MLS(X)8N65

650V/8A N-Channel MOSFET

Features

- Integrate fast recovery diode
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Application

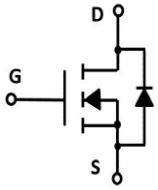
- Switch Mode Power Supply (SMPS)
- Motor Controls
- Power Factor Correction (PFC)

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
650V	900mΩ@10V	8A

TO-220F

TO-220



Pb-Free RoHS Halogen-Free

Absolute Maximum Ratings (TA=25℃unless otherwise noted)				
Symbol	**Parameter**		**Value**	**Unit**
Common Ratings (TC=25°C Unless Otherwise Noted)			TO-220F / TO-220	
V_{DS}	Drain-Source Breakdown Voltage		650	V
V_{GS}	Gate-Source Voltage		±30	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	8	A
Mounted on Large Heat Sink				
I_{DM}	Pulse Drain Current Tested	Tc=25°C	32	A
I_D	Continuous Drain Current@GS=10V	Tc=25°C	8	A
P_D	Maximum Power Dissipation	Tc=25°C	62.5	W
$R_{th(ch-c)}$	Thermal resistance，Channel to Case		3.45	°C/W
E_{AS}	Single pulse avalanche energy(Notes1)		432	mJ

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSYF8N65	TO-220F	MLSYF8N65	50	1,000	5,000	/
MLSY8N65	TO-220	MLSY8N65	50	1,000	5,000	/

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	650	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=650V，V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±30V，V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}，I_D=250μA	2.5	--	4.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V， I_D=5A	--	900	1100	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C_{ISS}	Input Capacitance	V_{DS}=25V，V_{GS}=0V， f=1MHz	--	1602	--	pF
C_{OSS}	Output Capacitance		--	102	--	pF
C_{RSS}	Reverse Transfer Capacitance		--	67	--	pF
Switching Characteristics						
Q_g	Total Gate Charge	V_{DD}=520V，I_D=10A，V_{GS}=10V	--	29.3	--	nC
Q_{gs}	Gate Source Charge		--	7.1	--	nC
Q_{gd}	Gate Drain Charge		--	6.8	--	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=325V，I_D=10A，R_G=10Ω	--	17	--	nS
t_r	Turn-on Rise Time		--	1.8	--	nS
$t_{d(off)}$	Turn-Off Delay Time		--	17	--	nS
t_f	Turn-Off Fall Time		--	1.8	--	nS
Source- Drain Diode Characteristics						
V_{SD}	Forward on voltage	Tj=25℃，Is=8A，	--	--	1.5	V

Note：

1、L=10mH, V_{DD}=50V, R_G=25Ω, Starting T_J=25℃

Typical Operating Characteristics

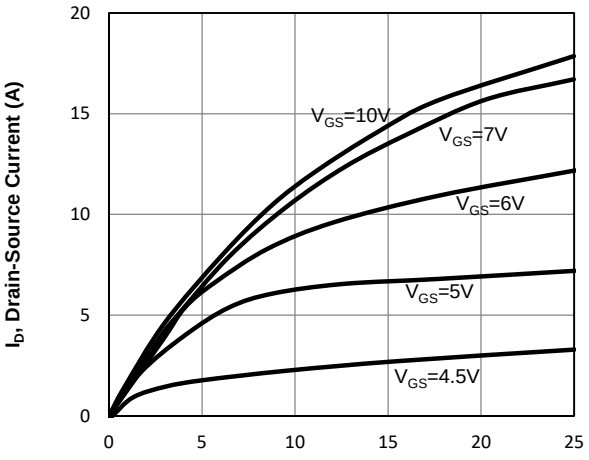


Fig1. Typical Output Characteristics

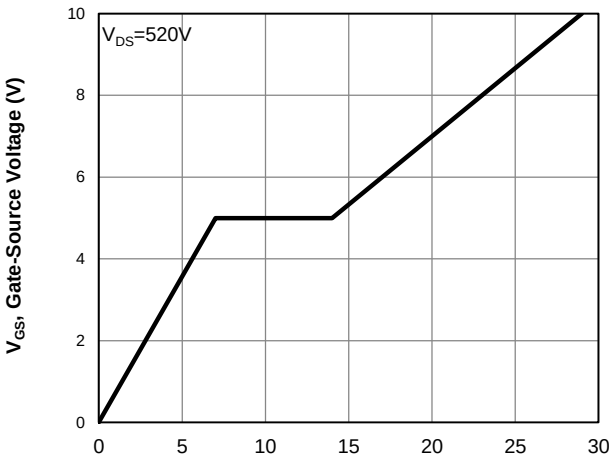


Fig2. Typical Gate Charge Vs.Gate-Source Voltage

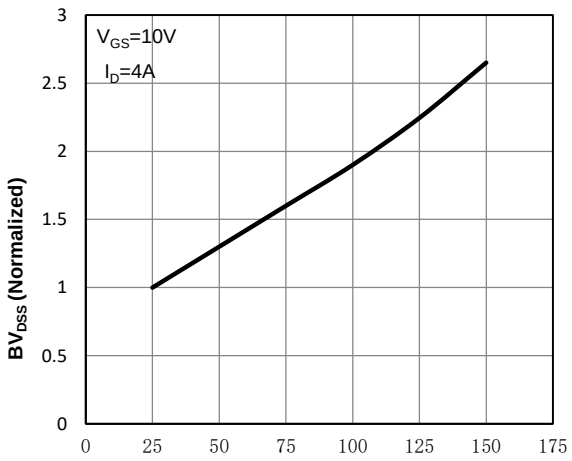


Fig3. BV_{DSS} Variation vs. Temperature

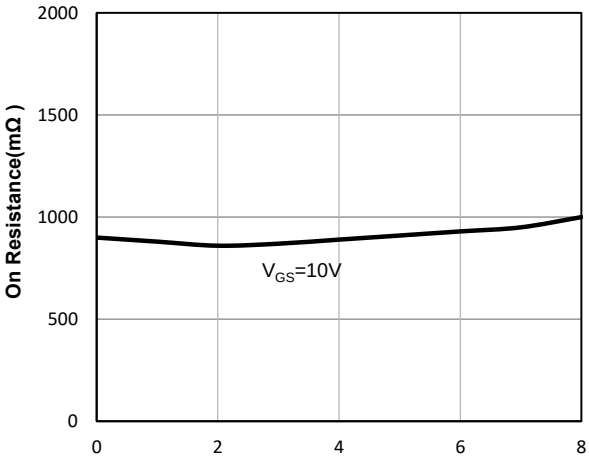


Fig4. On-Resistance Vs. Drain-Source Current

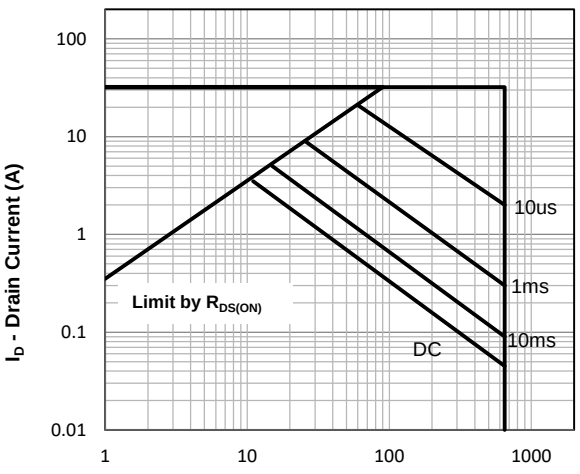


Fig5. Maximum Safe Operating Area

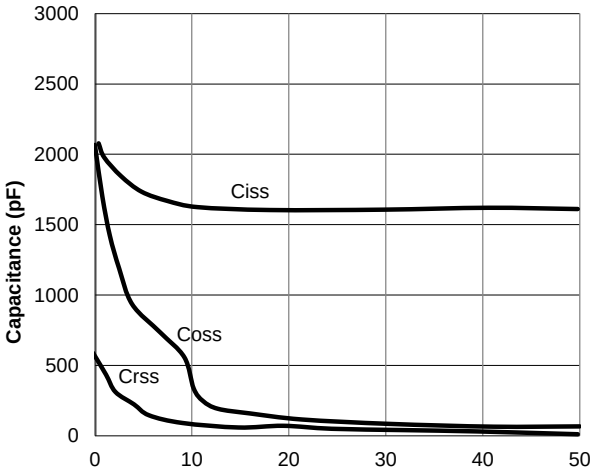
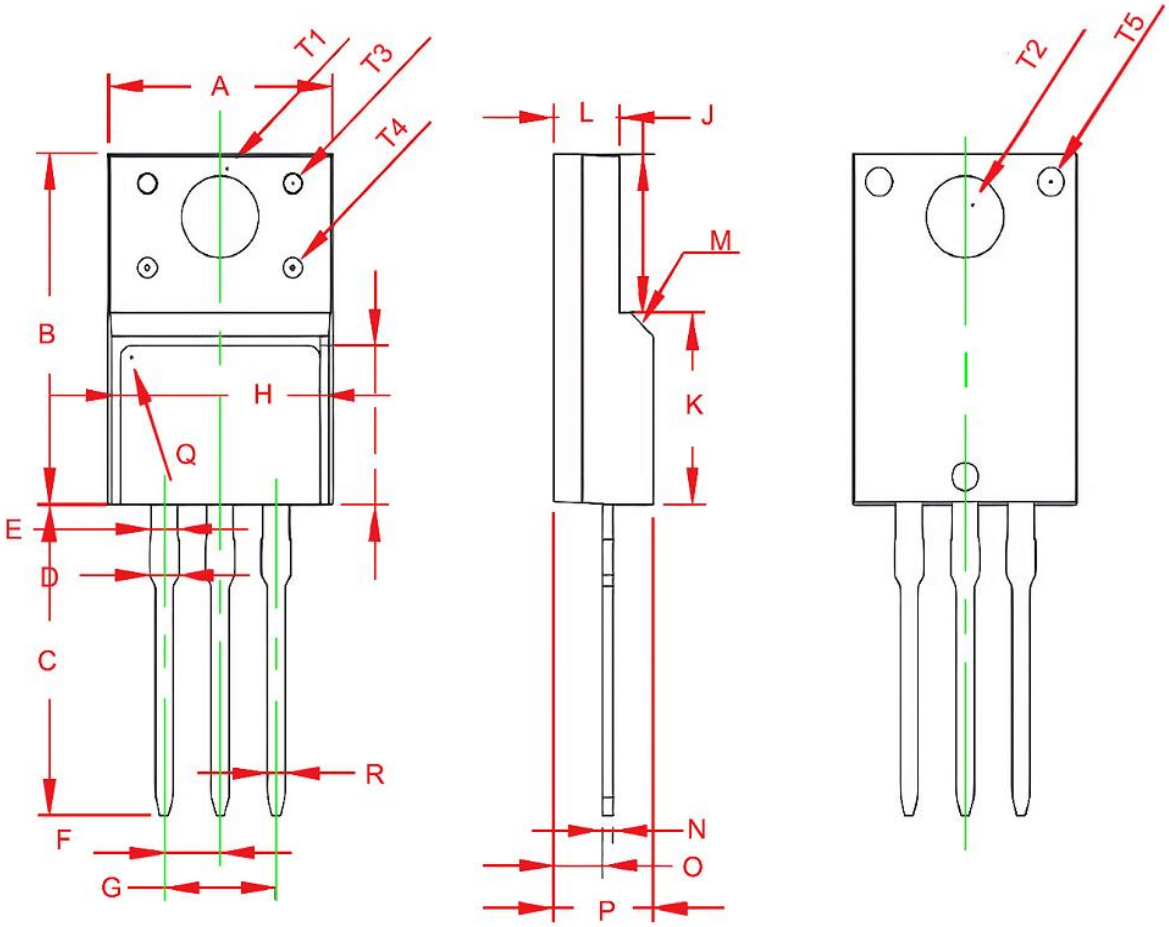


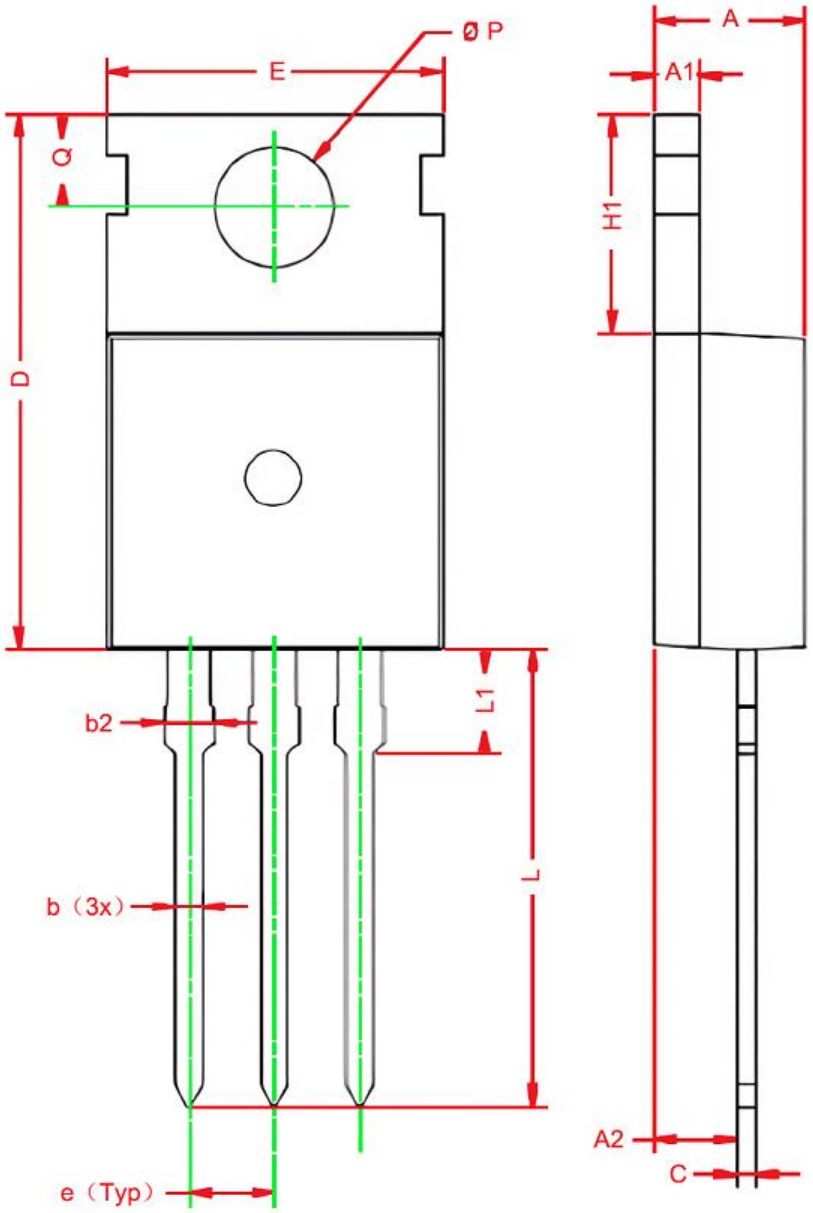
Fig6 Typical Capacitance Vs.Drain-Source Voltage

TO-220F Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	9.960	10.360	0.392	0.407
B	15.670	16.070	0.616	0.632
C	13.140	13.540	0.517	0.533
D	1.200	1.400	0.047	0.055
E	1.200TYP		0.047TYP	
F	2.540TYP		0.100TYP	
G	5.080TYP		0.200TYP	
H	7.600	8.000	0.299	0.314
I	7.100	7.500	0.279	0.295
J	6.480	6.880	0.255	0.270
K	8.990	9.390	0.353	0.369
L	2.340	2.740	0.092	0.107
M	45°TYP		45°TYP	
N	0.490	0.520	0.019	0.020
O	2.150	2.550	0.084	0.100
P	4.500	4.900	0.177	0.192
Q	0.500TYP		0.019TYP	
S	4.5°TYP		4.5°TYP	
T1	3.450TYP		0.135TYP	
T2	3.180TYP		0.125TYP	
T3	1.500TYP		0.059TYP	
T4	1.200TYP		0.047TYP	
T5	1.500TYP		0.059TYP	
R	0.770	0.830	0.030	0.032

TO-220 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	3.600	4.800	0.142	0.189
A1	1.200	1.400	0.047	0.055
A2	2.030	2.900	0.080	0.114
b	0.400	1.000	0.016	0.039
b2	1.200	1.780	0.047	0.070
c	0.360	0.600	0.014	0.024
D	14.220	16.500	0.561	0.651
e	2.340	2.740	0.092	0.108
E	9.700	10.600	0.383	0.418
H1	5.840	6.850	0.230	0.270
L	12.700	14.700	0.501	0.580
L1	2.700	3.300	0.106	0.130
ØP	3.500	4.000	0.138	0.158
Q	2.540	3.400	0.100	0.134