MTL0E250AG

40V/250A N-Channel MOSFET

Features

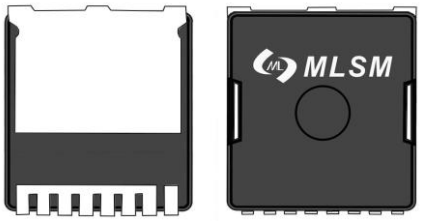
- High Speed Power Switching,Logic level
- Enhanced Body diode DV/DT capability
- Ehanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- Lead Free, Halogen Free

Application

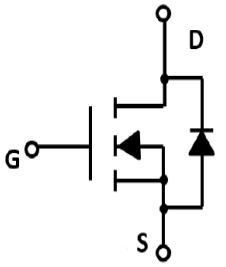
- DC/DC Converter
- Motor Drivers
- Ideal for high-frequency switching and synchronous rectification

Product Summary

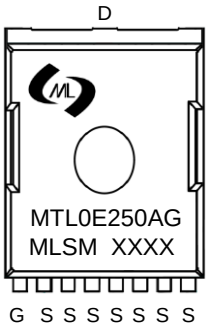
V_{DS}	$R_{DS(ON)}$ TYP	I_D
40V	1.2mΩ@10V	250A
	1.6mΩ@4.5V	



TOLL-8L view



Schematic diagram



MTL0E250AG: Device code
XXXX: Code

Marking and pin assignment

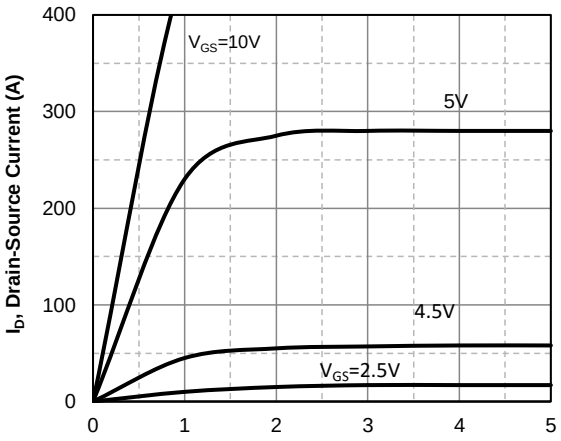
Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (T_A=25℃unless otherwise noted)				
Symbol	**Parameter**		**Rating**	**Unit**
Common Ratings (T_C=25°C Unless Otherwise Noted)				
V_{DS}	Drain-Source Breakdown Voltage		40	V
V_{GS}	Gate-Source Voltage		±20	V
E_{AS}	Single pulse avalanche energy		676	mJ
T_J,T_{STG}	Storage Temperature Range		-55 to 150	°C
I_S	Diode Continuous Forward Current	Tc=25°C	250	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	1000	A
I_D	Continuous Drain Current	Tc=25°C	250	A
P_D	Maximum Power Dissipation	Tc=25°C	300	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		55	°C/W

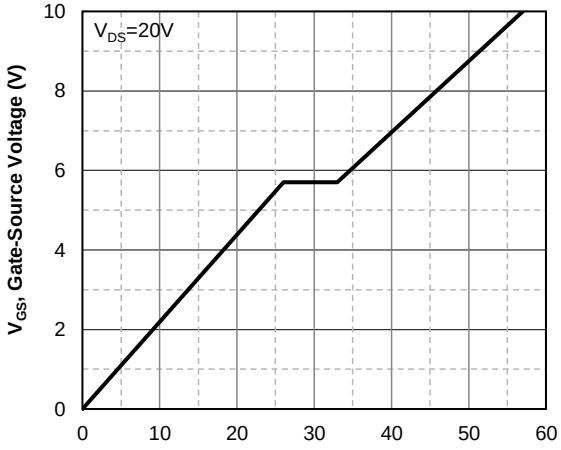
Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MTL0E250AG	TOLL-8L	MTL0E250AG	2,000	2,000	14,000	13"reel

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=250μA	40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V，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	1.0	1.8	2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V， I_D=30A	--	1.2	1.9	mΩ
		V_{GS}=4.5V， I_D=20A	--	1.6	2.5	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=20V，V_{GS}=0V， f=500KHz	--	4380	--	pF
C_{OSS}	Output Capacitance		--	1490	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	30	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=20V，I_D=55A，V_{GS}=10V	--	56	--	nC
Q_{gs}	Gate Source Charge		--	27	--	nC
Q_{gd}	Gate Drain Charge		--	5.6	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=20V，I_D=55A，V_{GS}=10V，R_G=3Ω	--	22	--	nS
t_r	Turn-on Rise Time		--	8.5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	44	--	nS
t_f	Turn-Off Fall Time		--	51.8	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=30A，	--	0.9	1.2	V

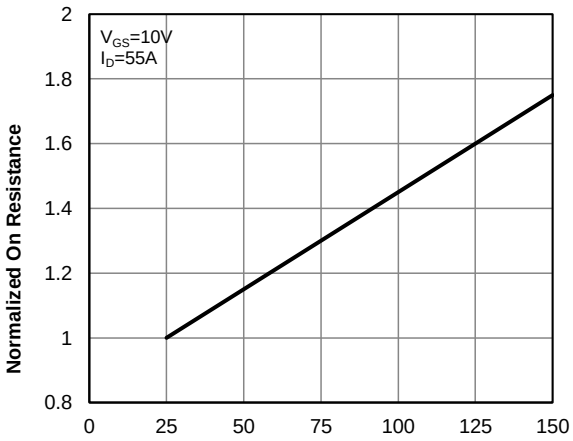
Typical Operating Characteristics



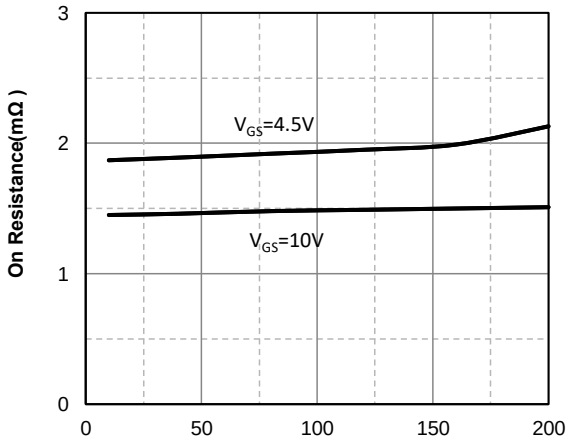
V_{DS}, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



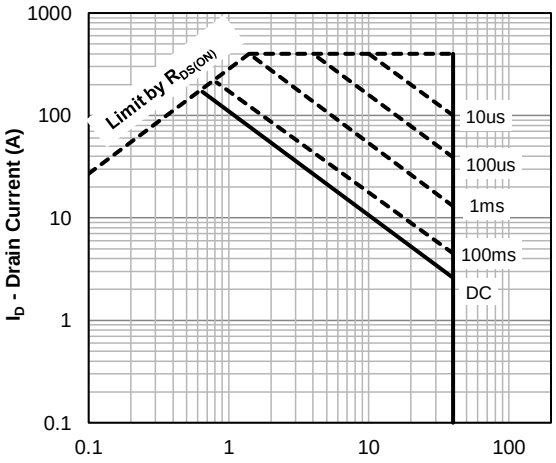
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



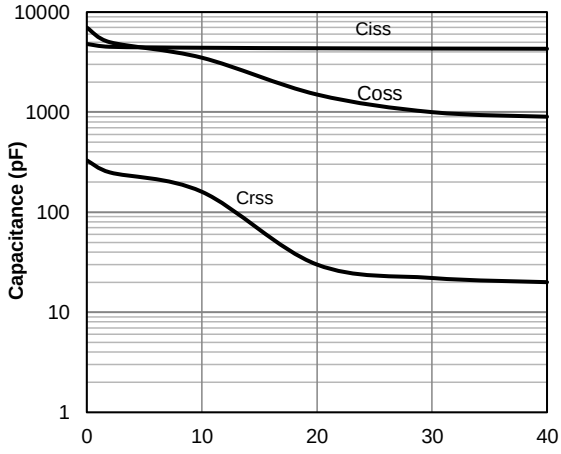
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



I_D, Drain-Source Current (A)
Fig4. On-Resistance Vs. Drain-Source Current

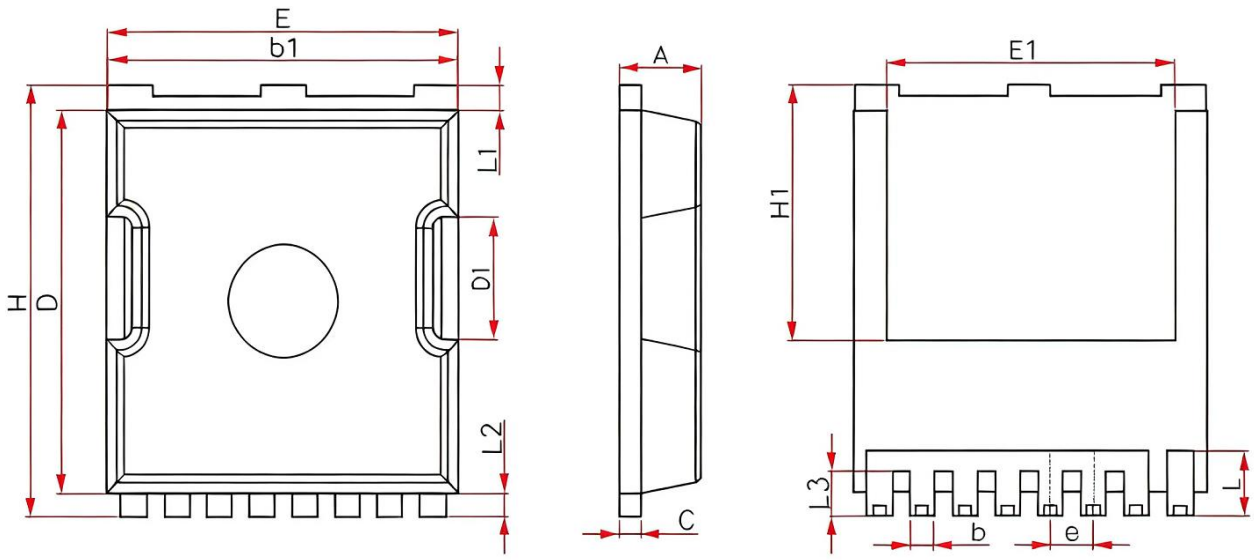


V_{DS}, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



V_{DS} , Drain-Source Voltage (V)
Fig6 Typical Capacitance Vs.Drain-Source Voltage

PDFN5X6-8L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	2.150	2.450	0.085	0.096
b	0.600	0.900	0.024	0.035
b1	9.650	9.950	0.380	0.392
C	0.350	0.650	0.014	0.026
D	10.180	10.700	0.401	0.421
D1	3.150	3.450	0.124	0.136
E	9.700	10.100	0.382	0.398
E1	7.350	8.450	0.289	0.333
e	1.100	1.300	0.043	0.051
H	11.450	11.950	0.451	0.470
H1	6.550	7.500	0.258	0.295
L	1.350	2.100	0.053	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