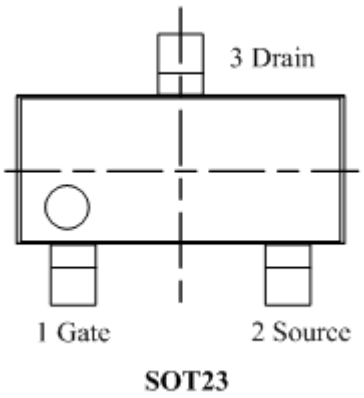
BYD Microelectronics Co., Ltd.

BF92302N

20V N-Channel MOSFET

General Description

The BF92302N uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge.
This device is suitable for used as a load switch or in PWM applications.



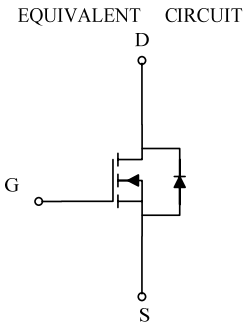
SOT23

Features

- V_{DS} (V) = 20V
- I_D = 3 A
- Low on-state resistance
  $R_{DS\ (on)}$ = 50mΩ TYP.(V_{GS} = 4.5V)
  $R_{DS\ (on)}$ = 60mΩ TYP.(V_{GS} = 2.5V)

Absolute Maximum Ratings (Ta = 25℃)

Parameter	Symbol	Value	Unit
N-MOSFET			
Drain to Source Voltage	V_{DSS}	20	V
Gate to Source Voltage	V_{GSS}	±8	V
Drain Current (DC)	$I_{D(DC)}$	3	A
Drain Current (pulse)[a]	$I_{D(pulse)}$	12	A
Maximun Power Dissipation[a]	P_D	1.3	W
Channel Temperature	T_{ch}	150	℃
Storage Temperature	T_{stg}	-55~+150	℃



N-Channel MOSFET

Note: Mounted on FR4 Board of 1”x1”.
Caution: These values must not be exceeded under any conditions.

Ordering Information

- Part Number : BF92302N
- Package : SOT-23

Electrical Characteristics (T_A = 25℃)

Symbol	Characteristics	Test Conditions	Min.	Typ.	Max.	Unit
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 20V,V_{GS}=0V			1	μA
I_{GSS}	Gate Leakage Current	V_{GS}=±8V,V_{DS}=0V			±100	nA
$V_{GSS(off)}$	Gate Cut-off Voltage	V_{DS}=V_{GS},I_D= 0.25mA	0.65	0.95	1.2	V
$\|y_{fs}\|$	Forward Transfer Admittance	V_{DS}= 5V,I_D=4A		6.5		S
$R_{DS(on)1}$	Drain to Source On-state Resistance	V_{GS}= 4.5V,I_D=1.5A		50	60	mΩ
$R_{DS(on)2}$		V_{GS}= 2.5V,I_D=1.5A		60	115	mΩ
C_{iss}	Input Capacitance	V_{GS} =0V， V_{DS} =15V,f=1.0MHZ		942		pF
C_{oss}	Output Capacitance			193.8		pF
C_{rss}	Reverse Transfer Capacitance			19.7		pF
$t_{d(on)}$	Turn-on Delay Time	V_{DD} =10V, I_D =1.5A, V_{GS} =4.5V, R_G =4.7Ω		9.24		ns
t_r	Rise Time			11.34		ns
$t_{d(off)}$	Turn-off Delay Time			19.93		ns
t_f	Fall Time			4.6		ns
Q_G	Total Gate Charge	V_{DD} =10V, I_D =1.5A, V_{GS} =4.5V, R_G =10Ω		7		nC
Q_{GS}	Gate to Source Charge			1		nC
Q_{GD}	Gate to Drain Charge			1.4		nC
V_{SD}	Drain-Source Diode Forward Voltage	I_s=0.94A,V_{GS}=0V			1.2	V

Typical characteristics (25℃ unless noted)

Figure 1 Output Caracteristics

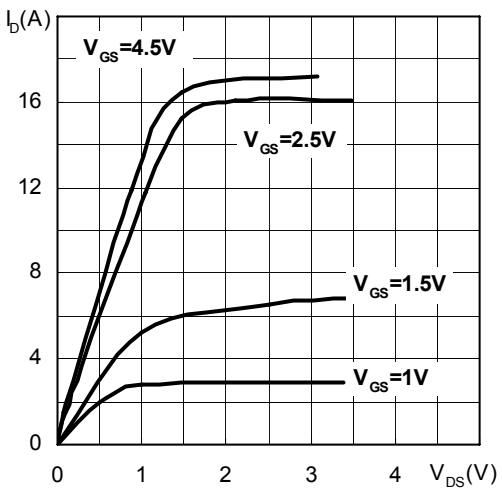


Figure 2 Transfer Characteristics

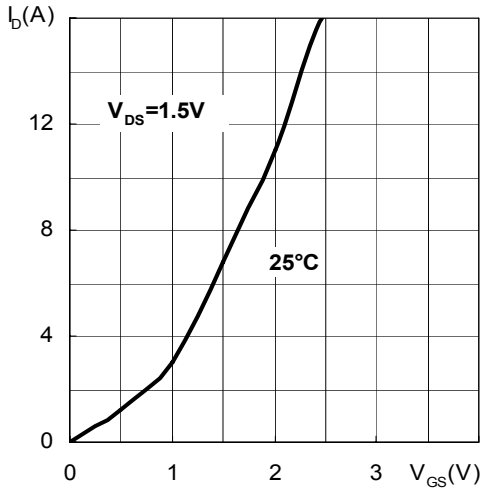


Figure 3 On Resistance VS Temperature

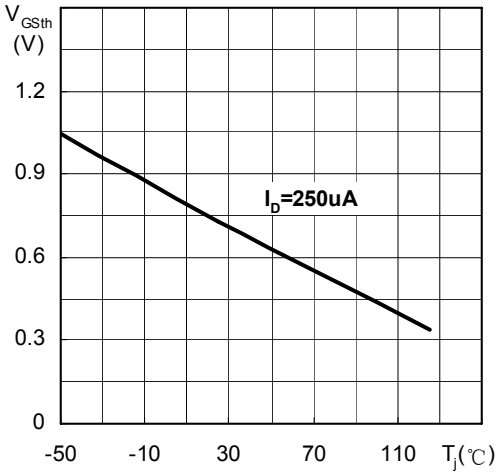


Figure 4 Normalized BV_{DSS} vs. Temperature

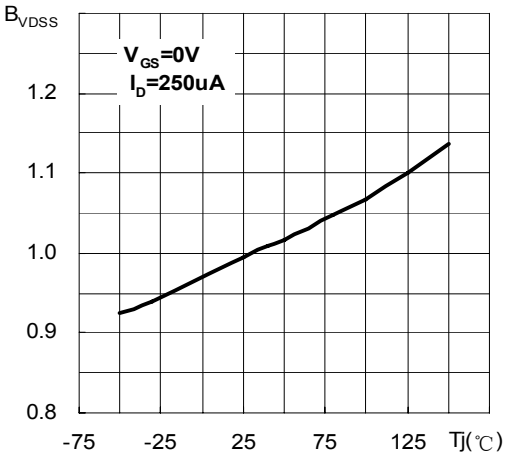


Figure 5 R_{DSON} vs. Temperature

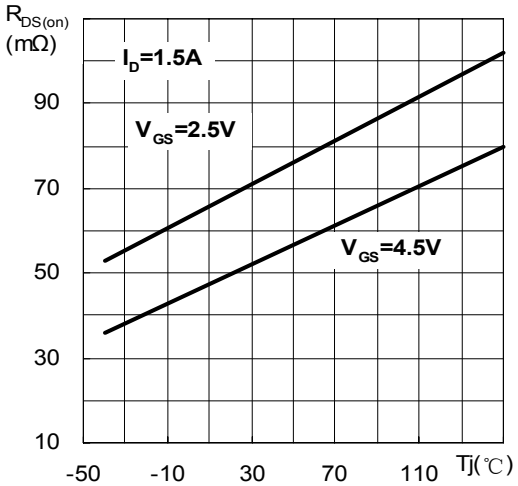


Figure 6 I_{GSS} vs. Temperature

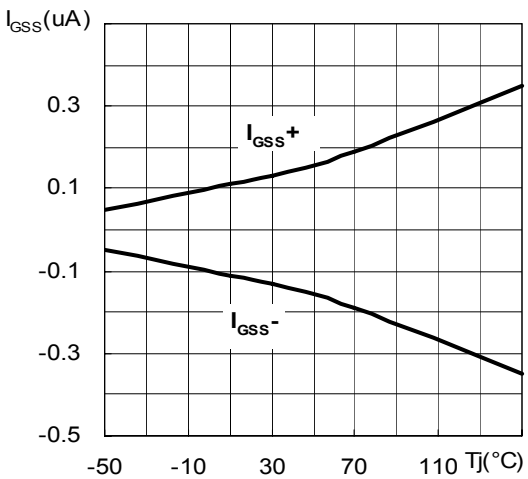


Figure 7 Capacitance

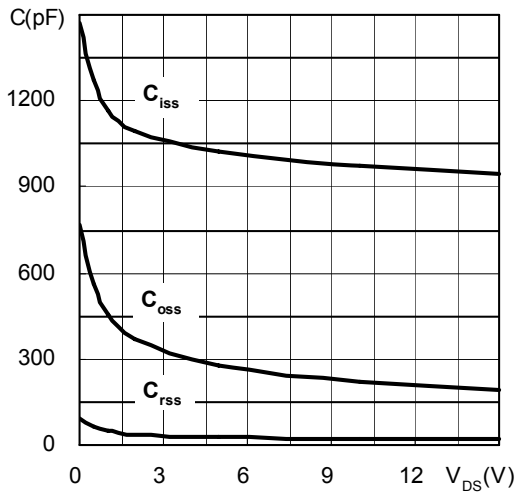


Figure 8 Gate Charge

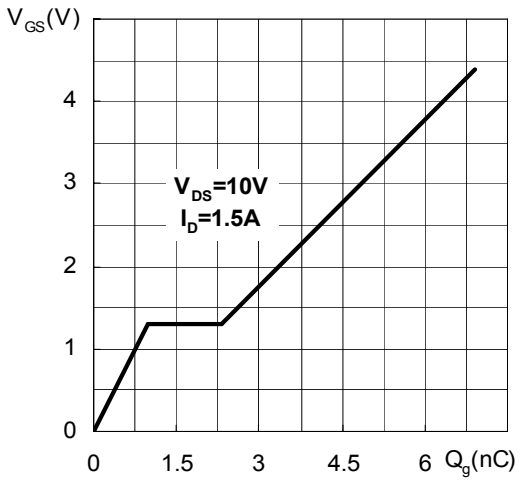


Figure 9 Safe Operating Area

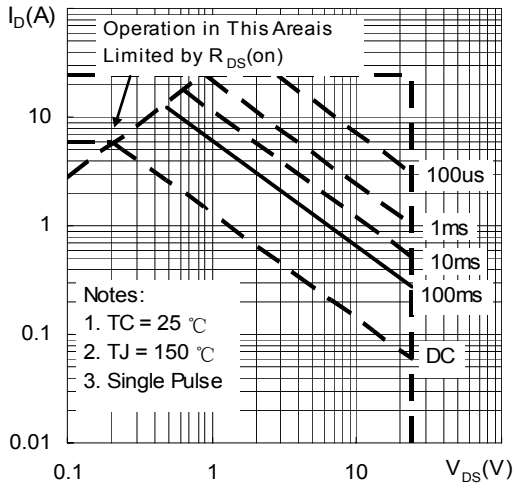


Figure 10 Maximum I_{DSS} Vs. Case Temperature

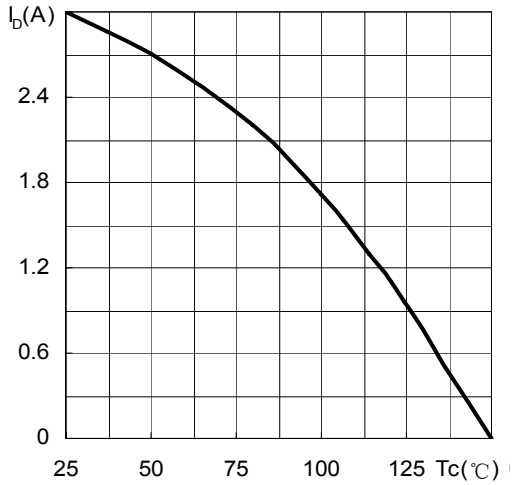


Figure 11 On Resistance VS Gate to Source Voltage

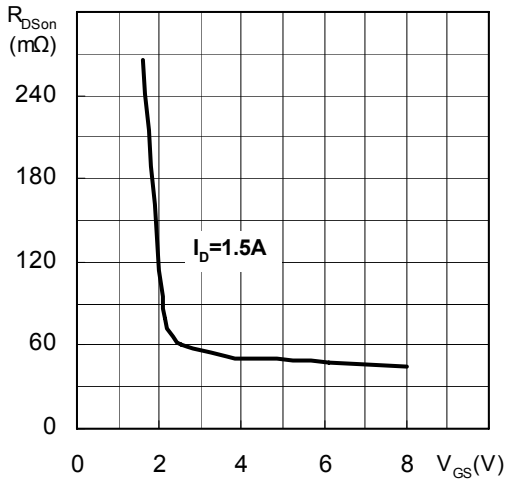
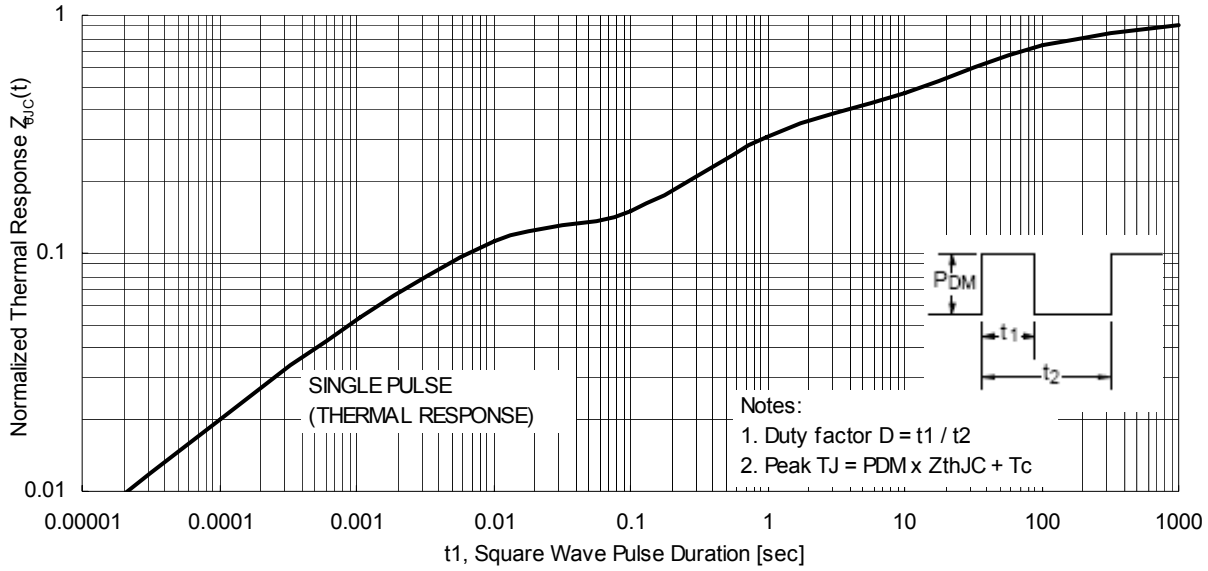
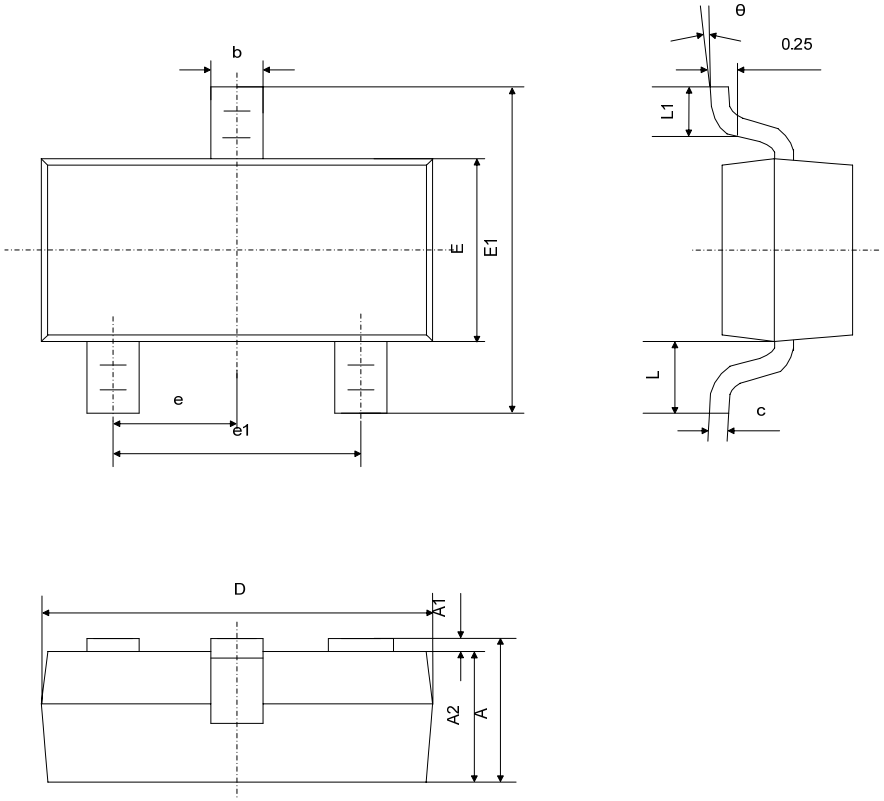


Figure 12 Normalized Maximum Transient Thermal Impedance



Package Drawing



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950TYP		0.037TYP	
e1	0.800	2.000	0.071	0.079
L	0.550REF		0.022REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°

Note:

1. Dimension D does not include mold flash, protrusions or gate burrs. Mold flash, protrusions or gate burrs shall not exceed 0.10mm per side.
2. Dimension E1 does not include inter-lead flash or protrusion. Inter-lead flash or protrusion shall not exceed 0.1mm per side.

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