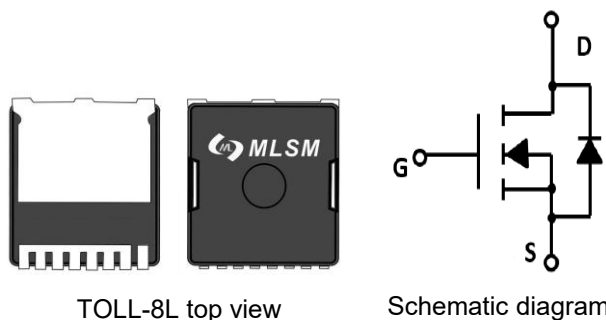


Features

- $R_{DS(ON)}$ MAX=1.8m Ω @ V_{GS} =10V
- Low gate Charge (typical 181nC)
- Low C_{rss} (typical 56pF)
- Fast switching speed
- Low On-Resistance
- Excellent FoM (figure of merit)
- 100% UIS and Rg tested

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
100V	1.5m Ω @10V	330A



Application

- Motor Driver
- DC/DC Converter
- Battery Management System



Halogen-Free

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter		Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)				
V _{DS}	Drain-Source Breakdown Voltage		100	V
V _{GS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-50 to 155	°C
E _{AS}	Single Pulse Avalanche Energy ^{Note1}		1707	mJ
I _S	Diode Continuous Forward Current	Tc=25°C	330	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ\text{C}$	1320	A
I_D	Continuous Drain Current	$T_C=25^\circ\text{C}$	330	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	357	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		35	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MTL1A330AG	TOLL-8L	MTL1A330AG	2,000	2,000	14,000	13" reel

Electrical Characteristics (TJ=25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V	--	--	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =40A	--	1.5	1.8	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	--	11304	--	pF
C _{OSS}	Output Capacitance		--	1470	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	56	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DD} =50V, I _D =40A, V _{GS} =10V	--	181	--	nC
Q _{gs}	Gate-Source Charge		--	54	--	nC
Q _{gd}	Gate-Drain Charge		--	49	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =40A, V _{GS} =10V, R _G =3Ω	--	85	--	nS
t _r	Turn-on Rise Time		--	137	--	nS
t _{d(off)}	Turn-Off Delay Time		--	92	--	nS
t _f	Turn-off fall Time		--	98	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =40A	--	0.83	1.4	V
t _{rr}	Reverse Recovery Time	I _F =40A, diF/dt=100A/us	--	78	--	nS
Q _{rr}	Reverse Recovery Charge		--	180	--	nC

Note 1:L=0.5mH, R_G=25Ω, V_{GS}=10V, V_{DD}=50V, Start T_J=25°C

Typical Operating Characteristics

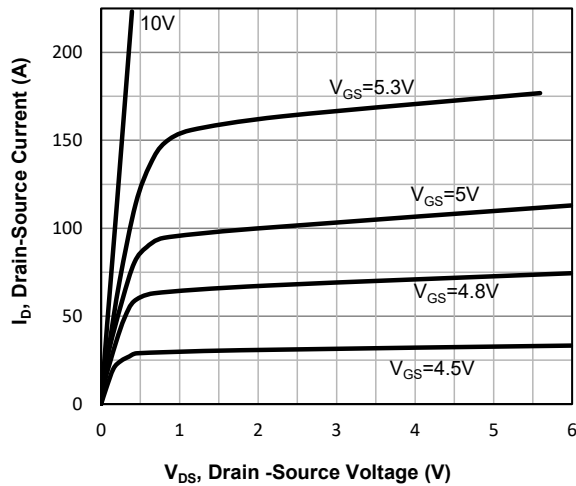


Fig1. Typical Output Characteristics

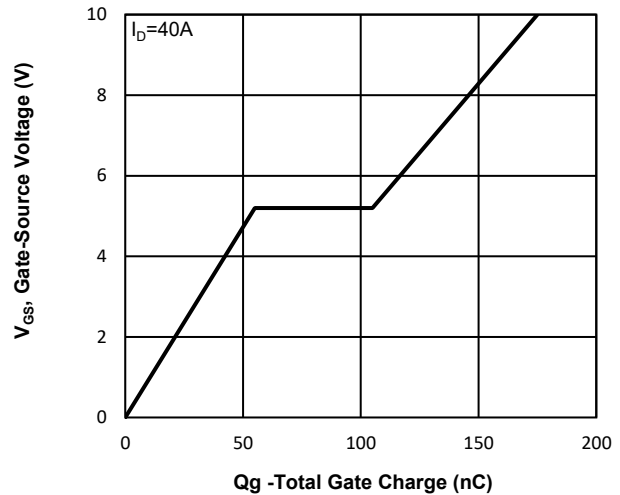


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

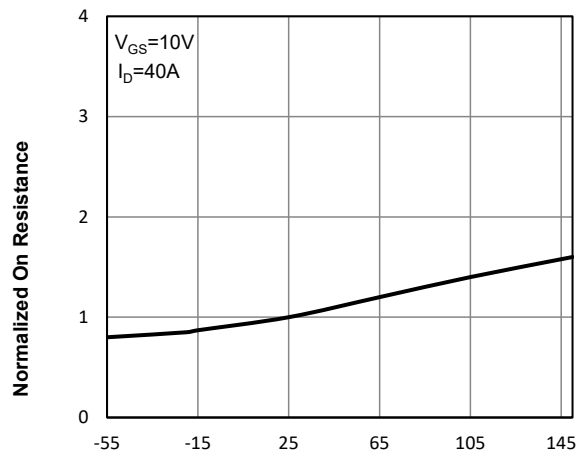


Fig3. Normalized On-Resistance Vs. Temperature

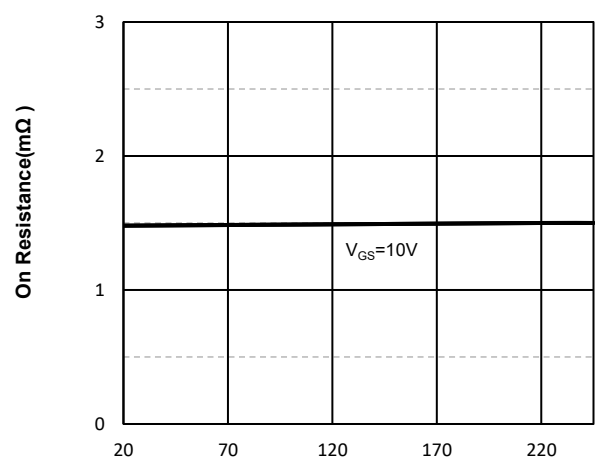


Fig4. On-Resistance Vs. Drain-Source Current

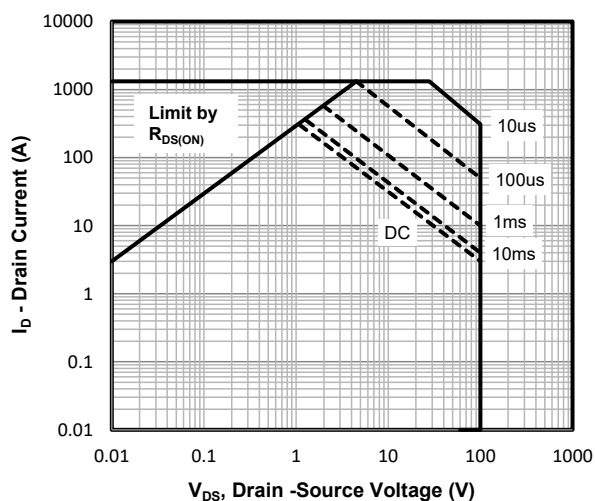


Fig5. Maximum Safe Operating Area

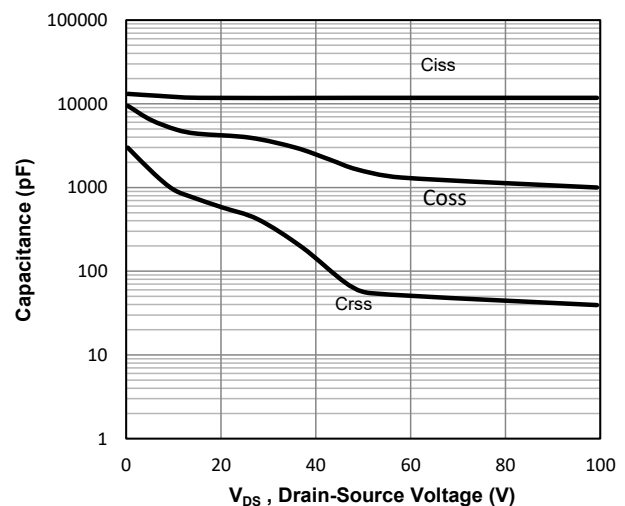
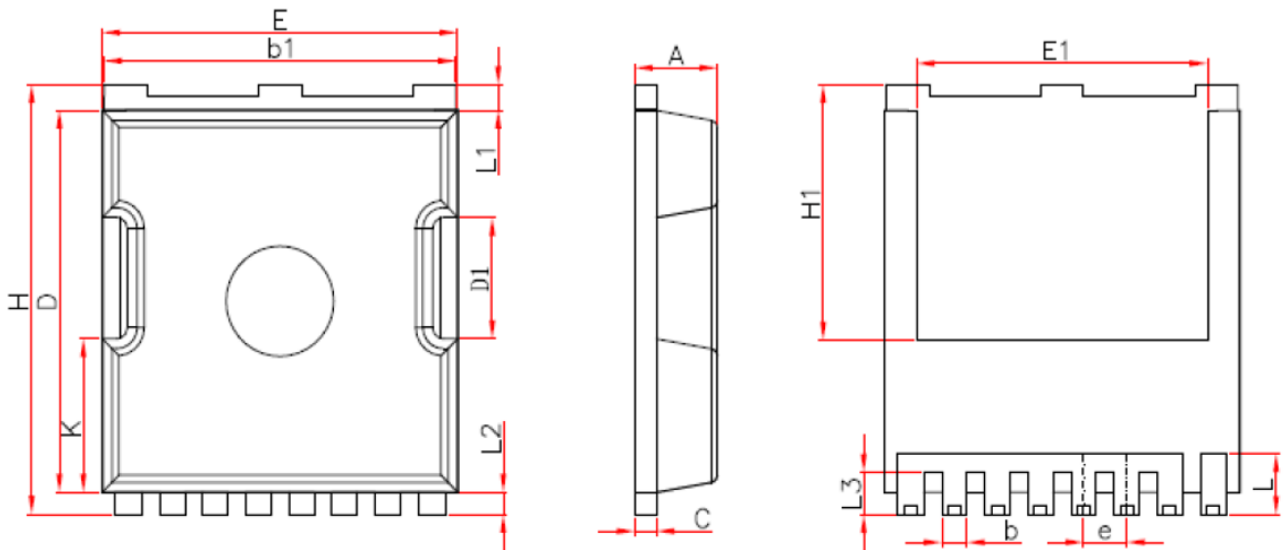


Fig6. Typical Capacitance Vs. Drain-Source Voltage

TOLL-8L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.087	0.094
b	0.700	0.900	0.028	0.035
b1	9.700	9.900	0.382	0.390
C	0.400	0.600	0.016	0.024
D	10.300	10.500	0.406	0.413
D1	3.150	3.450	0.124	0.136
E	9.700	10.100	0.382	0.398
E1	8.000	8.200	0.315	0.323
e	1.100	1.300	0.043	0.051
H	11.600	11.800	0.457	0.465
H1	6.850	7.050	0.270	0.278
K	4.080	4.280	0.161	0.169
L	1.600	2.100	0.063	0.083
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	1.050	1.300	0.041	0.051