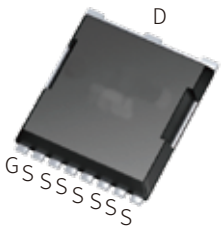
FEATURES

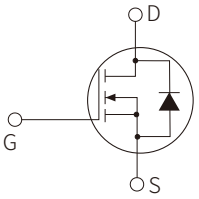
- Surface-mounted package
- Advanced trench cell design



TOLL-8L

APPLICATION

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



Schematic Symbol

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
Drain-Source Voltage T_C=25°C		V_{DS}	120	V
Drain Current (Pulsed) T_C=25°C V_{GS}=10V		I_{DM} **	1040	A
Drain Current (DC)	T_C=25°C V_{GS}=10V	I_D **	260	A
	T_C=100°C V_{GS}=10V		185	A
Gate-Source Voltage T_C=25°C		V_{GS}	±20	V
Drain power dissipation T_C=25°C		P_{tot}	375	W
Junction Temperature		T_J	175	°C
Storage Temperature		T_{STG}	-55 to 175	°C
Single Pulsed Avalanche Energy V_{DD}= 50 V , L=1.0mH		E_{AS}	2450	mJ
Thermal Resistance –Junction to Ambient		$R_{\theta JA}$ *	45	°C/W
Thermal Resistance- Junction to Case		$R_{\theta JC}$	0.4	°C/W
Continuous-Source Current T_C=25°C		I_S	260	A

Notes:
* Surface Mounted on 1 in² pad area, t ⩽10 sec
** Pulse width ⩽300us, duty cycle⩽ 2 %
*** Limited by bonding wire

ELECTRICAL CHARACTERISTICS (T_A=25°C)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_{DS}=250μA	120			V
Breakdown Voltage Temp. Coefficient	$\triangle V_{(BR)DSS}/\triangle T_J$	Reference to 25°C , I_{DS} = 5 mA		0.062		V/°C
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_{DS}=250μA	2		4	V
Drain Leakage Current	I_{DSS}	V_{DS}=96V,V_{GS}=0V			1	μA
Gate Leakage Current	I_{GSS}	V_{GS}=±20V ,V_{DS}=0V			±100	nA
On-State Resistance	$R_{DS(on)}$[a]	V_{GS}=10V,I_{DS}=50A		2	2.2	mΩ
		V_{GS}=6V,I_{DS}=30A		2.5	2.8	mΩ
Diode Characteristics						
Diode Forward Voltage	V_{SD}[a]	I_{SD}=50A,V_{GS}=0V			1.3	V
Reverse Recovery Time	t_{rr}	I_{DS}=50A, V_{GS}=0V dI_{SD}/dt=100A/μs		137		nS
Reverse Recovery Charge	Q_{rr}			474		nC
Dynamic Characteristics[b]						
Input capacitance	C_{iss}	V_{GS}=0V,V_{DS}=60V, Frequency = 1 MHz		11834		pF
Output capacitance	C_{oss}			1350		pF
Reverse transfer capacitance	C_{rss}			78		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=60V,V_{GEN}=10V R_G= 3.9Ω, R_L=1.2Ω, I_{DS}=50A		30		nS
Turn-on Rise Time	t_r			102		nS
Turn-Off Delay Time	$t_{d(off)}$			143		nS
Turn-Off Fall Time	t_f			101		nS
Gate Charge Characteristics[b]						
Total Gate Charge	Q_g	V_{DS}=60V,V_{GS}=10V,I_{DS}=50A		213		nC
Gate-Source Charge	Q_{gs}			62		nC
Gate-Drain Charge	Q_{gd}			54		nC

Notes:
a : Pulse test ; pulse width≤300us, duty cycle≤2 %
b : Guaranteed by design, not subject to production testing

PARAMETER CHARACTERISTIC CURVE

Figure1: Power Capability

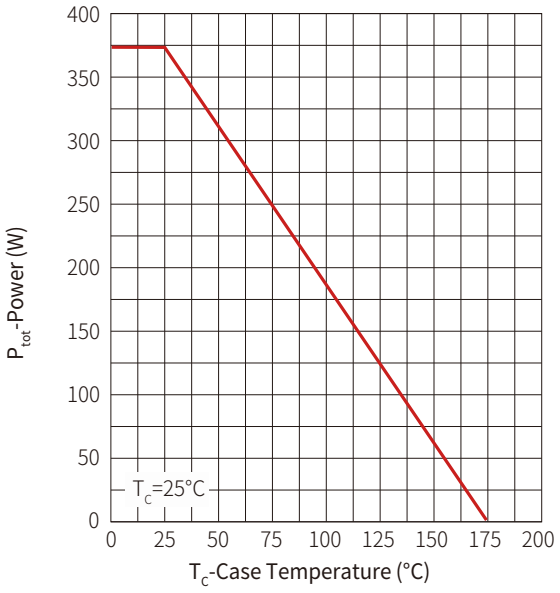


Figure2: Current Capability

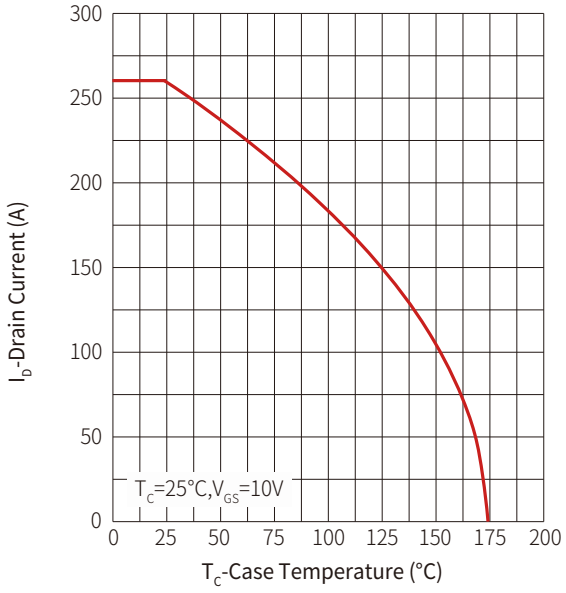


Figure3: Safe operating Area

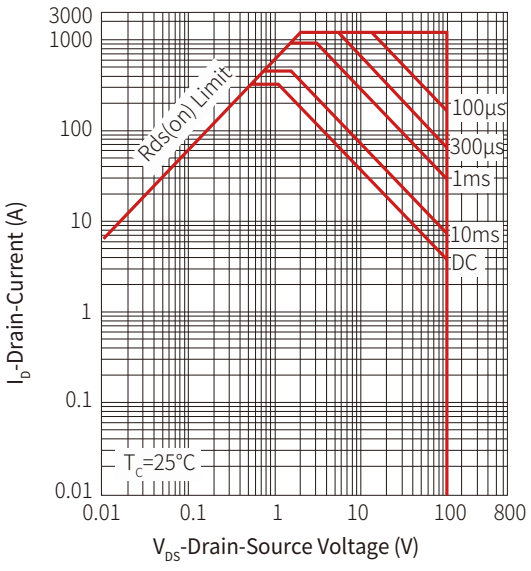


Figure 4: Transient Thermal Impedance

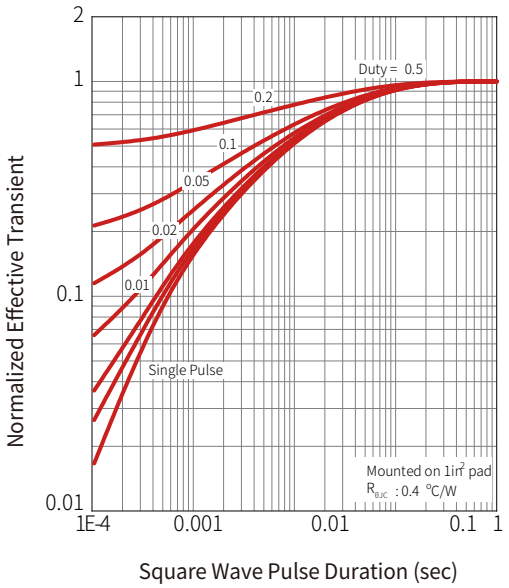


Figure 5:Output Characteristics

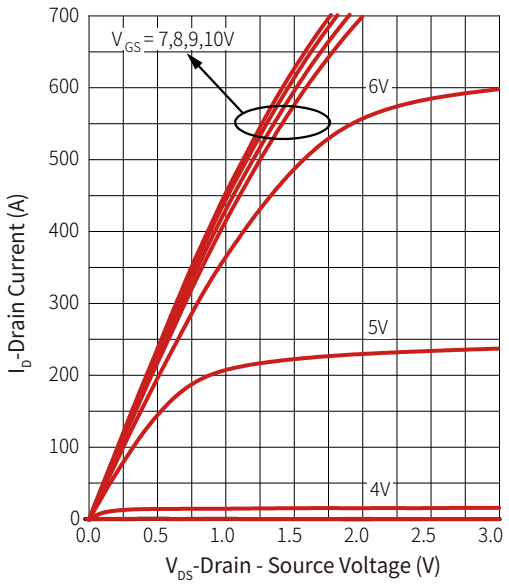


Figure 6: On Resistance

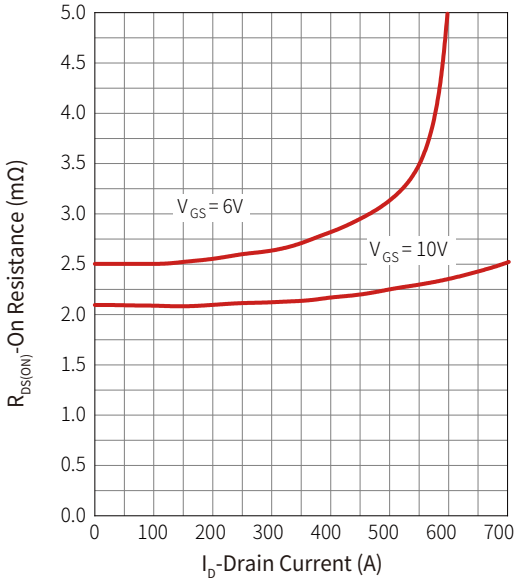


Figure 7:Transfer Characteristics

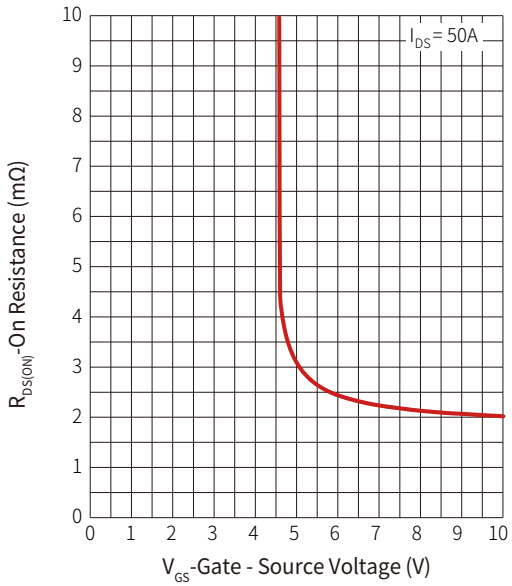


Figure 8: Normalized Threshold Voltage

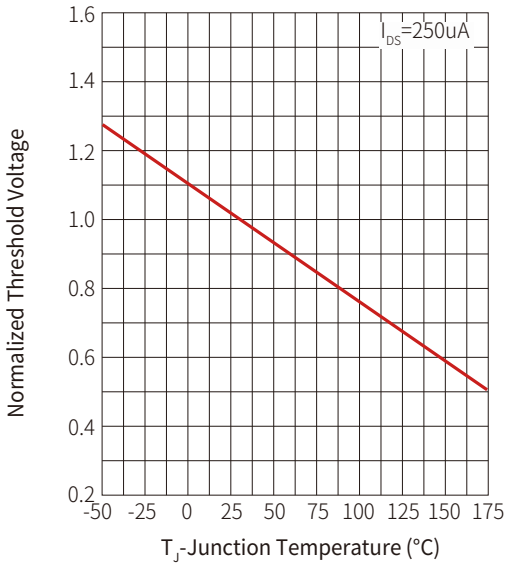


Figure 9:Normalized On Resistance

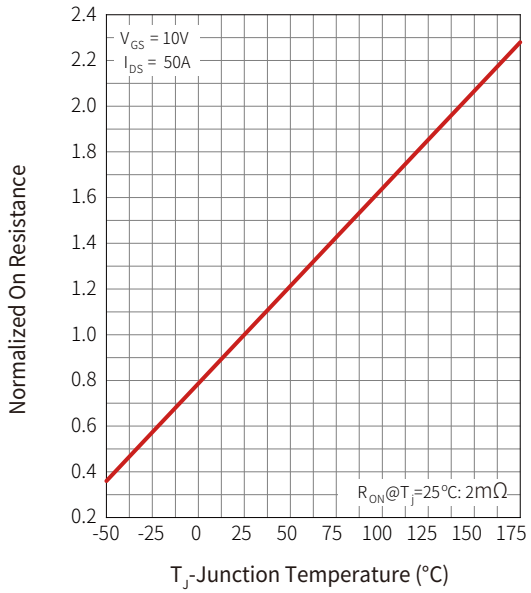


Figure 10: Diode Forward Current

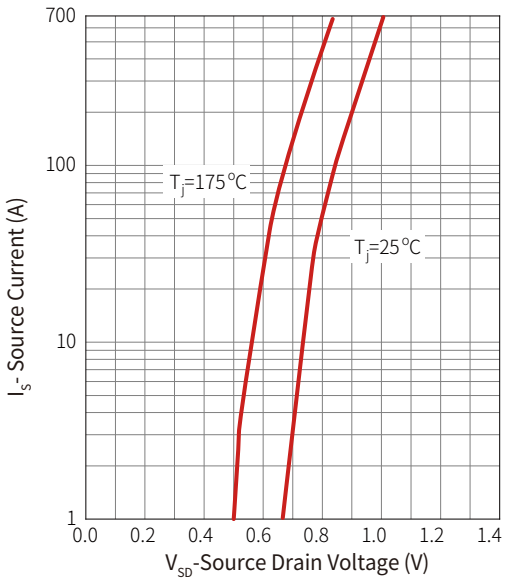


Figure 11:Capacitance

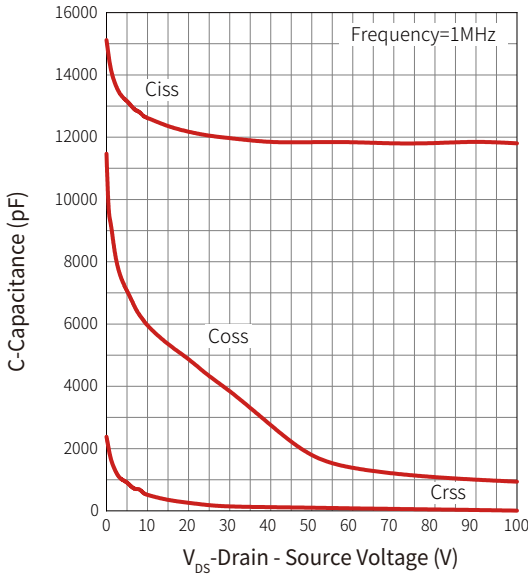
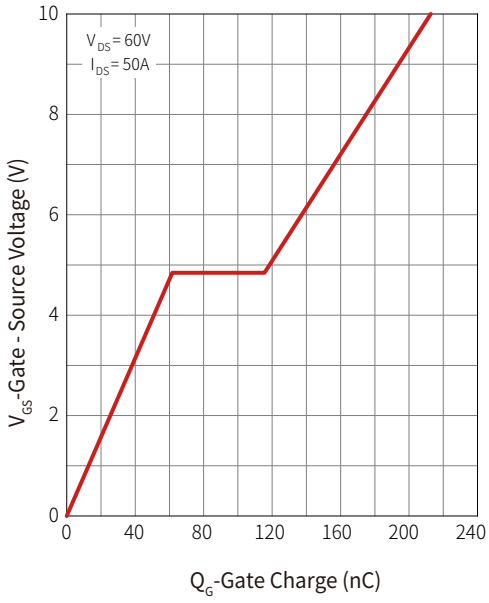
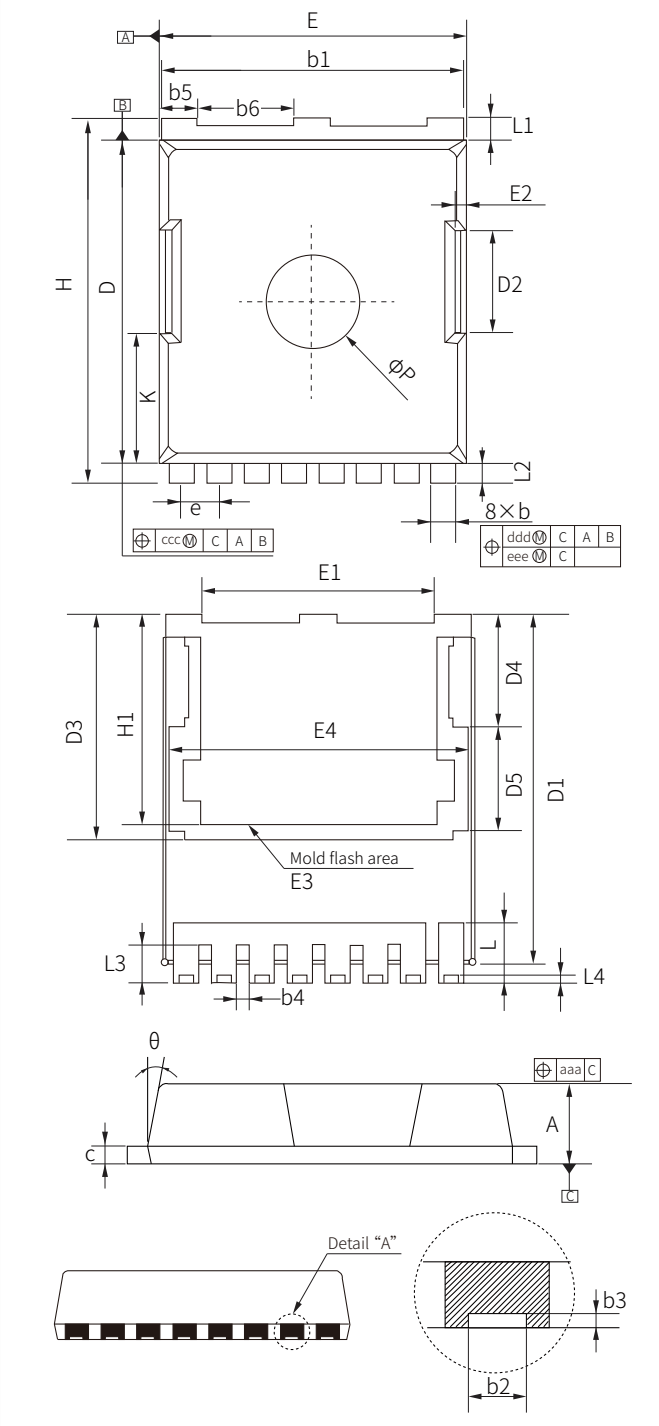


Figure 12: Gate Charge



TOLL-8L PACKAGE INFORMATION



Ref.	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.20	2.40	0.087	0.094
b	0.70	0.90	0.028	0.035
b1	9.70	9.90	0.382	0.390
b2	0.36	0.55	0.014	0.022
b3	0.05	-	0.002	-
b4	0.30	0.50	0.012	0.020
b5	1.10	1.30	0.043	0.051
b6	3.00	3.20	0.118	0.126
c	0.40	0.60	0.016	0.024
D	10.28	10.55	0.405	0.415
D1	10.98	11.18	0.432	0.440
D2	3.20	3.40	0.126	0.134
D3	7.15		0.281	
D4	3.59		0.141	
D5	3.26		0.128	
e	1.10	1.30	0.043	0.051
E	9.80	10.00	0.386	0.394
E1	7.40	7.60	0.291	0.299
E2	7.40	7.60	0.291	0.299
E3	8.50		0.335	
E4	9.46		0.372	
H	11.50	11.85	0.453	0.466
H1	6.55	6.75	0.258	0.266
K	4.08	4.28	0.161	0.169
L	1.60	2.10	0.063	0.083
L1	0.50	0.90	0.020	0.035
L2	0.50	0.70	0.020	0.028
L3	1.00	1.30	0.040	0.051
L4	0.13	0.33	0.005	0.013
P	2.85	3.15	0.112	0.124
θ	10°REF		0.398°REF	
aaa	0.20		0.008	
ccc	0.20		0.008	
ddd	0.25		0.010	
eee	0.20		0.008	

ORDERING INFORMATION

Part Number	Component Package	Marking	QTY/Reel	QTY/Box
SNM300N12L	TOLL-8L	XXXXXX N01N12T XXXXXXXX	2000PCS	14000PCS

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