



N-Channel Enhancement Mode MOSFET

1. Product Information

1.1 Features

- ☒ Surface-mounted package
- ☒ Advanced trench cell design

1.2 Applications

- ☒ LCD TV appliances
☒ LCDM appliances
- ☒ High power inverter system

1.3 Quick reference

- ☒ $BV \geq 200\text{ V}$
☒ $P_{\text{tot}} \leq 300\text{ W}$
☒ $I_D \leq 114\text{ A}$
- ☒ $R_{\text{DS(ON)}} \leq 7.7\text{ m}\Omega @ V_{\text{GS}} = 10\text{ V}$
☒ $R_{\text{DS(ON)}} \leq 8.8\text{ m}\Omega @ V_{\text{GS}} = 6\text{ V}$

2. Pin Description

Pin	Description	Simplified Outline	Symbol
1	Gate(G)	 Top View TOLL	
2,3,4,5,6,7,8	Source(S)		
9	Drain(D)		

iMN08N20T



3. Limiting Values

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	-	200	V
V_{GS}	Gate-Source Voltage	$T_C = 25\text{ }^{\circ}\text{C}$	-	± 20	V
$I_D^{*,***}$	Drain Current (DC)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	114	A
		$T_C = 100\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	81	A
I_{DM}^{***}	Drain Current (Pulsed)	$T_C = 25\text{ }^{\circ}\text{C}, V_{GS} = 10\text{ V}$	-	456	A
P_{tot}	Drain power dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	-	300	W
T_{stg}	Storage Temperature		-55	175	$^{\circ}\text{C}$
T_J	Junction Temperature		-	175	$^{\circ}\text{C}$
I_S	Continuous-SourceCurrent	$T_C = 25\text{ }^{\circ}\text{C}$	-	114	A
E_{AS}^*	Single Pulsed Avalanche Energy	$V_{DD} = 50\text{ V}, L = 1.0\text{ mH}$	-	1800	mJ
$R_{\theta JA}^*$	Thermal Resistance- Junction to Ambient		-	40	$^{\circ}\text{C/W}$
$R_{\theta JC}^*$	Thermal Resistance- Junction to Case		-	0.5	

Notes :

* Surface Mounted on 1 in² pad area, $t \leq 10\text{ sec}$

** Pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

*** Limited by bonding wire

4. Marking Information

Product Name	Marking
iMN08N20T	XXXXXXXX 08N20 XXXXXXXX X : Date Code

5. Ordering Code

iMN08N20T



6. Electrical Characteristics ($T_A=25^\circ$ 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	200	-	-	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _{DS} = 250 μA	2	-	4	V
I _{DSS}	Drain Leakage Current	V _{DS} = 160 V, V _{GS} = 0 V	-	-	1	μA
I _{GSS}	Gate Leakage Current	V _{GS} = ± 20 V, V _{DS} = 0 V	-	-	±100	nA
R _{DS(ON)} ^a	On-State Resistance	V _{GS} = 10 V, I _{DS} = 50 A	-	6.4	7.7	mΩ
		V _{GS} = 6 V, I _{DS} = 30 A	-	6.8	8.8	
Diode Characteristics						
V _{SD} ^a	Diode Forward Voltage	I _{SD} = 50 A, V _{GS} = 0 V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _{DS} = 50 A, V _{GS} = 0 V dI _{SD} /dt = 100 A/μs	-	140	-	nS
Q _{rr}	Reverse Recovery Charge		-	722	-	nC
Dynamic Characteristics ^b						
C _{iss}	Input Capacitance	V _{GS} = 0 V, V _{DS} = 100 V Frequency = 1 MHz	-	9182	-	pF
C _{oss}	Output Capacitance		-	463	-	
C _{rss}	Reverse Transfer Capacitance		-	49	-	
t _{d(on)}	Turn-on Delay Time	V _{DS} = 100 V, V _{GEN} = 10 V, R _G = 3.9 Ω, R _L = 2 Ω, I _{DS} = 50 A	-	24	-	nS
t _r	Turn-on Rise Time		-	74	-	
t _{d(off)}	Turn-off Delay Time		-	93	-	
t _f	Turn-off Fall Time		-	73	-	
Gate Charge Characteristics ^b						
Q _g	Total Gate Charge	V _{DS} = 100 V, V _{GS} = 10 V, I _{DS} = 50 A	-	144	-	nC
Q _{gs}	Gate-Source Charge		-	50	-	
Q _{gd}	Gate-Drain Charge		-	31	-	

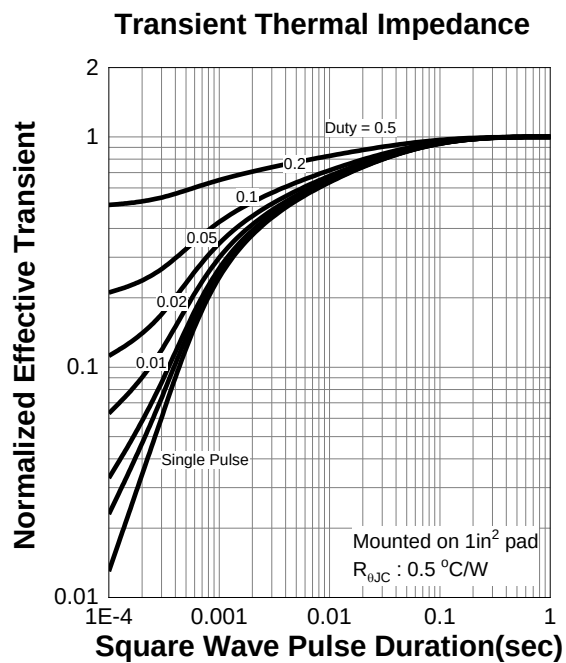
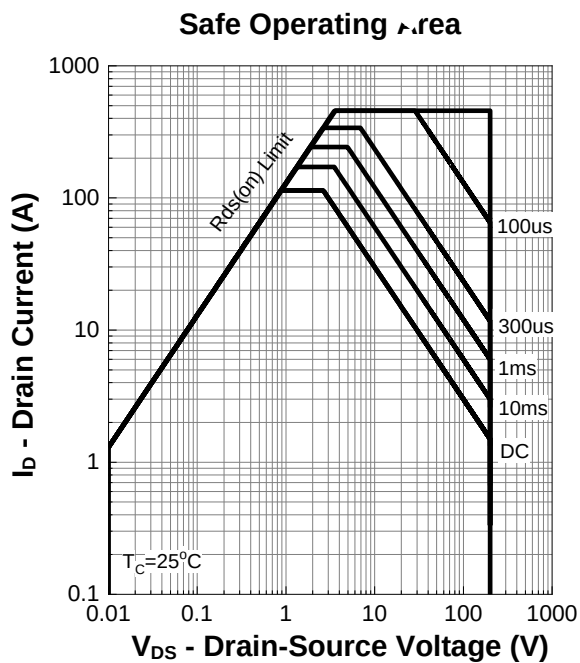
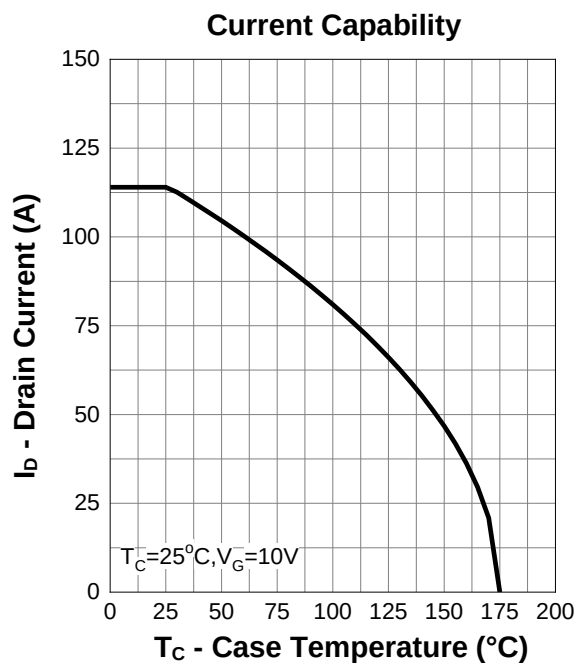
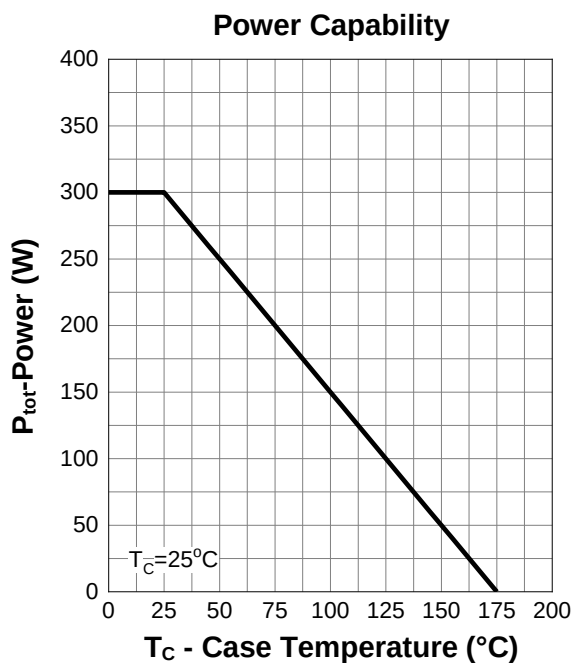
Notes :

a : Pulse test ; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$

b : Guaranteed by design, not subject to production testing

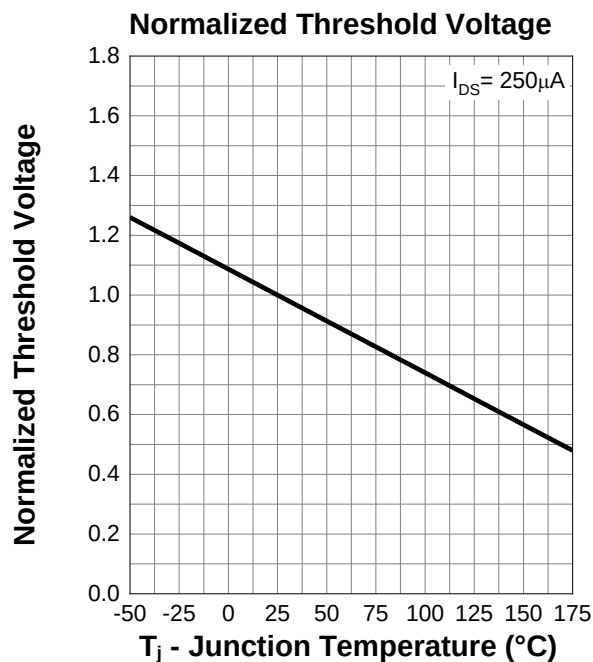
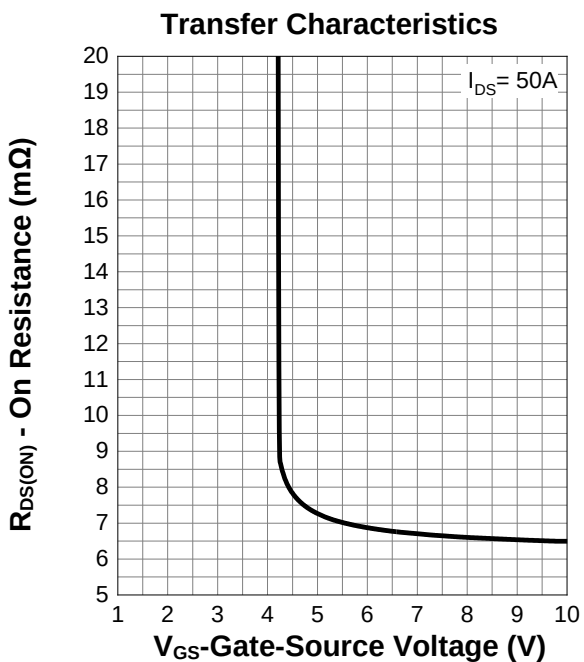
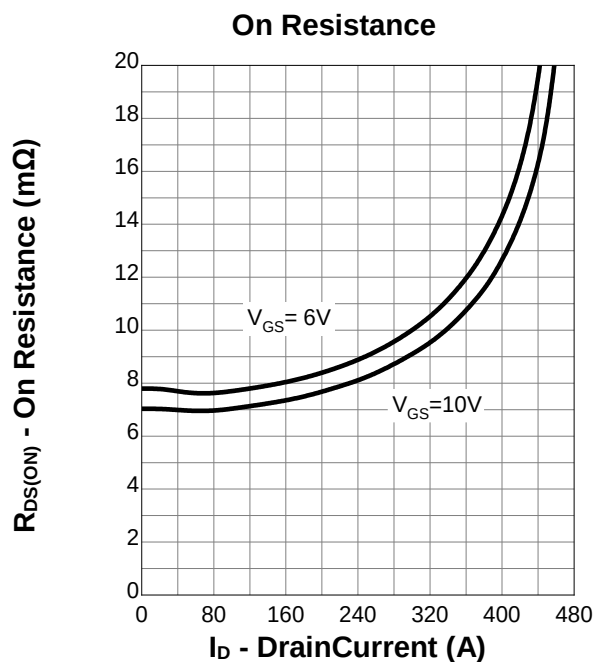
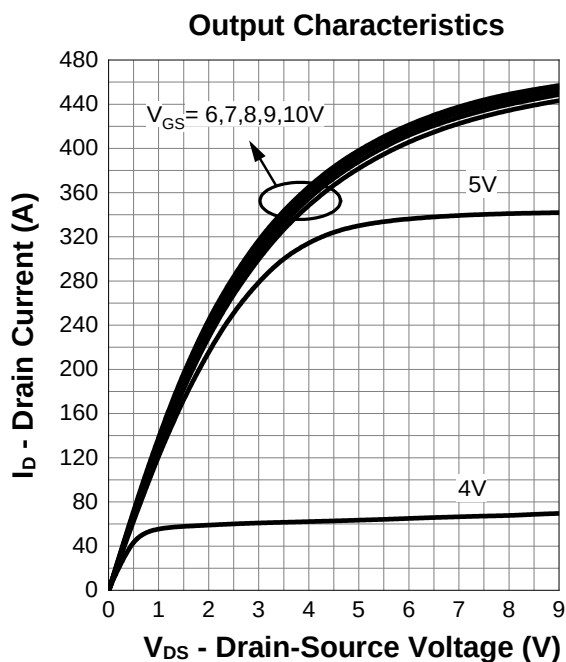


7. Typical Characteristics



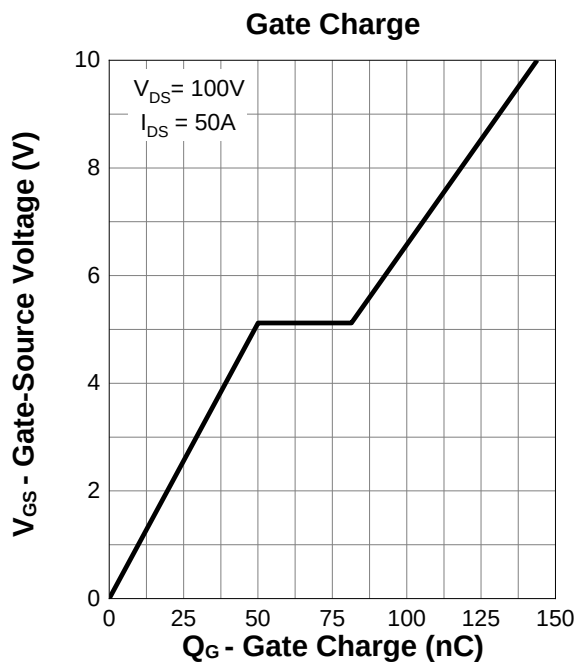
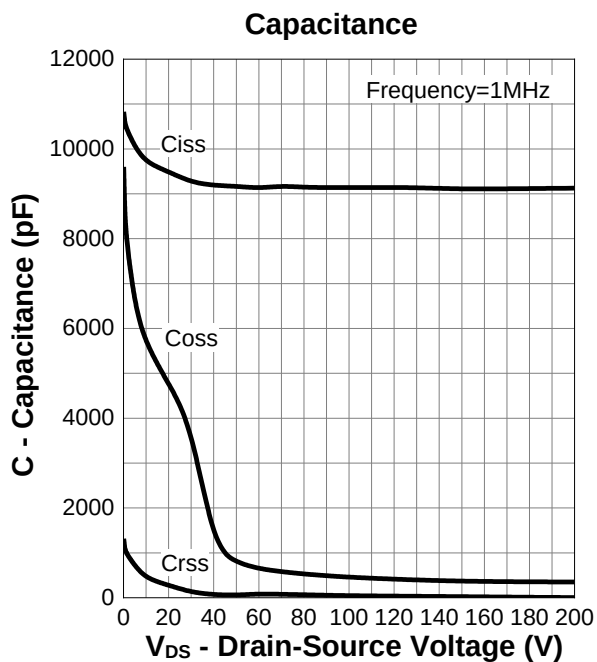
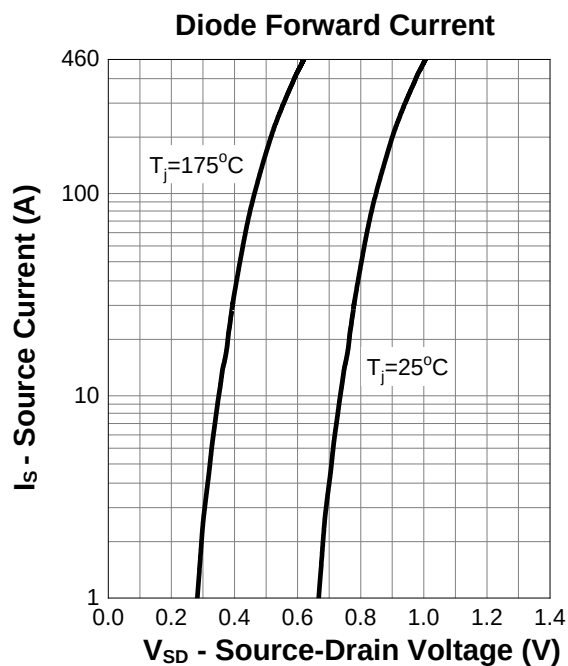
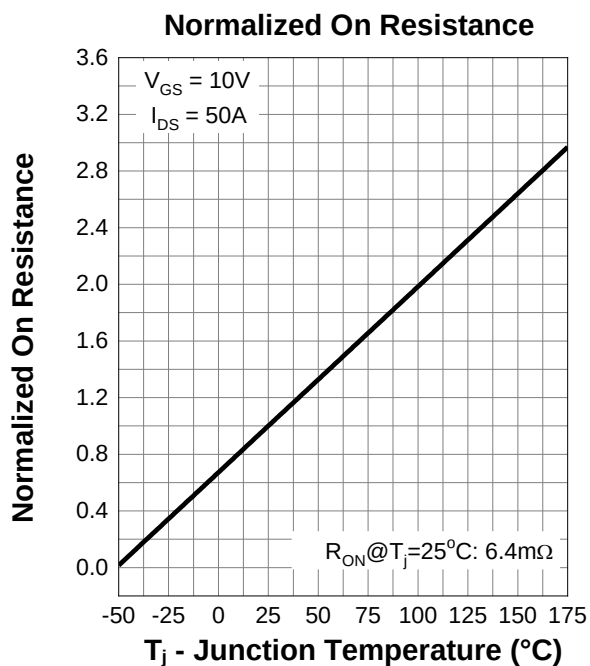


7. Typical Characteristics (cont.)





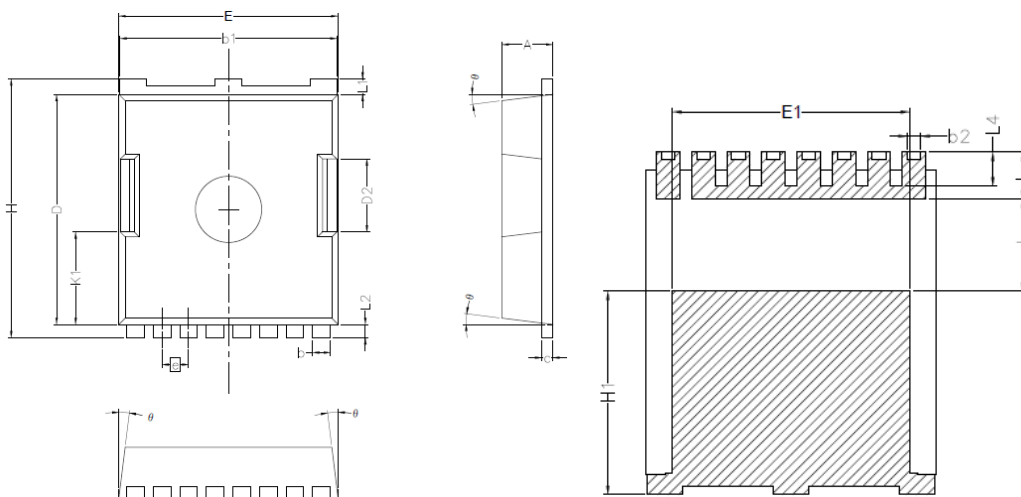
7. Typical Characteristics (cont.)





8. Package Dimensions

TOLL-8L Package



Symbol	Dimensions In Millimeters	
	MIN.	MAX.
A	2.20	2.40
b	0.90	0.90
b1	9.70	9.90
b2	0.42	0.50
c	0.40	0.60
D	10.28	10.58
D2	3.10	3.50
E	9.70	10.10
E1	7.90	8.30
e	1.20BSC	
H	11.48	11.88
H1	6.75	7.15
N	8	
J	3.00	3.30
K1	3.98	4.38
L	1.40	1.80
L1	0.60	0.80
L2	0.50	0.70
L4	1.00	1.30
θ	4°	10°