

Features

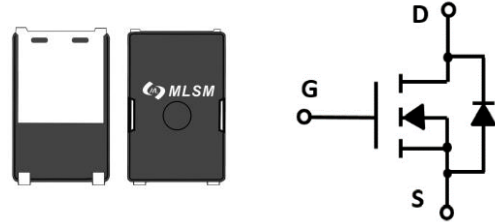
- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery(Qrr)
- Easy to Parallel and Simple to Drive

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
750V	340mΩ@15V	12A

Application

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



TOLL-4L



Halogen-Free

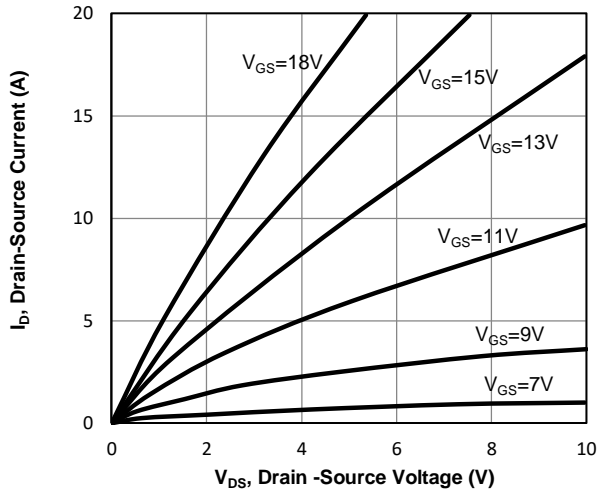
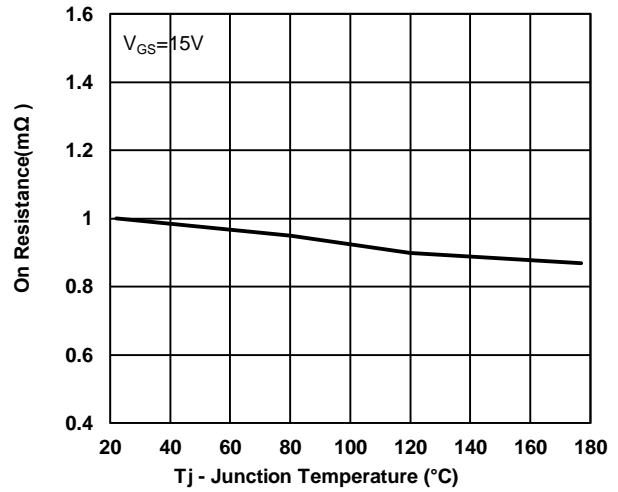
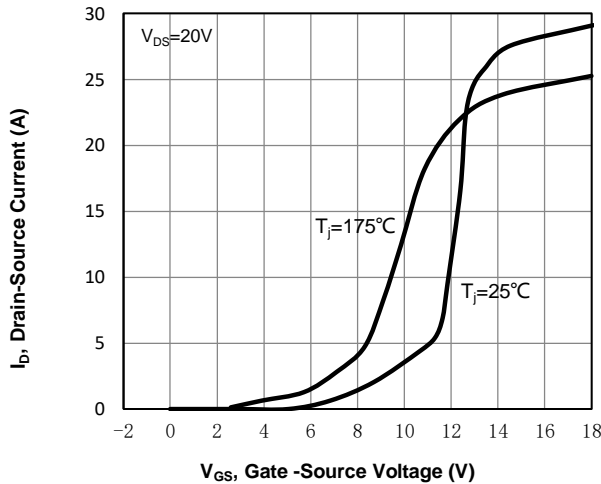
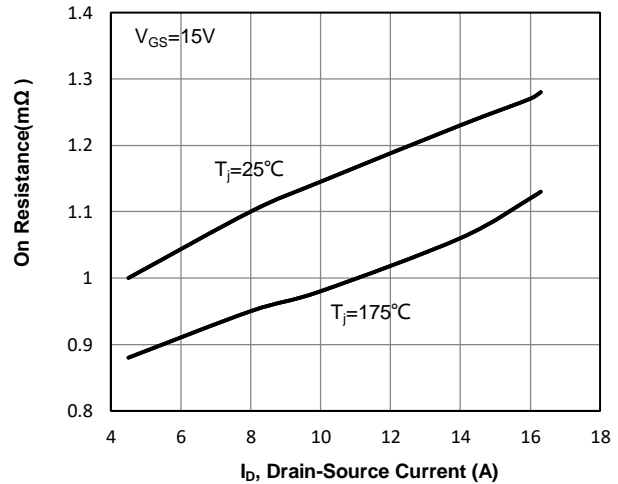
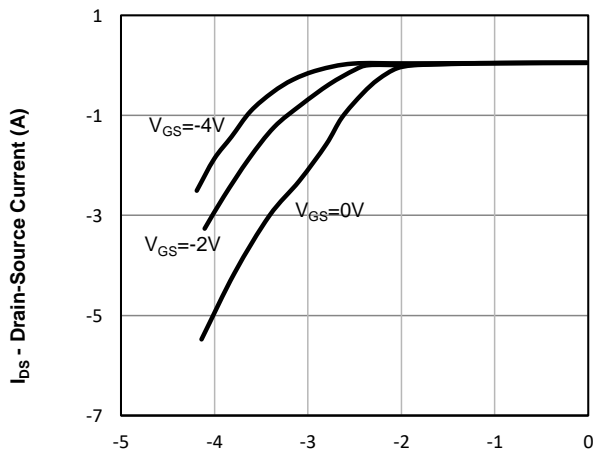
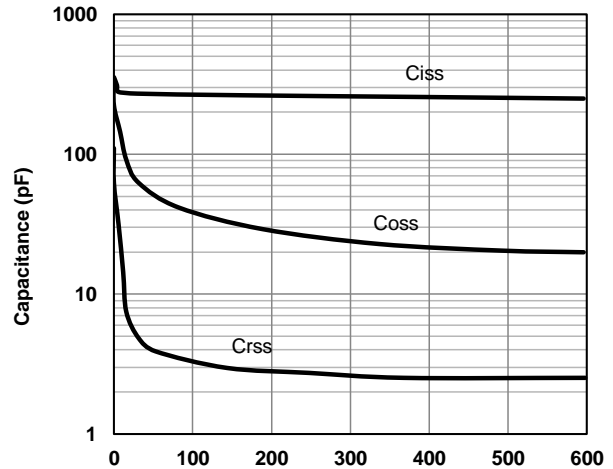
Absolute Maximum Ratings (TA=25°C unless otherwise noted)

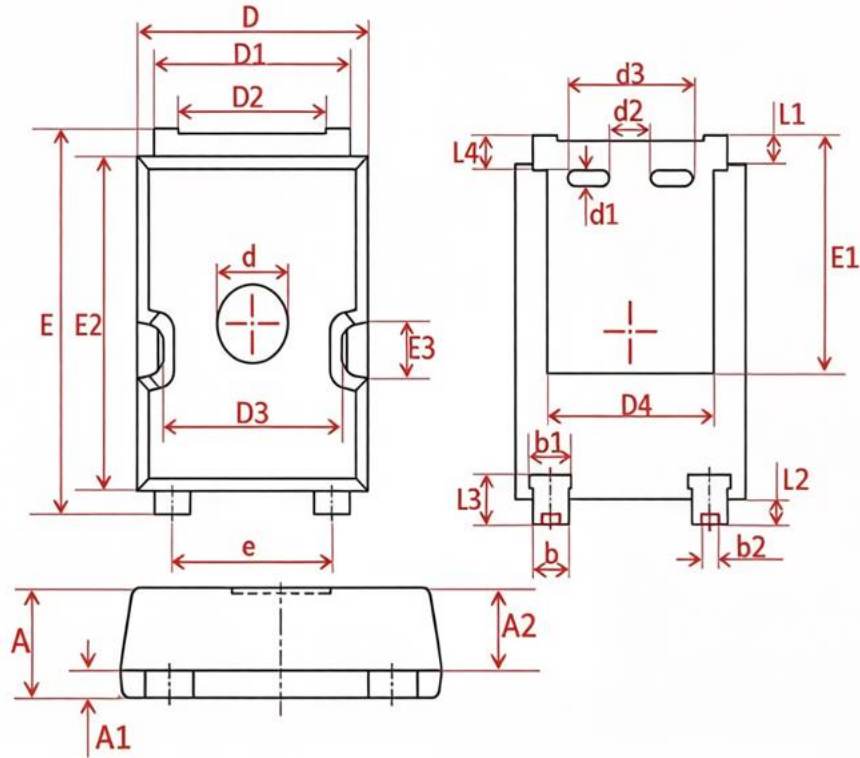
Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	750	V
V_{GS}	Gate-Source Voltage	-10/+22	V
V_{GSop}	Recommended Operation Voltage of Gate to Source	0/+15	V
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	°C
I_S	Diode Continuous Forward Current	$T_C=25^\circ C$ 12	A
I_{DM}	Pulse Drain Current Tested	$T_C=25^\circ C$ 24	A
		$T_C=175^\circ C$ 20	A
I_D	Continuous Drain Current	$T_C=25^\circ C$ 12	A
		$T_C=175^\circ C$ 10	A
P_D	Maximum Power Dissipation	$T_C=25^\circ C$ 24	W
E_{AS}	Single Pulsed Avalanche Energy	50	mJ
$R_{th(j-c)}$	Thermal Resistance from Junction-Case	6.25	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
ML340C7F	TOLL-4L	ML340C7F	2,500	5,000	35,000	13" reel

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)						
B _{V(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =500μA	750	830	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =750V, V _{GS} =0V	--	--	10	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =18V, V _{DS} =0V	--	--	250	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =1.8mA	3.0	--	5.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =18V, I _D =5A	--	260	--	mΩ
		V _{GS} =18V, I _D =5A, T _J =175°C	--	270	--	mΩ
		V _{GS} =15V, I _D =5A	--	330	390	mΩ
		V _{GS} =15V, I _D =5A, T _J =175°C	--	355	--	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =500V, V _{GS} =0V, f=1MHz	--	254	--	pF
C _{OSS}	Output Capacitance		--	20.2	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	2.4	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =500V, I _D =5A, V _{GS} =0/15V	--	8.8	--	nC
Q _{gs}	Gate Source Charge		--	3.3	--	nC
Q _{gd}	Gate Drain Charge		--	1.2	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =500V, I _D =5A, V _{GS} =0/15V, R _G =10Ω	--	24	--	nS
t _r	Turn-on Rise Time		--	42	--	nS
t _{d(off)}	Turn-Off Delay Time		--	26.8	--	nS
t _f	Turn-Off Fall Time		--	76	--	nS
R _g	Gate Resistance	V _{AC} =25mV, f=1MHz	--	25	--	Ω
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =3A	--	3.5	--	V
I _S	Continuous Diode Forward Current	V _{GS} =0V, T _J =25°C	--	12	--	A
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _{SD} =5A, V _R =500V, di/dt=530A/us, T _J =25°C	--	10.9	--	ns
Q _{rr}	Reverse Recovery Charge		--	28	--	nC
I _{rrm}	Peak Reverse Recovery Current		--	3.9	--	A

Typical Operating Characteristics

Fig1. Typical Output Characteristics

Fig2. Normalized On-Resistance Vs. Temperature

Fig3. Typical Transfer Characteristics

Fig4. On-Resistance Vs. Drain-Source Current

Fig5. Body Diode Characteristics

Fig6 Typical Capacitance Vs. Drain-Source

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