

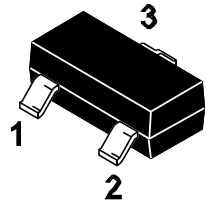
BC2301

P-Channel Enhancement Mode Power MOSFET

Features

- Surface mount package
- Halogen free product is acquired
- High power and current handling capability
- $V_{DS} = -20V, I_D = -2.8A$
 $R_{DS(on)} < 110m\Omega @ V_{GS} = -4.5V$

SOT-23



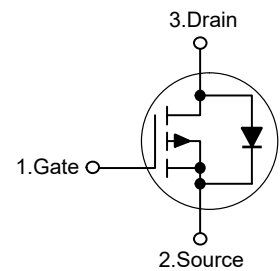
1. Gate 2. Source 3. Drain

Marking Code: M01

Applications

- Battery protection
- Load switch
- Power management

Schematic Diagram



Absolute Maximum Ratings

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	$-I_D$	2.8	A
Drain Current-Pulsed ^{Note1}	$-I_{DM}$	10	A
Maximum Power Dissipation	P_D	0.7	W
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Ambient ^{Note2}	$R_{\theta JA}$	179	°C/W
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Electrical Characteristics

(Ta=25°C unless otherwise specified)

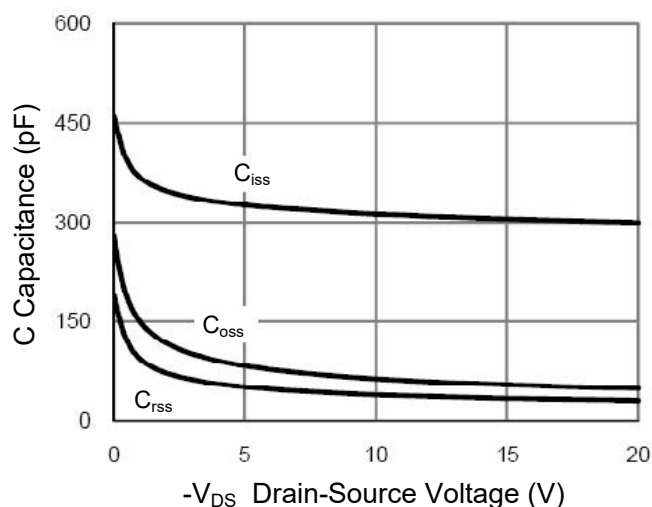
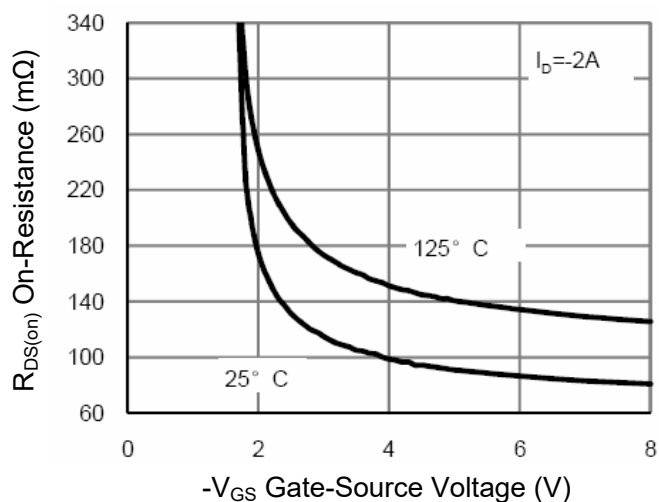
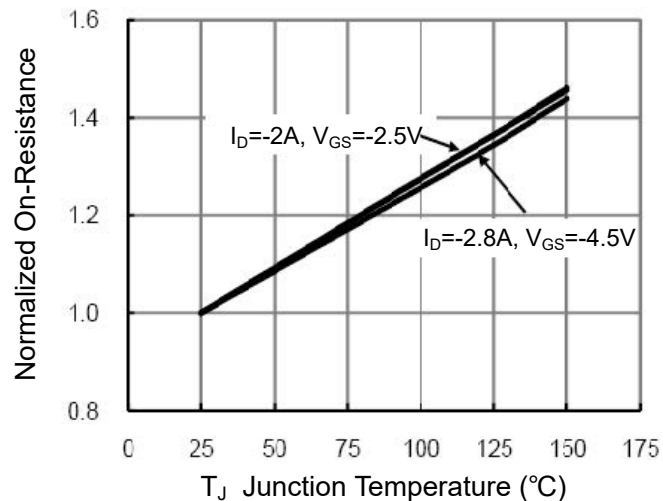
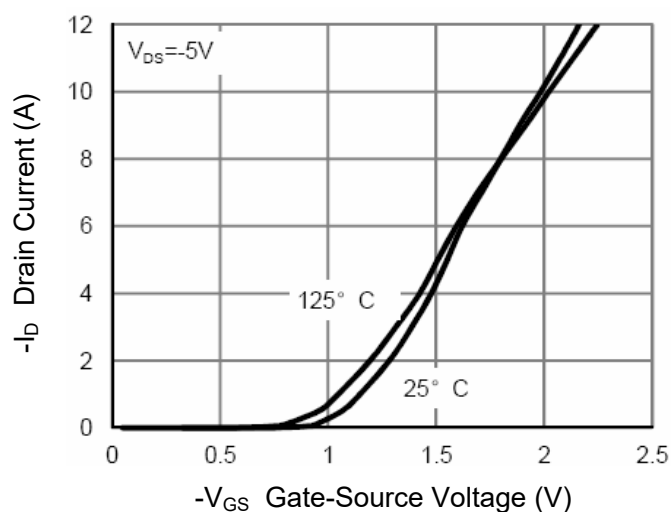
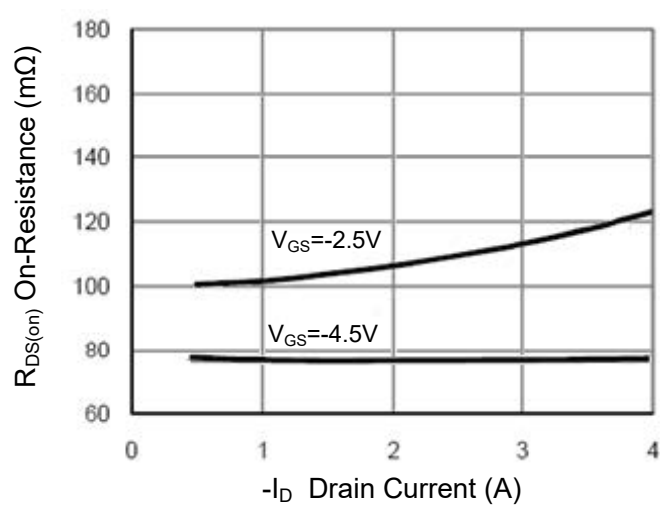
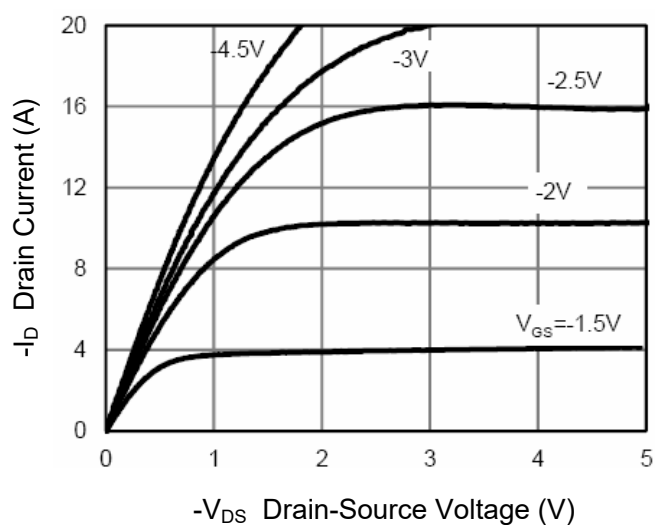
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	-V _{(BR)DSS}	V _{GS} =0V,I _D =-250μA	20	--	--	V
Zero Gate Voltage Drain Current	-I _{DSS}	V _{DS} =-20V,V _{GS} =0V	--	--	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±8V,V _{DS} =0V	--	--	±100	nA
Gate Threshold Voltage ^{Note3}	-V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250μA	0.4	0.7	1	V
Drain-Source On-Resistance ^{Note3}	R _{DS(on)}	V _{GS} =-4.5V,I _D =-2.8A	--	78	110	mΩ
		V _{GS} =-2.5V,I _D =-2A	--	102	140	mΩ
Forward Transconductance ^{Note3}	g _{FS}	V _{DS} =-5V,I _D =-2.8A	--	2	--	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =-10V,V _{GS} =0V,f=1MHz	--	325	--	pF
Output Capacitance	C _{oss}		--	63	--	pF
Reverse Transfer Capacitance	C _{rss}		--	37	--	pF
Switching Characteristics						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-10V, R _L =5Ω, V _{GS} =-4.5V,R _{GEN} =3Ω	--	11	--	nS
Turn-on Rise Time	t _r		--	5.5	--	nS
Turn-off Delay Time	t _{d(off)}		--	22	--	nS
Turn-off Fall Time	t _f		--	8	--	nS
Total Gate Charge	Q _g	V _{DS} =-10V,I _D =-2A, V _{GS} =-4.5V	--	3.2	--	nC
Gate-Source Charge	Q _{gs}		--	0.6	--	nC
Gate-Drain Charge	Q _{gd}		--	0.9	--	nC
Source-Drain Diode Characteristics						
Diode Forward Voltage ^{Note3}	-V _{SD}	V _{GS} =0V,I _S =-2.8A	--	--	1.2	V
Diode Forward Current ^{Note2}	-I _S		--	--	2.8	A

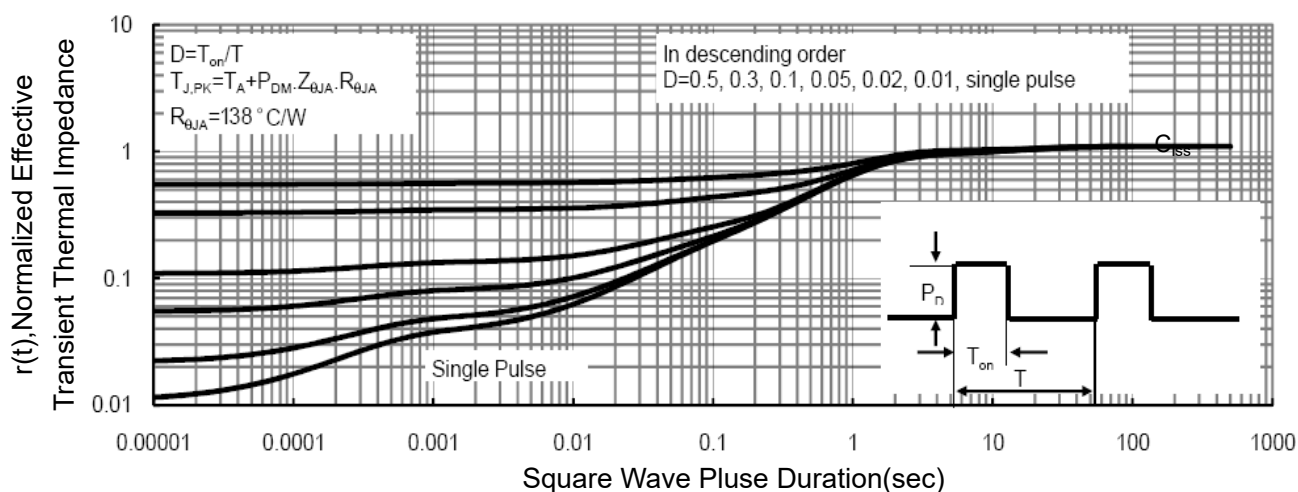
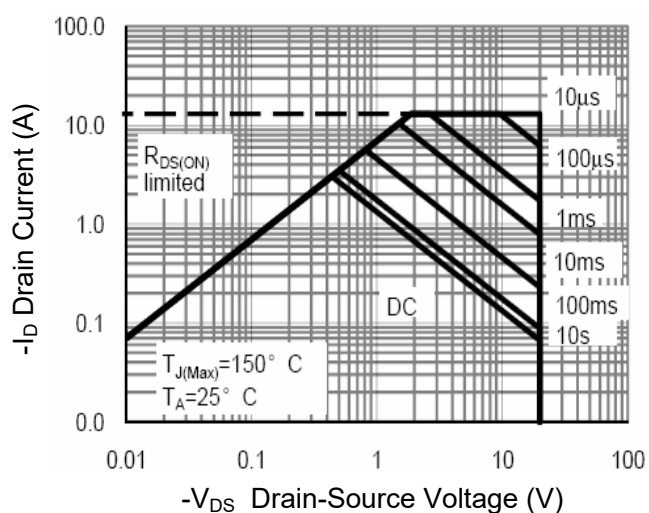
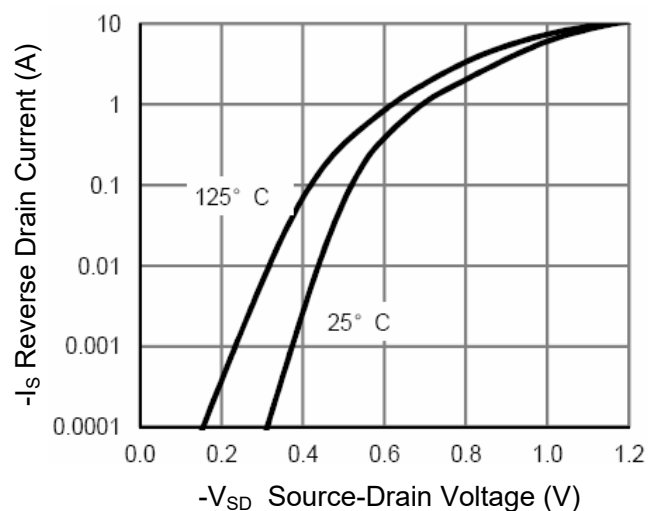
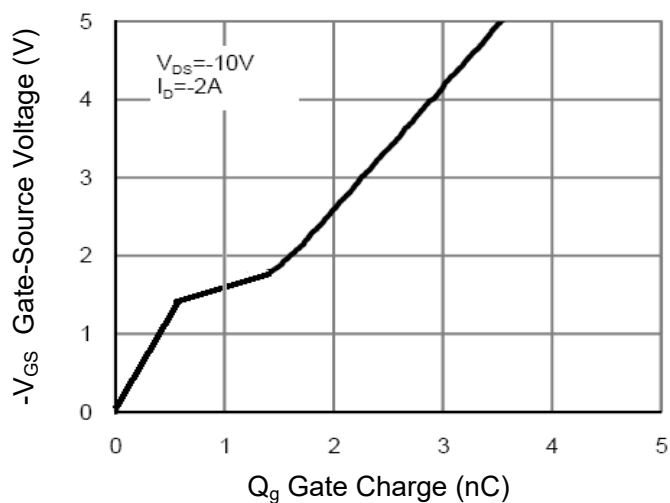
Note: 1. Repetitive Rating: Pulse width limited by maximum junction temperature.

2. Surface Mounted on FR4 Board, $t \leq 10$ sec.

3. Pulse Test: Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

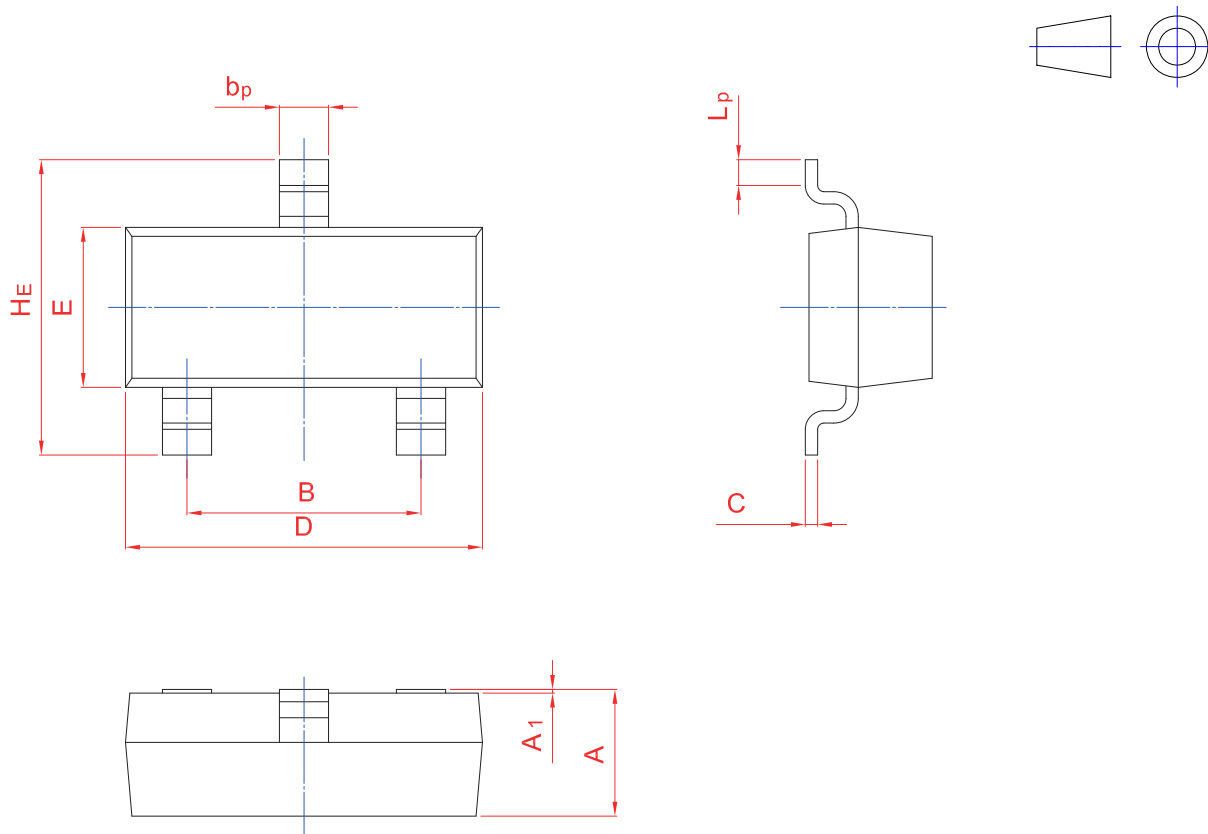
Typical Characteristic Curves





Package Outline

SOT-23



UNIT	A	B	b_p	C	D	E	H_E	A_1	L_p
mm	1.40 0.89	2.04 1.78	0.51 0.30	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20