

Features

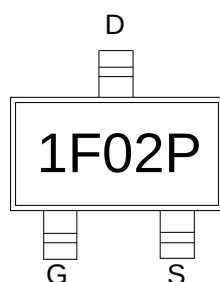
- High density cell design for ultra low $R_{DS(ON)}$
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high EAS

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
-150V	715mΩ@-10V	-2A
	740mΩ@-4.5V	

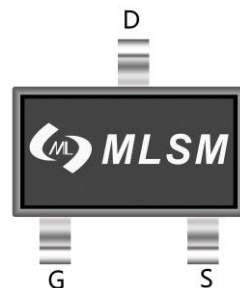
Application

- Battery and loading switching
- Excellent package for good heat dissipation

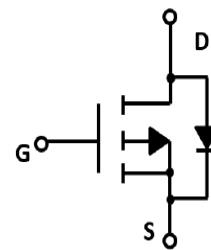


1F02P: Device code

Marking and pin assignment



SOT-23-3L top view



Schematic diagram



Pb-Free



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	-150	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 -2	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	Tc=25°C -10	A
I_D	Continuous Drain Current	Tc=25°C -2	A
P_D	Maximum Power Dissipation	Tc=25°C 15	W
E_{AS}	Single Pulsed Avalanche Energy ^{Note1}	16.2	mJ

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSK1F02P	SOT-23-3L	1F02P	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	V _{GS} =0V, I _D =-250μA	-150	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-150V, V _{GS} =0V	--	--	-1.0	uA
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	-2.0	-3.0	-4.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-2A	--	715	780	mΩ
		V _{GS} =-4.5V, I _D =-1A	--	740	980	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-75V, V _{GS} =0V, f=1MHz	--	710	--	pF
C _{OSS}	Output Capacitance		--	23	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	13	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-75V, I _D =-2A, V _{GS} =-10V	--	11	--	nC
Q _{gs}	Gate Source Charge		--	3	--	nC
Q _{gd}	Gate Drain Charge		--	2	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =-75V, I _D =-1A, V _{GS} =-10V, R _G =6Ω	--	20	--	nS
t _r	Turn-on Rise Time		--	16	--	nS
t _{d(off)}	Turn-Off Delay Time		--	40	--	nS
t _f	Turn-Off Fall Time		--	18	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=-2A	--	-0.8	-1.2	V

Note:

- 1、EAS Test condition: V_{DD}=-50V, V_{GS}=-10V, L=0.1mH, I_{AS}=1.8A, R_G=25Ω, Starting T_J = 25°C

Typical Operating Characteristics

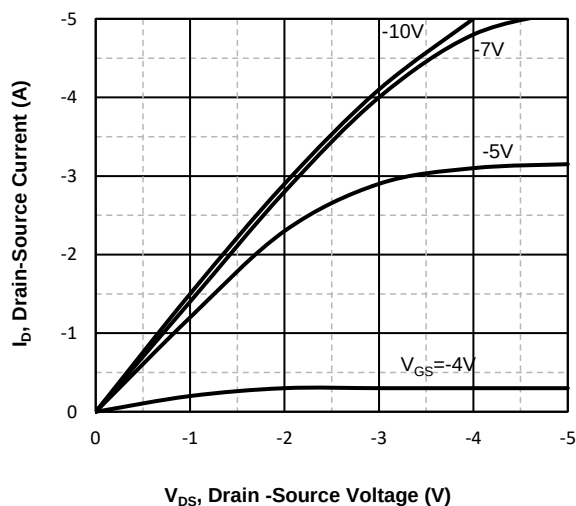


Fig1. Typical Output Characteristics

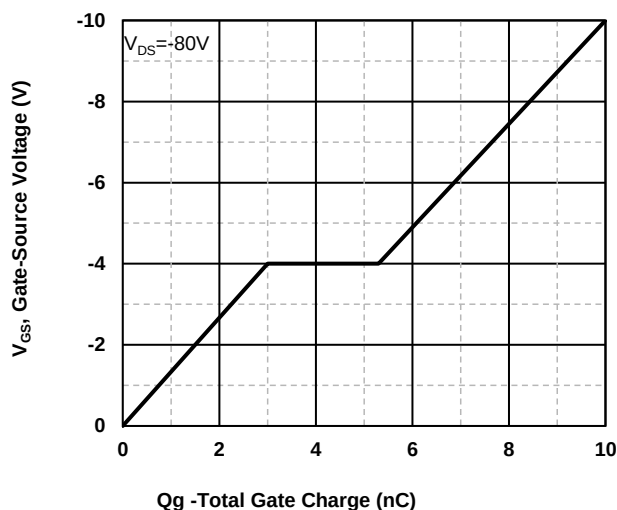


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

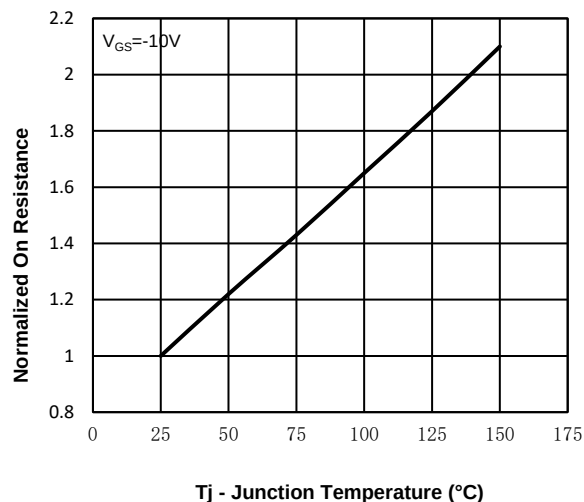


Fig3. Normalized On-Resistance Vs. Temperature

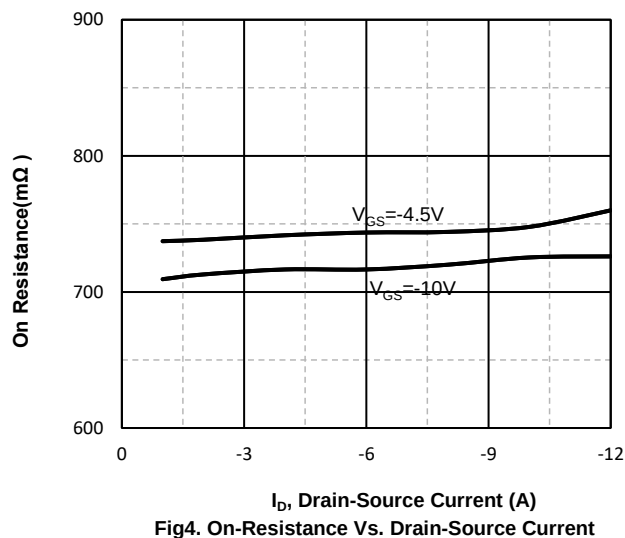


Fig4. On-Resistance Vs. Drain-Source Current

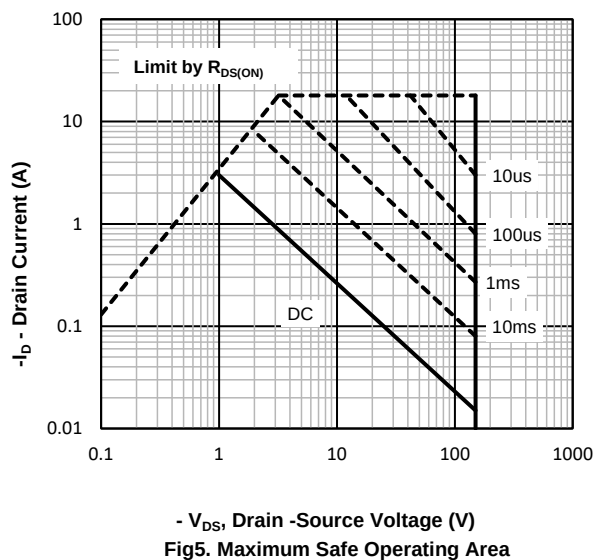


Fig5. Maximum Safe Operating Area

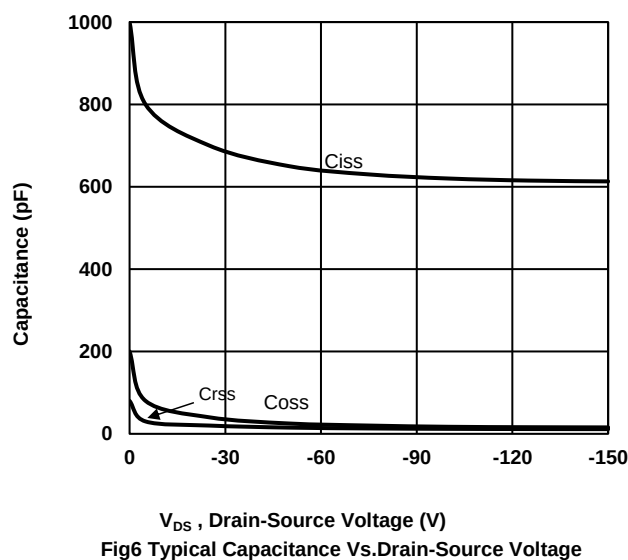
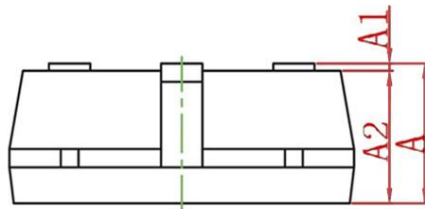
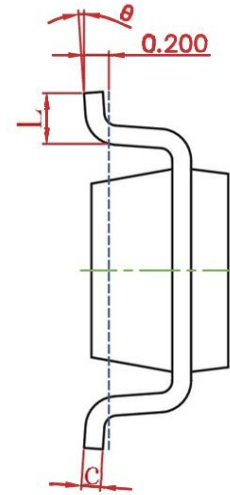
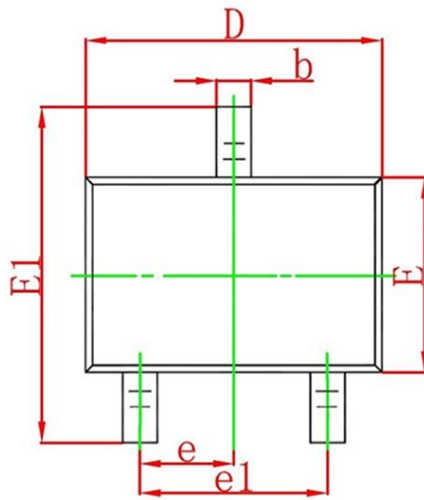


Fig6 Typical Capacitance Vs. Drain-Source Voltage

SOT-23-3L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.042	0.050
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.042	0.046
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.112	0.120
E	1.500	1.700	0.060	0.068
E1	2.650	2.950	0.106	0.118
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
theta	0°	8°	0°	8°