MLSM MICROELECTRONICS

MZ5WC17A

1700V/0.25A SiC MOSFET

Features

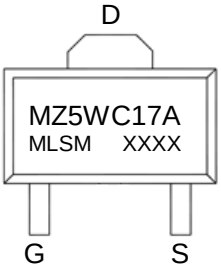
- Wide Bandgap SiC MOSFET Technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed Switching
- Low Reverse Recovery(Qrr)
- Easy to Parallel and Simple to Drive

Application

- Power Factor Correction Modules
- Switch Mode Power Supplies

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
1700V	50Ω@18V	0.25A

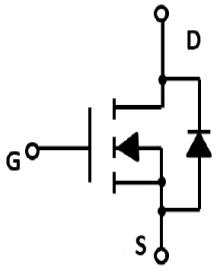


MZ5WC17A= Device code

XXXX= Code

Marking and pin assignment

SOT-89-2L top view



Schematic diagram

Pb-Free RoHS 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		1700	V
V_{GS}	Gate-Source Voltage		-10/+22	V
V_{GSop}	Recommended Operation Voltage of Gate to Source		-5/+18	V
T_J,T_{STG}	Operating and Storage Temperature Range		-55 to 175	°C
I_S	Diode Continuous Forward Current	Tc=25°C	0.25	A
I_{DM}	Pulse Drain Current Tested	Tc=25°C	0.5	A
		Tc=100°C	0.4	A
I_D	Continuous Drain Current	Tc=25°C	0.25	A
		Tc=100°C	0.2	A
P_D	Maximum Power Dissipation	Tc=25°C	3	W
$R_{th(j-c)}$	Thermal Resistance from Junction-Case		50	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MZ5WC17A	SOT-89-2L	MZ5WC17A	1,000	10,000	40,000	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=100μA	1700	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=1700V，V_{GS}=0V	--	--	100	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=22V，V_{DS}=0V	--	--	250	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}，I_D=100uA	2.0	--	4.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=18V，I_D=30mA	--	50	75	Ω
		V_{GS}=18V，I_D=30mA，Tj=175℃	--	58	--	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=1000V，V_{GS}=0V， f=1MHz	--	221	--	pF
C_{OSS}	Output Capacitance		--	9.2	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	3.3	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS}=1200V，I_D=100mA，V_{GS}=0/20V	--	9.6	--	nC
Q_{gs}	Gate Source Charge		--	0.4	--	nC
Q_{gd}	Gate Drain Charge		--	8.4	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=1000V，I_D=100mA，V_{GS}=-3.5/20V，R_G=10kΩ	--	4	--	nS
t_r	Turn-on Rise Time		--	47	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	47.5	--	nS
t_f	Turn-Off Fall Time		--	853	--	nS
R_g	Gate Resistance	V_{AC}=25mV, f=1MHz	--	500	--	Ω
Source Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=2A	--	3.8	--	V
I_S	Continuous Diode Forward Current	V_{GS}=0V，Tj=25℃	--	0.25	--	A

Typical Operating Characteristics

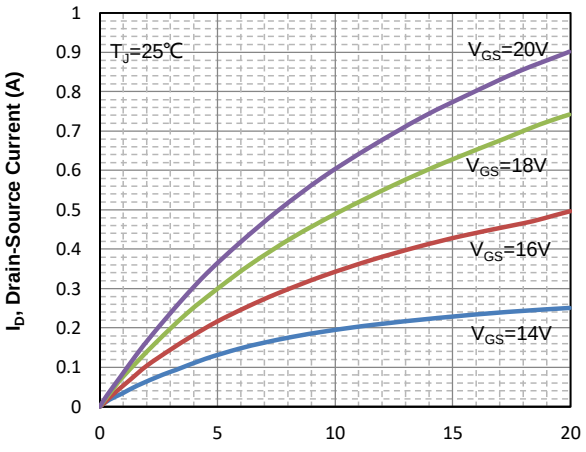


Fig1. Typical Output Characteristics

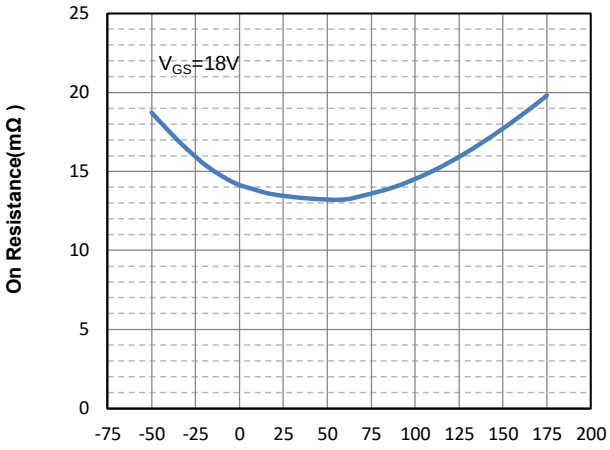


Fig2. Normalized On-Resistance Vs. Temperature

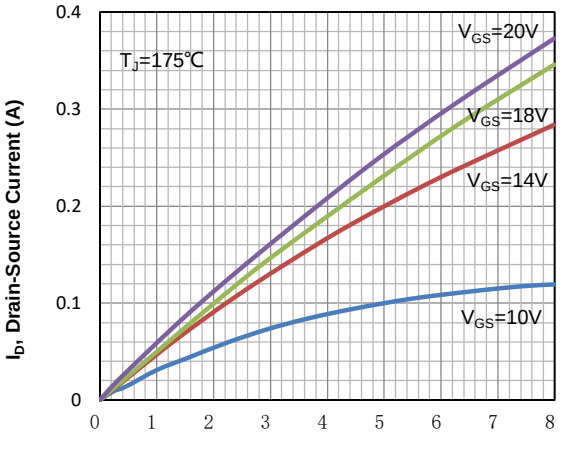


Fig3. Typical Output Characteristics

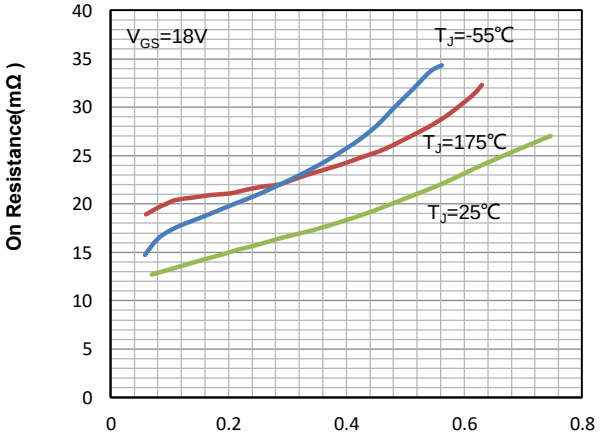


Fig4. On-Resistance Vs. Drain-Source Current

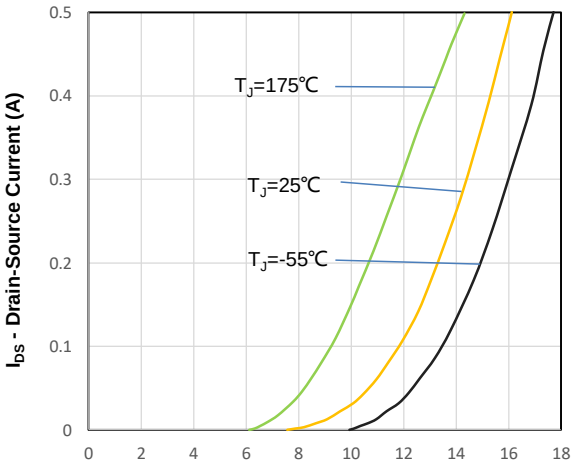


Fig5. Typical Transfer Characteristics

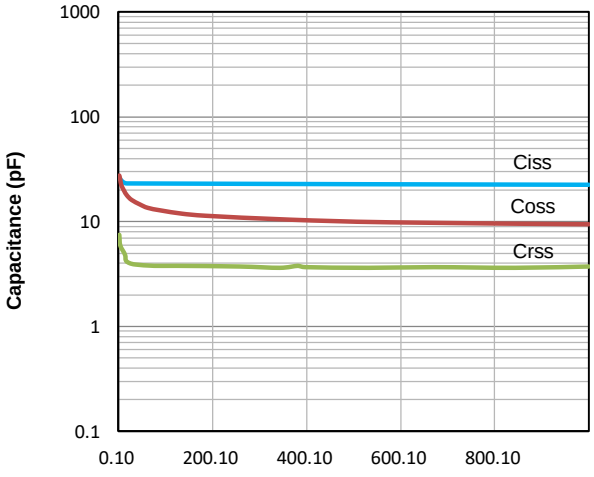
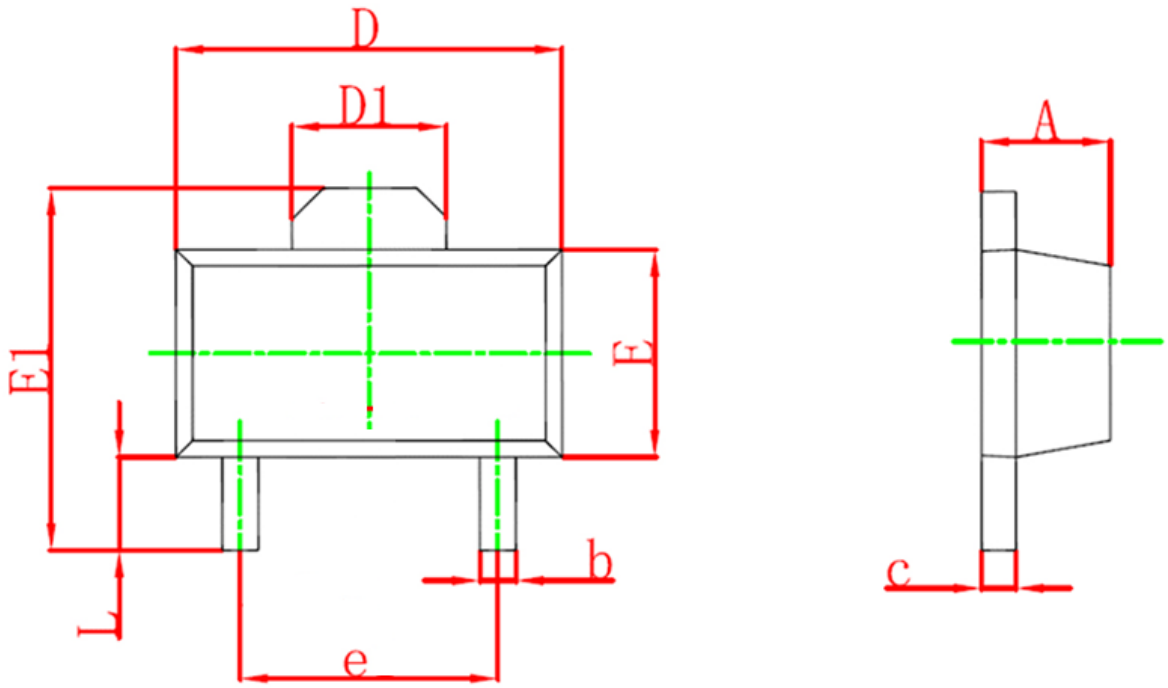


Fig6 Typical Capacitance Vs.Drain-Source

SOT-89-2L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions in Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.300	0.500	0.012	0.020
c	0.350	0.440	0.014	0.017
D	4.400	4.500	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.900	4.300	0.154	0.169
e	2.950	3.050	0.116	0.120
L	0.900	1.200	0.035	0.047