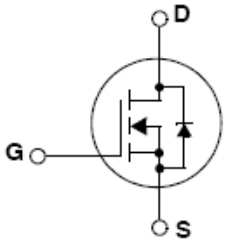
BYD Microelectronics Co., Ltd.

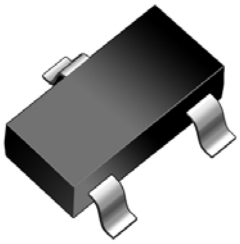
BF92N7002

60V N-Channel MOSFET

General Description

This Power MOSFET device has specifically been designed to minimize input capacitance and gate charge. It is therefore suitable as primary switch in advanced high-efficiency, high-frequency isolated DC-DC converters for Telecom and Computer applications. It is also intended for any applications with low gate drive requirements.





Features

- V_{DS} =60 V
- I_D =300mA
- $R_{DS(ON)}$ =2. 8Ω TYP (V_{GS}=10V)
  $R_{DS(ON)}$ =3. 8Ω TYP (V_{GS}=4.5V)
- Fast switching
- 100% avalanche tested
- Improved dv/dt capability

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	60	V
I_D	Drain Current(continuous)at Tc=25℃	300	mA
V_{GS}	Gate-Source Voltage	±20	V
P_D	Power Dissipation (T_C = 25°C)	350	mW
T_J,Tstg	Operating junction and Storage Temperature Range	-55 to +150	℃

Ordering Information

Part Number	Package	Packaging
BF92N7002	SOT-23	Reel

Thermal Data

Symbol	Parameter	Max.	Unit
Rthj-Amb	Thermal Resistance Junction-Ambient	375	℃/W

Electrical Characteristics(T_c = 25℃)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	I_D=250uA, V_{GS}=0V	60			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V			1	uA
		V_{DS}=60V,V_{GS}=0V ,Tc=125℃			10	uA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V ,V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS} ,I_D=250uA	1.0	2	2.5	V
$R_{DS(on)}$	Static Drain-Source On Resistance	V_{GS}=10V ,I_D=500mA		2.8	5	Ω
		V_{GS}=4.5V ,I_D=300mA		3.8	5.5	Ω
C_{iss}	Input Capacitance	V_{DS}=25V,f=1MHZ,V_{GS}=0V		43		pF
C_{oss}	Output Capacitance			20		pF
C_{rss}	Reverse Transfer Capacitance			6		pF
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=30V, I_D=500mA V_{GS}=4.5V ,R_G=4.7Ω		6		ns
t_r	Rise Time			5		ns
$t_{d(off)}$	Turn-Off Delay Time			15		ns
t_f	Fall Time			35		ns
Q_g	Total Gate Charge	V_{DD}=30V, I_D=1A V_{GS}=5V		1.4	2.0	nC
Q_{gs}	Gate-Source Charge			0.8		nC
Q_{gd}	Gate-Drain Charge			0.5		nC
G_{FS}	Forward Trans-conductance	V_{DS}=10V, I_D=500mA （Note1）		0.6		S
I_{SD}	Source-drain Current				0.35	A
I_{SDM}	Source-drain Current(pulsed)	（Note2）			1.4	A
V_{SD}(*)	Forward On Voltage	I_F=0.3A ,V_{GS}=0V （Note1）		0.85	1.5	V
T_{rr}	Reverse Recovery Time	V_{DD}=37.5V,I_F=75A,di/dt=100A/us		130		ns

Notes:
1.(*)Pulsed：Pulse duration =300 us,duty cycle 1.5%.
2. Pulse width limired by safe operating area

Typical characteristics (25℃ unless noted)

Figure 1 Output Characteristics

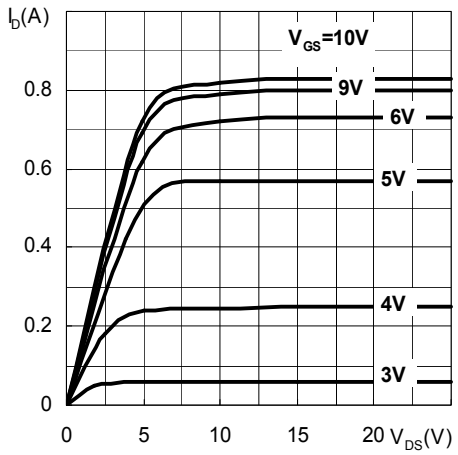


Figure 2 Transfer Characteristics

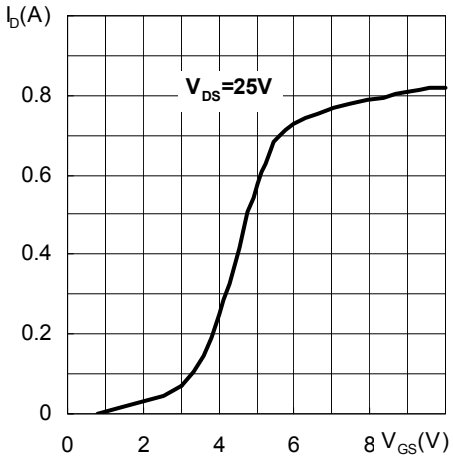


Figure 3 Normalized Threshold Voltage vs. Temperature

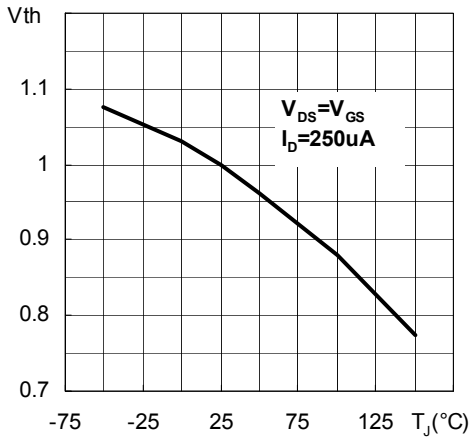


Figure 4 Normalized BV_{DSS} vs.Temperature

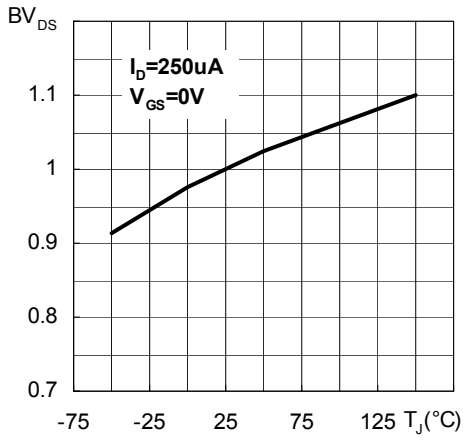


Figure 5 Normalized on Resistance Vs.Temperature

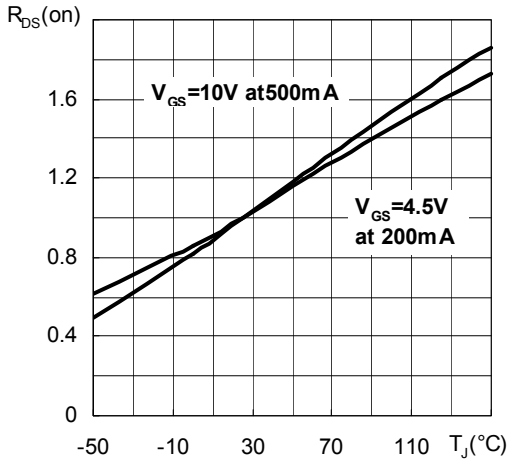


Figure 6 Source-Drain Diode Foreard Characteristics

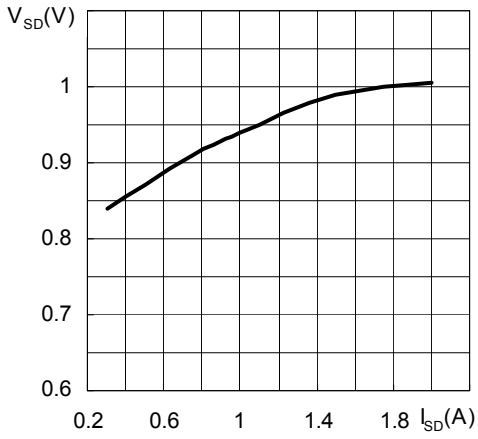


Figure 7 Capacitance

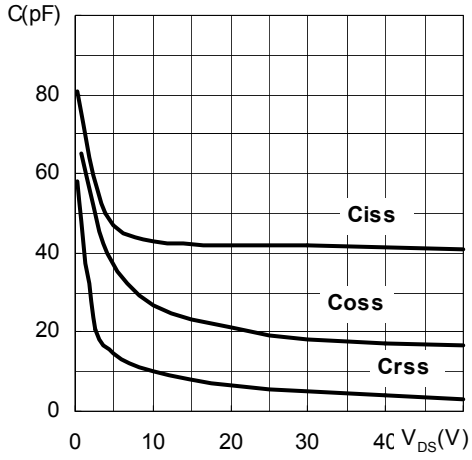


Figure 8 Gate Charge

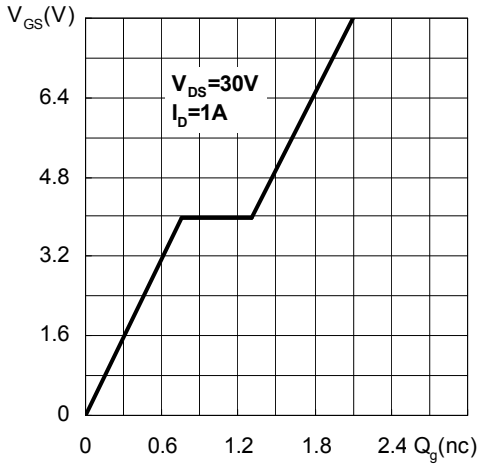


Figure 9 Maximum Forward Biased Safe Operating Area

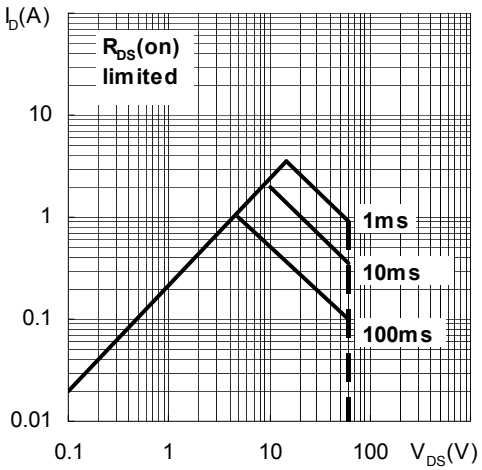
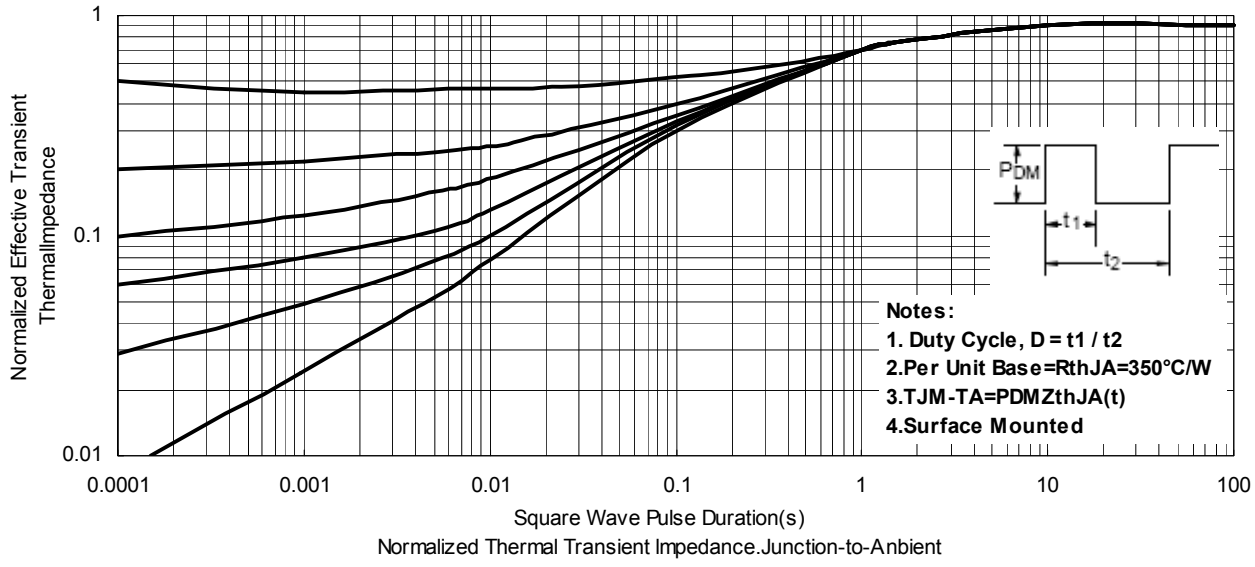
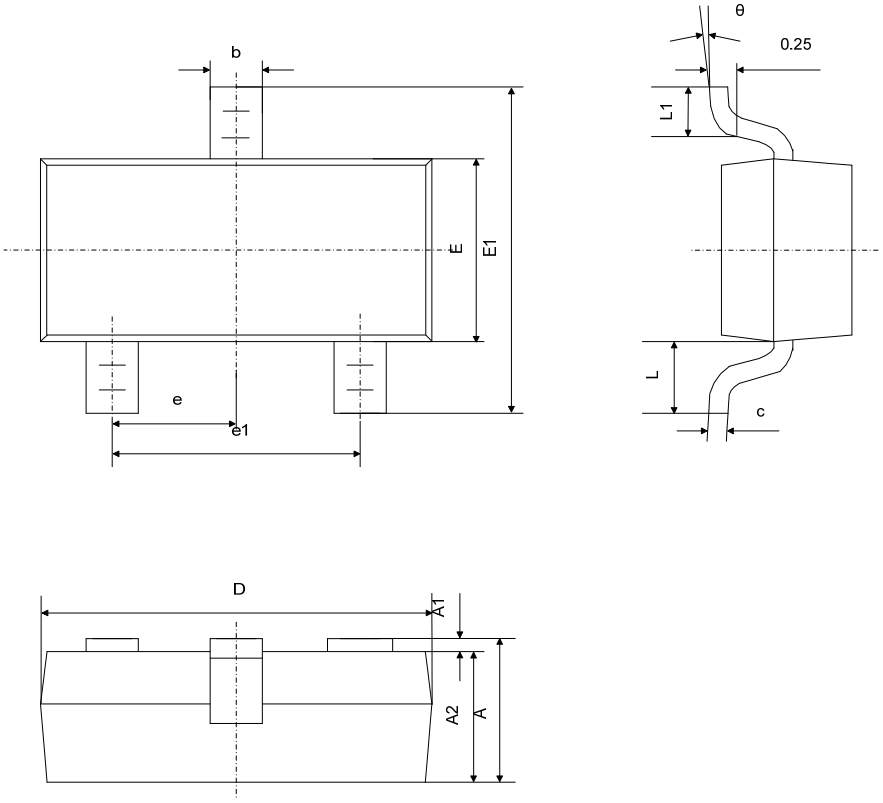


Figure 10 Normalized Maximum Transient Thermal Impedance



Package Drawing



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.009	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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