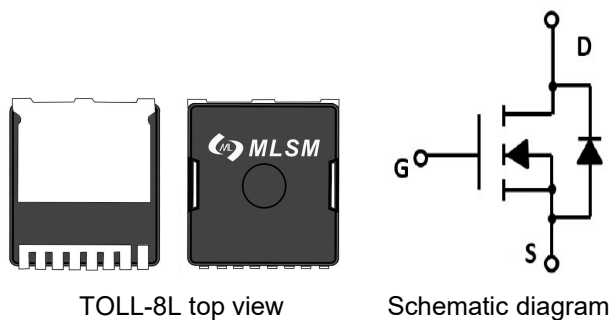


Features

- $R_{DS(on)}_{MAX}=1.5m\Omega@V_{GS}=10V$
- Low gate Charge (typical 262nC)
- Low C_{rss} (typical 73pF)
- 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	$1.2m\Omega@10V$	350A



Application

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



Halogen-Free

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

Symbol	Parameter	Rating	Unit
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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}		2494	mJ
I _S	Diode Continuous Forward Current	Tc=25°C	350	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ C$	1680	A
I_D	Continuous Drain Current	$T_c=25^\circ C$	350	A
P_D	Maximum Power Dissipation	$T_c=25^\circ C$	481	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		25	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MTL1A350AG	TOLL-8L	MTL1A350AG	/	/	/	/

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 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	--	1.2	1.5	mΩ

Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)

C _{ISS}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	--	15995	--	pF
C _{OSS}	Output Capacitance		--	2202	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	73	--	pF

Switching Characteristics

Q _g	Total Gate Charge	V _{DD} =50V, I _D =40A, V _{GS} =10V	--	262	--	nC
Q _{gs}	Gate-Source Charge		--	74.6	--	nC
Q _{gd}	Gate-Drain Charge		--	72	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =50V, I _D =20A, V _{GS} =10V, R _G =1.6Ω	--	40	--	nS
t _r	Turn-on Rise Time		--	32	--	nS
t _{d(off)}	Turn-Off Delay Time		--	100	--	nS
t _f	Turn-off fall Time		--	36	--	nS

Source- Drain Diode Characteristics

V _{SD}	Forward on voltage	T _J =25°C, I _S =40A	--	0.8	1.2	V
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 Note 1:L=0.5mH, R_G=25Ω, V_{GS}=10V, V_{DD}=50V, Start T_J=25°C

Typical Operating Characteristics

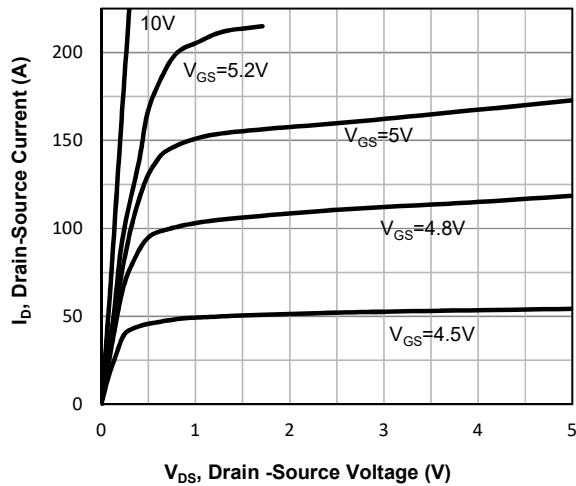


Fig1. Typical Output Characteristics

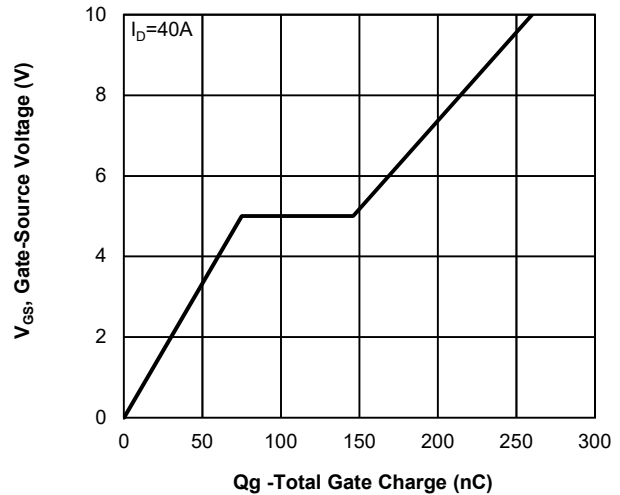


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

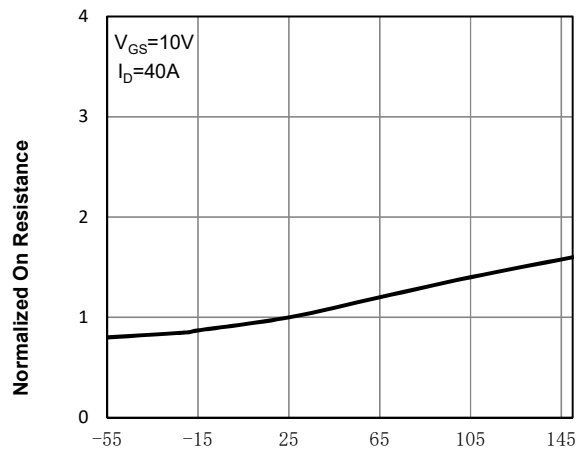


Fig3. Normalized On-Resistance Vs. Temperature

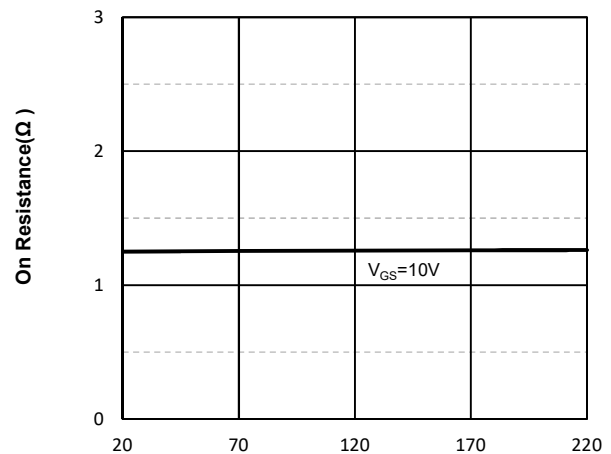


Fig4. On-Resistance Vs. Drain-Source Current

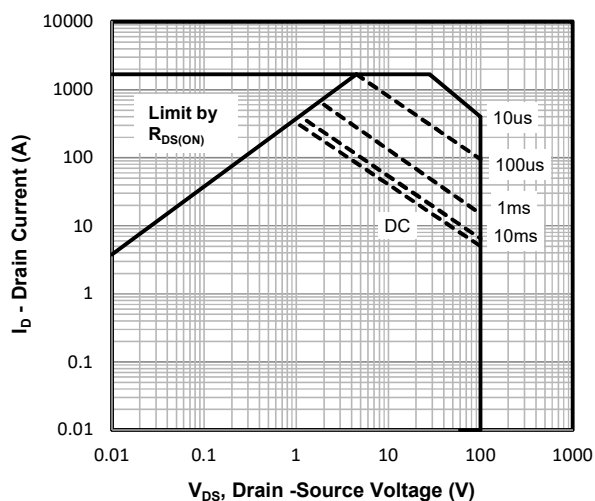


Fig5. Maximum Safe Operating Area

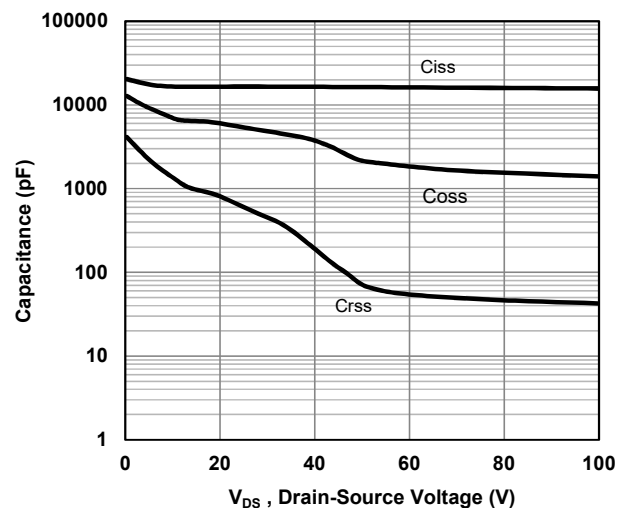
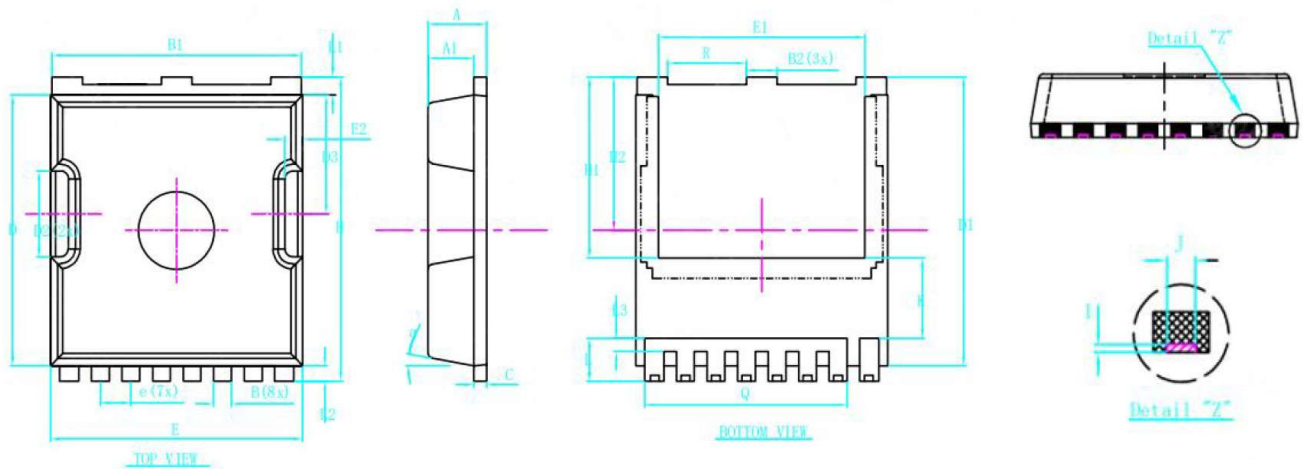


Fig6. Typical Capacitance Vs. Drain-Source Voltage

TOLL-8L Package information


Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.200	2.400	0.088	0.096
A1	1.700	1.900	0.068	0.076
B	0.700	0.900	0.028	0.036
B1	9.700	9.900	0.388	0.396
B2	1.100	1.300	0.044	0.052
c	0.400	0.600	0.016	0.024
D	10.300	10.500	0.412	0.420
D1	11.000	11.200	0.440	0.448
D2	3.200	3.400	0.128	0.136
D3	4.470	4.670	0.178	0.186
E	9.800	10.000	0.392	0.400
E1	8.000	8.200	0.320	0.328
E2	0.500	0.700	0.020	0.028
e	1.200BSC		0.047BSC	
H	11.600	11.800	0.464	0.472
H1	6.95BSC		0.274BSC	
H2	5.900BSC		0.232BSC	
I	0.050	0.150	0.002	0.006
J	0.35REF.		0.014REF.	
K	3.100REF.		0.122REF.	
L	1.550	1.750	0.062	0.070
L1	0.600	0.800	0.024	0.032
L2	0.500	0.700	0.020	0.028
L3	0.400	0.600	0.016	0.024
Q	8.000REF		0.315REF.	
R	3.000	3.200	0.120	0.128
a	10°REF		10°REF	