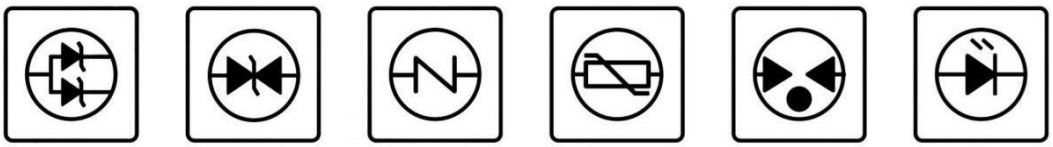
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MSZ1C04A

Product specification

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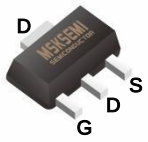
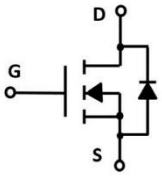
MSZ1C04A

120V/4A N-Channel MOSFET

Features

- Trench Power LV MOSFET technology
- High Density Cell Design for Low $R_{DS(ON)}$
- High Speed switching

Reference News

SOT-89-3L	Schematic diagram	Marking
		1C04A ****

Application

- CoBattery protection
- Load switch
- Power management

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
120V	220mΩ@10V	8A
	245mΩ@4.5V	

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		120	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	Tc=25°C	16	A
I_D	Continuous Drain Current	Tc=25°C	4	A
P_D	Maximum Power Dissipation	Tc=25°C	0.5	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		150	°C/W

Ordering Information (Example)

Type	Package	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MSZ1C04A	SOT-89-3L	1,000	4,000	24,000	7"reel

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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	120	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=120V, 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	--	220	270	mΩ
		V_{GS}=4.5V, I_D=2A	--	245	300	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=60V, V_{GS}=0V , f=1MHz	--	123	--	pF
C_{OSS}	Output Capacitance		--	18	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	4.5	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=50V, I_D=2A, V_{GS}=10V	--	14	--	nC
Q_{gs}	Gate Source Charge		--	4	--	nC
Q_{gd}	Gate Drain Charge		--	1	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=50V, I_D=2A, V_{GS}=10, R_G=2Ω	--	13.7	--	nS
t_r	Turn-on Rise Time		--	2.5	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	10.1	--	nS
t_f	Turn-Off Fall Time		--	1.2	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃, Is=2A	--	--	1.3	V

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Typical Operating Characteristics

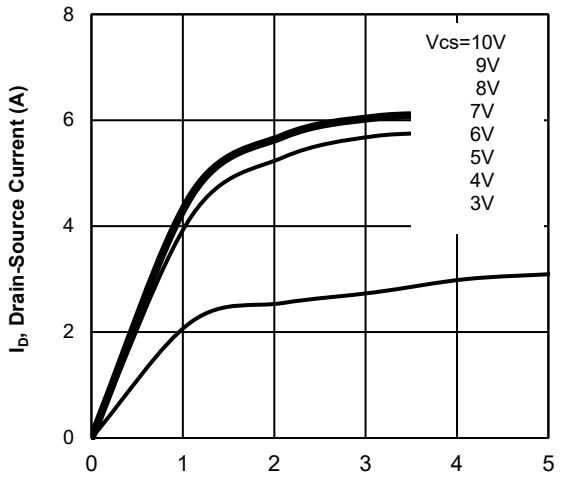


Fig1. Typical Output Characteristics

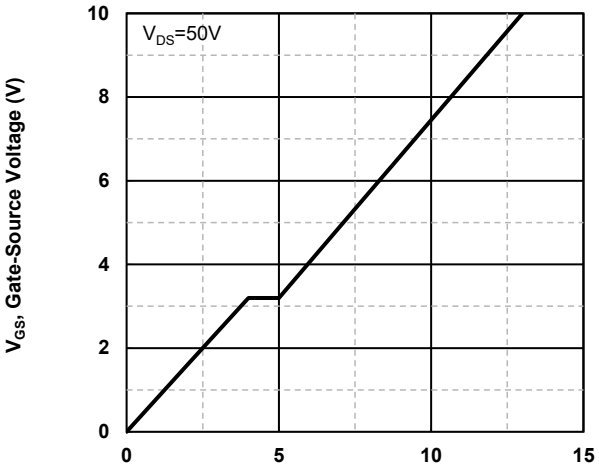


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

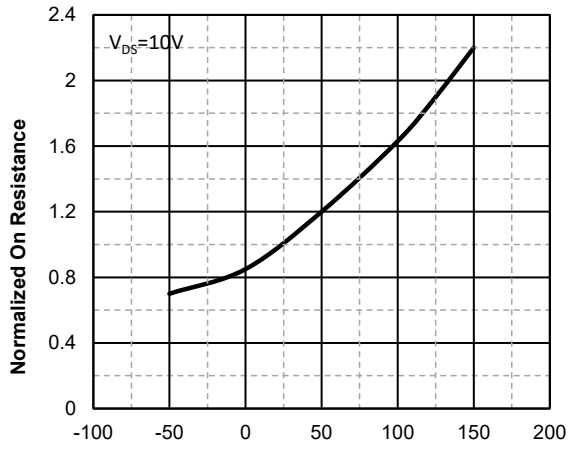


Fig3. Normalized On-Resistance Vs. Temperature

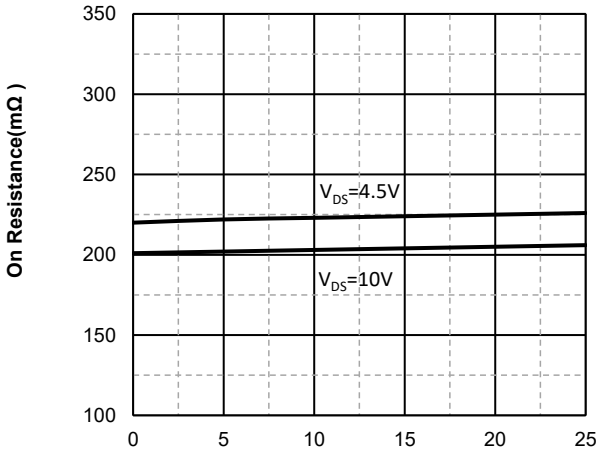


Fig4. On-Resistance Vs. Drain-Source Current

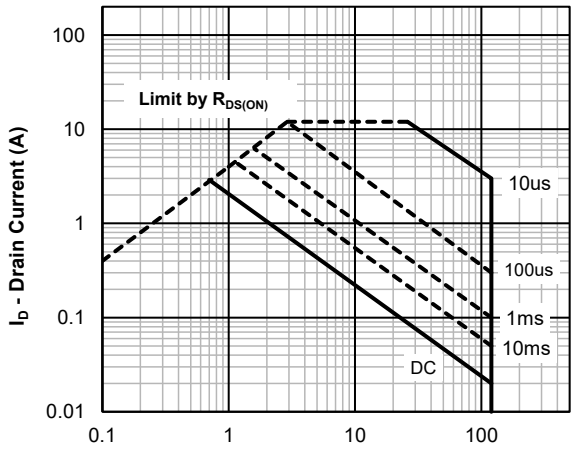


Fig5. Maximum Safe Operating Area

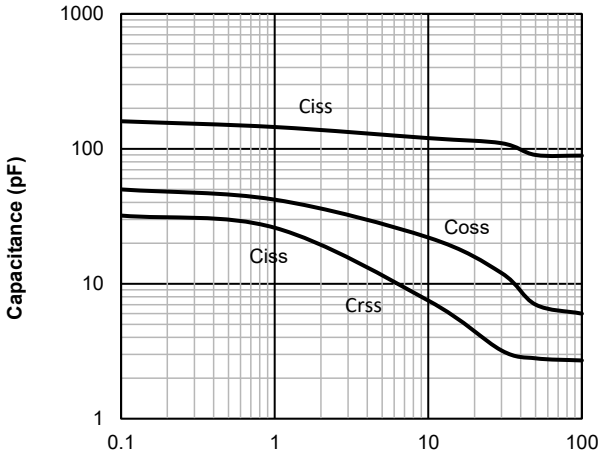
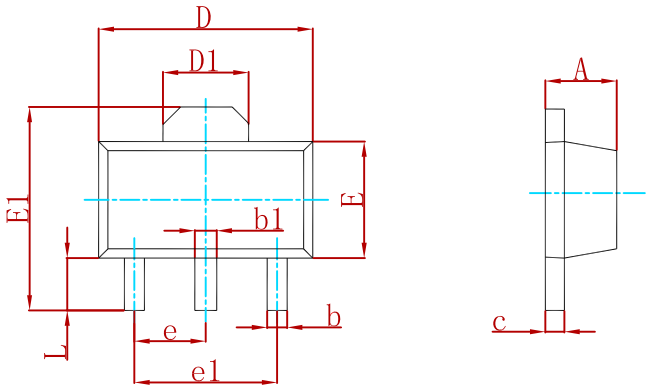


Fig6 Typical Capacitance Vs.Drain-Source Voltage

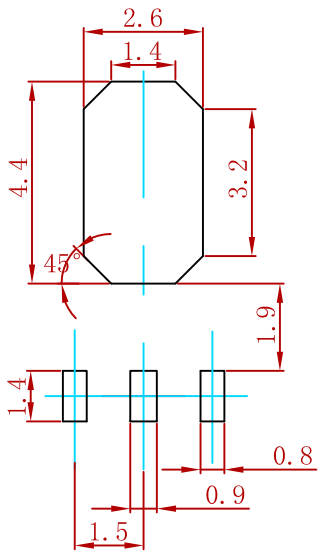
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PACKAGE MECHANICAL DATA



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047

Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.05mm.
3.The pad layout is for reference purposes only.

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