

Features

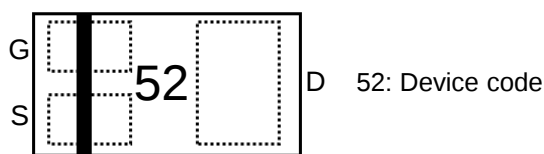
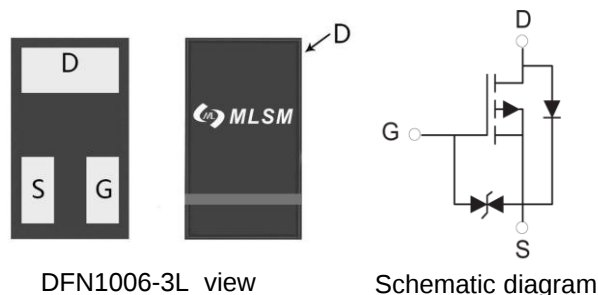
- Energy efficient
- Miniature surface mount package saves board space
- With protection diode between gate and source

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
-50V	4.1Ω@-10V	-0.18A
	5.5Ω@-5V	

Application

- High-speed line driver、Relay driver
- High-side load switch and Switching circuits



Marking and pin assignment



Halogen-Free

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

Symbol	Parameter	Rating	Unit
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Common Ratings (TC=25°C Unless Otherwise Noted)

V _{DS}	Drain-Source Breakdown Voltage		-50	V
V _{GS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	Tc=25°C	-0.18	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}C$	-0.7	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	-0.18	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$	0.35	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		357	°C/W

Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSBA502K	DFN1006-3L	52	10,000	150,000	600,000	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	-50	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-50V, V _{GS} =0V	--	--	-1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.9	--	-2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-0.1A	--	4.1	8.0	Ω
		V _{GS} =-5V, I _D =-0.1A	--	5.5	10	Ω
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	--	43	--	pF
C _{OSS}	Output Capacitance		--	2.9	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	1.8	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-10V, I _D =-0.18A, V _{GS} =-4.5V	--	9.5	--	nC
Q _{gs}	Gate Source Charge		--	1.1	--	nC
Q _{gd}	Gate Drain Charge		--	2	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =-10V, R _L =2.5Ω, V _{GS} =-4.5V, R _G =2.8Ω	--	12.8	--	nS
t _r	Turn-on Rise Time		--	8.9	--	nS
t _{d(off)}	Turn-Off Delay Time		--	18.8	--	nS
t _f	Turn-Off Fall Time		--	30	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=-0.18A	--	--	-1.2	V

Typical Operating Characteristics

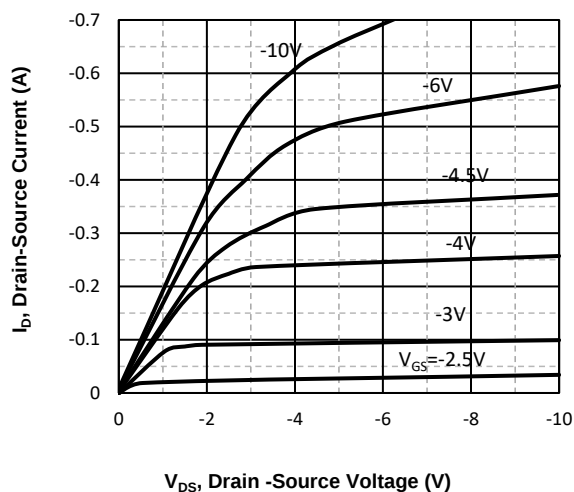


Fig1. Typical Output Characteristics

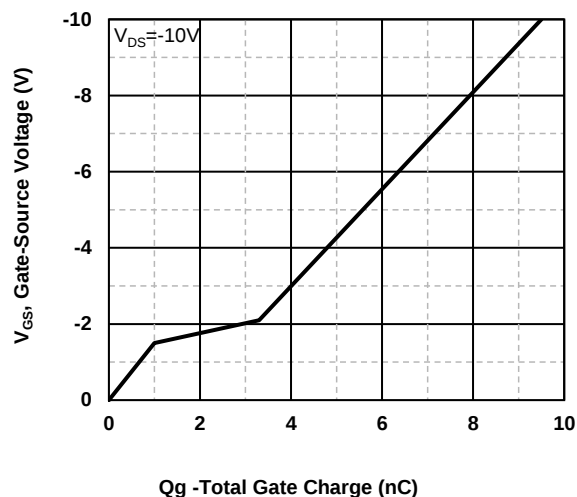


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

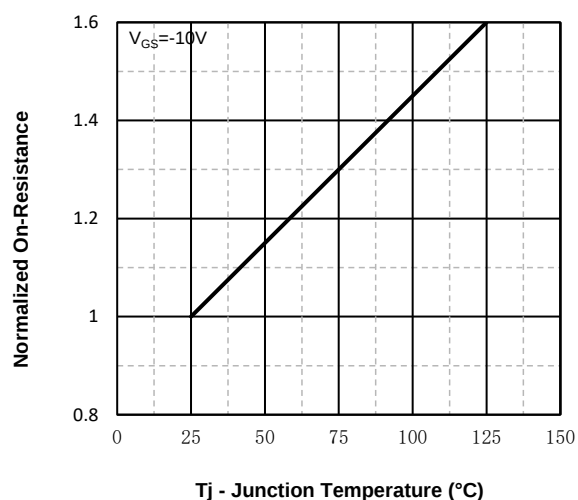


Fig3. Normalized On-Resistance Vs. Temperature

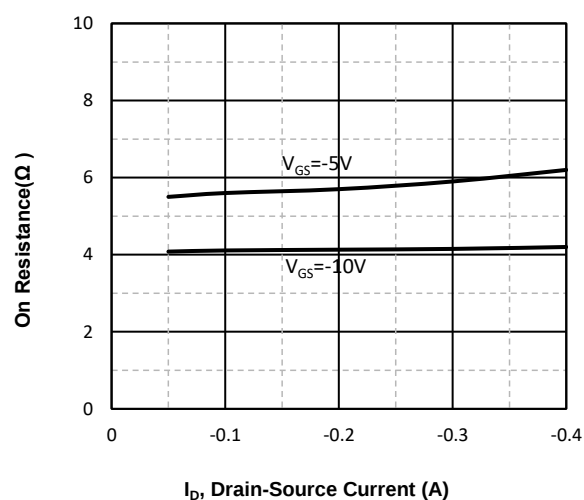


Fig4. On Resistance Vs. Drain-Source Current

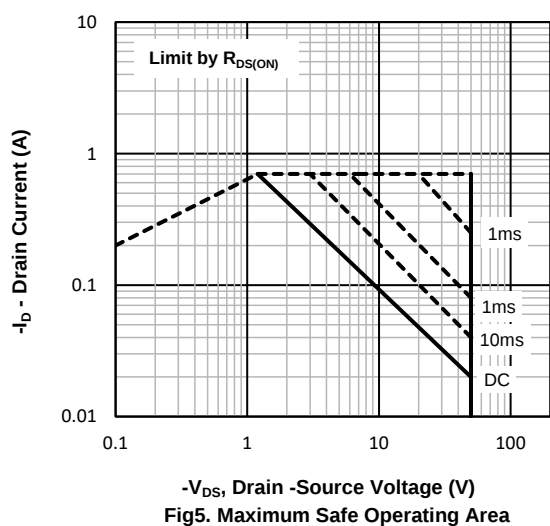


Fig5. Maximum Safe Operating Area

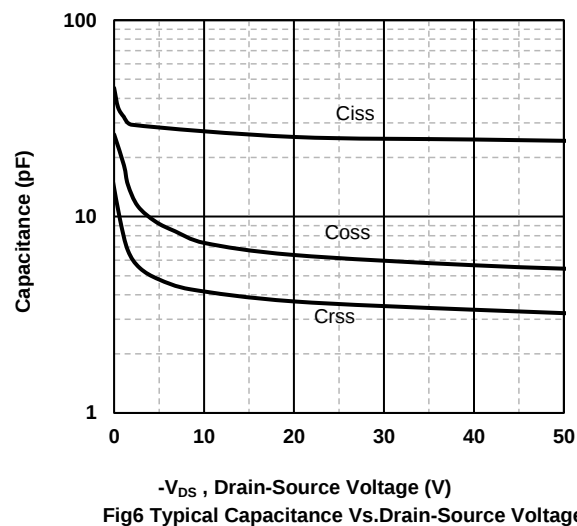
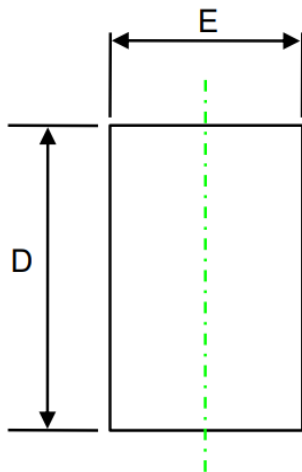
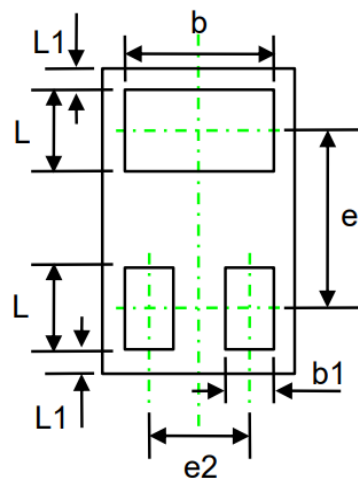


Fig6 Typical Capacitance Vs. Drain-Source Voltage

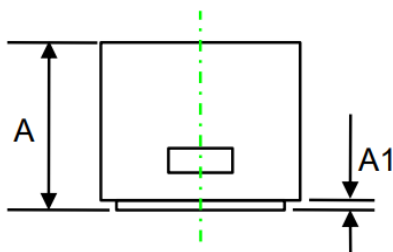
DFN1006-3L Package information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.450	0.550	0.017	0.021
A1	0.000	0.030	0.000	0.001
D	0.950	1.050	0.037	0.041
E	0.550	0.650	0.021	0.025
b	0.470	0.550	0.018	0.021
e	0.65TYP		0.025TYP	
e2	0.35TYP		0.013TYP	
L1	0.05TYP		0.001TYP	
L	0.220	0.300	0.008	0.012
b1	0.110	0.190	0.004	0.007