

Description

The PPMT2305 uses advanced trench technology to provide excellent $R_{DS(on)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

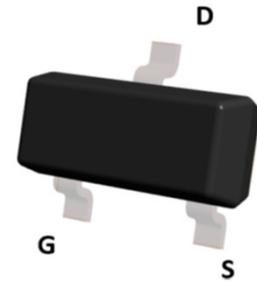
MOSFET Product Summary		
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)(Typ)$	$I_D(A)$
-20	22@ $V_{GS} = -4.5V$	-6
	28@ $V_{GS} = -2.5V$	

Feature

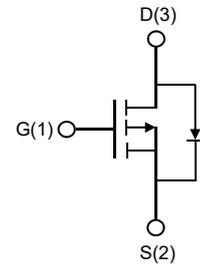
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package

Applications

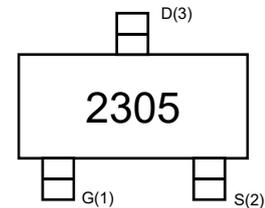
- PWM applications
- Load switch
- Power management
- DC-DC Converters
- Wireless Chargers



**SOT-23
(Bottom 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}	± 12	V
Drain Current-Continuous ¹⁾	I_D	$T_C=25^\circ C$	-6.0
		$T_C=100^\circ C$	-4.8
Pulsed Drain Current ²⁾	I_{DM}	-16	A
Total Power Dissipation ³⁾	P_D	1.3	W
Thermal Resistance , Junction-to-Ambient ⁴⁾	$R_{\theta JA}$	93	$^\circ C/W$
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ C$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = -250\mu A$	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$	-	-	-1.0	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4	-0.6	-1.1	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	$V_{GS} = -4.5V, I_D = -4A$	-	22	28	m Ω
		$V_{GS} = -2.5V, I_D = -3A$	-	28	38	
Dynamic Characteristics⁶⁾						
Input Capacitance	C_{ISS}	$V_{DS} = -10V, V_{GS} = 0V,$ $f = 1.0MHz$	-	1000	-	pF
Output Capacitance	C_{OSS}		-	99	-	
Reverse Transfer Capacitance	C_{RSS}		-	80	-	
Switching Characteristics⁶⁾						
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = -10V, V_{GS} = -4.5V,$ $R_G = 1\Omega, I_D = -3.3A$	-	10	-	μs
Turn-on Rise Time	t_r		-	32	-	
Turn-Off Delay Time	$t_{d(off)}$		-	50	-	
Turn-Off Fall Time	t_f		-	51	-	
Total Gate Charge	Q_g	$V_{DS} = -16V, V_{GS} = -4.5V,$ $I_D = -5A$	-	8.8	-	nC
Gate-Source Charge	Q_{gs}		-	1.4	-	
Gate-Drain Charge	Q_{gd}		-	1.9	-	
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -2A$	-	-0.8	-1.2	V

Notes:

1. Computed continuous current assumes the condition of T_{J_Max} while the actual continuous current depends on the thermal & electro-mechanical application board design.
2. Repetitive Rating: Pulse width limited by maximum junction temperature($T_{J_Max}=150^\circ C$).
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square copper pad layout.
5. Guaranteed by design, not subject to production.

Typical Characteristics

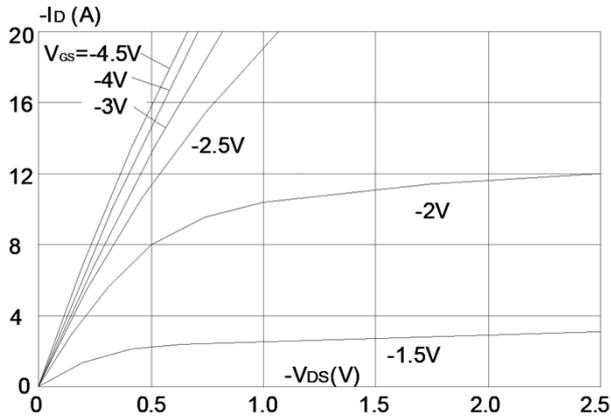


Figure 1: Output Characteristics

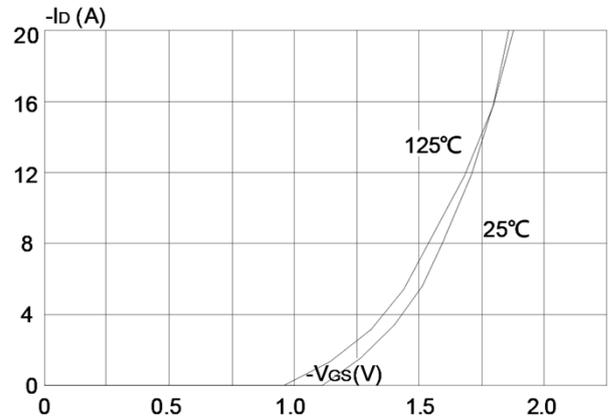


Figure 2: Typical Transfer Characteristics

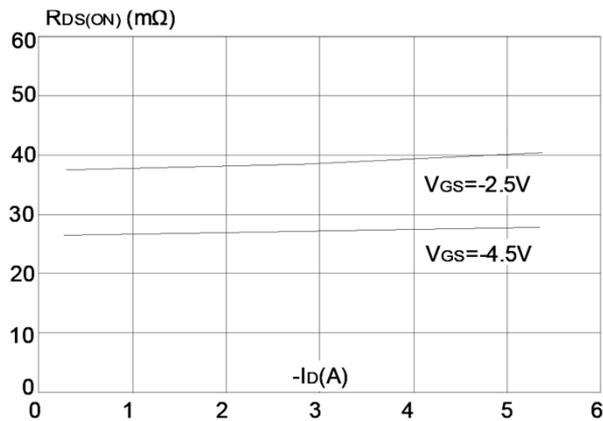


Figure 3: On-resistance vs. Drain Current

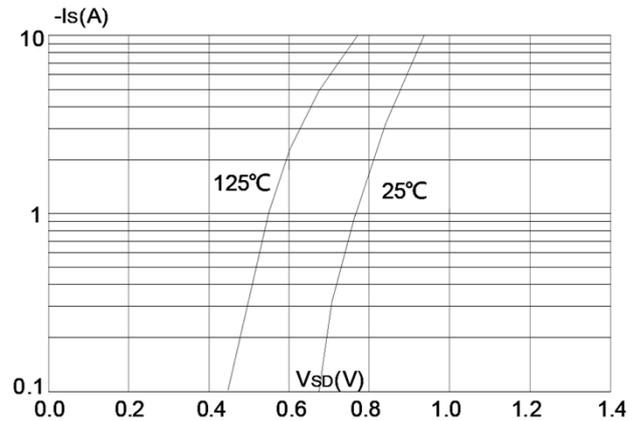


Figure 4: Body Diode Characteristics

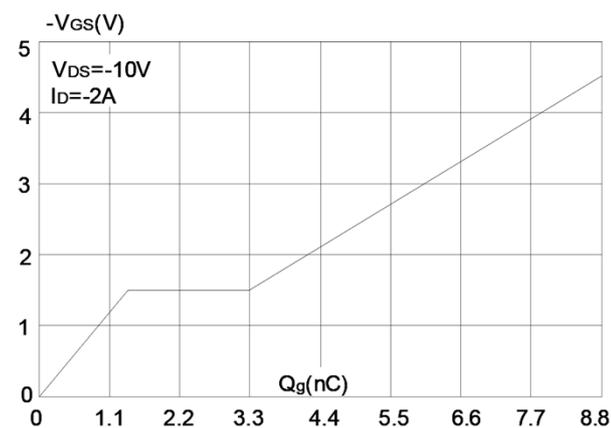


Figure 5: Gate Charge Characteristics

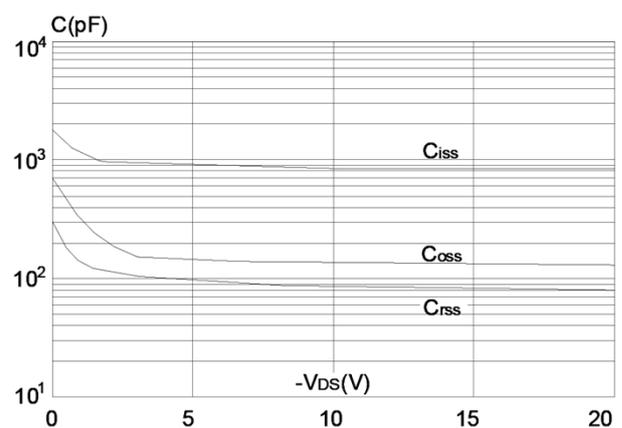


Figure 6: Capacitance Characteristics

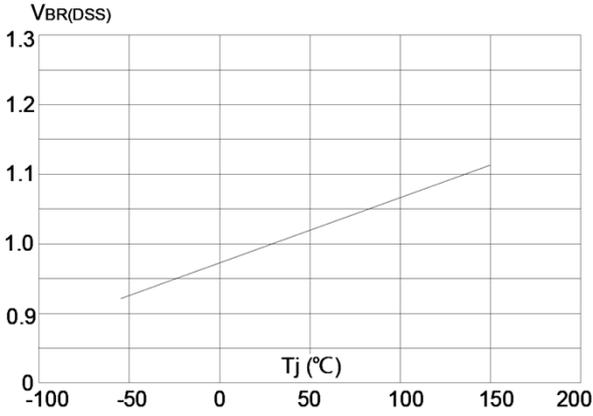


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

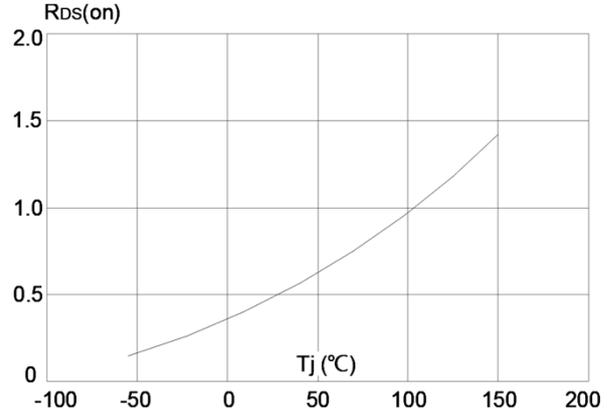


Figure 8: Normalized on Resistance vs. Junction Temperature

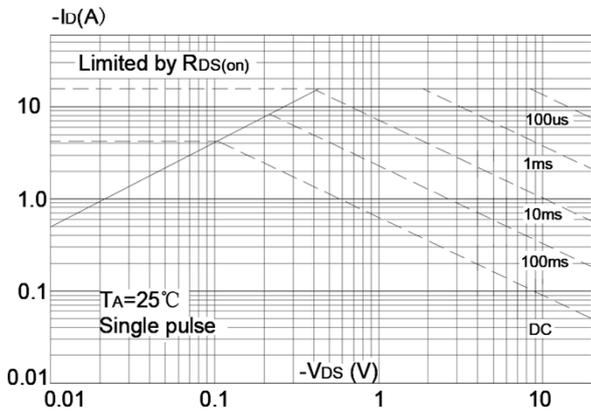


Figure 9: Maximum Safe Operating Area

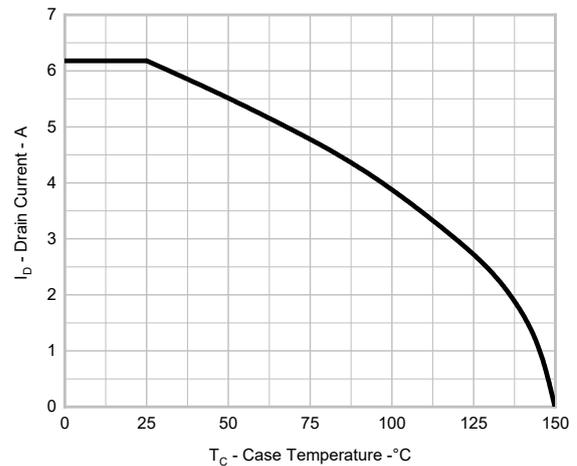


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

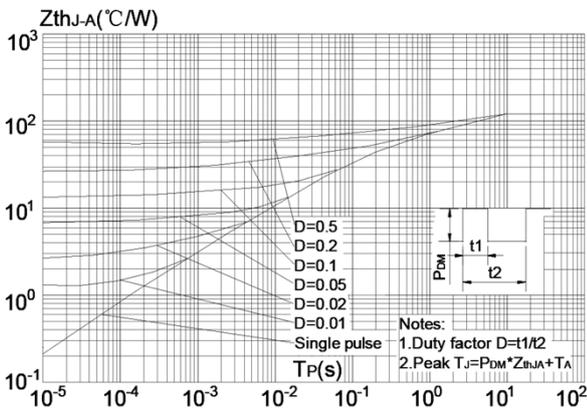
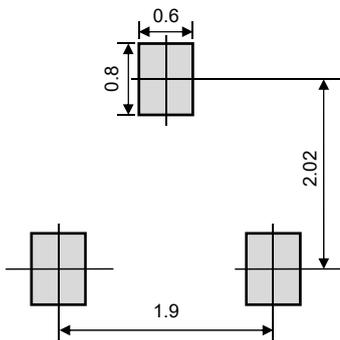
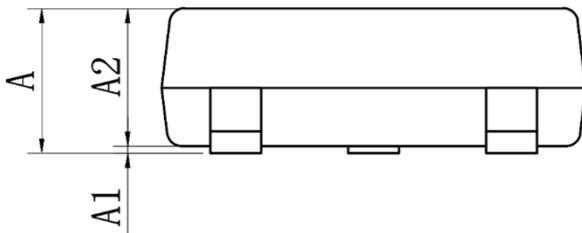
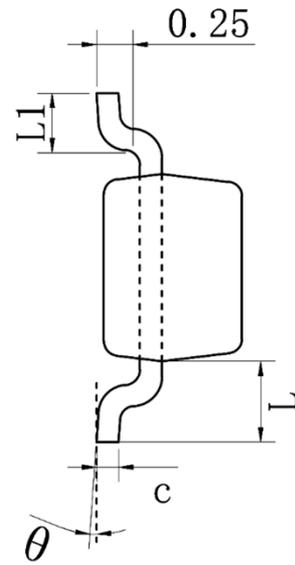
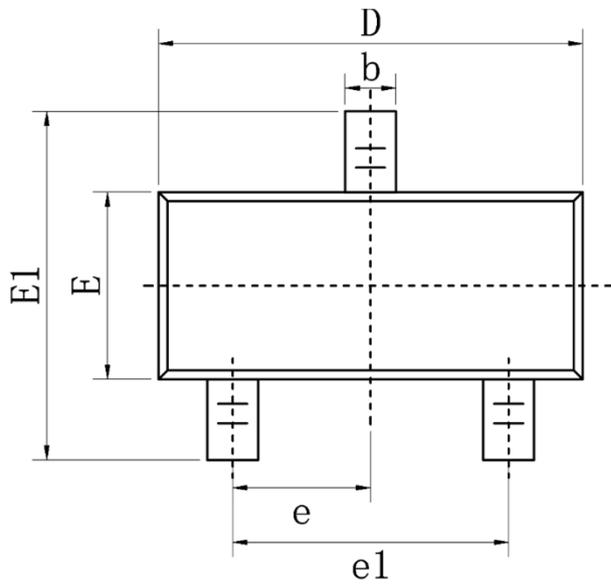


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Product Dimension (SOT-23)



Suggested PCB Layout

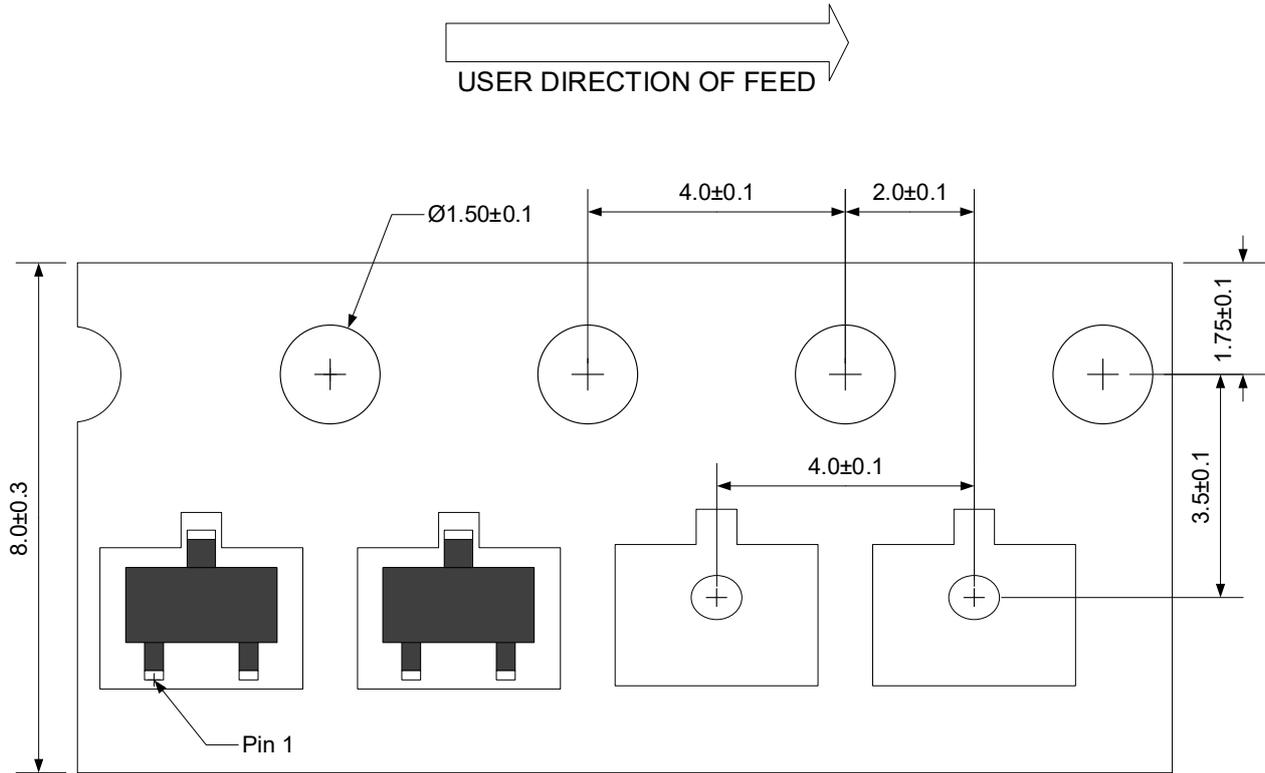
Unit: mm

Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.50	0.012	0.020
c	0.05	0.25	0.002	0.010
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
E1	2.25	2.55	0.089	0.100
e	0.95 Typ.		0.037 Typ.	
e1	1.90 Typ.		0.075 Typ.	
L	0.55 Ref.		0.022 Ref.	
L1	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°

Ordering Information

Device	Package	Reel	Shipping
PPMT2305	SOT-23	7"	3000 / Tape & Reel

Load With Information



Unit:mm

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