

Features

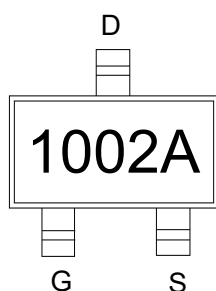
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Application

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

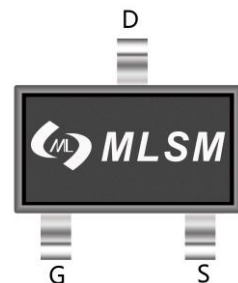
Product Summary

V_{DS}	$R_{DS(on)}$ TYP	I_D
100V	180mΩ@10V	2A
	200mΩ@4.5V	

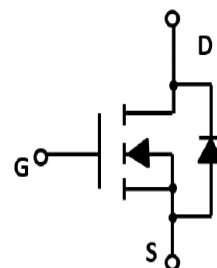


1002A: Device code

Marking and pin assignment



SOT-23-3L top view



Schematic diagram



Pb-Free



RoHS



Halogen-Free

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

Symbol	Parameter	Rating	Unit
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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	$T_c=25^\circ\text{C}$ 2	A

Mounted on Large Heat Sink

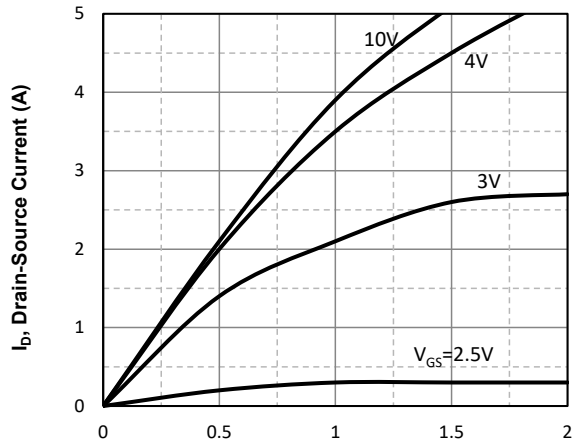
I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$ 11	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$ 2	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$ 1.5	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	85	°C/W

Ordering Information (Example)

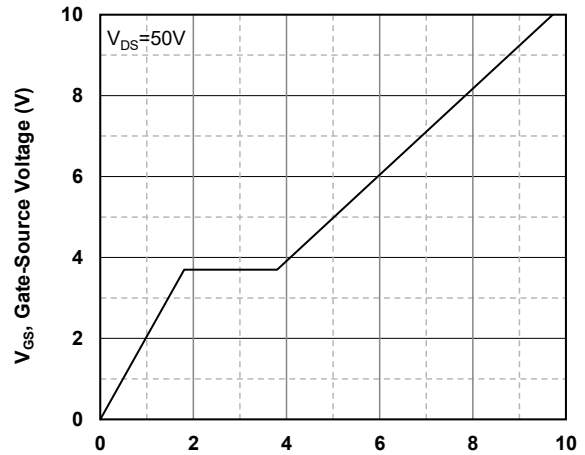
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSK1002A	SOT-23-3L	1002A	3,000	45,000	180,000	7"reel

Electrical Characteristics (TJ=25°C 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	VGS=0V, ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V, VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V, VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1	1.8	2.5	V
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=2A	--	180	250	mΩ
		VGS=4.5V, ID=2A	--	200	300	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=50V, VGS=0V, f=1MHz	--	387	--	pF
COSS	Output Capacitance		--	31	--	pF
CRSS	Reverse Transfer Capacitance		--	28	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=50V, ID=2A, VGS=10V	--	9.5	--	nC
Qgs	Gate Source Charge		--	1.8	--	nC
Qgd	Gate Drain Charge		--	1.98	--	nC
td(on)	Turn-on Delay Time	VDS=50V, ID=1.3A, VGS=10V, RG=1Ω	--	4	--	nS
tr	Turn-on Rise Time		--	18	--	nS
td(off)	Turn-Off Delay Time		--	13.5	--	nS
tf	Turn-Off Fall Time		--	28	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	TJ=25°C, IS=2A	--	--	1.2	V

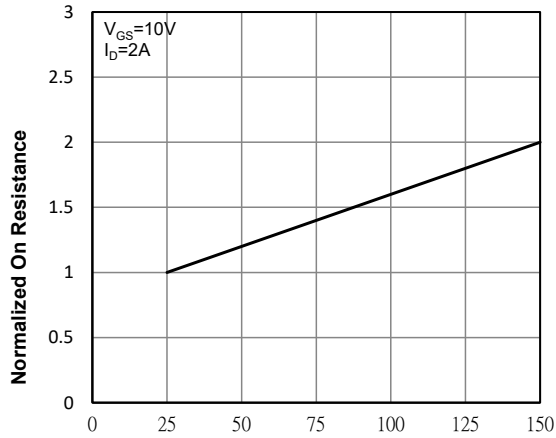
Typical Operating Characteristics



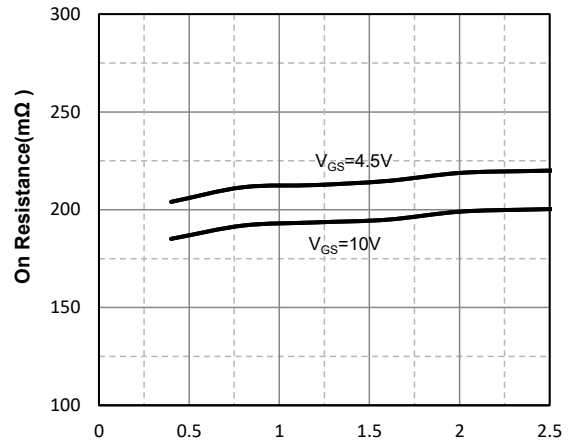
V_{DS} , Drain -Source Voltage (V)
Fig1. Typical Output Characteristics



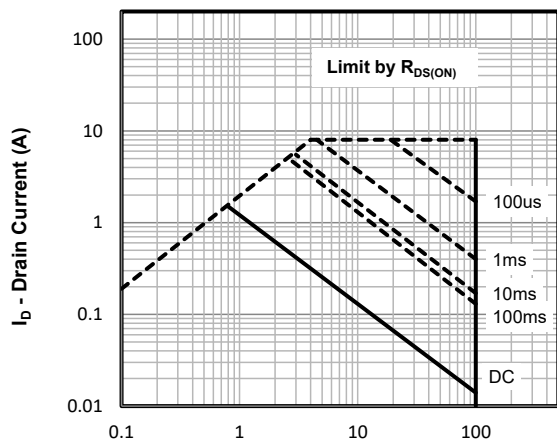
Q_g -Total Gate Charge (nC)
Fig2. Typical Gate Charge Vs. Gate-Source Voltage



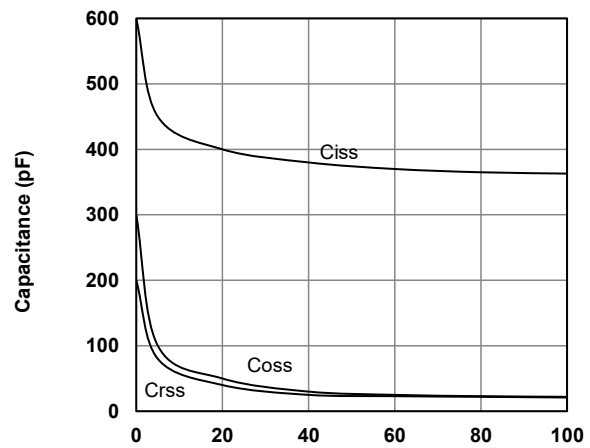
T_j - Junction Temperature ($^{\circ}C$)
Fig3. Normalized On-Resistance Vs. Temperature



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

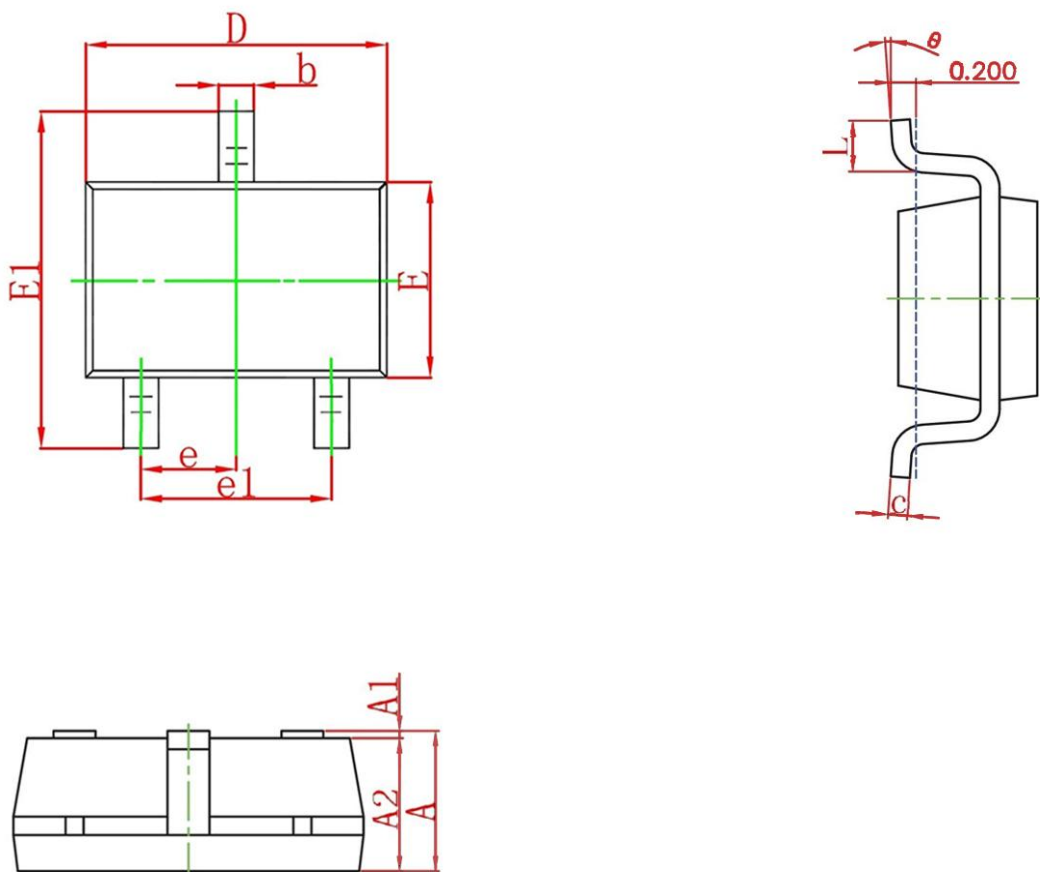


V_{DS} , Drain -Source Voltage (V)
Fig5. Maximum Safe Operating Area



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°