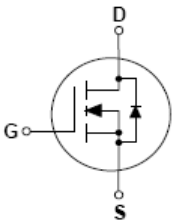
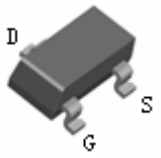
N-Channel Enhancement Mode Field Effect Transistor BL3402

FEATURES

- Electrostatic Sensitive Devices.
- V_{DS} (V) = 30V
- I_D = 4 A
- $R_{DS(ON)}$ < 55mΩ (V_{GS} = 10V)
  $R_{DS(ON)}$ < 70mΩ (V_{GS} = 4.5V)
  $R_{DS(ON)}$ < 110mΩ (V_{GS} = 2.5V)

Pb Lead-free





SOT-23

APPLICATIONS

- N-channel enhancement mode effect transistor.
- Switching application.

ORDERING INFORMATION

Type No.	Marking	Package Code
BL3402	3402	SOT-23

MAXIMUM RATING @ Ta=25℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	30	V
V_{GSS}	Gate -Source voltage	±12	V
I_D	Continuous Drain Current[A] @ TA = 25 ℃ @ TA = 70 ℃	4 3.4	A
I_{DM}	Pulsed Drain Current [a]	15	A
P_D	Power Dissipation	1.4	W
$R_{\theta JA}$	Thermal resistance,Junction-to-Ambient	70	℃/W
T_J, Tstg	Junction and Storage Temperature	-55 to +150	℃

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ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
STATIC PARAMETERS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=24 V_{GS}=0V	-	-	1	μA
Gate-body Leakage	I_{GSS}	V_{DS}=0V, V_{GS}=±12V	-	-	100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.6	1.0	1.4	V
On state drain current	$I_{DON)}$	V_{DS}==5V,V_{GS}=4.5V	10	-	-	A
Static drain-Source on-resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=4A V_{GS}=4.5V,I_D=3A V_{GS}=2.5V,I_D=2A	- - -	45 55 83	55 70 110	mΩ
Forward Transconductance	gFS	V_{DS}=5V,I_D=4A	-	8	-	S
Drain-Source diode forward voltage	V_{SD}	V_{GS}=0V,I_s=1A	-	0.8	1.0	V
Maximum Body-Diode Continuous Current	I_S		-	-	2.5	A
DYNAMIC CHARACTERISTICS[C]						
Input capacitance	C_{ISS}	V_{DS}=15V,V_{GS}=0V,f=1.0MHz	-	390	-	pF
Output capacitance	C_{OSS}		-	54.5	-	
Reverse transfer capacitance	C_{RSS}		-	41	-	
Gate resistance	Rg	V_{DS}=0V,V_{GS}=0V,f=1.0MHz		3		Ω
SWITCHING CHARACTERISTICS[C]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DS} = 15V, R_L = 3.75Ω, V_{GS}= 10V, R_{GEN}= 6Ω	-	3.3	-	ns
Rise Time	tr		-	1	-	ns
Turn-Off Delay Time	$t_{D(OFF)}$		-	21.7	-	ns
Fall Time	tf		-	2.1	-	ns
Total Gate Charge	Qg	V_{DS} = 15V I_D= 4A V_{GS}= 4.5V,	-	4.34	-	nC
Gate-Source Charge	Qgs		-	0.6	-	nC
Gate-Drain Charge	Qgd		-	1.38	-	nC
Body Diode Reverse Recovery Time	trr	IF=4A, dI/dt=100A/μs	-	12	-	nS
Body Diode Reverse Recovery Charge	Qrr	IF=4A, dI/dt=100A/μs	-	6.3	-	nC

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TYPICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

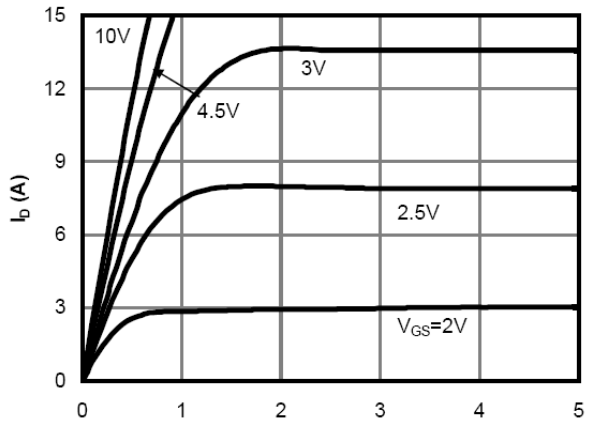

Fig 1: On-Region Characteristics

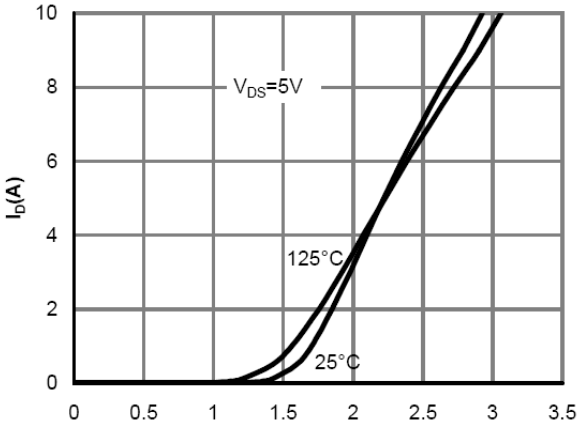

Figure 2: Transfer Characteristics

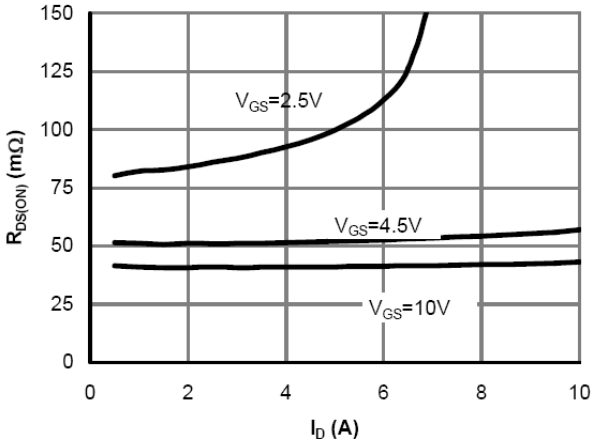

Figure 3: On-Resistance vs. Drain Current and Gate Voltage

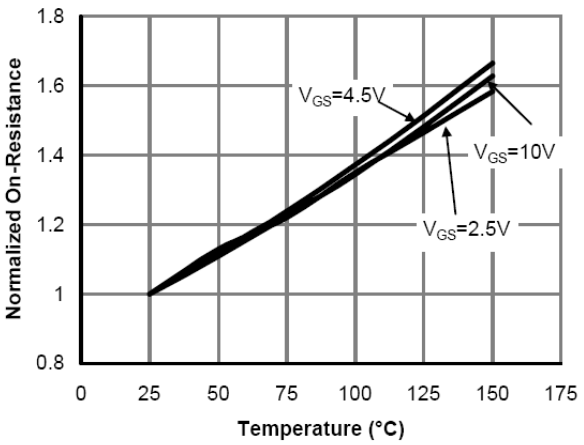

Figure 4: On-Resistance vs. Junction Temperature

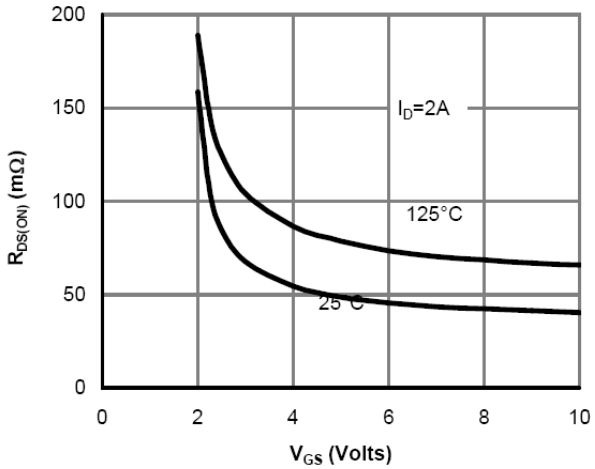

Figure 5: On-Resistance vs. Gate-Source Voltage

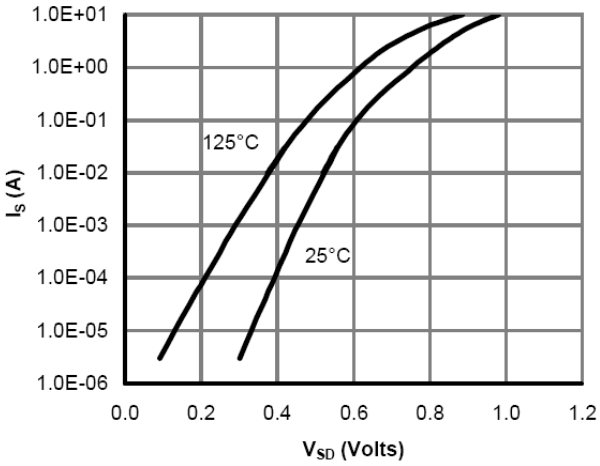

Figure 6: Body-Diode Characteristics

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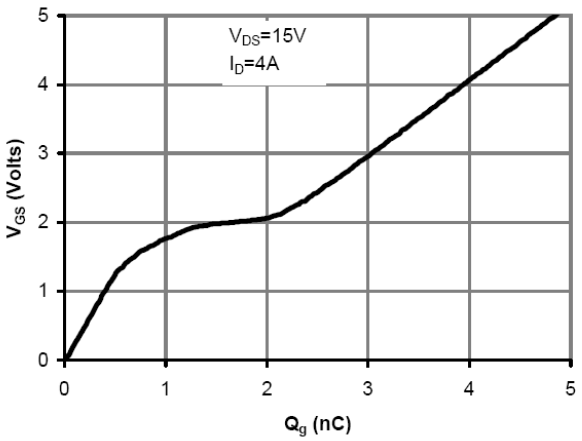

Figure 7: Gate-Charge Characteristics

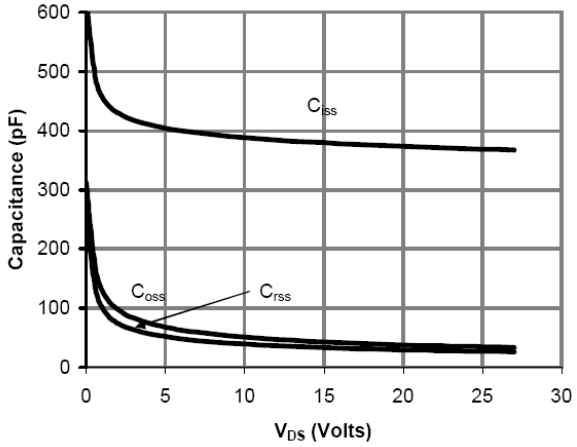

Figure 8: Capacitance Characteristics

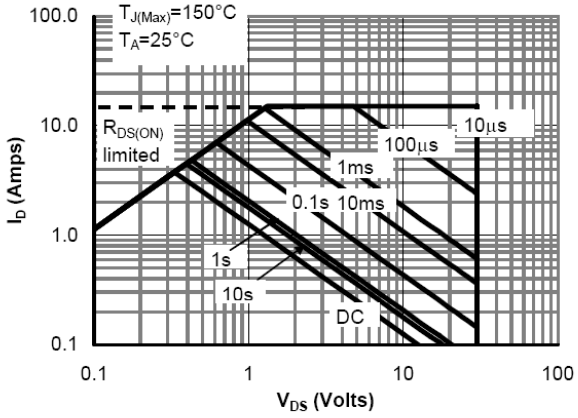

Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

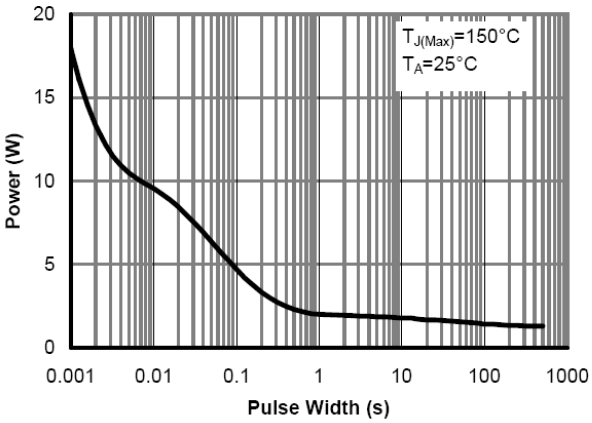

Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

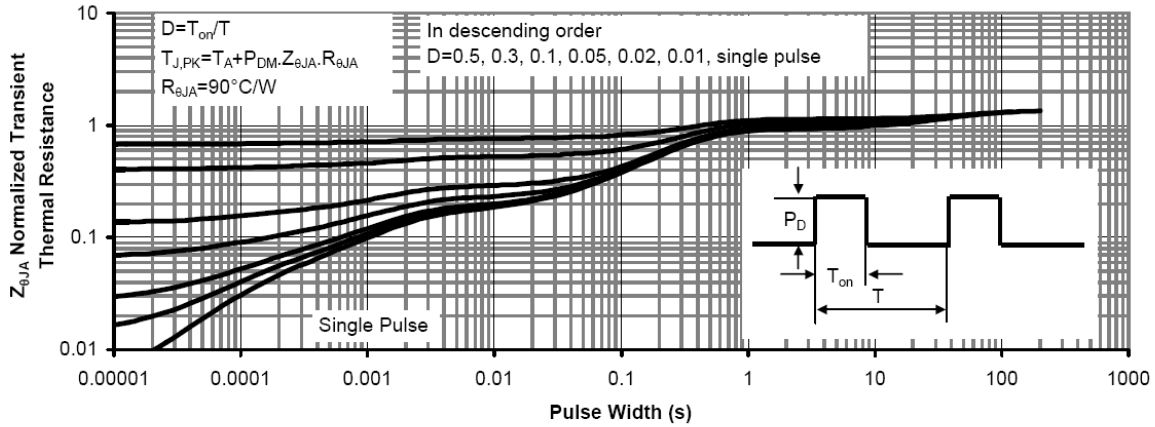

Figure 11: Normalized Maximum Transient Thermal Impedance

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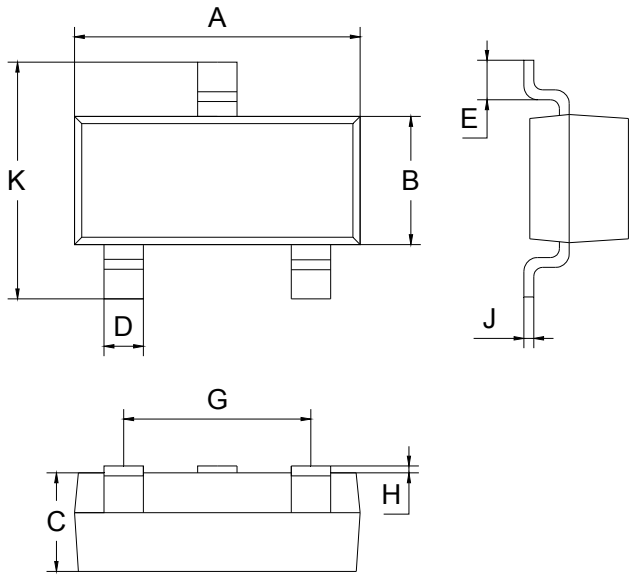
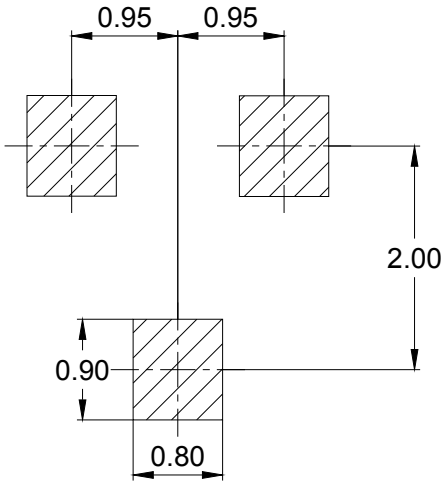
PACKAGE OUTLINE

Plastic surface mounted package SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	1.0 Typical	
D	0.4 Typical	
E	0.35	0.48
G	1.80	2.00
H	0.02	0.1
J	0.1 Typical	
K	2.20	2.60
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
BL3402	SOT-23	3000/Tape&Reel