

30V_{DS}/±20V_{GS} N-Channel Enhancement Mode MOSFET

Features

- $V_{DS}=30V, I_D=100A$
- $R_{DS(ON)}=4m\Omega$ (TYP.) $V_{GS}=10V$
- Reliable and Rugged
- Avalanche Rated
- Low On-Resistance
- High Current Capability

Applications

- Load Switch
- Power management in portable/desktop PCs
- DC/DC conversion

Ordering Information

Device	Package		Marking	Package Qty.
BSC0904NSI	PDFN5*6	Pb-Free	**	5000pcs/Reel

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage (V _{GS} =0V)	V _{DS}	30	V
Gate-Source Voltage (V _{GS} =0V,static)	V _{GS}	±20	V
Continuous Drain Current (T _C =25°C)	I _D	100	A
Continuous Drain Current (T _C =100°C)		65	A
Pulse Drain Current	I _{DM}	200	A
Maximum Power Dissipation	P _D	105	W
Single pulse avalanche energy	E _{as}	380	mJ
Operating,Storage Temperature Range	T _J ,T _{STG}	-55~175	°C

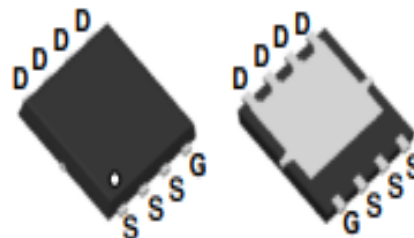
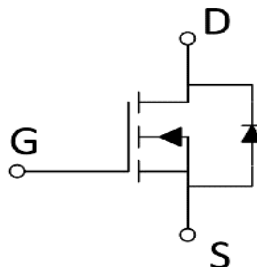
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	30	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
Gate -Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	0.7	1.7	2.5	V
Drain-Source On-state Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =20A	-	3.5	5	mΩ
		V _{GS} =4.5V, I _D =20A	-	7	10	
Body Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _{SD} =1A	-	-	1.2	V

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Case	R _{θJC}	-	4.5	-	°C/W
Thermal Resistance, Junction-to-Ambient	R _{θJA}	-	48	-	°C/W

PDFN5*6



Dynamic Characteristics

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input capacitance	C_{iss}	$V_{DS}=15V$	-	3568	-	pF
Output capacitance	C_{oss}	$V_{GS}=0V$	-	422	-	
Reverse transfer capacitance	C_{rss}	$f=1MHz$	-	341	-	
Gate Resistance	R_g	$f=1MHz$	-	1.5	-	Ω
Total Gate Charge	Q_g	$V_{DS}=15V$	-	67	-	nC
Gate Source Charge	Q_{gs}	$V_{GS}=10V$	-	13.7	-	
Gate Drain Charge	Q_{gd}	$I_D=20A$	-	10.3	-	
Turn-on delay Time	$t_{d(on)}$	$V_{GS}=10V$	-	12	-	ns
Rise time	t_r	$V_{DS}=15V$	-	15	-	
Turn-off delay Time	$t_{d(off)}$	$R_L=0.75\Omega$	-	40	-	
Fall time	t_f	$R_G=3\Omega$	-	14	-	
Reverse Recovery Time	t_{rr}	$V_{GS}=0V, I_{SD}=20A$	-	29	-	ns
Reverse Recovery Charge	Q_{rr}	$dI/dt=500A/\mu s$	-	32	-	nC

Electrical Characteristics Diagrames

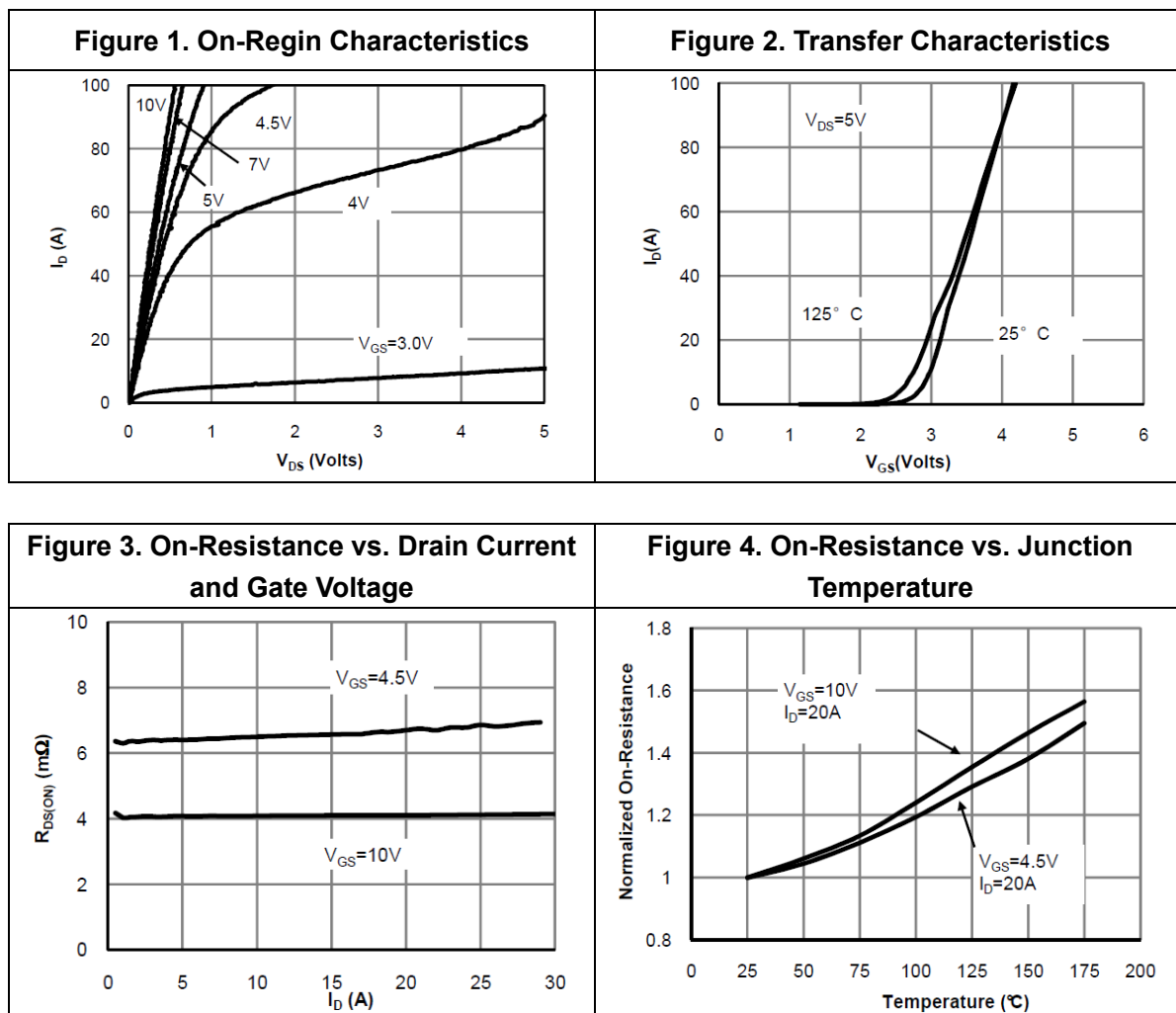
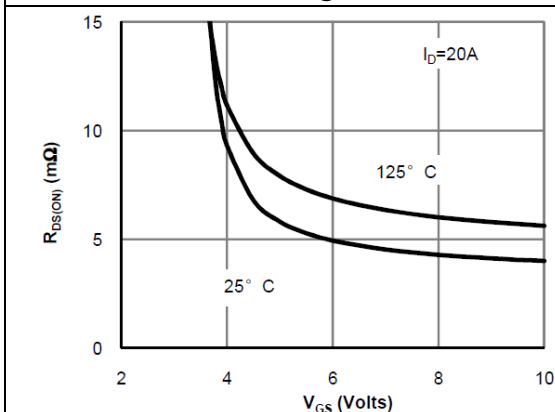
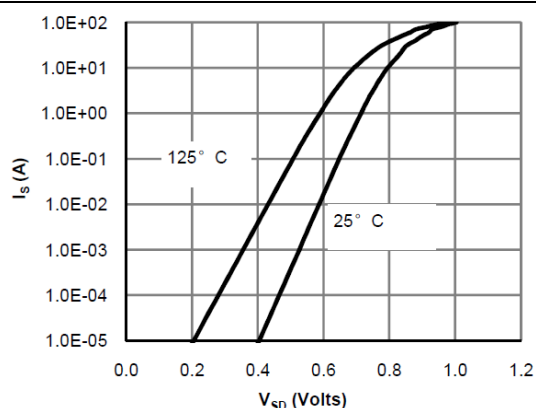
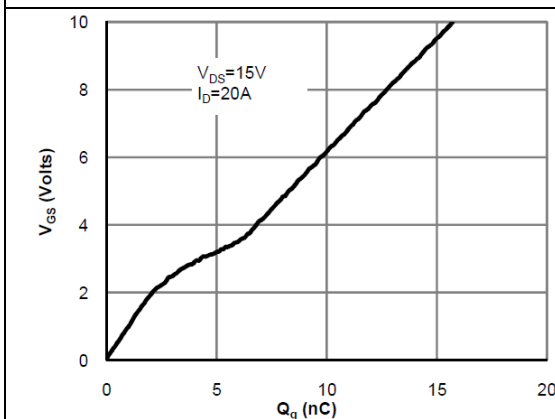
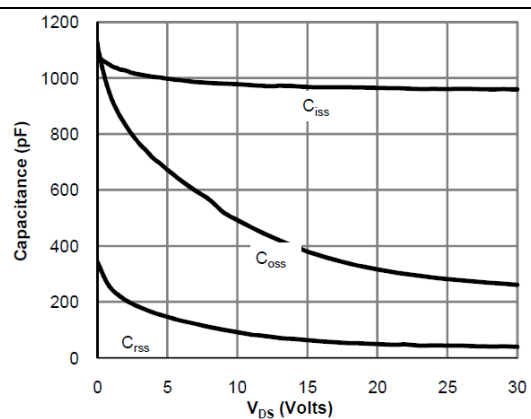
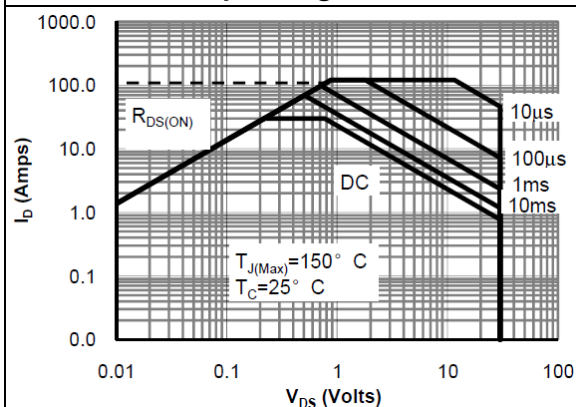
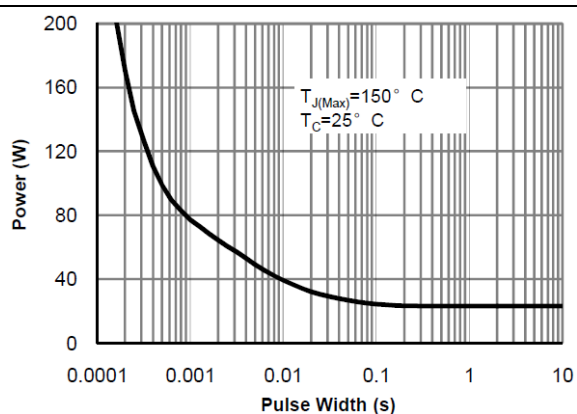


Figure 5. On-Resistance vs. Gate-Source Voltage

Figure 6. Body-Diode Characteristics

Figure 7. Gate-Charge Characteristics

Figure 8. Capacitance Characteristics

Figure 9. Maximum Forward Biased Safe Operating Area

Figure 10. Single Pulse Power Rating Junction-to-Case


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