

Features

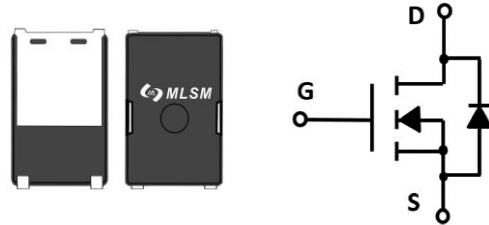
- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery(Qrr)
- Easy to Parallel and Simple to Drive

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
1200V	40mΩ@18V	60A

Application

- Power Factor Correction Modules
- Switch Mode Power Supplies
- DC-AC Inverters
- High Voltage DC/DC Converters



TOLL-4L



Halogen-Free

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

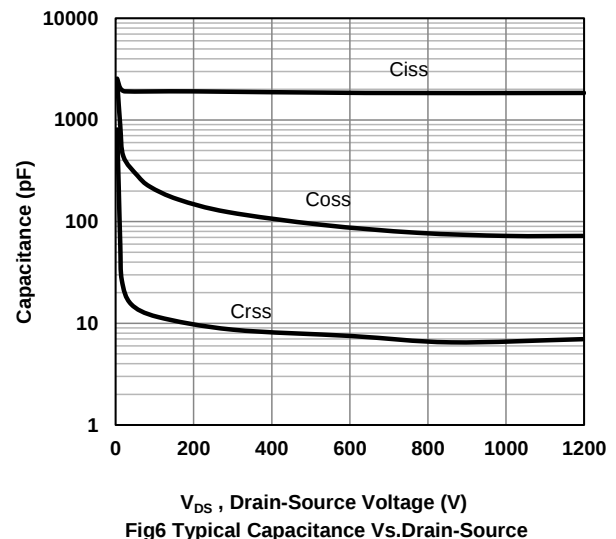
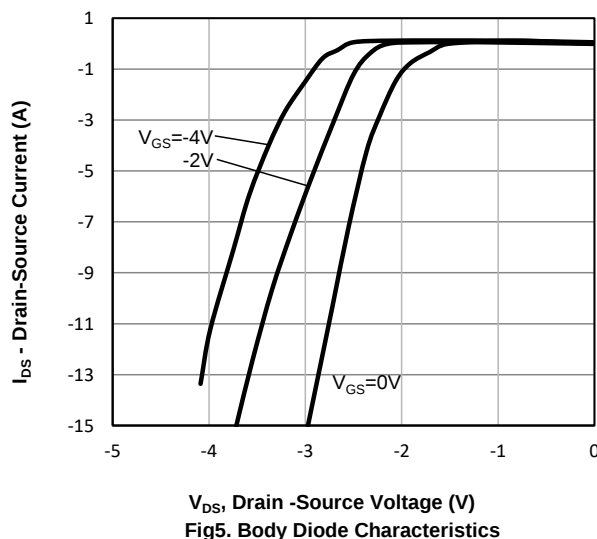
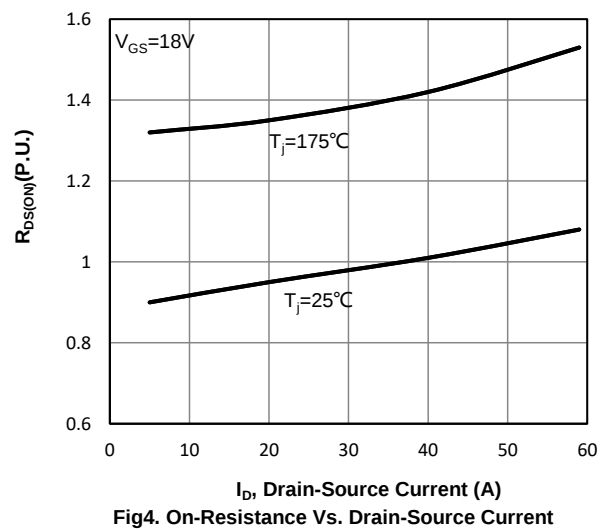
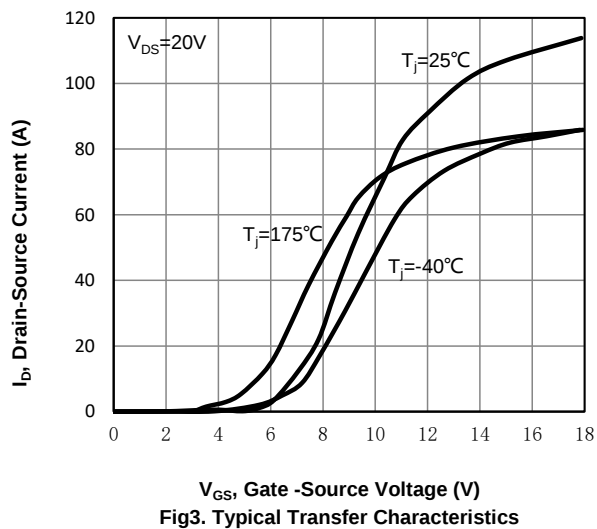
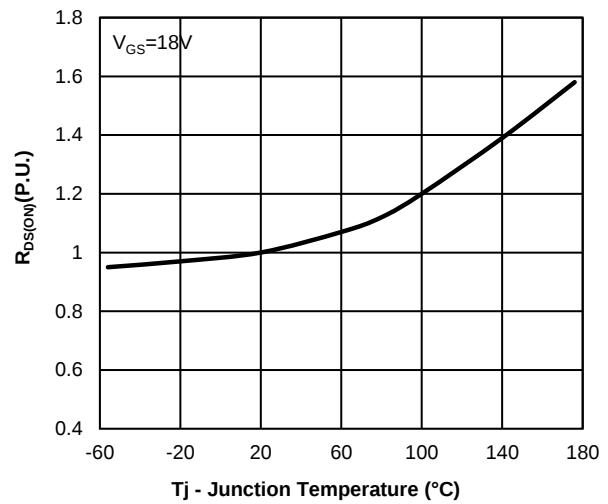
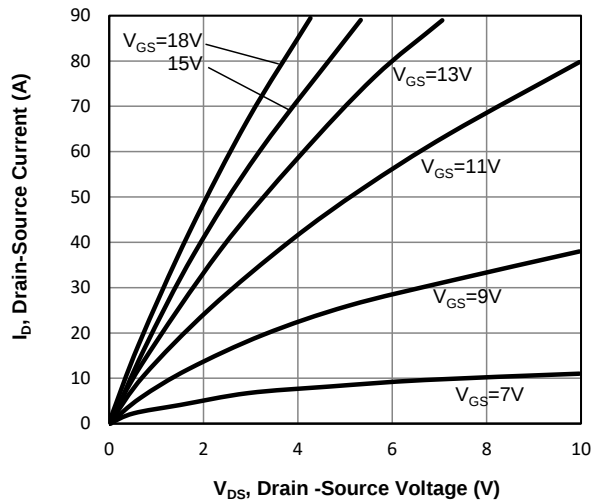
Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	1200	V
V_{GS}	Gate-Source Voltage	-10/+22	V
V_{GSop}	Recommended Operation Voltage of Gate to Source	-4/+18	V
T_J, T_{STG}	Storage Temperature Range	-55 to 175	°C
I_S	Diode Continuous Forward Current	Tc=25°C 60	A
I_{DM}	Pulse Drain Current Tested	Tc=25°C 135	A
		Tc=100°C 100	A
I_D	Continuous Drain Current	Tc=25°C 60	A
		Tc=100°C 50	A
P_D	Maximum Power Dissipation	Tc=25°C 283	W
$R_{th(j-c)}$	Thermal Resistance from Junction-Case	0.529	°C/W

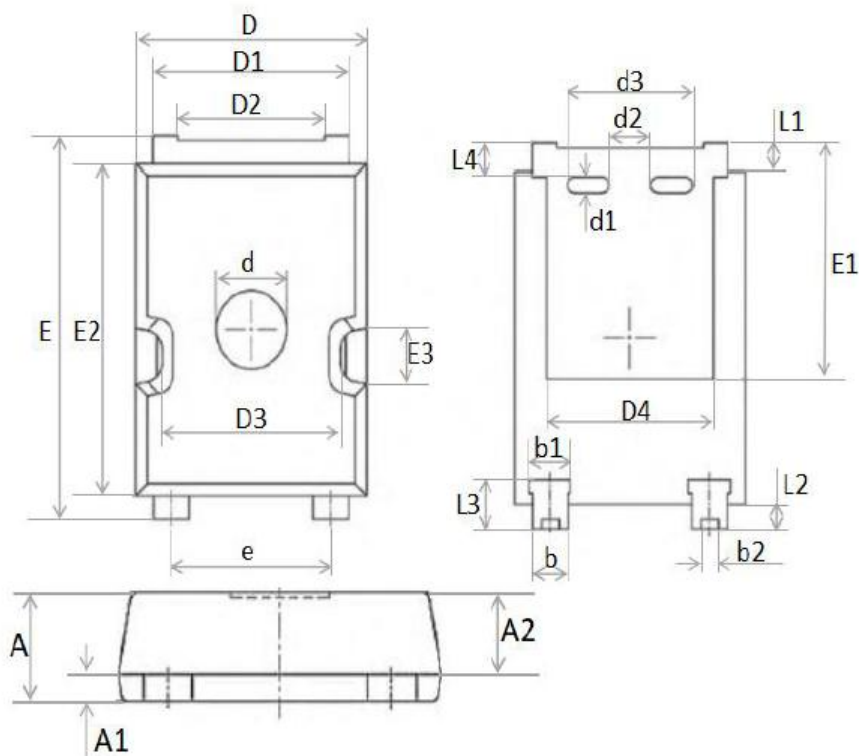
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
ML40C12A	TOLL-4L	ML40C12A	2,500	5,000	35,000	13"reel

Electrical Characteristics (TJ=25℃ unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =500μA	1200	1500	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =1200V, V _{GS} =0V	--	--	10	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =18V, V _{DS} =0V	--	--	100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =9mA	2.0	--	4.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =18V, I _D =40A	--	40	52	mΩ
		V _{GS} =18V, I _D =40A, Tj=175℃	--	62	--	mΩ
Dynamic Electrical Characteristics @ TJ = 25℃ (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =800V, V _{GS} =0V, f=1MHz	--	1860	--	pF
C _{OSS}	Output Capacitance		--	75	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	7	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =800V, I _D =40A, V _{GS} =-4/18V	--	80	--	nC
Q _{gs}	Gate Source Charge		--	3	--	nC
Q _{gd}	Gate Drain Charge		--	13	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =800V, I _D =40A, V _{GS} =-4/18V, R _G =10Ω	--	13	--	nS
t _r	Turn-on Rise Time		--	30	--	nS
t _{d(off)}	Turn-Off Delay Time		--	35	--	nS
t _f	Turn-Off Fall Time		--	10	--	nS
R _g	Gate Resistance	V _{AC} =25mV, f=1MHz	--	2	--	Ω
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25℃, I _S =20A	--	4.5	--	V
I _S	Continuous Diode Forward Current	V _{GS} =-4V, Tj=25℃	--	68	--	A
t _{rr}	Reverse Recovery Time	V _{GS} = 4V, I _{SD} =40A, V _R =800V, di/dt=530A/us, Tj=25℃	--	28	--	ns
Q _{rr}	Reverse Recovery Charge		--	83	--	nC
I _{rrm}	Peak Reverse Recovery Current		--	5.3	--	A

Typical Operating Characteristics



TOLL-4L Package information


Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.900	2.100	0.074	0.082
A1	0.400	0.600	0.015	0.023
A2	1.400	1.600	0.055	0.062
b	0.900	1.100	0.035	0.043
b1	1.090	1.290	0.430	0.051
b2	0.400	0.600	0.016	0.024
D	6.500	6.700	0.256	0.264
D1	5.500	5.700	0.217	0.224
D2	4.100	4.300	0.161	0.169
D3	5.000	5.200	0.196	0.204
D4	4.700	4.900	0.185	0.192
d	2.000REF		0.07874REF	
d1	0.400	0.600	0.016	0.024
d2	1.000	1.200	0.039	0.047
d3	3.600	3.800	0.141	0.149
E	9.800	10.000	0.385	0.393
E1	5.900	6.200	0.232	0.244
E2	8.500	8.700	0.335	0.343
E3	1.400REF		0.05511REF	
e	4.470	4.670	0.176	0.184
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	1.100	1.400	0.043	0.055
L4	0.700	0.900	0.028	0.035