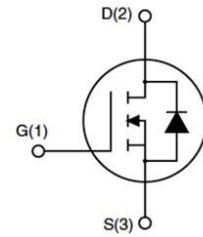


60V N- Channel Enhancement Mode MOSFET

Description

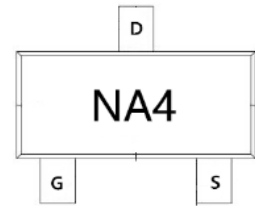
The PM2310 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.



General Features

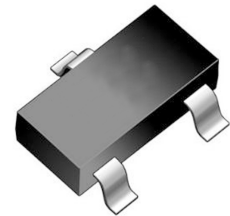
$V_{DS} = 60V$ $I_D = 3A$

$R_{DS(ON)} < 75m\Omega$ @ $V_{GS}=10V$



Application

- Battery protection
- Load switch
- Uninterruptible power supply



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
PM2310	SOT23	NA4	3000

Absolute Maximum Ratings@Tj=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	+20	V
$I_D@T_A=25^\circ C$	Drain Current ³ , V_{GS} @ 10V	3.2	A
$I_D@T_A=70^\circ C$	Drain Current ³ , V_{GS} @ 10V	2.5	A
I_{DM}	Pulsed Drain Current ¹	12	A
$P_D@T_A=25^\circ C$	Total Power Dissipation	1.38	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient ³	90	°C/W

60V N- Channel Enhancement Mode MOSFET
Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =3A	-	55	75	mΩ
		V _{GS} =4.5V, I _D =2A	-	72	135	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	-	7	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =48V, V _{GS} =0V	-	-	10	μA
I _{GSS}	Gate-Source Leakage	V _{GS} =+20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =3A	-	6	9.6	nC
Q _{gs}	Gate-Source Charge	V _{DS} =30V	-	1.5	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	3.5	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =30V	-	5	-	ns
t _r	Rise Time	I _D =1A	-	6.5	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	17	-	ns
t _f	Fall Time	V _{GS} =10V	-	3.5	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	470	750	pF
C _{oss}	Output Capacitance	V _{DS} =15V f=1.0MHz	-	50	-	pF
C _{rss}	Reverse Transfer Capacitance		-	45	-	pF
V _{SD}	Forward On Voltage ²	I _S =1.2A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time ²	I _S =3A, V _{GS} =0V, dI/dt=100A/μs	-	20	-	ns
Q _{rr}	Reverse Recovery Charge		-	16	-	nC

Notes:

1.Pulse width limited by Max. junction temperature.

2.Pulse test

3.Surface mounted on 1 in² copper pad of FR4 board, t ≤ 10s ; 270°C/W when mounted on min. copper pad

60V N- Channel Enhancement Mode MOSFET

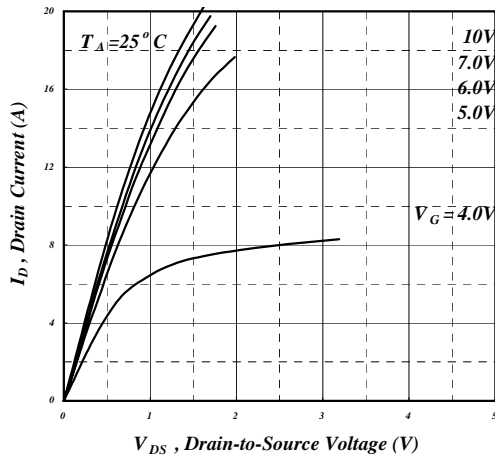


Fig 1. Typical Output Characteristics

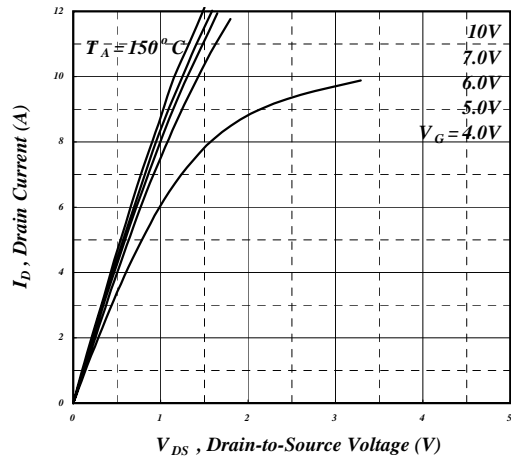


Fig 2. Typical Output Characteristics

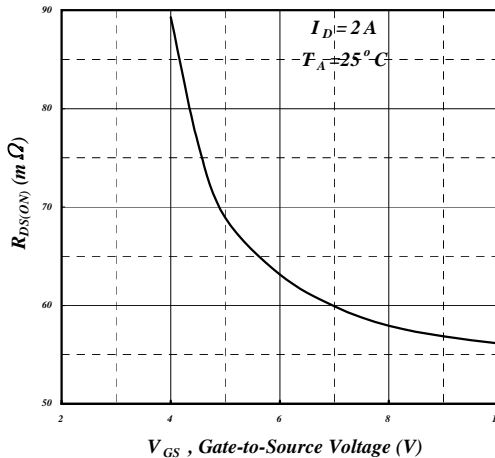


Fig 3. On-Resistance v.s. Gate Voltage

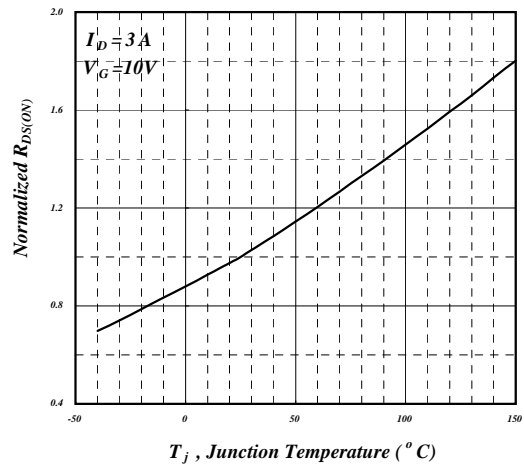


Fig 4. Normalized On-Resistance v.s. Junction Temperature

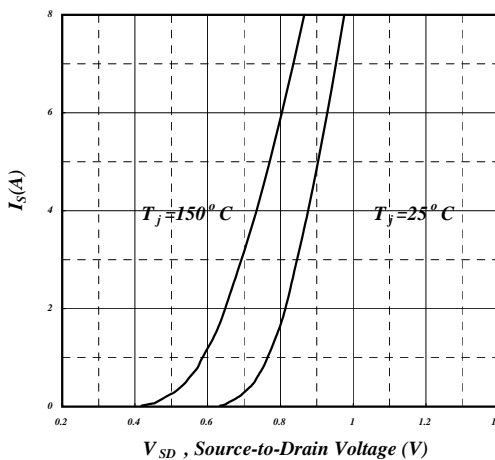


Fig 5. Forward Characteristic of Reverse Diode

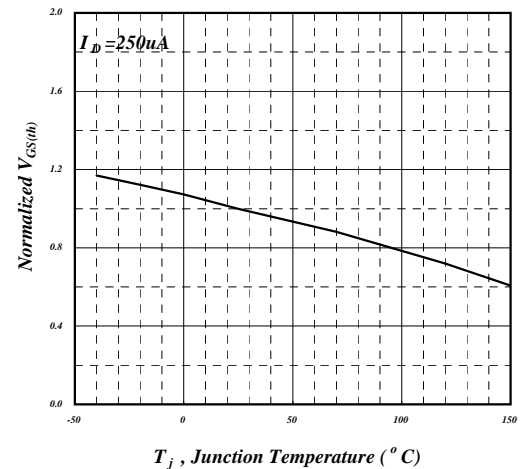


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

60V N- Channel Enhancement Mode MOSFET

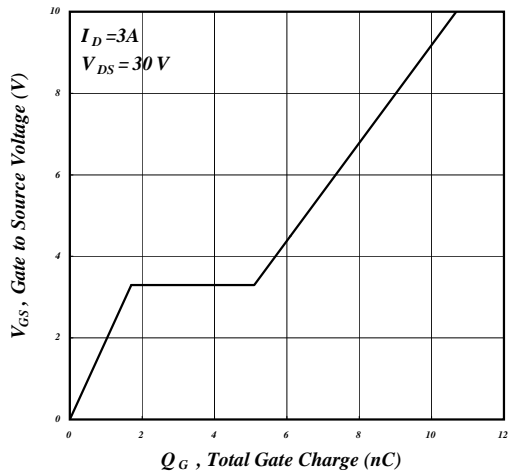


Fig 7. Gate Charge Characteristics

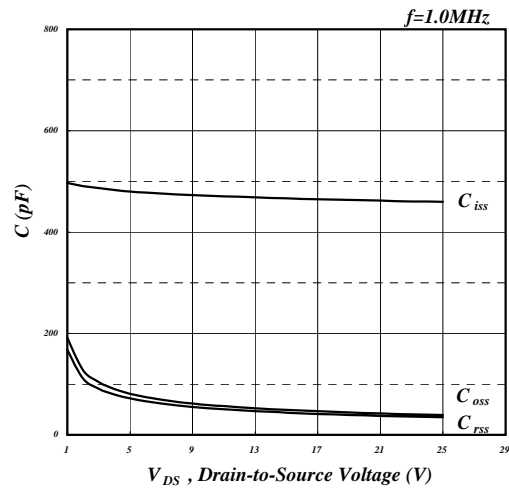


Fig 8. Typical Capacitance Characteristics

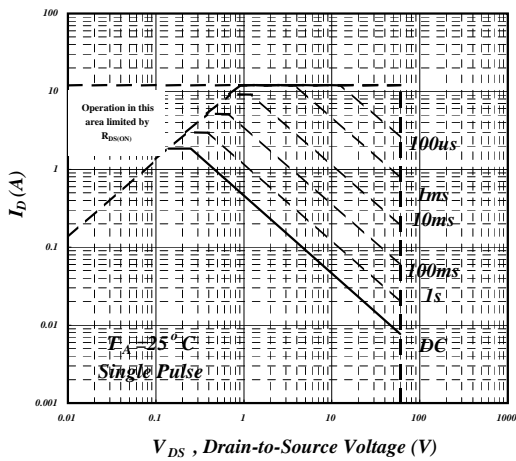


Fig 9. Maximum Safe Operating Area

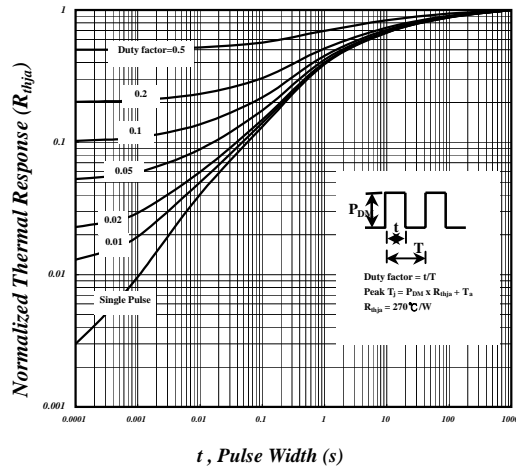


Fig 10. Effective Transient Thermal Impedance

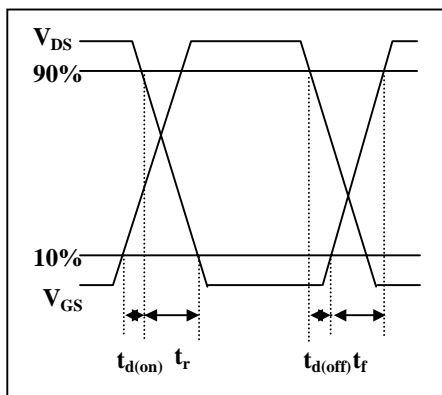


Fig 11. Switching Time Waveform

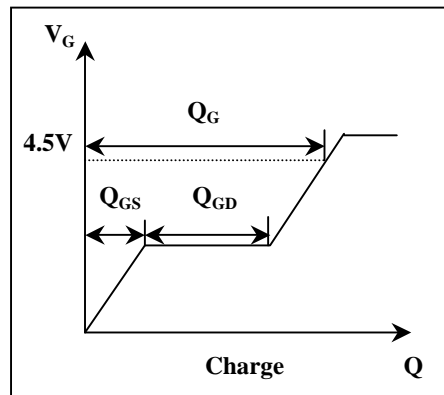
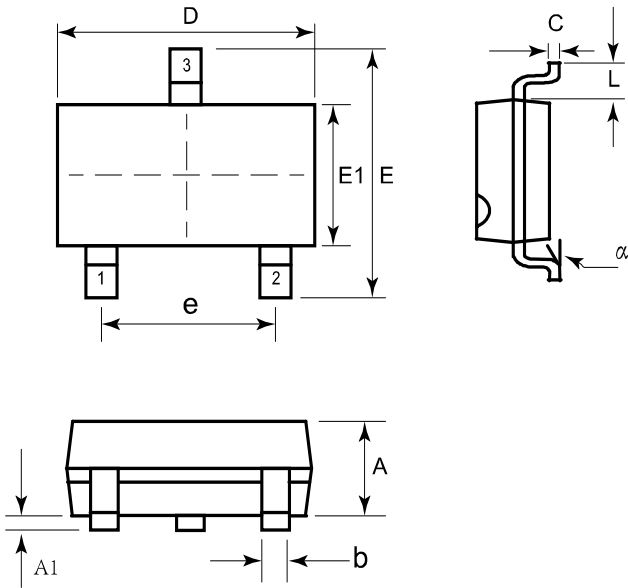


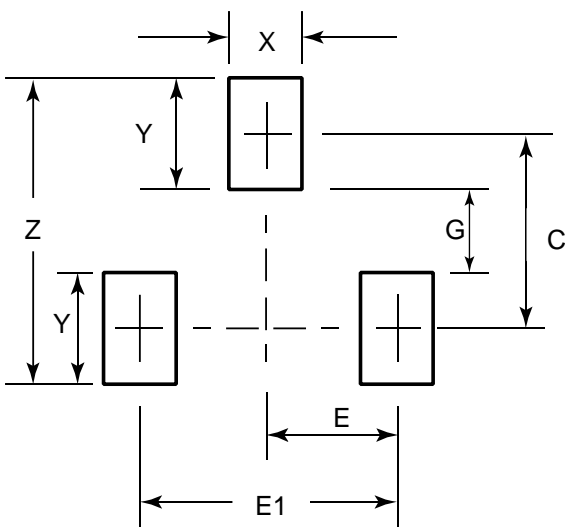
Fig 12. Gate Charge Waveform

SOT-23 Package Outline Drawing



SYM	DIMENSIONS					
	INCHES			MILLIMETERS		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.035	0.037	0.040	0.88	0.95	1.02
A1	0.000	-	0.004	0.01	-	0.10
b	0.012	-	0.020	0.30	-	0.51
C	0.003	-	0.007	0.08	-	0.18
D	0.110	0.114	0.120	2.80	2.90	3.04
E	0.082	0.093	0.104	2.10	2.37	2.64
E1	0.047	0.051	0.055	1.20	1.30	1.40
e	0.075 BSC			1.90 BSC		
L	0.022 BSC			0.55 BSC		
α	0°		8°	0°		8°

Suggested Land Pattern



SYM	DIMENSIONS	
	MILLIMETERS	INCHES
C	2.20	0.087
E	0.95	0.037
E1	1.90	0.075
G	0.80	0.031
X	1.00	0.039
Y	1.40	0.055
Z	3.60	0.141