

BC2302R2

N-Channel Enhancement Mode MOSFET

The BC2302R2 uses advanced trench technology to provide excellent $R_{DS(on)}$. It is widely used for load switches in power management.

Features and Benefits:

- Low On-Resistance
- High Dense Design
- Reliable and Rugged

Applications:

- Battery management
- Portable appliances
- Load Switch

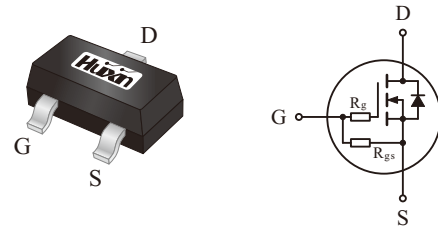
$$V_{DS} = 20V, I_D = 2.5A$$

$$R_{DS(on)} = 85m\Omega (V_{GS} = 4.5V, Typ)$$

$$R_{DS(on)} = 110m\Omega (V_{GS} = 2.5V, Typ)$$

$$V_{GS(th)} = 0.65V (Typ)$$

Package & Pin information



SOT-23

Package Information

Product Name	Package	Packing	Qty.
BC2302R2	SOT-23	Tape&Reel	3000pcs

Maximun Ratings ($T_J = 25^\circ C$ unless otherwise specified)

Parameter	Symbols	Value	Unit
Drain-Source Voltage	V_{DSS}	20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current, $V_{GS} = 4.5V$	I_D	2.5	A
Pulsed drain current (Note1)	I_{DM}	12	A
Power dissipation, $T_C = 25^\circ C$	P_D	1000	mW
Thermal Resistance from Junction to Ambient (Note2)	$R_{\theta JA}$	125	$^\circ C/W$
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 ~ +150	$^\circ C$

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 $\leq 2\%$.

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Symbols	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{(BR)DSS}$	Drain-Source breakdown voltage	20	—	—	V	$V_{GS}=0, I_D=250\mu\text{A}$
$V_{GS(th)}$	Gate threshold voltage	0.45	0.65	0.90	V	$V_{GS}=V_{DS}, I_D=250\mu\text{A}$
$R_{DS(on)}$	Drain-Source on-State resistance	—	85	116	$\text{m}\Omega$	$V_{GS}=4.5\text{V}, I_D=2.5\text{A}$
		—	110	145	$\text{m}\Omega$	$V_{GS}=2.5\text{V}, I_D=2\text{A}$
I_{DSS}	Zero gate voltage drain current	—	—	1	μA	$V_{DS}=20\text{V}, V_{GS}=0, T_J=25^{\circ}\text{C}$
I_{GSS}	Gate-Source leakage current	± 1	—	± 20	μA	$V_{DS}=0, V_{GS}=\pm 12\text{V}$
C_{iss}	Input capacitance	—	50.6	—	pF	$V_{GS}=0$ $V_{DS}=10\text{V}$ $f=1\text{MHz}$
C_{oss}	Output capacitance	—	8.8	—		
C_{rss}	Reverse transfer capacitance	—	6.7	—		
Q_g	Total gate charge	—	0.6	—	nC	$V_{DS}=10\text{V}$ $V_{GS}=4.5\text{V}$ $I_D=2\text{A}$
Q_{gs}	Gate to source charge	—	0.1	—		
Q_{gd}	Gate to drain (Miller) charge	—	0.3	—		
R_G	Gate resistance	—	120	—	Ω	$f=1\text{MHz}$, open drain
R_{GS}	Gate-Source pull-down resistor	—	1.0	—	$\text{M}\Omega$	

Body Diode Characteristics

Symbols	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	—	—	1.2	V	$V_{GS}=0, I_S=2.5\text{A}$
I_{SD}	Body Diode Forward Current	—	—	2.5	A	

Electrical Characteristics Diagrams

Fig1. Typ. output characteristics

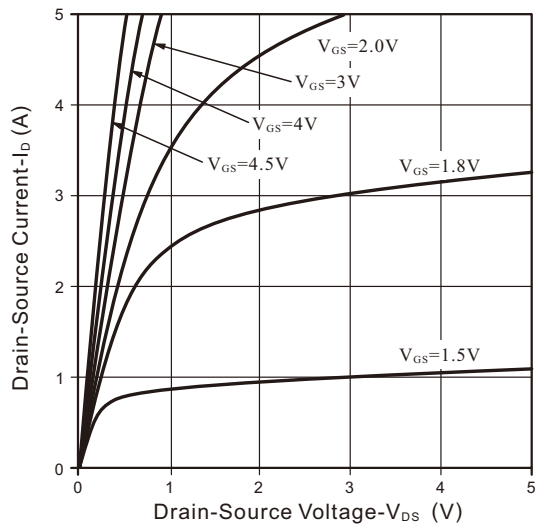


Fig2. Transfer Characteristic

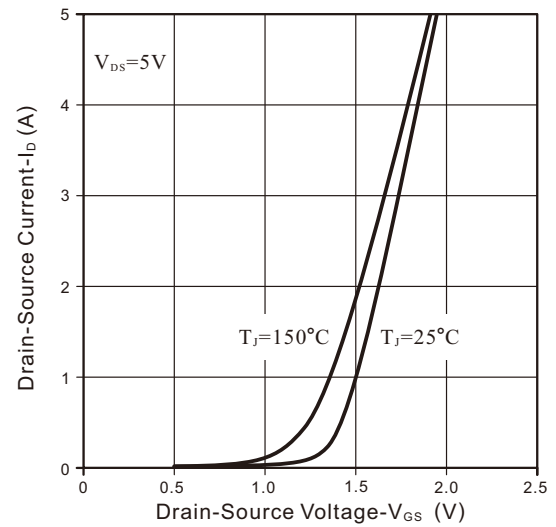


Fig3. On-Resistance vs. Drain Current

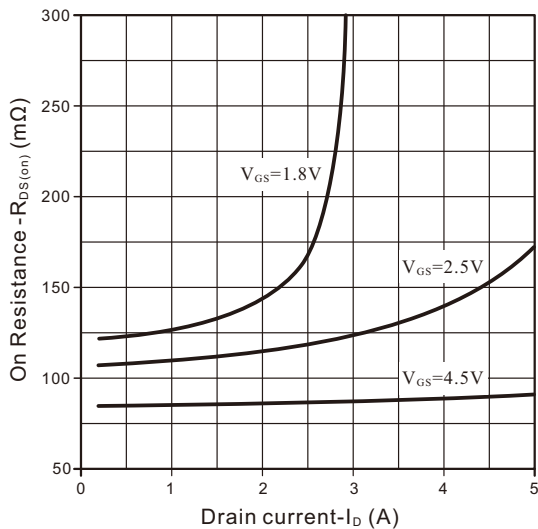


Fig4. On-Resistance vs. T_J

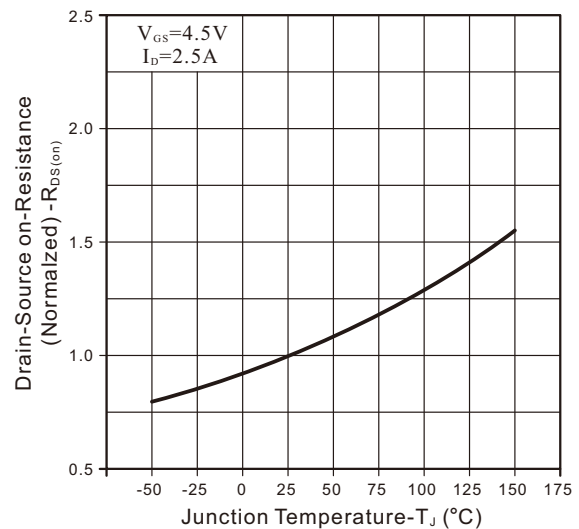


Fig5. Typical Capacitance vs. D-S Voltage

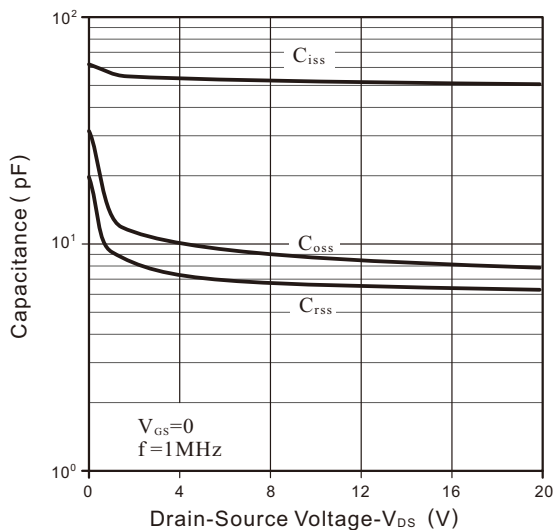
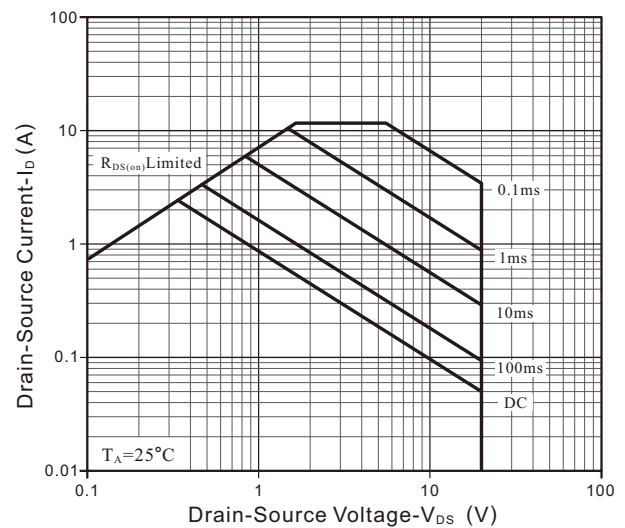
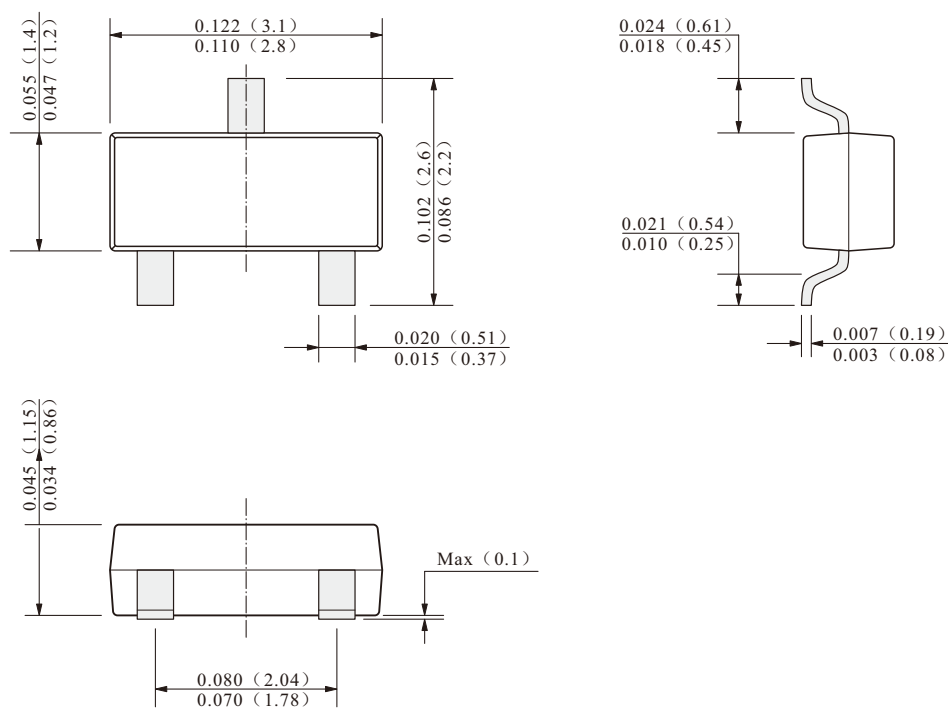


Fig6. Safe Operating Area



Package Information

SOT-23-Package Outline Dimension



Dimensions in inches and (millimeters)