Features

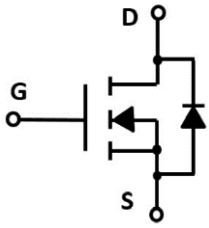
- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery(Qrr)
- Easy to Parallel and Simple to Drive

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
750V	180mΩ@15V	20A

Application

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



TOLL-4L

Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃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	Tc=25°C	20	A
I_{DM}	Pulse Drain Current Tested	Tc=25°C	40	A
		Tc=100°C	36	A
I_D	Continuous Drain Current	Tc=25°C	20	A
		Tc=100°C	18	A
P_D	Maximum Power Dissipation	Tc=25°C	33	W
E_{AS}	Single Pulsed Avalanche Energy		220	mJ
$R_{th(j-c)}$	Thermal Resistance from Junction-Case		4.5	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
ML180C7F	TOLL-4L	ML180C7F	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°C (unless otherwise stated)						
$BV_{(BR)DSS}$	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=8.5A	--	120	--	mΩ
		V_{GS}=18V，I_D=8.5A，Tj=175℃	--	130	--	mΩ
		V_{GS}=15V，I_D=8.5A	--	180	240	mΩ
		V_{GS}=15V，I_D=8.5A，Tj=175℃	--	160	--	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=500V，V_{GS}=0V，f=1MHz	--	491	--	pF
C_{OSS}	Output Capacitance		--	39	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	4.2	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=500V，I_D=5A，V_{GS}=0/15V	--	28.6	--	nC
Q_{gs}	Gate Source Charge		--	8.3	--	nC
Q_{gd}	Gate Drain Charge		--	13.8	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=500V，I_D=5A，V_{GS}=0/15V，R_G=10Ω	--	16	--	nS
t_r	Turn-on Rise Time		--	55	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	34	--	nS
t_f	Turn-Off Fall Time		--	71	--	nS
R_g	Gate Resistance	V_{AC}=25mV, f=1MHz	--	6.5	--	Ω
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=5A	--	3.4	--	V
I_S	Continuous Diode Forward Current	V_{GS}=0V，Tj=25℃	--	20	--	A
t_{rr}	Reverse Recovery Time	V_{GS} = 0V, I_{SD}=8.55A, V_R=500V, di/dt=530A/us, Tj=25℃	--	17.6	--	ns
Q_{rr}	Reverse Recovery Charge		--	43	--	nC
I_{rrm}	Peak Reverse Recovery Current		--	4.2	--	A

Typical Operating Characteristics

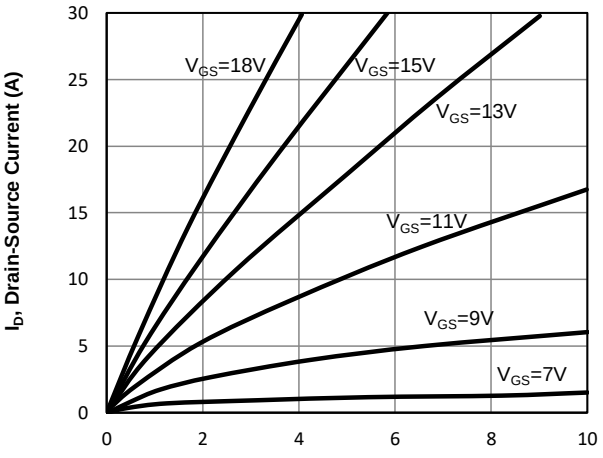


Fig1. Typical Output Characteristics

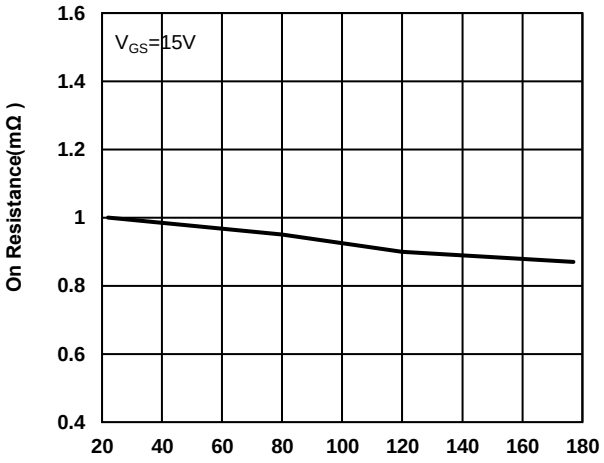


Fig2. Normalized On-Resistance Vs. Temperature

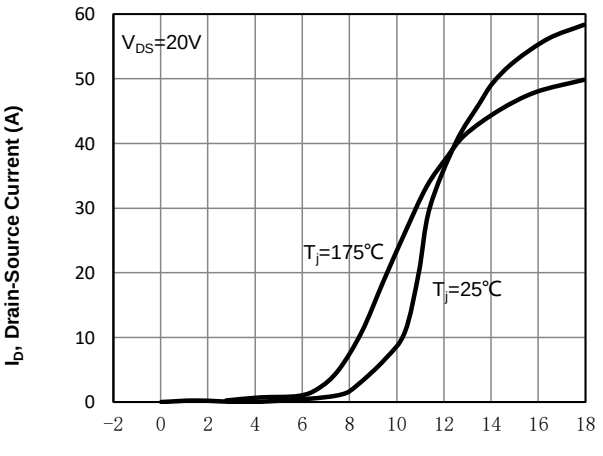


Fig3. Typical Transfer Characteristics

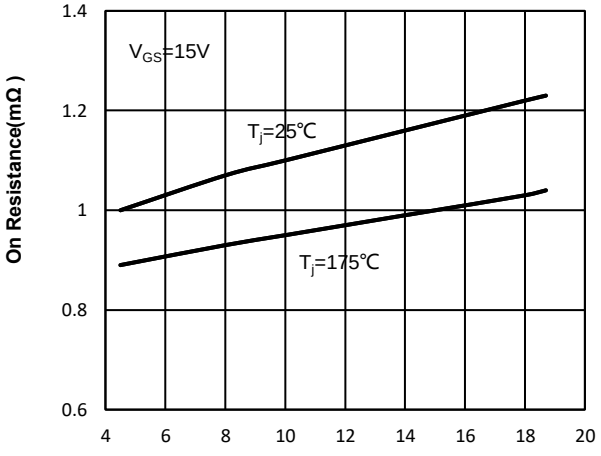


Fig4. On-Resistance Vs. Drain-Source Current

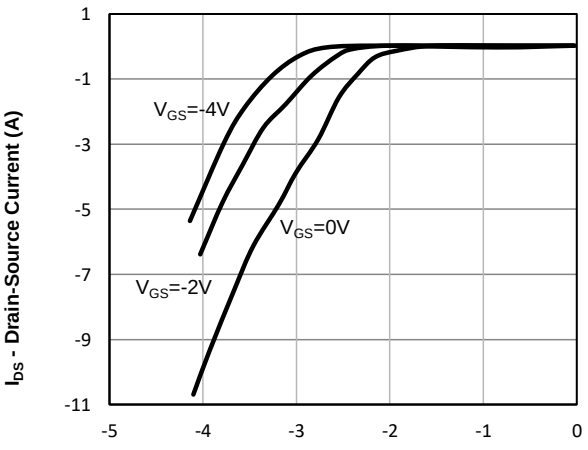


Fig5. Body Diode Characteristics

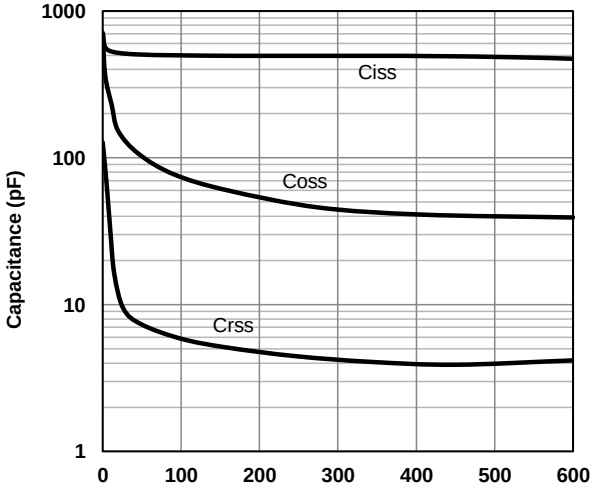
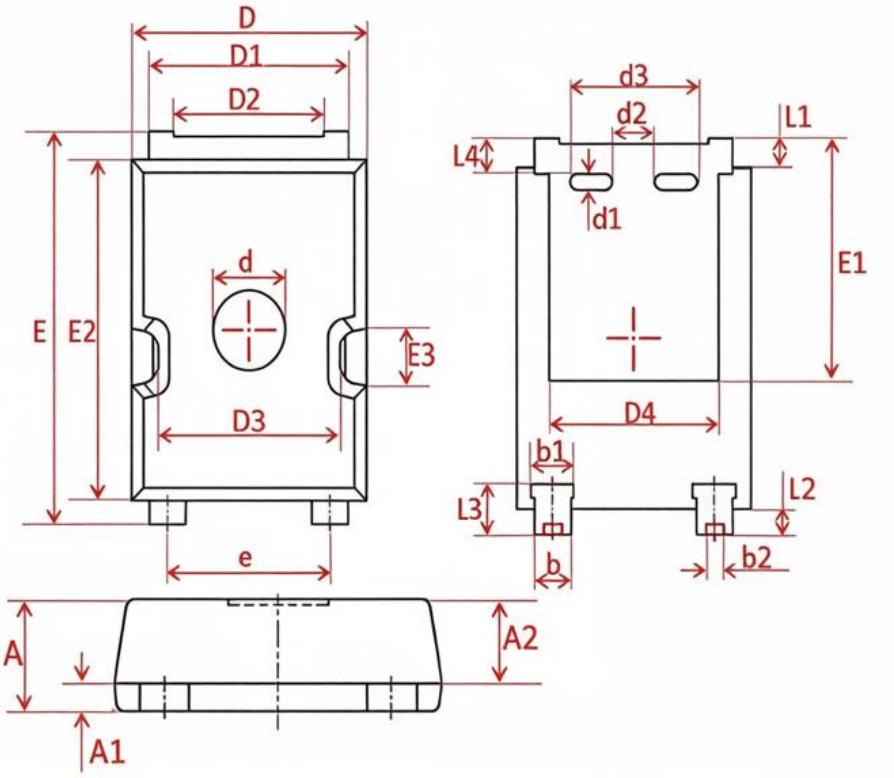


Fig6 Typical Capacitance Vs.Drain-Source

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