

Features

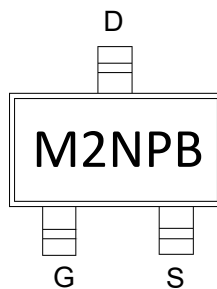
- Trench Power LV MOSFET technology
- High Power and current handing capability

Product Summary

V_{DS}	$R_{DS(ON)}$ MAX	I_D MAX
20V	318mΩ@4.5V	6A
	356mΩ@2.5V	

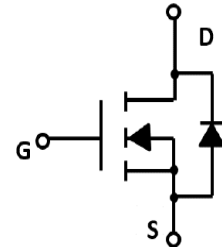
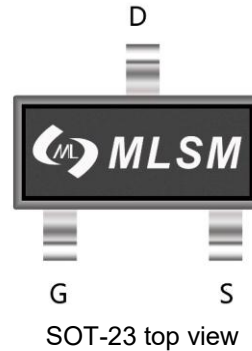
Application

- PWM application
- Load switch



M2NPB: Device code

Marking and pin assignment



Schematic diagram



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		20	V
V _{GS}	Gate-Source Voltage		±8	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	1.75	A

Mounted on Large Heat Sink

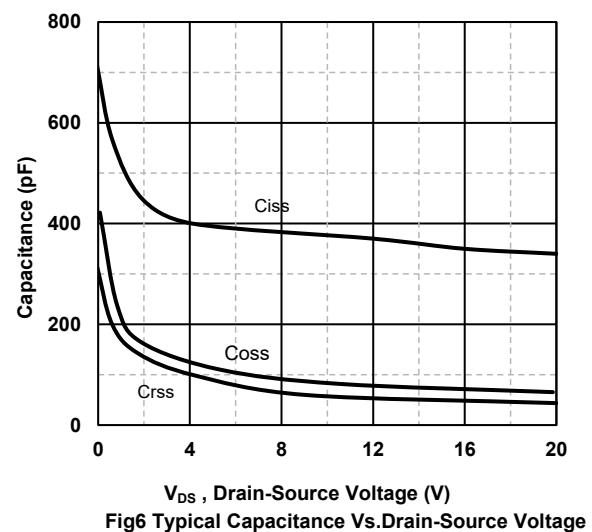
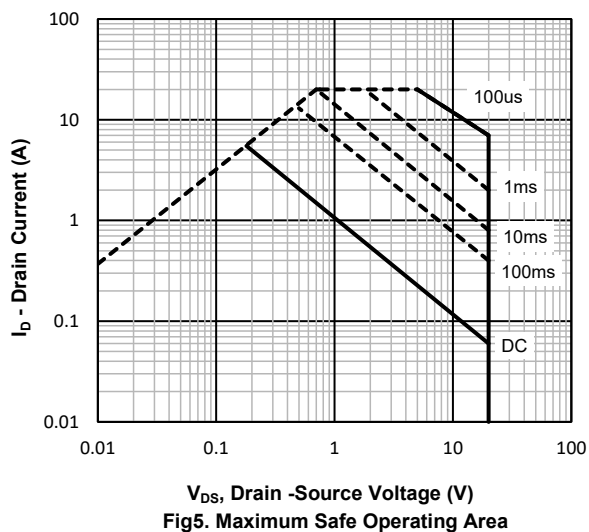
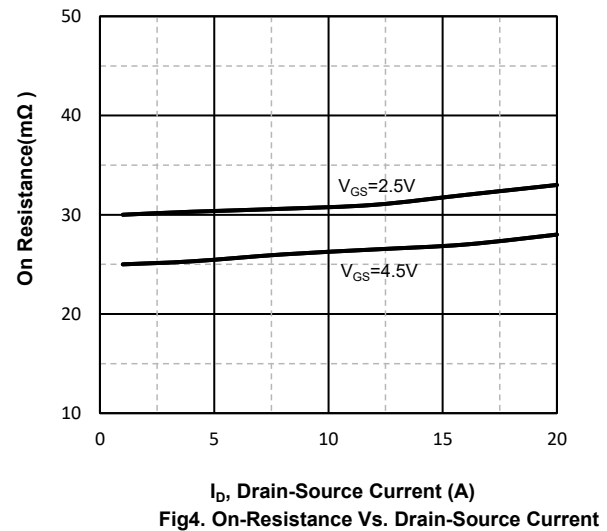
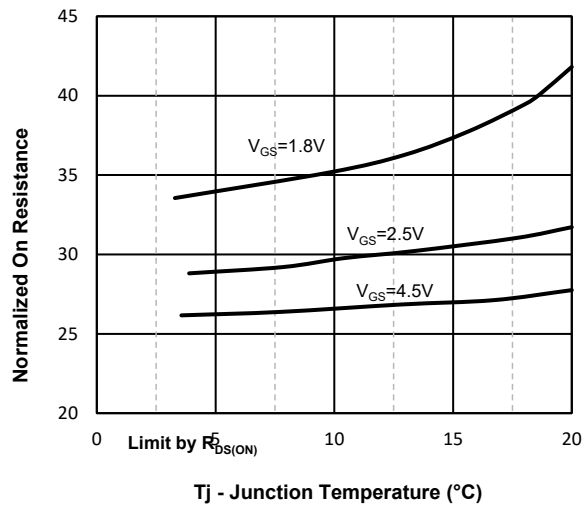
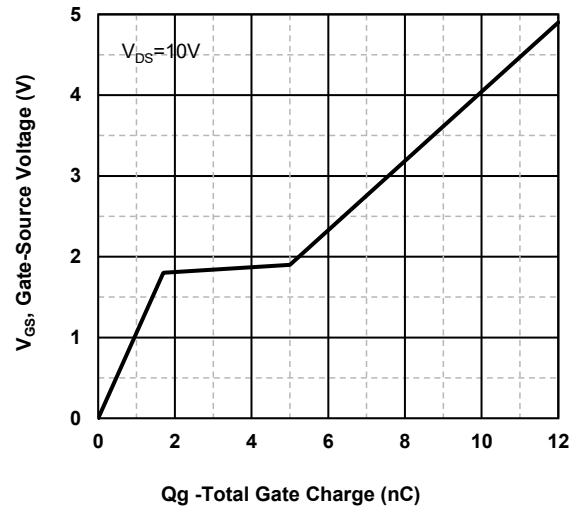
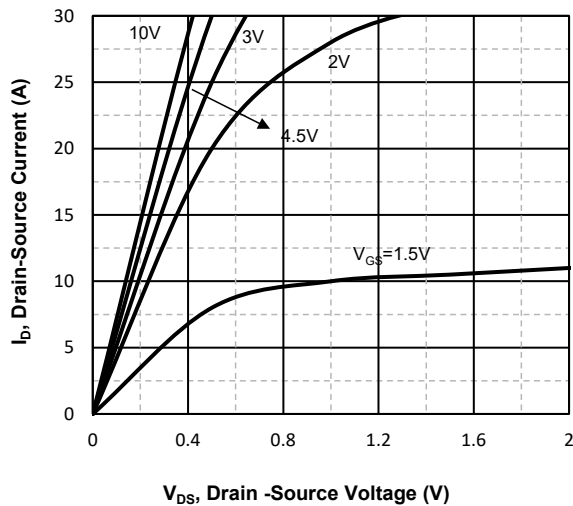
I_{DM}	Pulse Drain Current Tested	$T_C=25^{\circ}C$	20	A
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	6	A
P_D	Maximum Power Dissipation	$T_C=25^{\circ}C$	2.1	W
$R_{\theta JA}$	Thermal Resistance Junction-to-Ambient		100	°C/ W

Ordering Information (Example)

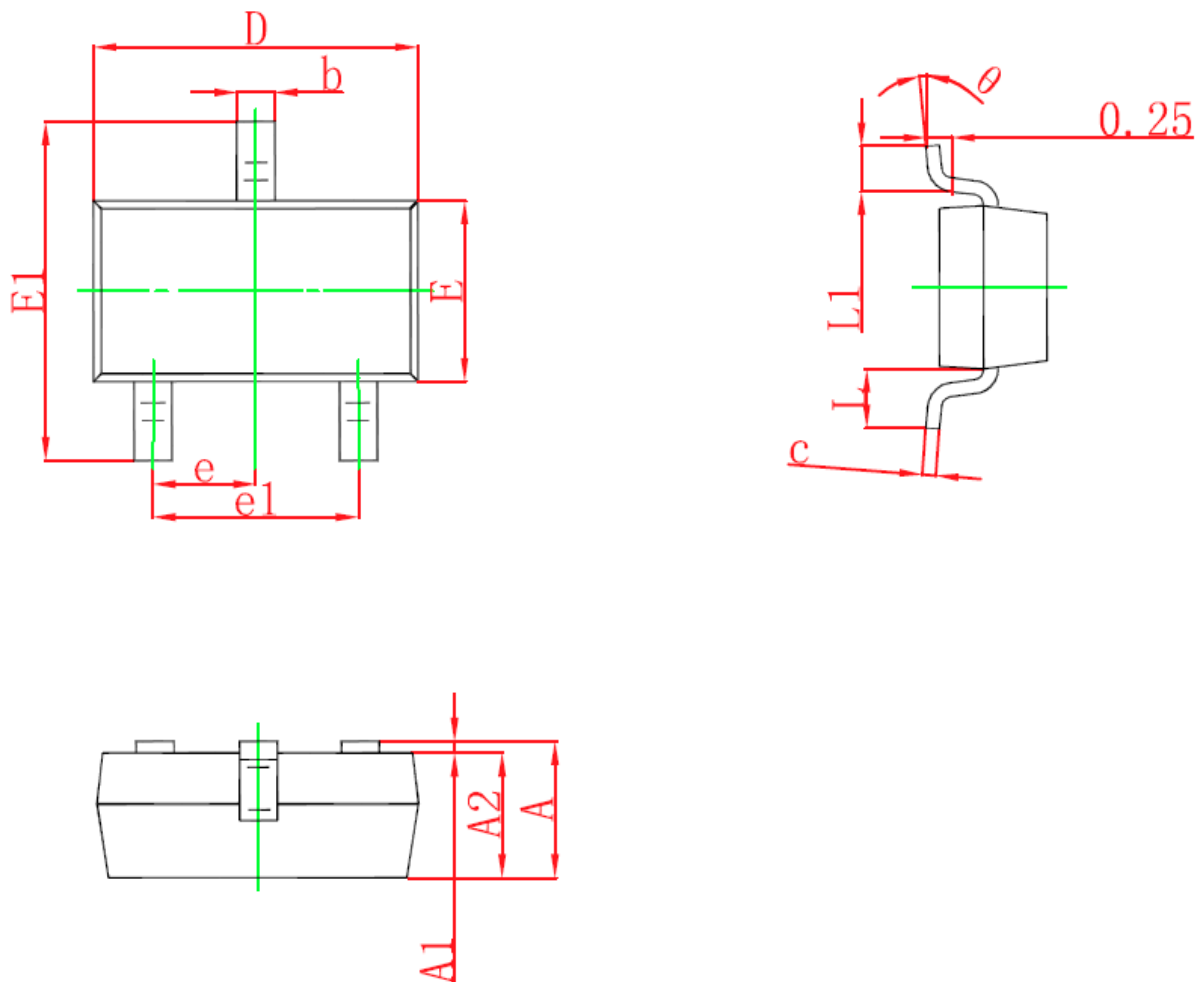
Type	Package	Marking	Minimum Package(pcs)	Inner Box Quantity(pcs)	Outer Carton Quantity(pcs)	Delivery Mode
Si2312CDS	SOT-23	M2NPB	3,000	45,000	180,000	7"reel

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	20	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	--	--	1	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	0.45	--	1.00	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =5.0A	--	26.5	31.8	mΩ
		V _{GS} =2.5V, I _D =4.7A	--	29.6	35.6	mΩ
		V _{GS} =1.8V, I _D =4.3A	--	34.5	41.4	mΩ
Dynamic Electrical Characteristics @ TJ = 25°C (unless otherwise stated)						
C _{ISS}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	--	865	--	pF
C _{OSS}	Output Capacitance		--	105	--	pF
C _{RSS}	Reverse Transfer Capacitance		--	55	--	pF
Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =10V, I _D =5A, V _{GS} =4.5V	--	8.8	--	nC
Q _{gs}	Gate Source Charge		--	1.1	--	nC
Q _{gd}	Gate Drain Charge		--	0.7	--	nC
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V, R _L =2.2Ω, I _D =4A, V _{GS} =4.5V, R _G =1Ω	--	8	--	nS
t _r	Turn-on Rise Time		--	17	--	nS
t _{d(off)}	Turn-Off Delay Time		--	31	--	nS
t _f	Turn-Off Fall Time		--	8	--	nS
Source- Drain Diode Characteristics						
V _{SD}	Forward on voltage	Tj=25°C, Is=4A	--	0.75	1.2	V

Typical Operating Characteristics



SOT-23 Package information



Symbol	Dimensions in Millimeters(mm)		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°