

Features

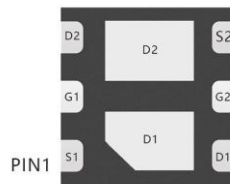
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

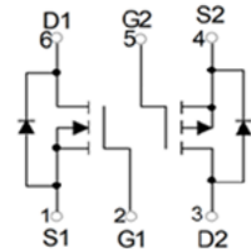
- Battery protection
- Load switch
- Power management

Product Summary

V_{DS}	$R_{DS(ON)}$ TYP	I_D
20V	24mΩ@4.5V	5A
	28mΩ@2.5V	
-20V	50mΩ@-4.5V	-5A
	66mΩ@-2.5V	



DFN2X2-6L view



Schematic diagram



Pin 1

Marking and pin assignment

 PC05 : Device code
 XXXX : Code


Pb-Free



Halogen-Free

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

Symbol	Parameter	N-Channel	P-Channel	Unit
--------	-----------	-----------	-----------	------

Common Ratings (TC=25°C Unless Otherwise Noted)

V_{DS}	Drain-Source Breakdown Voltage		20	-20	V
V_{GS}	Gate-Source Voltage		±8	±8	V
T_J	Maximum Junction Temperature		150	150	°C
T_{STG}	Storage Temperature Range		-55 to 150	-55 to 150	°C
I_S	Diode Continuous Forward Current	$T_C=25^{\circ}C$	5	-5	A

Mounted on Large Heat Sink

I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}C$	22	-22	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	5	-5	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$	2	2	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		62.5	62.5	°C/W

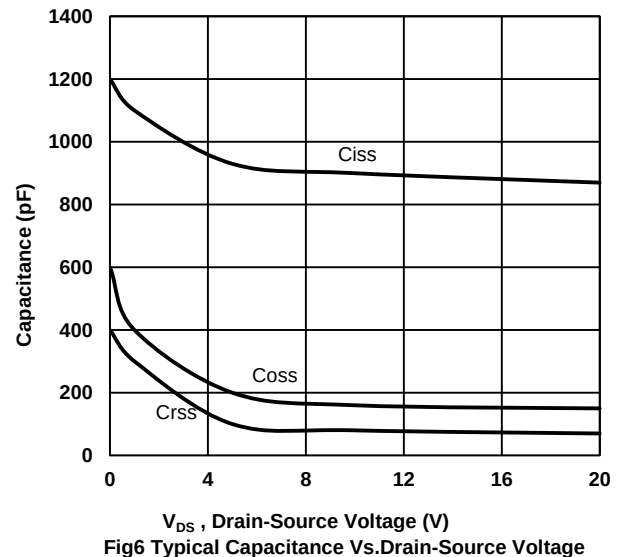
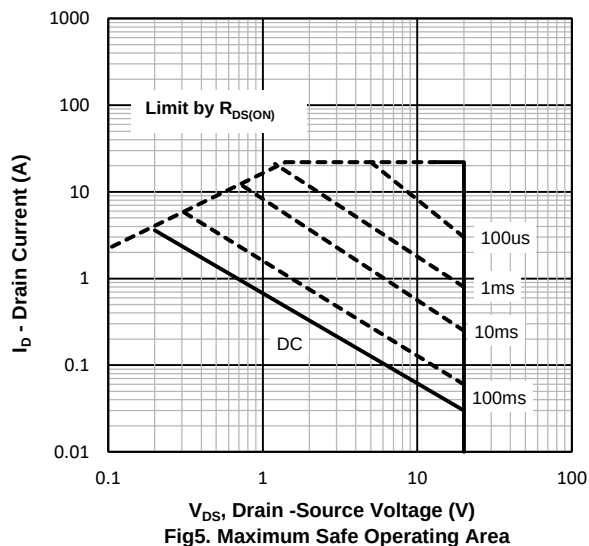
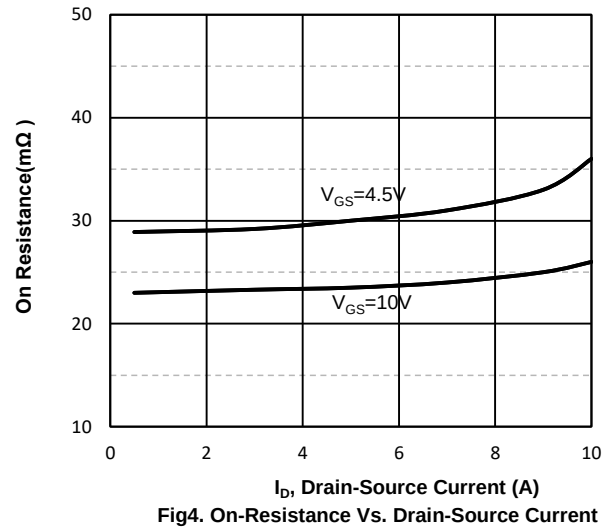
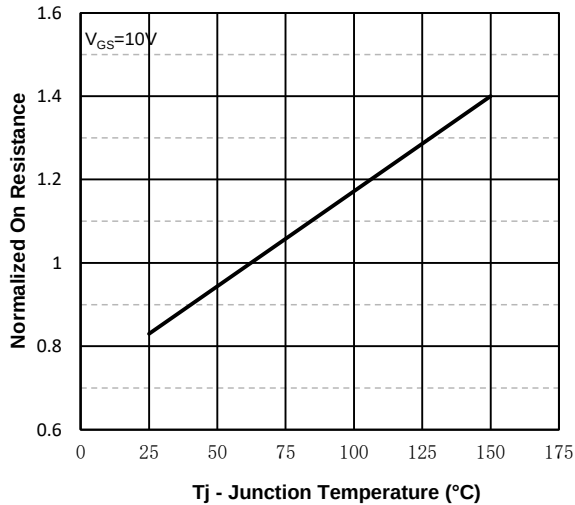
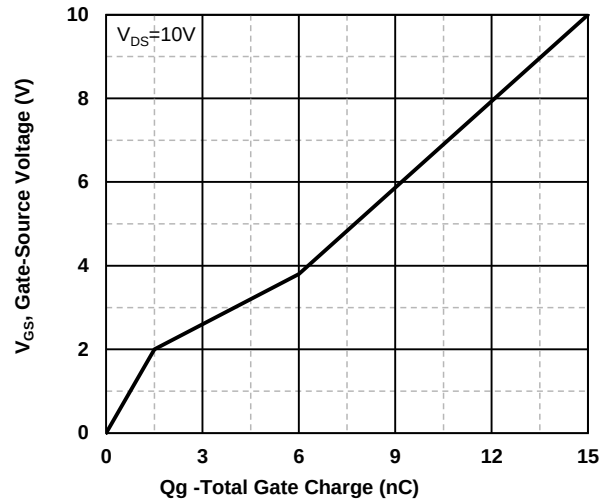
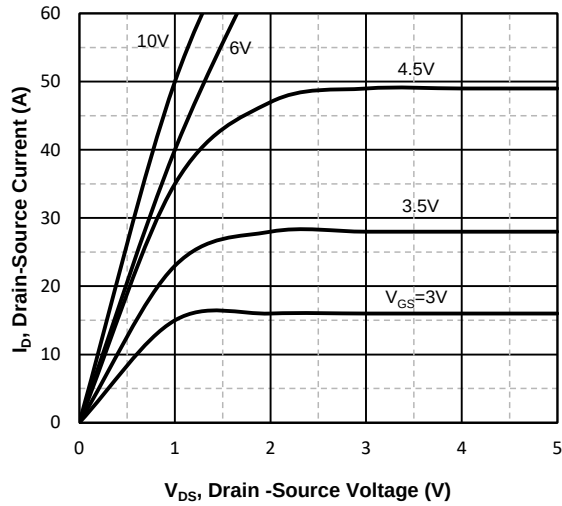
Ordering Information (Example)

Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
MLSMPC05	DFN2X2-6L	PC05	3,000	45,000	180,000	7"reel

N-Ch 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	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	--	--	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±8V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.4	--	1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =5.0A	--	24	29	mΩ
		V _{GS} =2.5V, I _D =3.0A	--	28	34	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	--	900	--	pF
C _{OSS}	Output Capacitance		--	162	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	105	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =10V, I _D =5A, V _{GS} =4.5V	--	15	--	nC
Q _{gs}	Gate Source Charge		--	1.8	--	nC
Q _{gd}	Gate Drain Charge		--	2.8	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V, R _L =1.4Ω, V _{GS} =4.5V, R _G =3Ω	--	4.5	--	nS
t _r	Turn-on Rise Time		--	9.2	--	nS
t _{d(off)}	Turn-Off Delay Time		--	18.7	--	nS
t _f	Turn-Off Fall Time		--	3.1	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=5A	--	--	1.2	V

P-Ch 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	-20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V	--	--	-1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±8V, V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.4	--	-1.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-5.0A	--	50	61	mΩ
		V _{GS} =-2.5V, I _D =-4.0A	--	66	81	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =-10V, V _{GS} =0V, f=1MHz	--	800	--	pF
C _{OSS}	Output Capacitance		--	131	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	103	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-10V, I _D =-5A, V _{GS} =-4.5V	--	15.5	--	nC
Q _{gs}	Gate Source Charge		--	1.3	--	nC
Q _{gd}	Gate Drain Charge		--	2.9	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =-10V, I _D =-5A, V _{GS} =-4.5V, R _G =3Ω	--	4.4	--	nS
t _r	Turn-on Rise Time		--	7.6	--	nS
t _{d(off)}	Turn-Off Delay Time		--	44	--	nS
t _f	Turn-Off Fall Time		--	13.5	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=-5A	--	--	-1.2	V

N-Channel Typical Operating Characteristics



P-Channel Typical Operating Characteristics

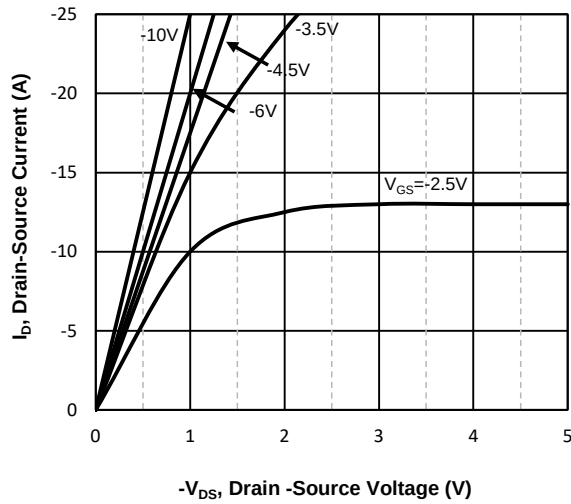


Fig7. Typical Output Characteristics

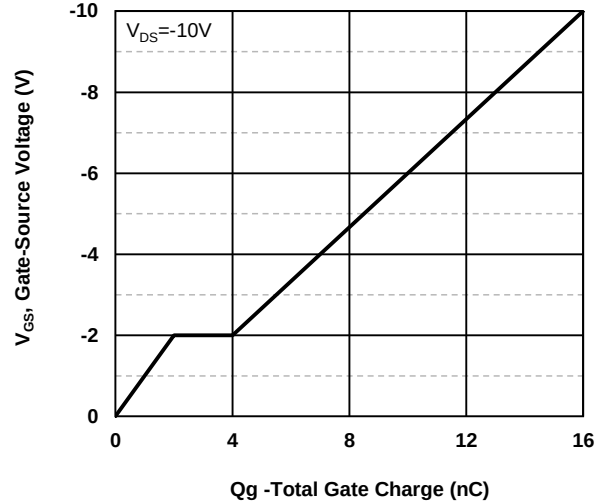


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

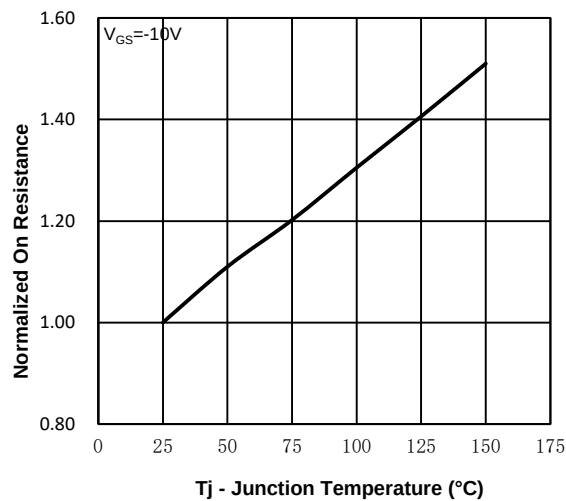


Fig9. Normalized On-Resistance Vs. Temperature

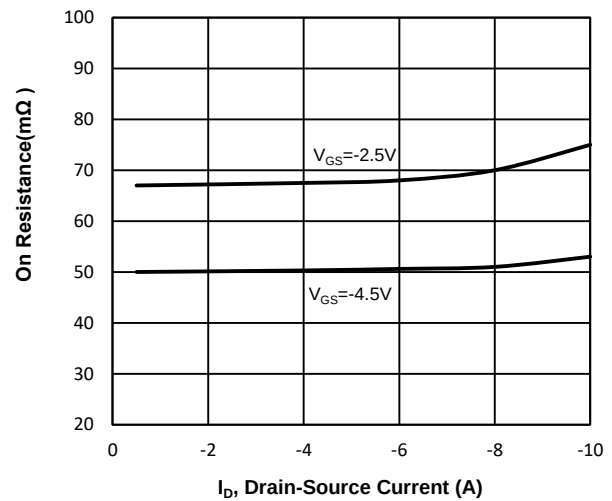


Fig10. On-Resistance Vs. Drain-Source Current

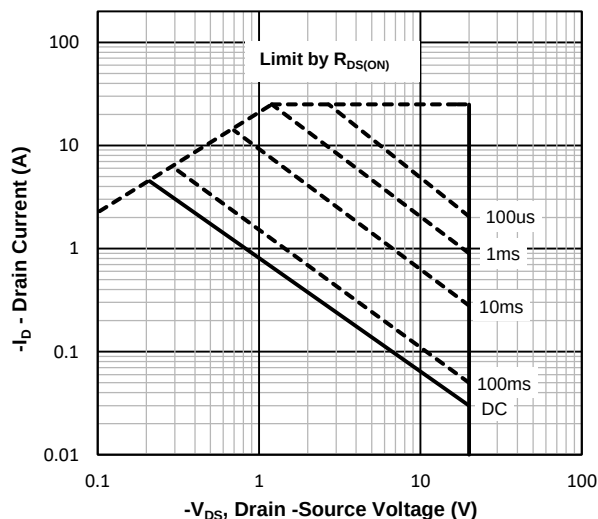


Fig11. Maximum Safe Operating Area

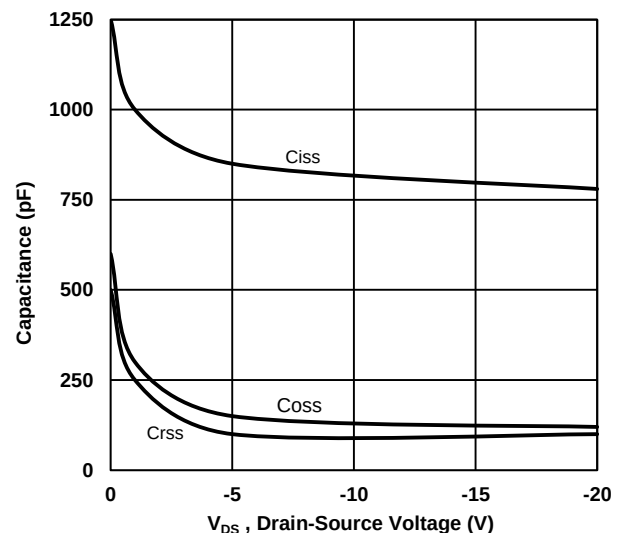
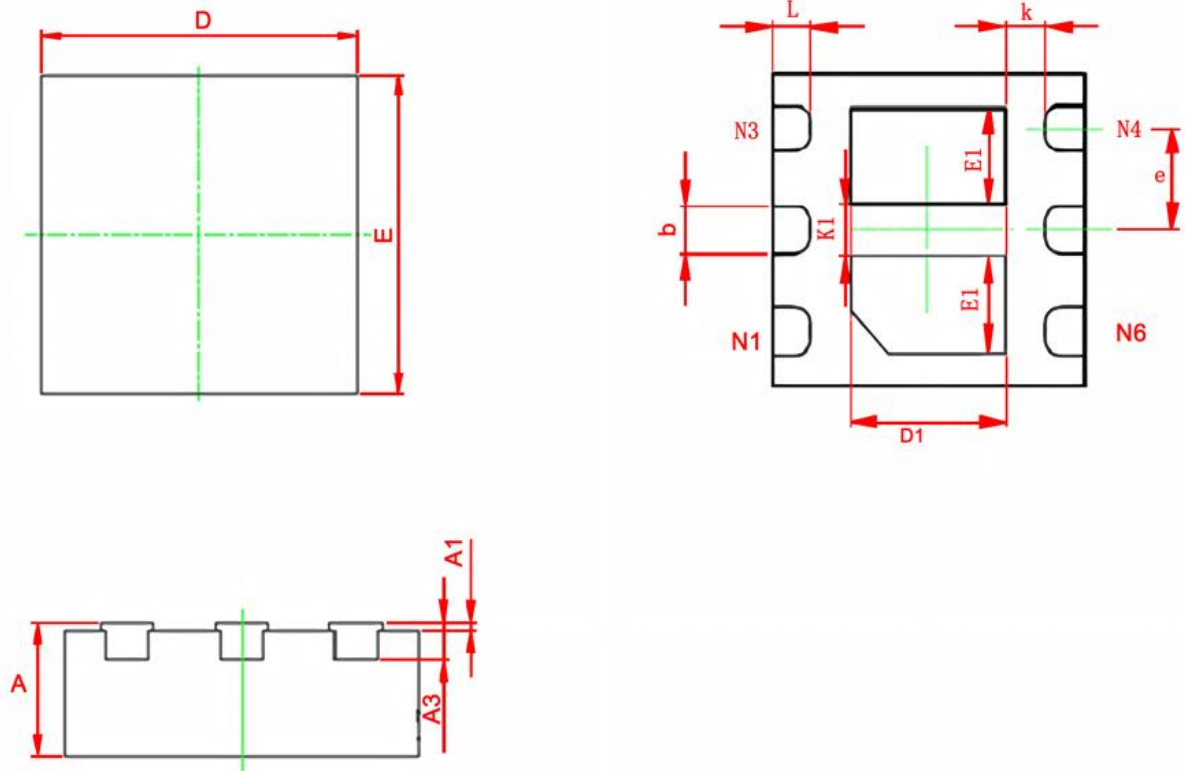


Fig12 Typical Capacitance Vs. Drain-Source Voltage

DFN2X2-6L Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.600	0.700	0.024	0.027
A1	0.000	0.050	0.000	0.001
A3	0.203REF		0.007REF	
b	0.230	0.330	0.009	0.012
D	1.924	2.076	0.075	0.081
E	1.924	2.076	0.075	0.081
e	0.650TYP		0.025TYP	
L	0.224	0.376	0.008	0.014
k	0.200	-	0.007	-
E1	0.520	0.720	0.020	0.028
D1	0.800	1.000	0.031	0.039
K1	0.320TYP		0.012TYP	