

Features

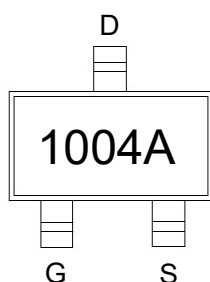
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Fast switching and soft recovery

Application

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

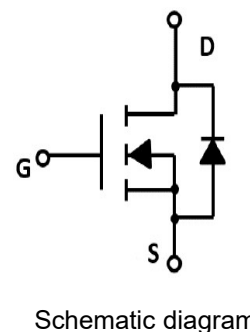
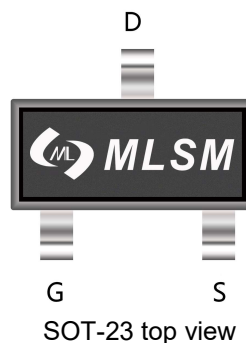
Product Summary

V_{DS}	$R_{DS(on)}$ MAX	I_D MAX
100V	160mΩ@10V	4A
	200mΩ@4.5V	



1004A : Device code

Marking and pin assignment



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	Tc=25°C	4	A

Mounted on Large Heat Sink

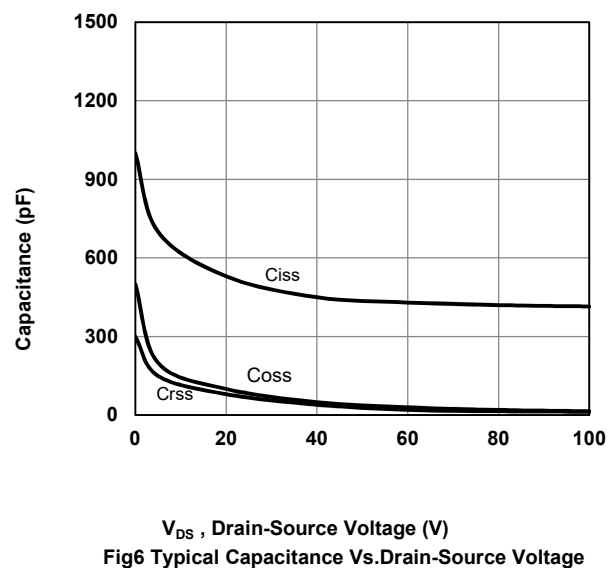
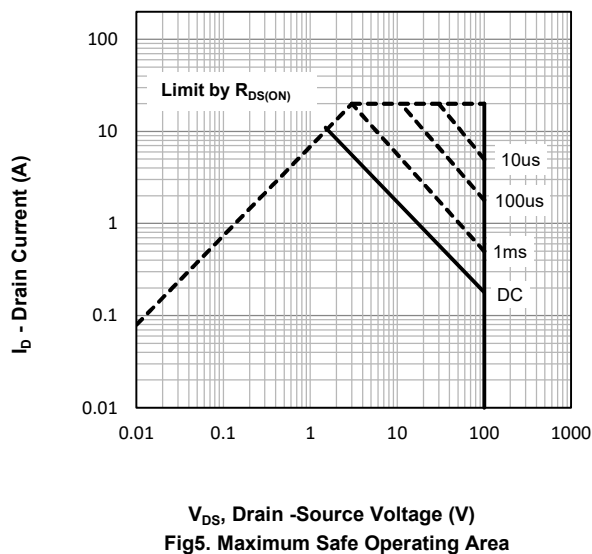
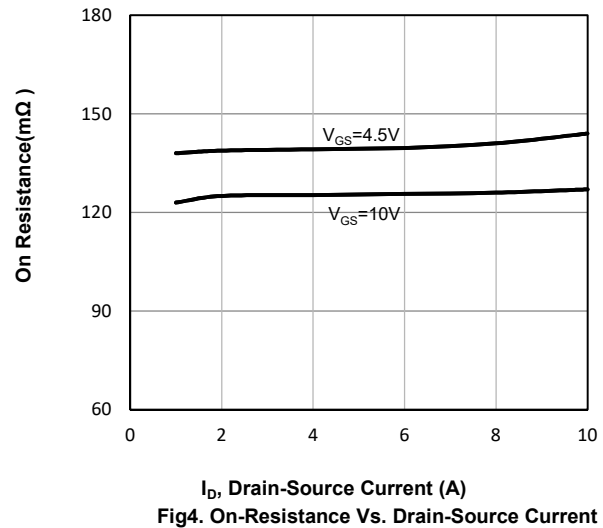
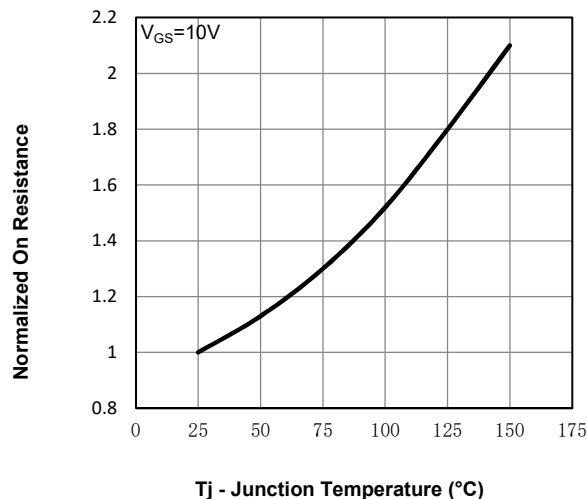
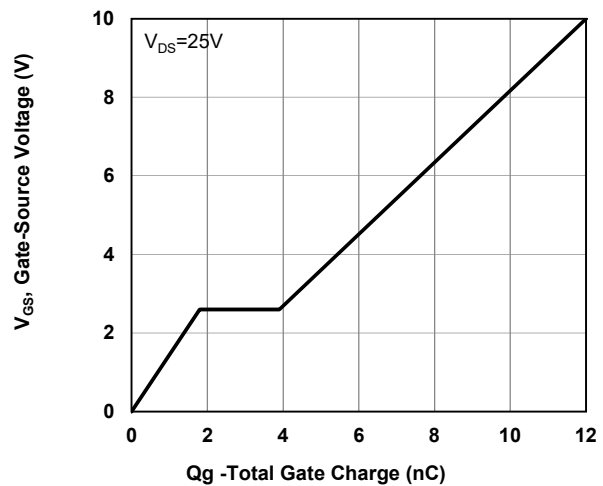
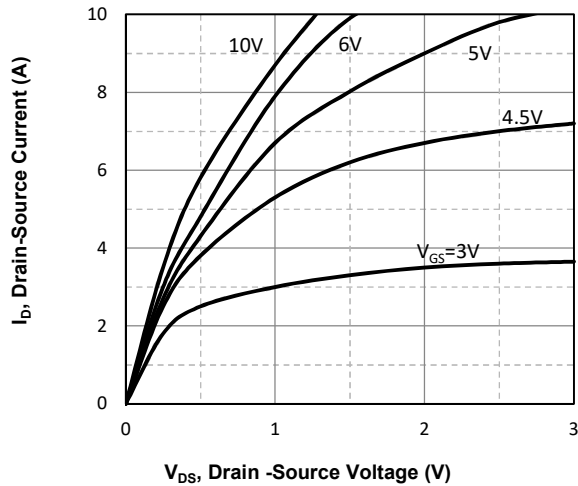
I_{DM}	Pulse Drain Current Tested	$T_c=25^\circ\text{C}$	15	A
I_D	Continuous Drain Current	$T_c=25^\circ\text{C}$	4	A
P_D	Maximum Power Dissipation	$T_c=25^\circ\text{C}$	1.35	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		85	°C/W

Ordering Information (Example)

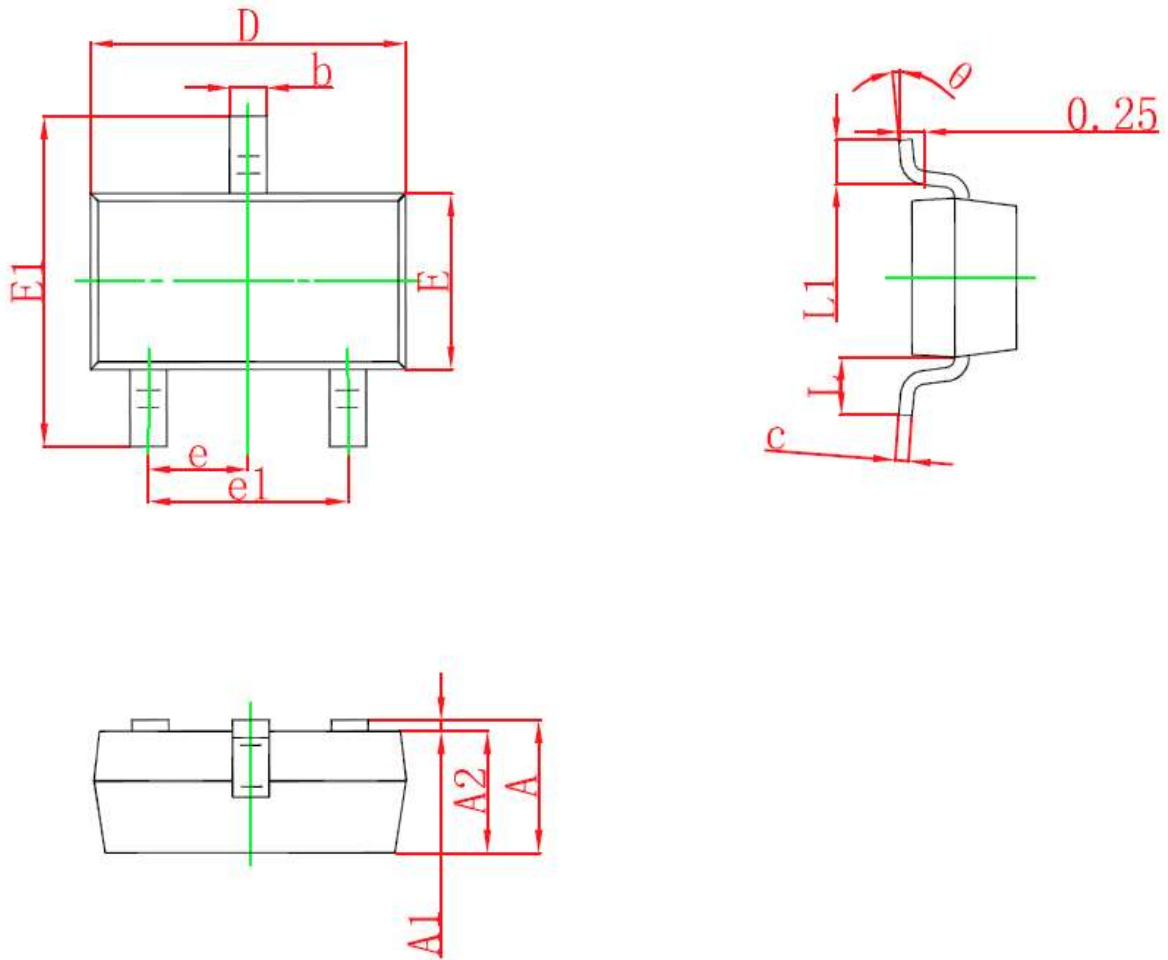
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLS1004A	SOT-23	1004A	3,000	45,000	180,000	7"reel

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	1.0	1.8	2.5	V
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=3A	--	124	160	mΩ
		VGS=4.5V, ID=2A	--	138	200	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
CISS	Input Capacitance	VDS=25V, VGS=0V, f=1MHz	--	480	--	pF
COSS	Output Capacitance		--	30	--	pF
CRSS	Reverse Transfer Capacitance		--	22	--	pF
Switching Characteristics						
Qg	Total Gate Charge	VDS=30V, ID=3A, VGS=10V	--	15	--	nC
Qgs	Gate Source Charge		--	3	--	nC
Qgd	Gate Drain Charge		--	4.4	--	nC
td(on)	Turn-on Delay Time	VDS=30V, ID=3A, VGS=10V, RG=3Ω	--	12	--	nS
tr	Turn-on Rise Time		--	7.5	--	nS
td(off)	Turn-Off Delay Time		--	36	--	nS
tf	Turn-Off Fall Time		--	9.2	--	nS
Source- Drain Diode Characteristics						
VSD	Forward on voltage	TJ=25°C, IS=3A	--	--	1.2	V

Typical Operating Characteristics



SOT-23 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E1	2.250	2.550	0.088	0.100
E	1.200	1.400	0.047	0.055
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°