

### • General Description

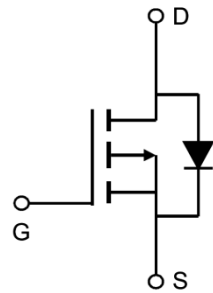
AP2305B combines advanced MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ . This device is most suitable to load switch or PWM applications.

### • Applications

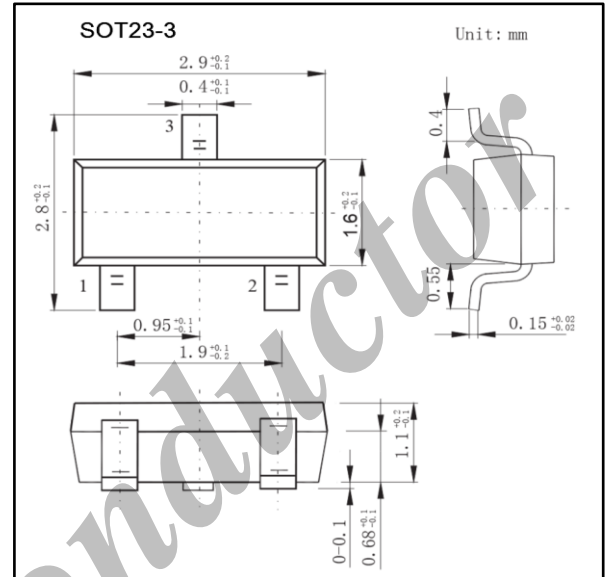
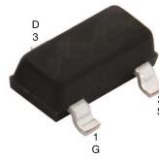
- DC-DC converter for portable devices
- Load switch

### • Product Summary

$V_{DS}$	-8V
$I_D$ (at $V_{GS} = -4.5V$ )	-3.5A
$R_{DS(ON)}$ (at $V_{GS} = -4.5V, I_D = -3.5A$ )	< 52m $\Omega$
$R_{DS(ON)}$ (at $V_{GS} = -2.5V, I_D = -3A$ )	< 71m $\Omega$
$R_{DS(ON)}$ (at $V_{GS} = -1.8V, I_D = -2A$ )	< 108m $\Omega$



Top View



### • Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-8	V
Gate-Source Voltage	$V_{GS}$	$\pm 8$	V
Continuous Drain Current ( $T_j = 150^\circ C$ )	$I_D$	$T_a = 25^\circ C$	-3.5
		$T_a = 70^\circ C$	-2.8
Pulsed Drain Current	$I_{DM}$	-12	A
Power Dissipation ** Note (i) & (ii)	$P_D$	$T_a = 25^\circ C$	1.25
		$T_a = 70^\circ C$	0.8
Junction and Storage Temperature Range	$T_j, T_{STG}$	-55 to 150	$^\circ C$
Thermal Characteristics			
Thermal Resistance, Junction-to-Ambient ** Note (i) & (ii)	$R_{\theta JA}$	100	$^\circ C/W$

- Notes  
 (i) Surface Mounted on FR4 Board  
 (ii)  $t \leq 5s$

• **Electrical Characteristics Ta = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{DSS}$	$V_{GS}=0V, I_D=-10\mu A$	-8			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-8V, V_{GS}=0V$			-1	$\mu A$
		$V_{DS}=-8V, V_{GS}=0V, T_J=55^\circ C$			-10	
Gate-Body Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 8V$			$\pm 100$	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.45		-0.8	V
On-State Drain Current ** Note (a)	$I_{D(ON)}$	$V_{DS} \leq -5V, V_{GS}=-4.5V$	-6			A
		$V_{DS} \leq -5V, V_{GS}=-2.5V$	-3			
Static Drain-Source On-Resistance ** Note (a)	$R_{DS(ON)}$	$V_{GS}=-4.5V, I_D=-3.5A$		44	52	m $\Omega$
		$V_{GS}=-2.5V, I_D=-3.0A$		60	71	
		$V_{GS}=-1.8V, I_D=-2.0A$		87	108	
Forward Transconductance ** Note (a)	$g_{FS}$	$V_{DS}=-5V, I_D=-3.5A$		8.5		S
Diode Forward Voltage	$V_{SD}$	$I_S=-1.6A, V_{GS}=0V$			-1.2	V
Maximum Body-Diode Continuous Current ** Note (i) & (ii)	$I_S$				-1.6	A
<b>Dynamic Parameters ** Note (b)</b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-4V, V_{GS}=0V, f=1MHz$		1245		pF
Output Capacitance	$C_{oss}$			375		
Reverse Transfer Capacitance	$C_{rss}$			210		
<b>Switching Parameters ** Note (b)</b>						
Total Gate Charge	$Q_g$	$V_{DS}=-4V, V_{GS}=-4.5V, I_D=-3.5A$		10	15	nC
Gate Source Charge	$Q_{gs}$			2		
Gate Drain Charge	$Q_{gd}$			2		
Turn-On Delay Time	$t_{D(on)}$	$V_{DD}=-4V, R_L=4\Omega, I_D=-1A, V_{GEN}=-4.5V, R_{GEN}=6\Omega,$		13	20	ns
Turn-On Rise Time	$t_r$			25	40	
Turn-Off Delay Time	$t_{D(off)}$			55	80	
Turn-Off Fall Time	$t_f$			19	35	

Notes

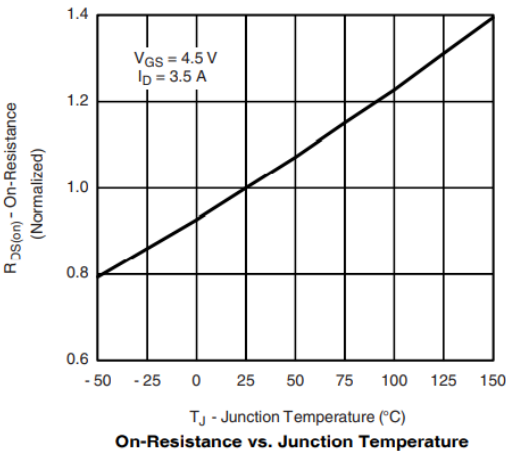
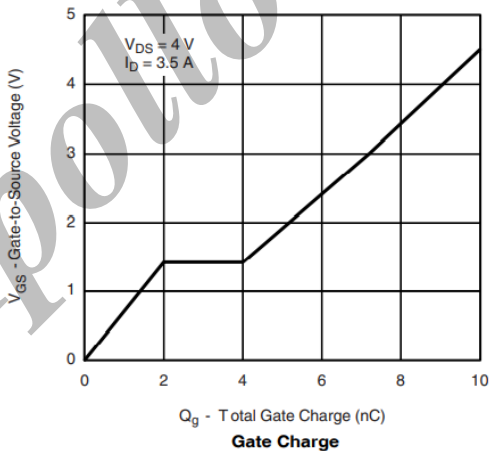
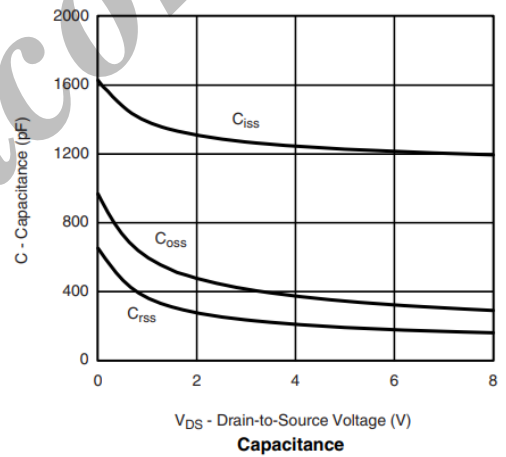
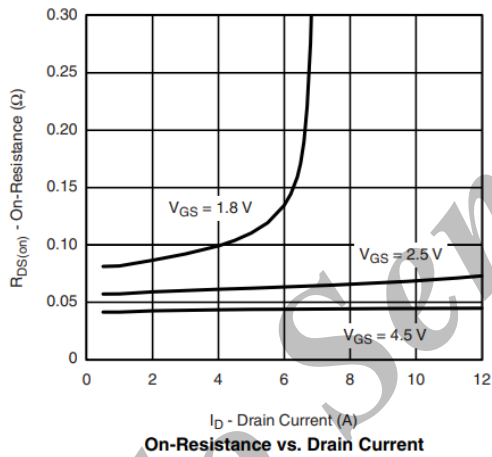
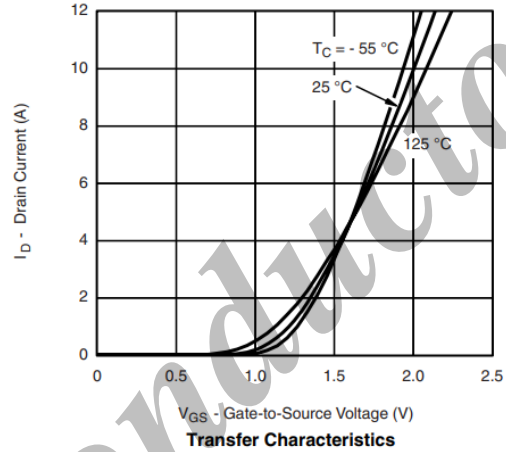
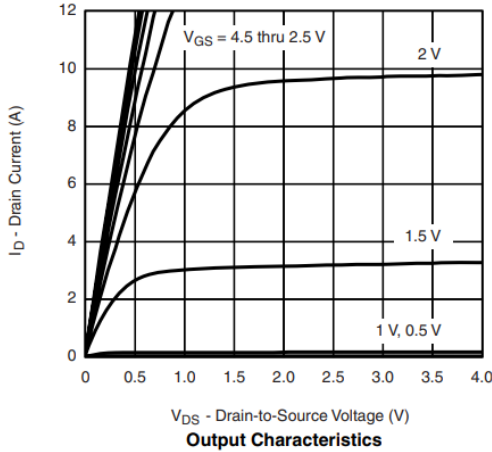
- (a) For DESIGN AID ONLY, not subject to production testing.
- (b) Pulse test:  $PW \leq 300\mu s$ , duty cycle  $\leq 2\%$ .
- (c) Switching time is essentially independent of operating temperature.

• **Ordering Information**

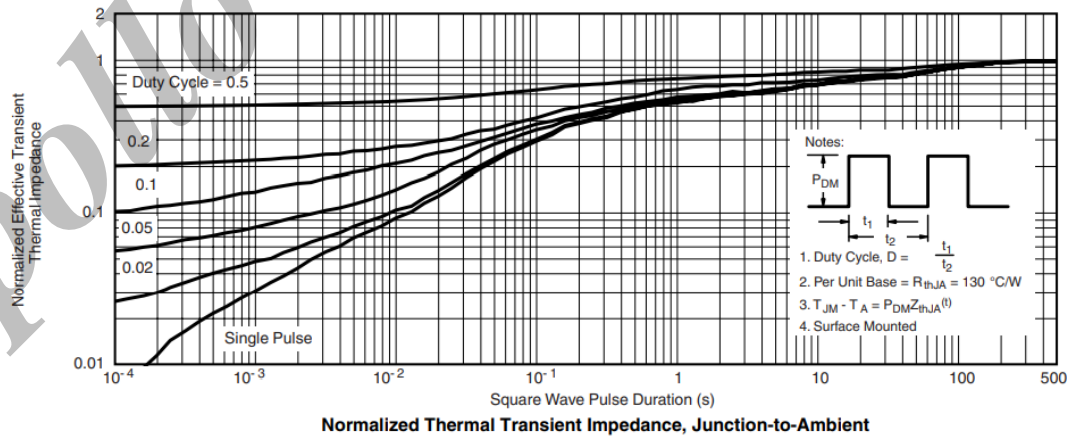
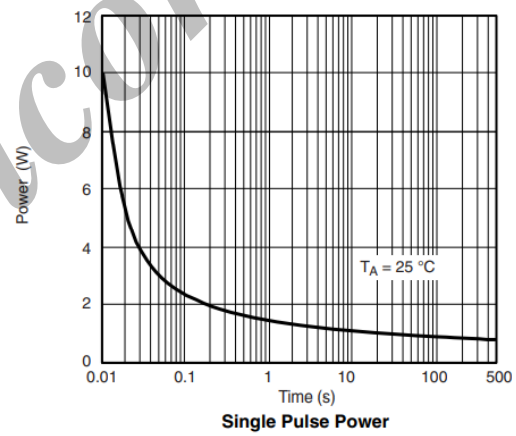
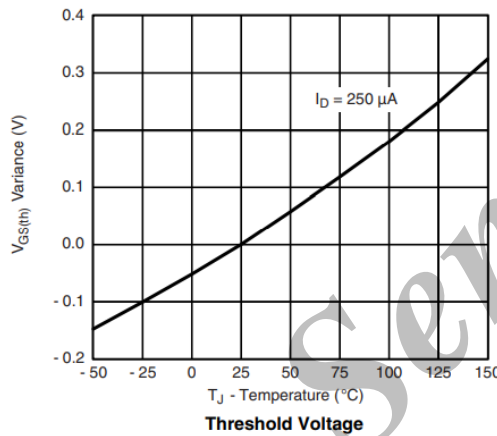
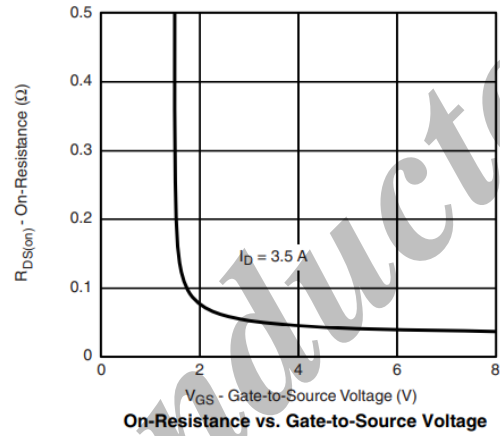
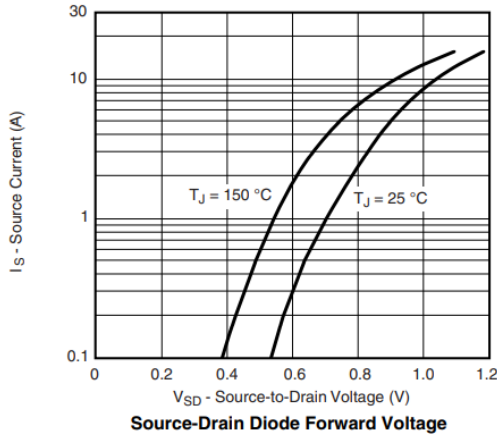
Ordering Part Number	Package	MOQ
AP2305B	SOT23-3	3,000 pcs / reel

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• Typical Electrical and Thermal Characteristics



• Typical Electrical and Thermal Characteristics



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