MLSK1005A

100V/5A N-Channel MOSFET

Features

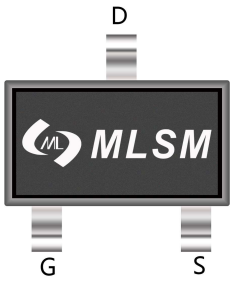
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Application

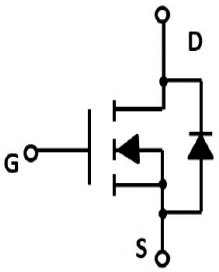
- Consumer electronic power supply
- Motor control
- Synchronous-rectification
- Isolated DC/DC convertor

Product Summary

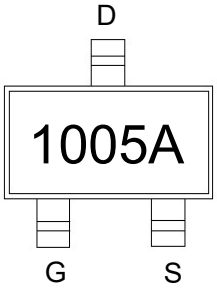
V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
100V	140mΩ@10V	5A
	170mΩ@4.5V	



SOT-23-3L top view



Schematic diagram



1005A: Device code

Marking and pin assignment

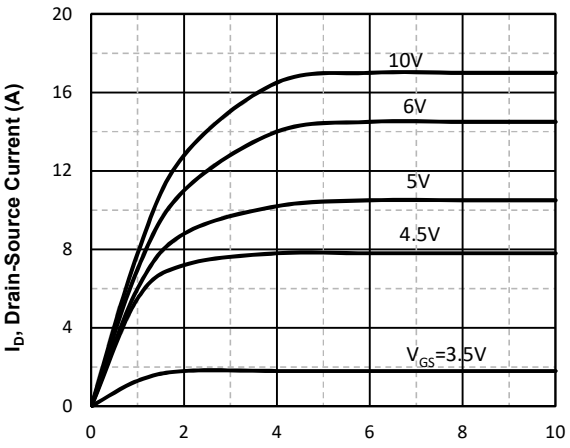
Pb-Free RoHS HAL Halogen-Free

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		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
I_S	Diode Continuous Forward Current	Tc=25°C	5	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	20	A
I_D	Continuous Drain Current	Tc=25°C	5	A
P_D	Maximum Power Dissipation	Tc=25°C	1.5	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		83	°C/W

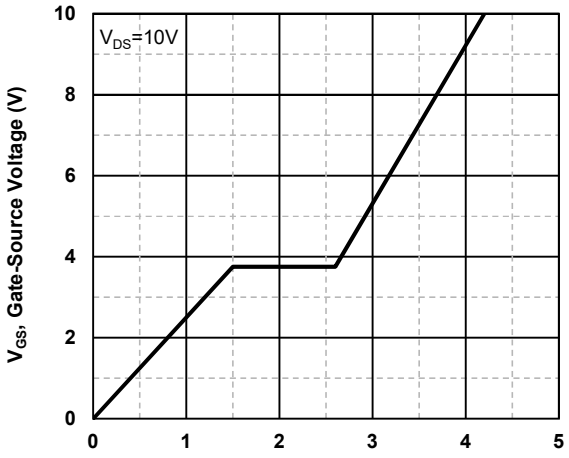
Ordering Information (Example)						
Type	**Package**	**Marking**	**Minimum Package(pcs)**	**Inner Box Quantity(pcs)**	**Outer Carton Quantity(pcs)**	**Delivery Mode**
MLSK1005A	SOT-23-3L	1005A	3,000	45,000	180,000	7"reel

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	100	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=100V, V_{GS}=0V	--	--	1	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=3A	--	105	140	mΩ
		V_{GS}=4.5V, I_D=2A	--	140	170	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz	--	212	--	pF
C_{OSS}	Output Capacitance		--	27.5	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	1.6	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=50V, I_D=3A, V_{GS}=10V	--	3.3	--	nC
Q_{gs}	Gate Source Charge		--	0.35	--	nC
Q_{gd}	Gate Drain Charge		--	0.87	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V, I_D=3A, V_{GS}=10V, R_G=2Ω	--	13.2	--	nS
t_r	Turn-on Rise Time		--	2.2	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	11	--	nS
t_f	Turn-Off Fall Time		--	1.1	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=5A	--	--	1.2	V

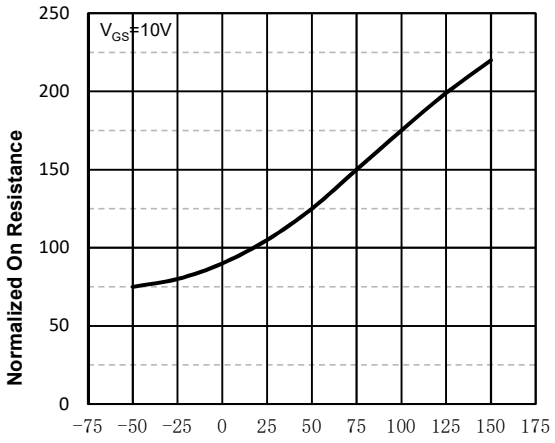
Typical Operating Characteristics



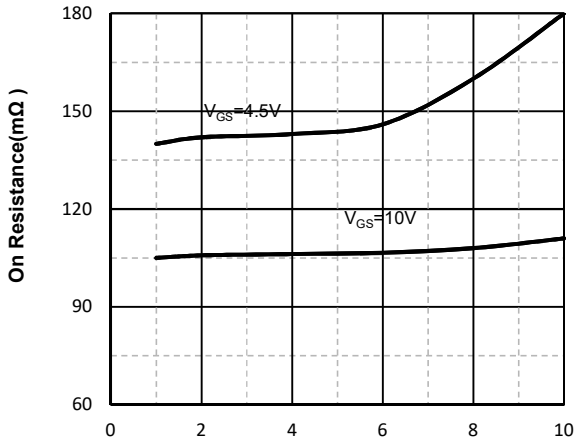
V_{DS}, Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



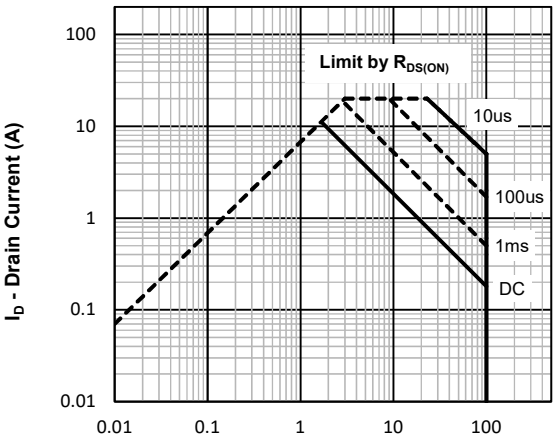
Qg -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs.Gate-Source Voltage



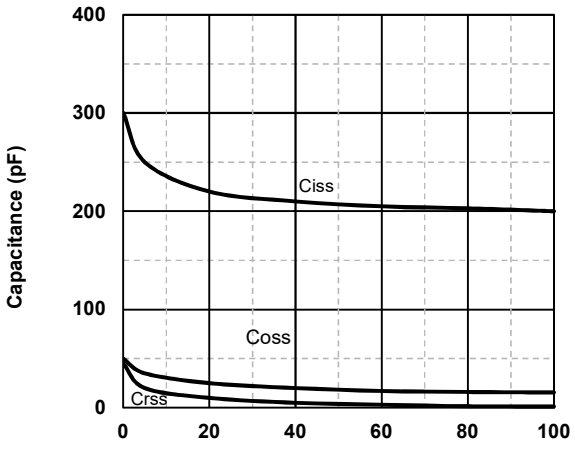
Tj - Junction Temperature (°C)
Fig3. Normalized On-Resistance Vs. Temperature



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

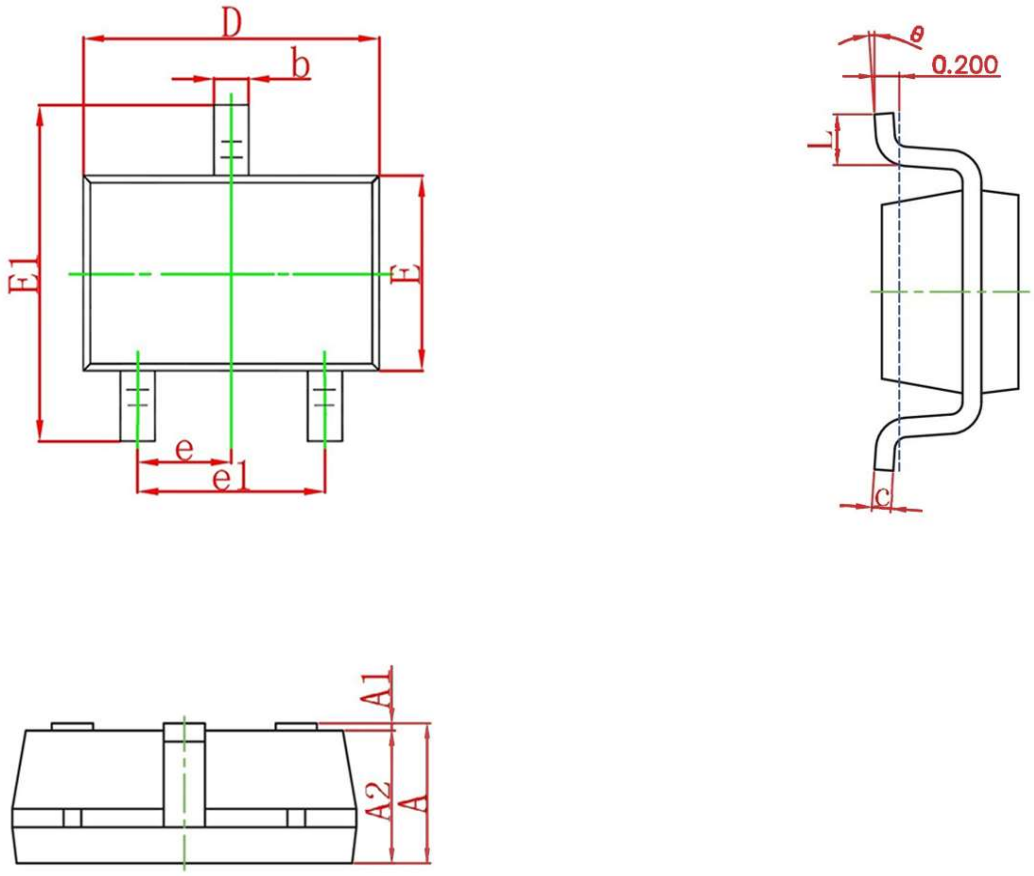


V_{DS}, Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



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

SOT-23-3L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.042	0.050
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.042	0.046
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.112	0.120
E	1.500	1.700	0.060	0.068
E1	2.650	2.950	0.106	0.118
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°