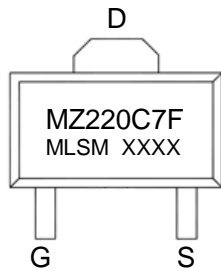


Features

- 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

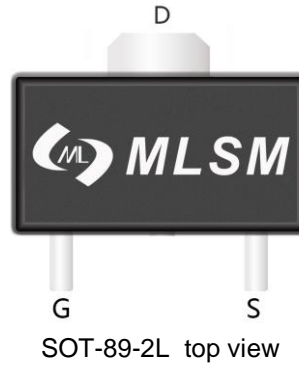


Marking and pin assignment

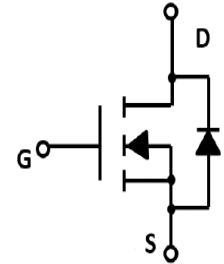
 MZ220C7F= Device code
 XXXX= Code

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
750V	220mΩ@15V	12A



SOT-89-2L top view



Schematic diagram



Pb-Free



RoHS



Halogen-Free

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

Symbol	Parameter	Rating	Unit
Common Ratings (TC=25°C Unless Otherwise Noted)			
V_{DS}	Drain-Source Breakdown Voltage	750	V
V_{GS}	Gate-Source Voltage	-10/+22	V
V_{GSop}	Recommended Operation Voltage of Gate to Source	0/+15	V
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to 175	°C
I_S	Diode Continuous Forward Current	Tc=25°C 12	A
I_{DM}	Pulse Drain Current Tested	Tc=25°C 24.5	A
		Tc=100°C 20	A
I_D	Continuous Drain Current	Tc=25°C 12	A
		Tc=100°C 10	A
P_D	Maximum Power Dissipation	Tc=25°C 3	W
E_{AS}	Single Pulsed Avalanche Energy ^{Note1}	65	mJ
$R_{th(j-c)}$	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
MZ220C7F	SOT-89-2L	MZ220C7F	1,000	10,000	40,000	7" reel

Electrical Characteristics (T _J =25°C unless otherwise noted)						
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
BV _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =100μA	750	830	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =750V, V _{GS} =0V	--	--	10	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 =3.5mA	3.0	--	5.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =18V, I _D =8A	--	160	--	mΩ
		V _{GS} =18V, I _D =8A, T _J =175°C	--	205	--	mΩ
		V _{GS} =15V, I _D =8A	--	213	280	mΩ
		V _{GS} =15V, I _D =8A, T _J =175°C	--	225	--	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =400V, V _{GS} =0V, f=1MHz	--	285	--	pF
C _{OSS}	Output Capacitance		--	21	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	2.3	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =400V, I _D =8A, V _{GS} =0/15V	--	12.3	--	nC
Q _{gs}	Gate Source Charge		--	4.4	--	nC
Q _{gd}	Gate Drain Charge		--	1.5	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =400V, I _D =8A, V _{GS} =0/15V, R _G =4.3Ω	--	20	--	nS
t _r	Turn-on Rise Time		--	11	--	nS
t _{d(off)}	Turn-Off Delay Time		--	17	--	nS
t _f	Turn-Off Fall Time		--	11.2	--	nS
R _g	Gate Resistance	V _{AC} =25mV, f=1MHz	--	23	--	Ω
Source Drain Diode Characteristics						
V _{SD}	Forward on voltage	T _J =25°C, I _S =4A	--	3.5	--	V
I _S	Continuous Diode Forward Current	V _{GS} =0V, T _J =25°C	--	12	--	A
t _{rr}	Reverse Recovery Time	V _{GS} = 0V, I _{SD} =8A, V _R =400V, di/dt=1600A/us, T _J =25°C	--	12	--	ns
Q _{rr}	Reverse Recovery Charge		--	35.5	--	nC
I _{rrm}	Peak Reverse Recovery Current		--	5	--	A

Note 1:L=0.5mH, R_G=25Ω, V_{GS}=20V, V_{DD}=50V, Start T_J=25°C

Typical Operating Characteristics

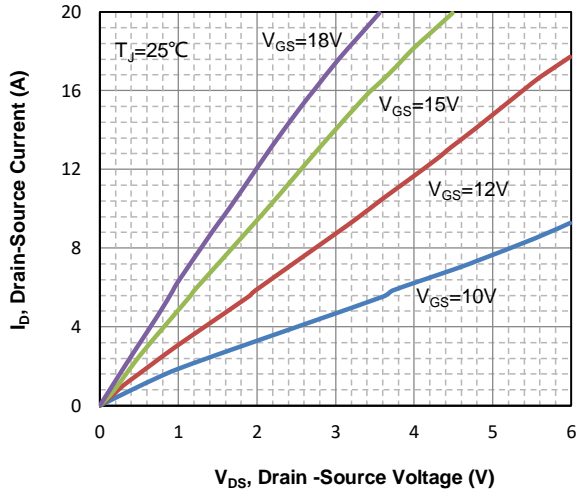


Fig1. Typical Output Characteristics

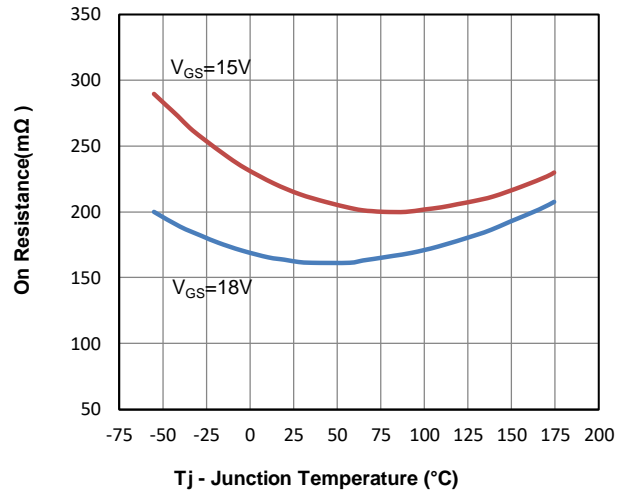


Fig2. Normalized On-Resistance Vs. Temperature

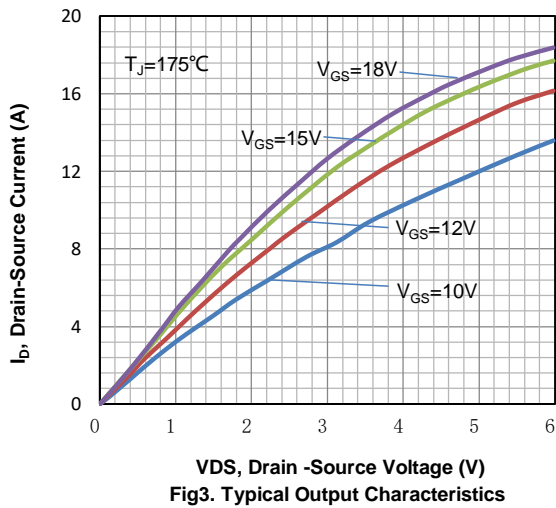


Fig3. Typical Output Characteristics

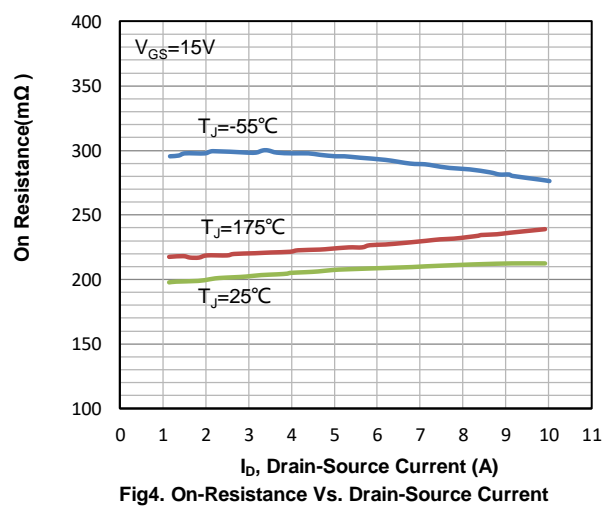


Fig4. On-Resistance Vs. Drain-Source Current

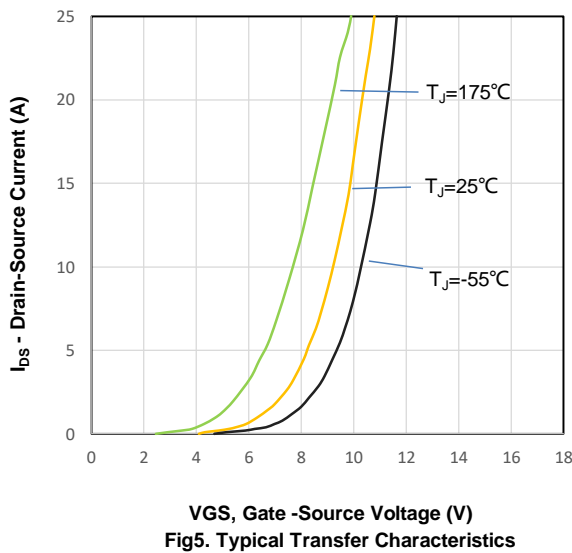


Fig5. Typical Transfer Characteristics

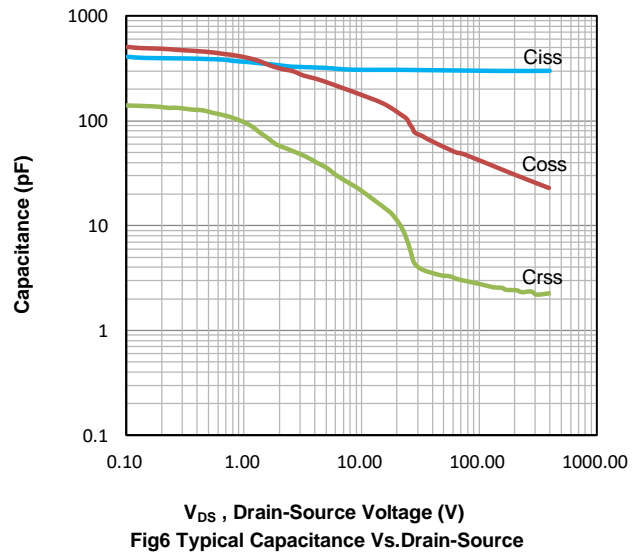
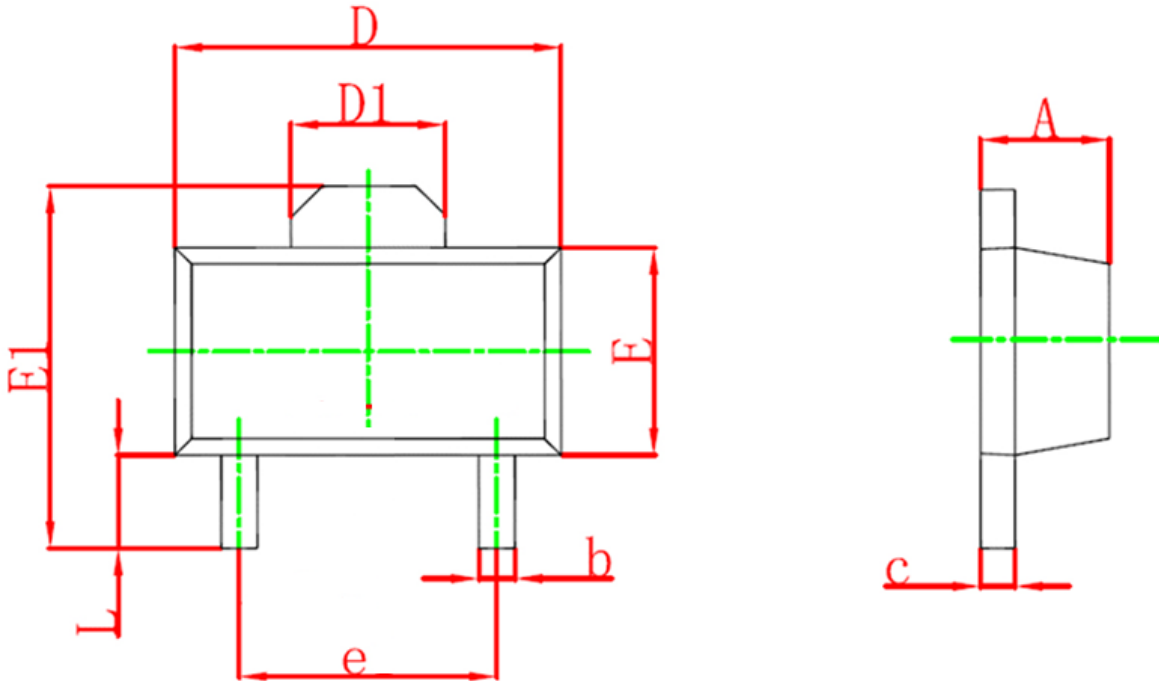


Fig6 Typical Capacitance Vs. Drain-Source

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