

SOT-23 Plastic-Encapsulate MOSFETS

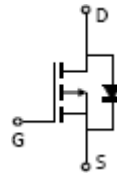
BC2305 P-Channel 20V(D-S) MOSFET

FEATURE

TrenchFET Power MOSFET

APPLICATIONS

- Load Switch for Portable Devices
- DC/DC Converter



Equivalent Circuit



Maximum ratings ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	
Continuous Drain Current	I_D	-3.0	A
Continuous Source-Drain Diode Current	I_S	-0.8	
Maximum Power Dissipation	P_D	0.35	W
Thermal Resistance from Junction to Ambient($t \leq 10\text{s}$)	$R_{\theta JA}$	357	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-50 ~ +150	

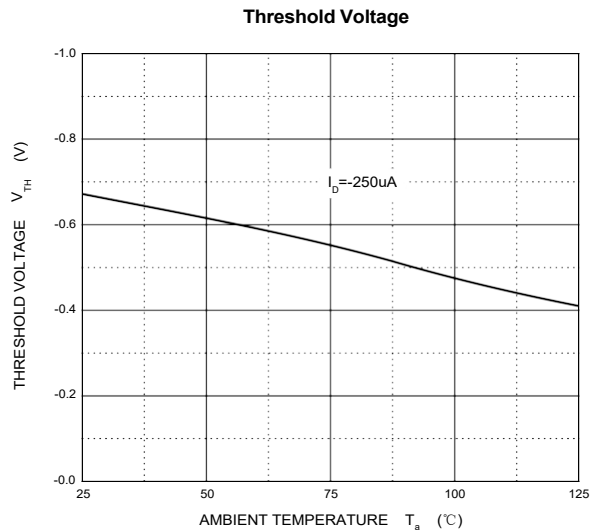
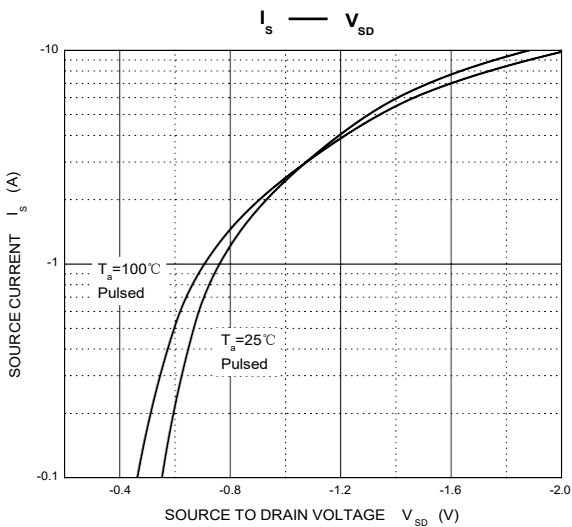
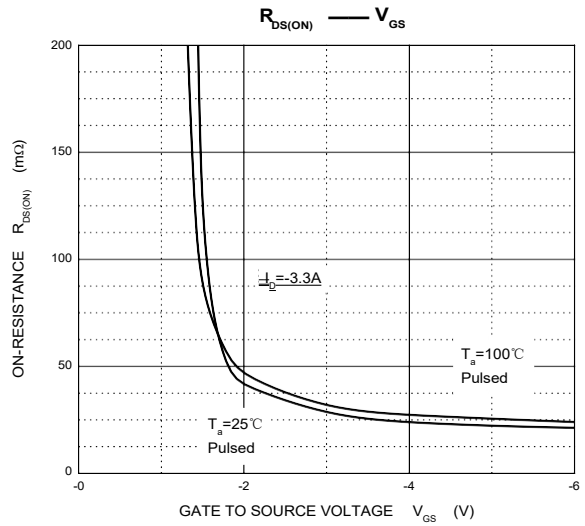
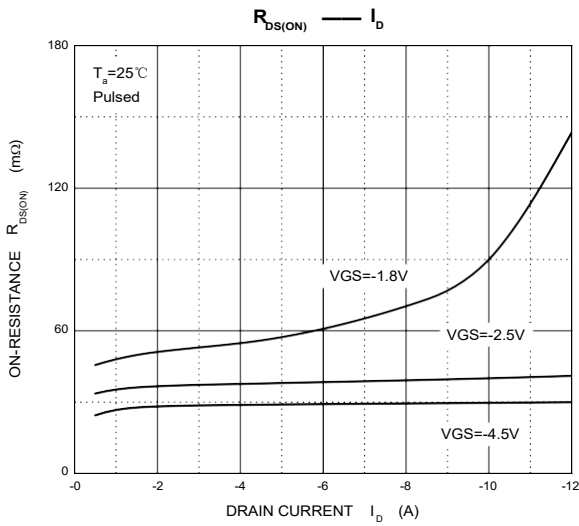
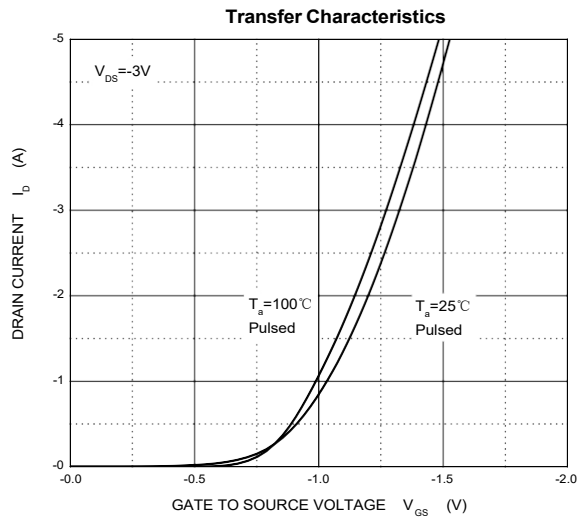
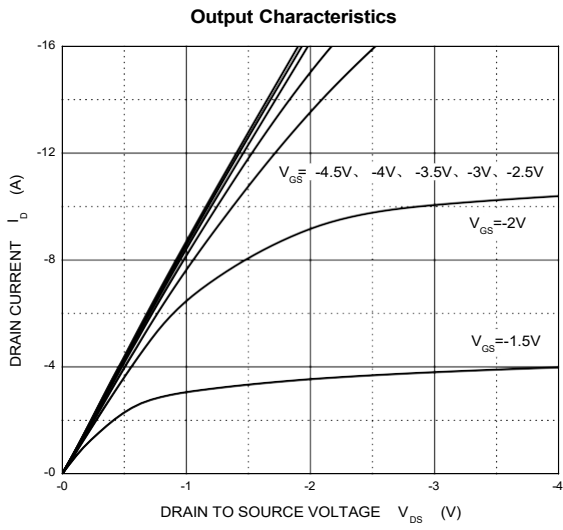
Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate-source threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.4		-1.0	
Gate-source leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 8V$			± 100	nA
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -20V, V_{GS} = 0V$			-1	μA
Drain-source on-state resistance ^a	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -2.8A$		0.060	0.072	Ω
		$V_{GS} = -2.5V, I_D = -2.4A$		0.070	0.091	
		$V_{GS} = -1.8V, I_D = -1.7A$		0.090	0.120	
Forward transconductance ^a	g_{fs}	$V_{DS} = -5V, I_D = -3.0A$	6			S
Dynamic						
Input capacitance ^{b,c}	C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$		745		pF
Output capacitance ^{b,c}	C_{oss}			65		
Reverse transfer capacitance ^{b,c}	C_{rss}			21		
Total gate charge ^b	Q_g	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -3.0A$		20		nC
				10		
Gate-source charge ^b	Q_{gs}	$V_{DS} = -6V, V_{GS} = -4.5V, I_D = -3.0A$		1.2		
Gate-drain charge ^b	Q_{gd}			1.6		
Gate resistance ^{b,c}	R_g	$f = 1MHz$	1.4	7	14	Ω
Turn-on delay time ^{b,c}	$t_{d(on)}$	$V_{DD} = -15V, R_L = 15\Omega, I_D \approx -3.0A, V_{GEN} = -10V, R_g = 6\Omega$		13	20	ns
Rise time ^{b,c}	t_r			35	53	
Turn-off Delay time ^{b,c}	$t_{d(off)}$			32	48	
Fall time ^{b,c}	t_f			10	20	
Turn-on delay time ^{b,c}	$t_{d(on)}$	$V_{DD} = -4V, R_L = 1.2\Omega, I_D \approx -3.0A, V_{GEN} = -8V, R_g = 1\Omega$		5	10	
Rise time ^{b,c}	t_r			11	17	
Turn-off delay time ^{b,c}	$t_{d(off)}$			22	33	
Fall time ^{b,c}	t_f			16	24	
Drain-source body diode characteristics						
Continuous source-drain diode current	I_S	$T_C = 25^\circ C$			-1.4	A
Pulse diode forward current ^a	I_{SM}				-10	
Body diode voltage	V_{SD}	$I_F = -1.0A$		-0.8		V

Electrical characteristics ($T_a = 25^\circ C$ unless otherwise noted)

Note :

- a. Pulse Test ; Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.
- c. These parameters have no way to verify.

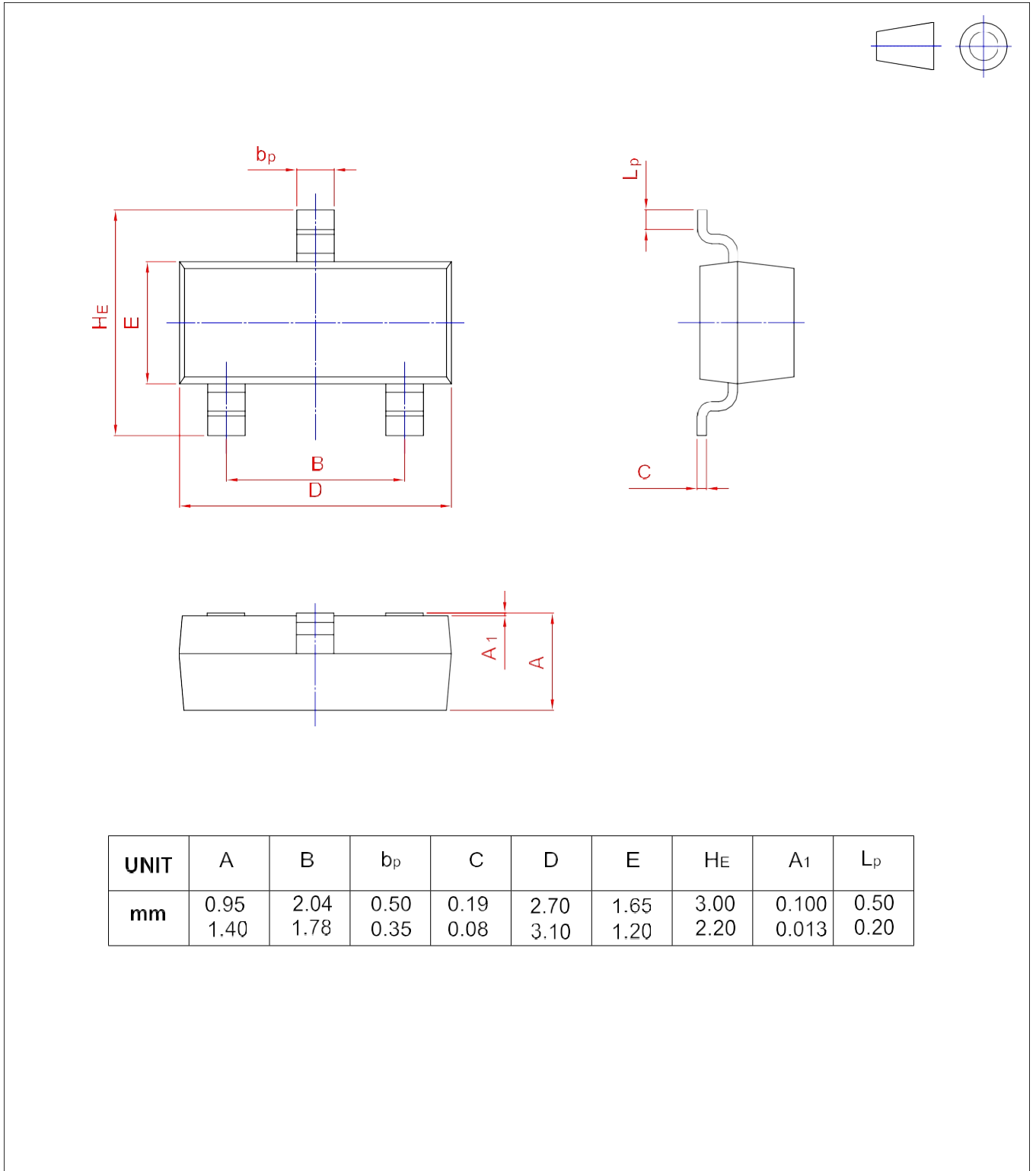
Typical Characteristics



PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



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