

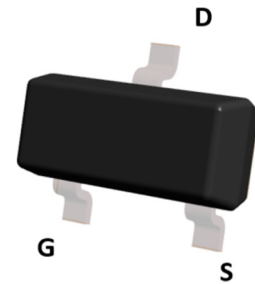
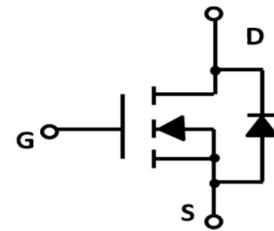
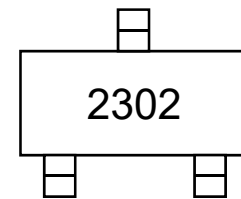
Description

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

MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
20	30@ $V_{GS} = 4.5V$	4.0
	45@ $V_{GS} = 2.5V$	

Applications

- PWM application
- Load switch


Top View

Circuit Diagram

Marking (Top View)
Absolute maximum rating@25°C

Rating	Symbol	Value	Units
Drain-source Voltage	V_{DS}	20	V
Gate-source Voltage	V_{GS}	± 10	V
Drain Current	I_D	$T_A=25^\circ C$ @ Steady State	4.0
		$T_A=70^\circ C$ @ Steady State	3.5
Pulsed Drain Current ¹⁾	I_{DM}	18	A
Total Power Dissipation @ $T_A=25^\circ C$	P_D	1.0	W
Thermal Resistance Junction-to-Ambient @ Steady State ²⁾	$R_{\theta JA}$	125	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

Notes:

1) Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2) Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 16V, V_{GS} = 0V, T_C = 25^\circ C$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 10V, V_{DS} = 0V$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1.0	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 4.0A$	-	-	30	m Ω
		$V_{GS} = 2.5V, I_D = 3.0A$	-	-	45	
Diode Forward Voltage	V_{SD}	$I_S = 4.3A, V_{GS} = 0V$	-	-	1.2	V
Maximum Body-Diode Continuous Current	I_S		-	-	4.0	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	-	595	-	pF
Output Capacitance	C_{oss}		-	106	-	
Reverse Transfer Capacitance	C_{rss}		-	59	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS} = 4.5V, V_{DS} = 10V, I_D = 4.0A$	-	6.6	-	nC
Gate Source Charge	Q_{gs}		-	0.9	-	
Gate Drain Charge	Q_{gd}		-	1.4	-	
Turn-on Delay Time	$t_{D(on)}$	$V_{GS} = 4.5V, V_{DD} = 10V, R_L = 1.5\Omega, R_{GEN} = 3\Omega$	-	13	-	ns
Turn-on Rise Time	t_r		-	54	-	
Turn-off Delay Time	$t_{D(off)}$		-	18	-	
Turn-off Fall Time	t_f		-	11	-	

Typical Characteristics

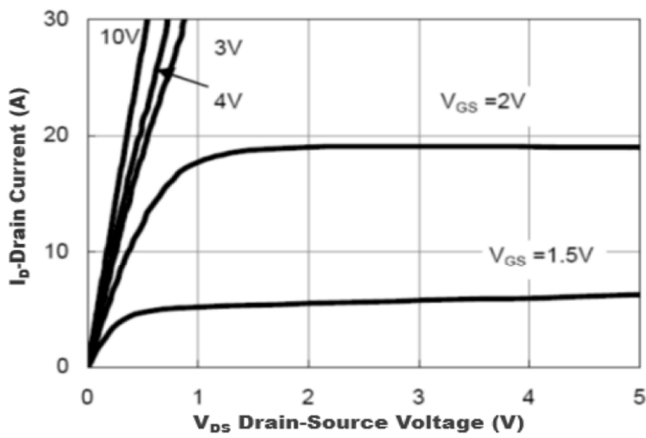


Figure1. Output Characteristics

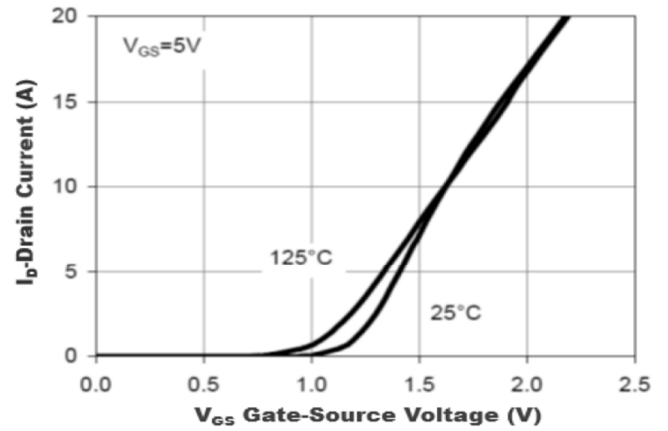


Figure2. Transfer Characteristics

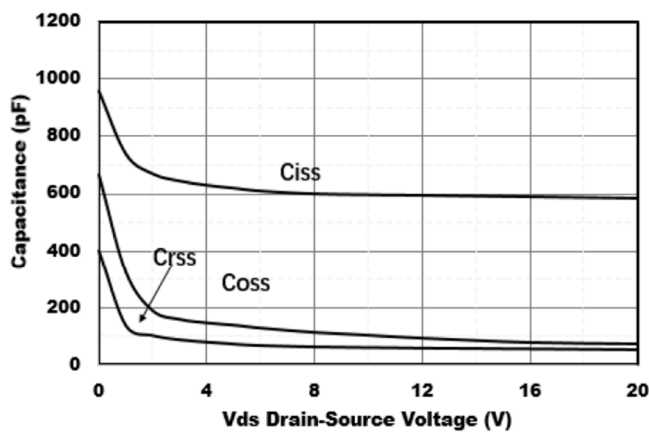


Figure3. Capacitance Characteristics

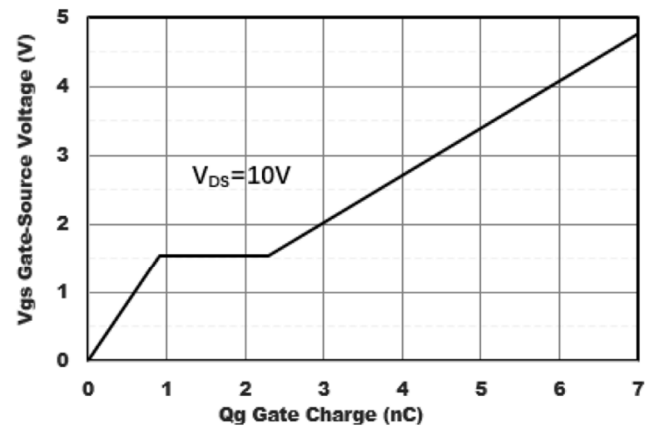


Figure4. Gate Charge

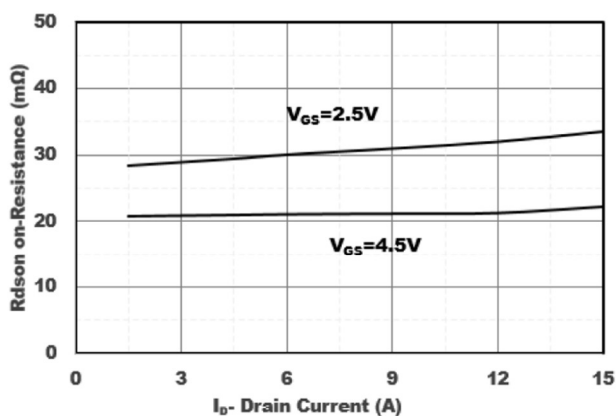


Figure5. Drain-Source on Resistance

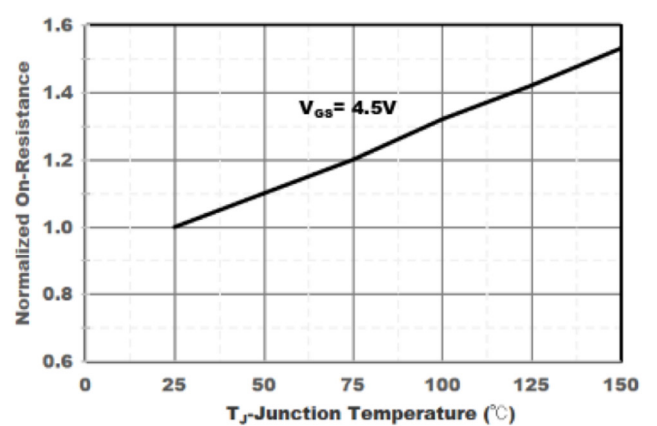


Figure6. Drain-Source on Resistance

N-Channel MOSFET

PNMT2302

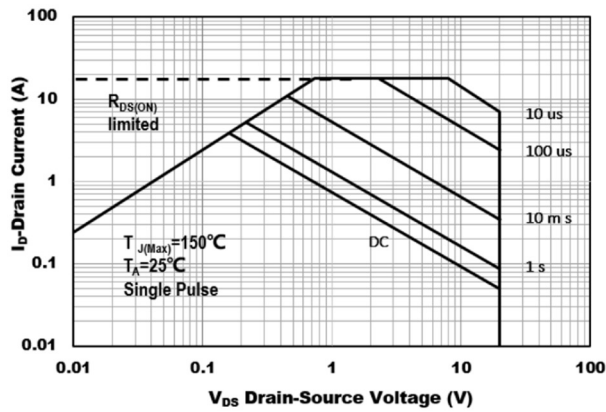


Figure7. Safe Operation Area

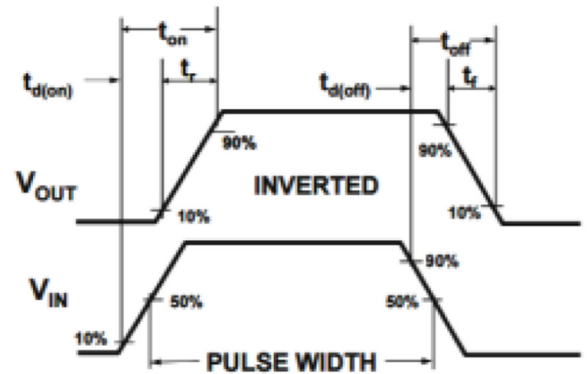
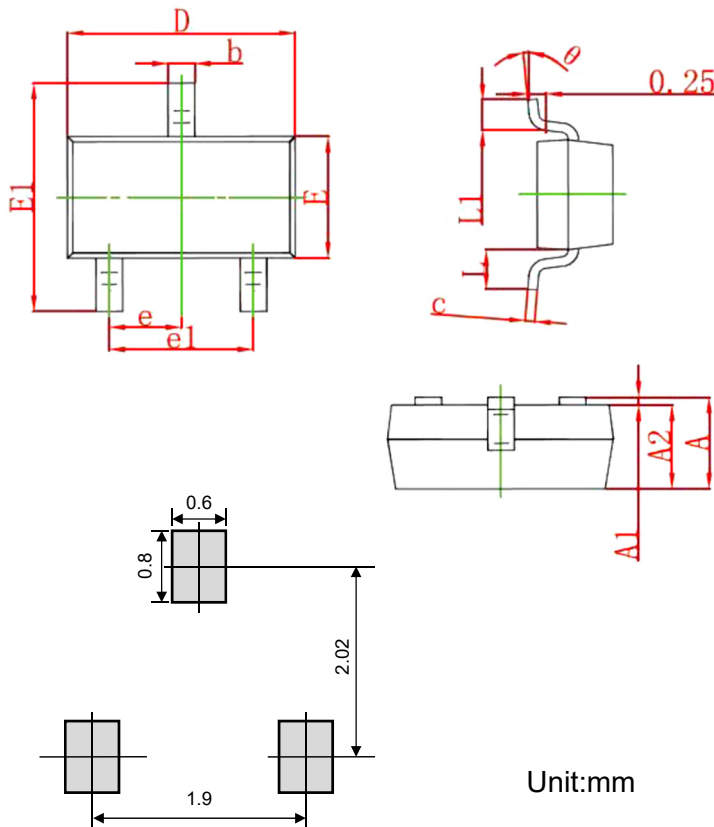


Figure8. Switching wave

Product dimension (SOT-23)



Suggested PCB Layout


Dim	Millimeters		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	0.950 Typ.		0.037 Typ.	
e1	1.800	2.000	0.071	0.079
L	0.550 Ref.		0.022 Ref.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

Unit:mm

Ordering information

Device	Package	Reel	Shipping
PNMT2302	SOT-23 (Pb-Free)	7"	3000 / Tape & Reel


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