



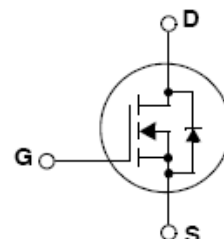
BYD Microelectronics Co., Ltd.

BF92N7002

60V N-Channel MOSFET

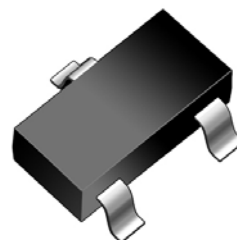
General Description

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

- $V_{DS} = 60\text{ V}$
- $I_D = 300\text{ mA}$
- $R_{DS(ON)} = 2.8\Omega$ TYP ($V_{GS} = 10\text{ V}$)
- $R_{DS(ON)} = 3.8\Omega$ TYP ($V_{GS} = 4.5\text{ V}$)
- 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 $T_c = 25^\circ\text{C}$	300	mA
V_{GS}	Gate-Source Voltage	± 20	V
P_D	Power Dissipation ($T_c = 25^\circ\text{C}$)	350	mW
T_J, T_{stg}	Operating junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$

Ordering Information

Part Number	Package	Packaging
BF92N7002	SOT-23	Reel

**Thermal Data**

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

Electrical Characteristics(T_c = 25°C)

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, T _c =125°C			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 =4.7 Ω		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:

- (*)Pulsed: Pulse duration =300 us,duty cycle 1.5%.
- Pulse width limited by safe operating area

Typical characteristics (25°C unless noted)

Figure 1 Output Characteristics

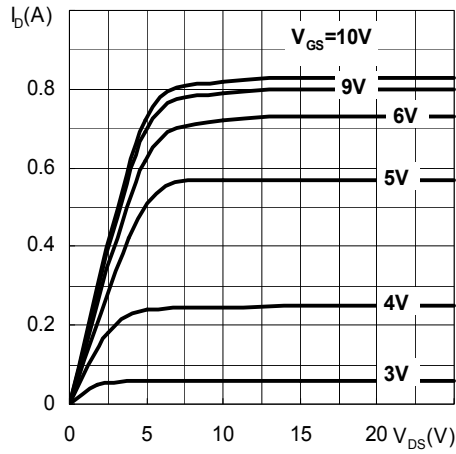


Figure 2 Transfer Characteristics

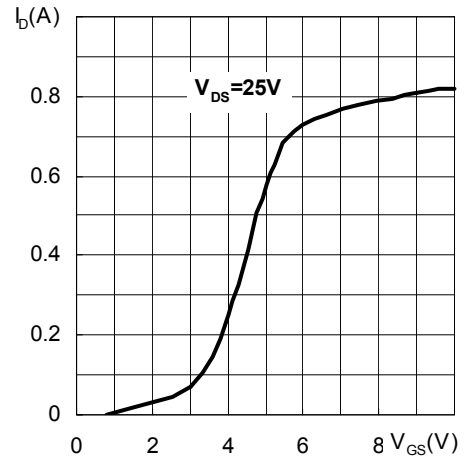


Figure 3 Normalized Threshold Voltage vs. Temperature

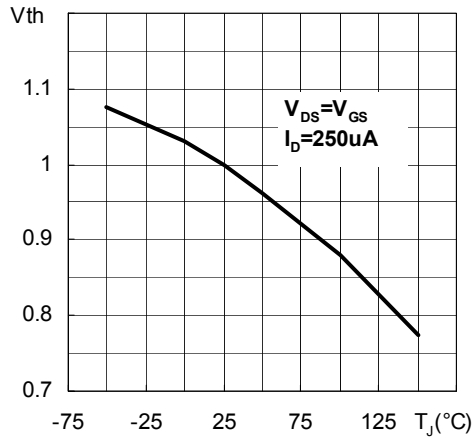


Figure 4 Normalized BV_{DSS} vs. Temperature

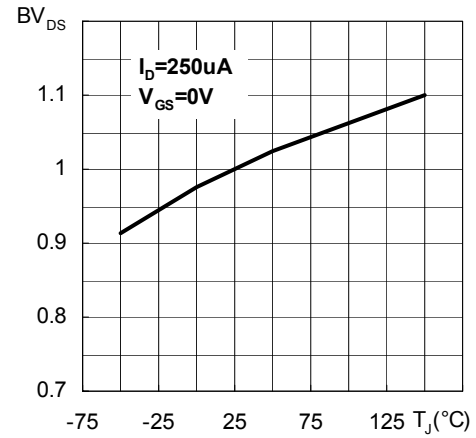


Figure 5 Normalized on Resistance Vs. Temperature

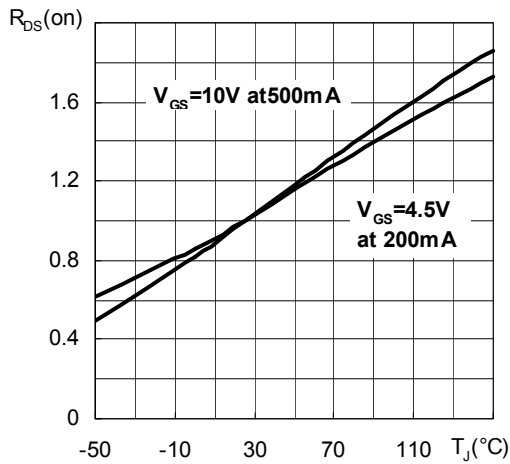


Figure 6 Source-Drain Diode Forward Characteristics

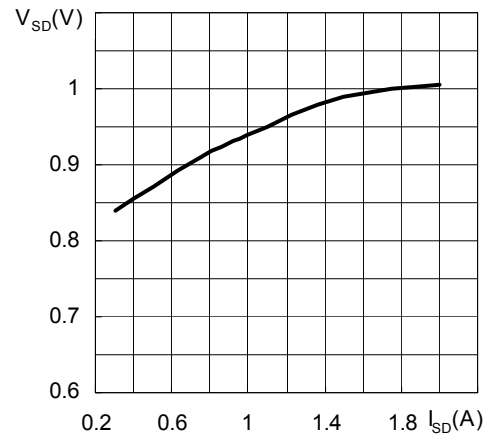


Figure 7 Capacitance

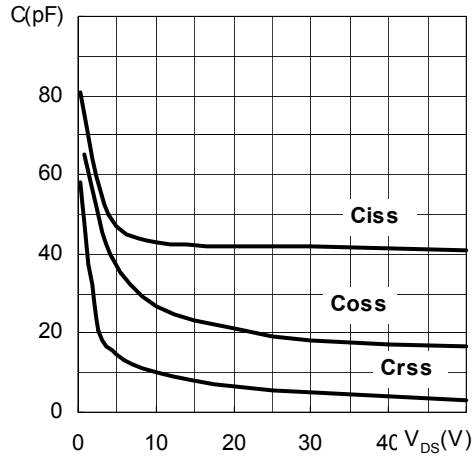


Figure 8 Gate Charge

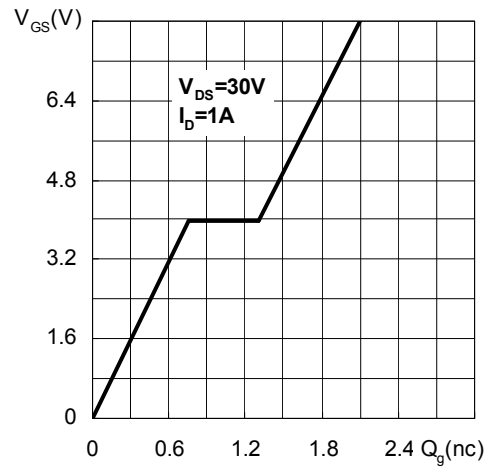


Figure 9 Maximum Forward Biased Safe Operating Area

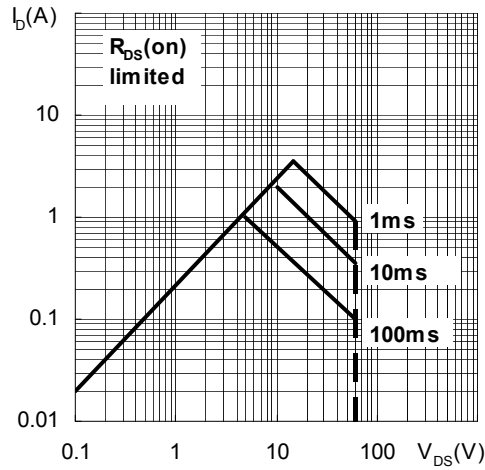
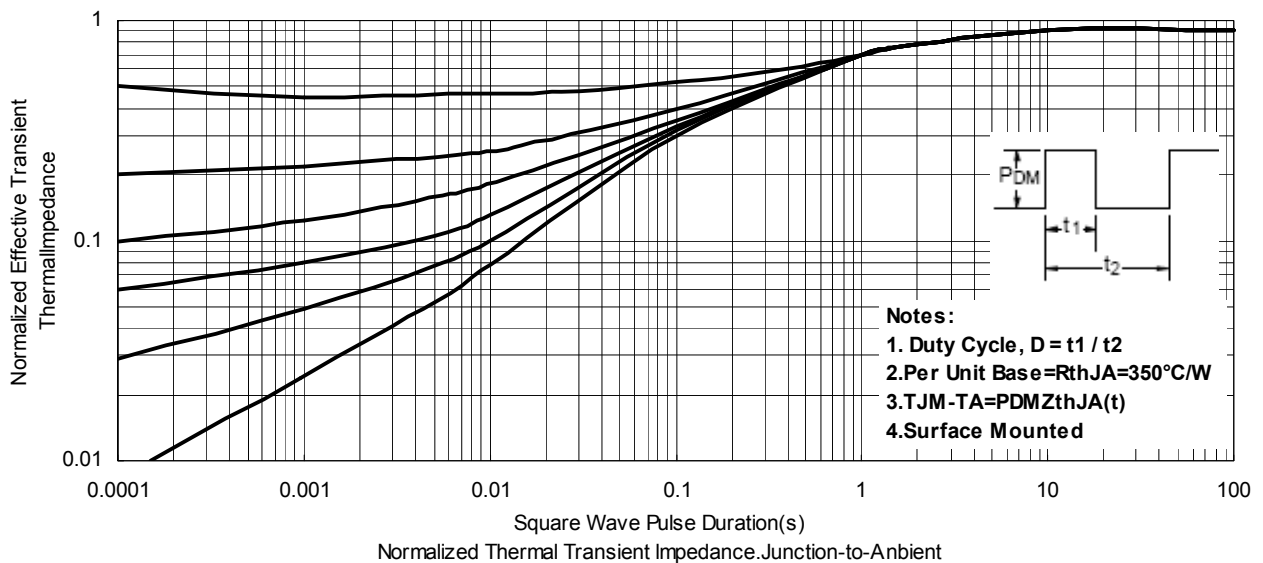
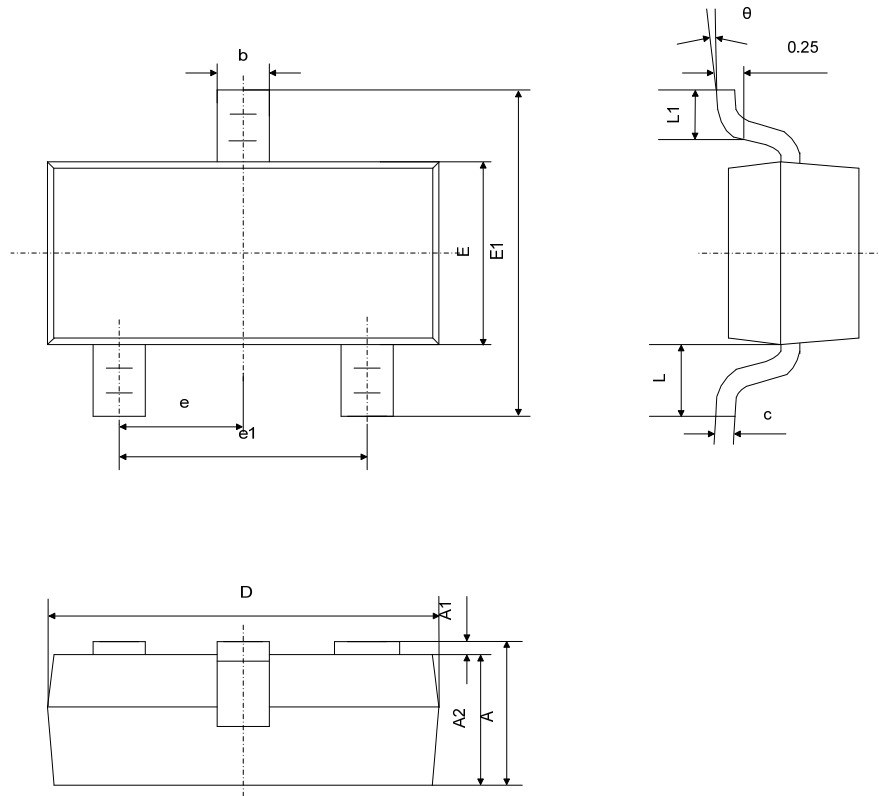


Figure 10 Normalized Maximum Transient Thermal Impedance



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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