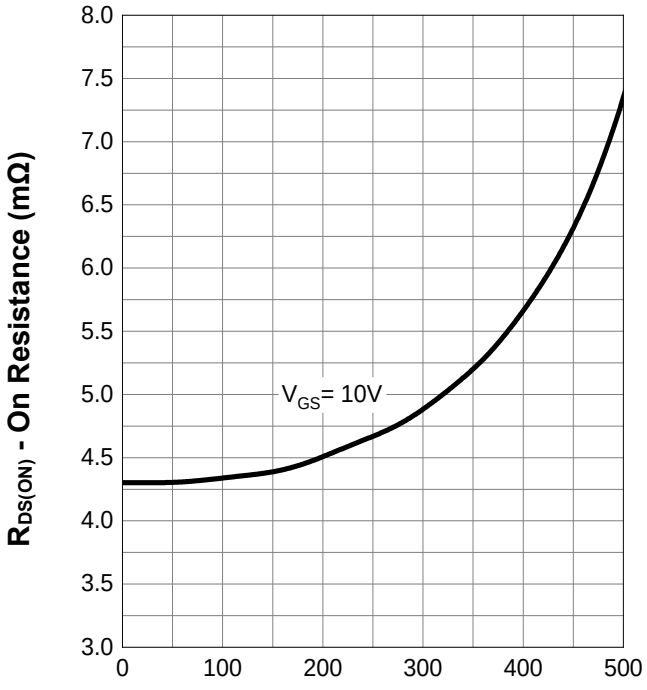
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6. Typical Characteristics

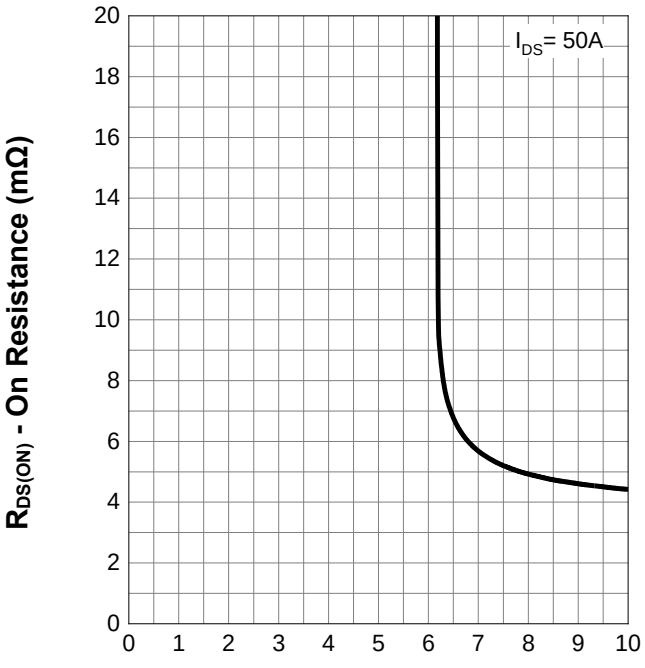
Output Characteristics



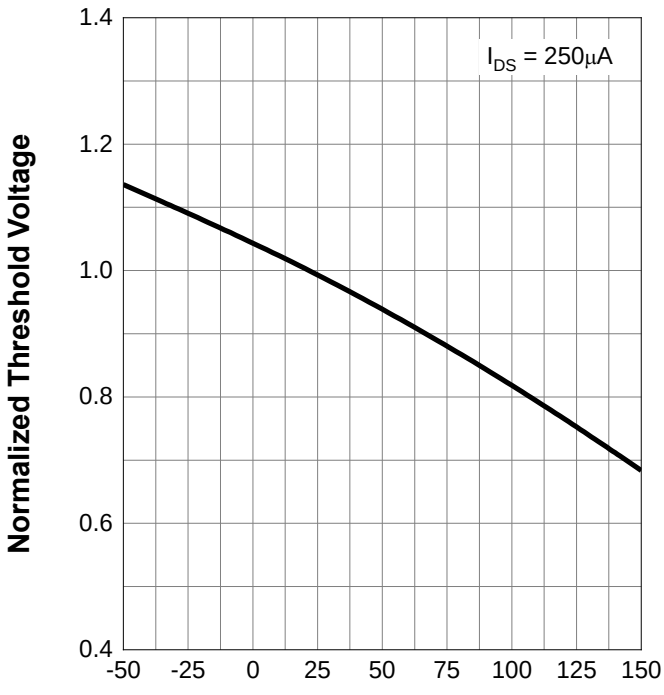
On Resistance



Transfer Characteristics



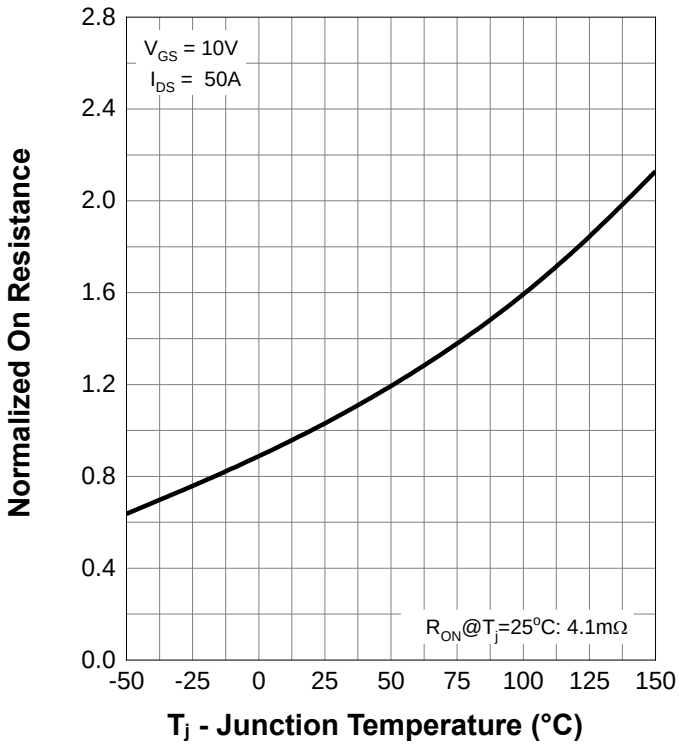
Normalized Threshold Voltage



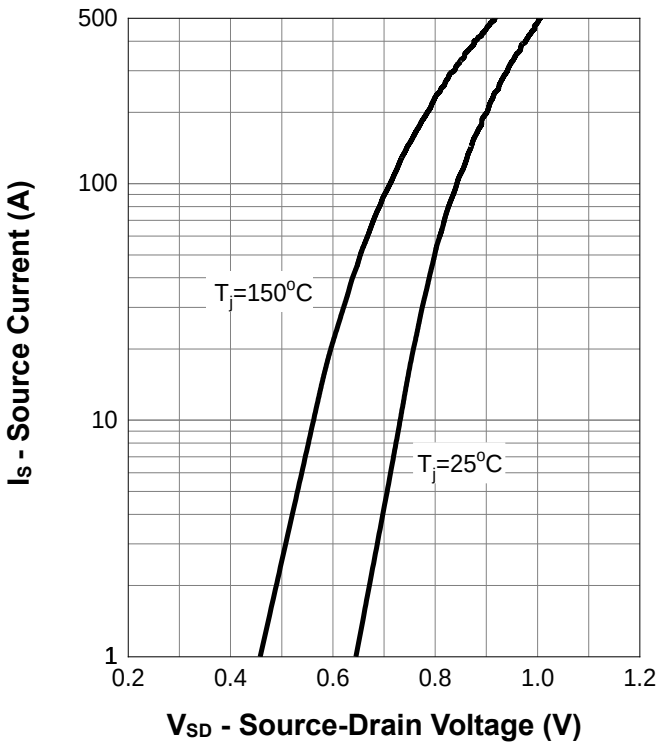
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6. Typical Characteristics

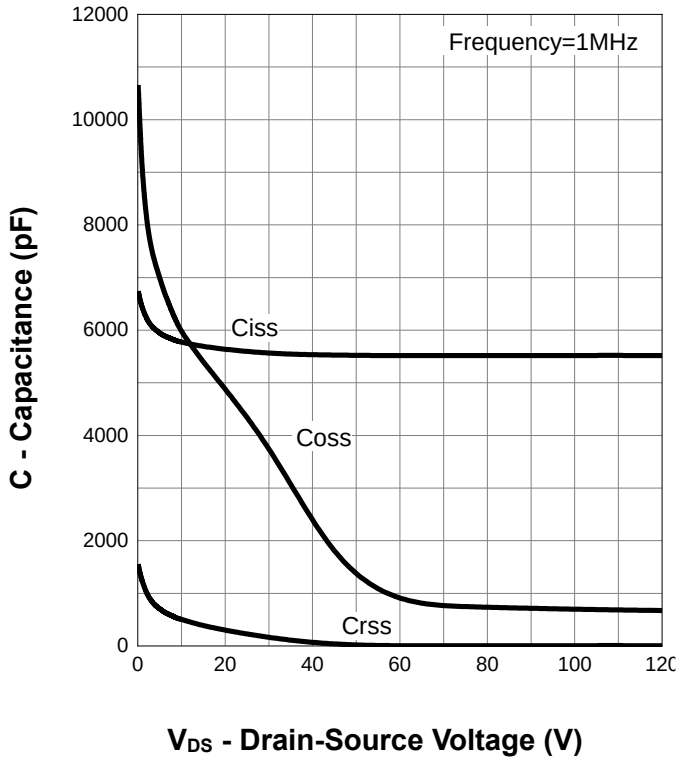
Normalized On Resistance



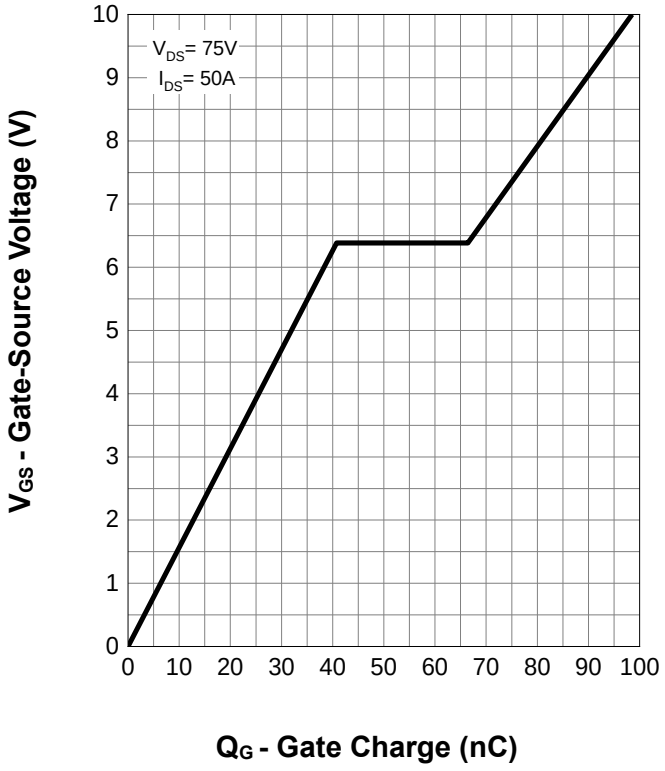
Diode Forward Current



Capacitance



Gate Charge



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