

30V N-Channel Power MOSFET

DESCRIPTION

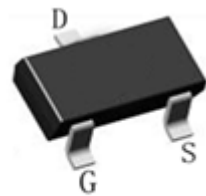
The BLM3400 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

Application

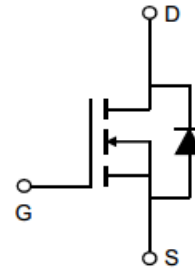
- PWM applications
- Load switch
- Power management

KEY CHARACTERISTICS

- $V_{DS} = 30V, I_D = 5.1A$
 - $R_{DS(ON)} < 59m\Omega @ V_{GS}=2.5V$
 - $R_{DS(ON)} < 45m\Omega @ V_{GS}=4.5V$
 - $R_{DS(ON)} < 41m\Omega @ V_{GS}=10V$
- High density cell design for lower R_{dson}



SOT-23 Top View



Schematic diagram

Package Marking And Ordering Information

Device Marking	Ordering Codes	Package	Product Code	Packing
3400	BLM3400	SOT-23	BLM3400	Tape Reel

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current-Continuous	I_D	5.1	A
Drain Current-Pulsed (Note 1)	I_{DM}	20	A
Maximum Power Dissipation (Tc=25°C)	P_D	1.3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	°C

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	96	°C/W
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Electrical Characteristics (TA=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V, V_{GS}=0V$	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS}=\pm 12V, V_{DS}=0V$	-	-	± 100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	0.7	0.9	1.4	V
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS}=2.5V, I_D=3A$	-	45	59	m Ω
		$V_{GS}=4.5V, I_D=4A$		34	45	
		$V_{GS}=10V, I_D=5A$		31	41	
Forward Transconductance	g_{FS}	$V_{DS}=5V, I_D=5A$	10	-	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS}=15V, V_{GS}=0V,$ $f=1.0MHz$	-	595	-	pF
Output Capacitance	C_{oss}		-	39	-	pF
Reverse Transfer Capacitance	C_{rss}		-	36	-	pF
Switching Characteristics <small>(Note 4)</small>						
Turn-on Delay Time	$t_{d(on)}$	$V_{DD}=15V, R_L=3\Omega,$ $V_{GS}=10V, R_{GEN}=3\Omega$	-	3.0	-	nS
Turn-on Rise Time	t_r		-	4.5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	25	-	nS
Turn-Off Fall Time	t_f			3.8	-	nS
Total Gate Charge	Q_g	$V_{DS}=15V, I_D=5A$ $V_{GS}=4.5V$	-	9.3	-	nC
Gate-Source Charge	Q_{gs}		-	1.6	-	nC
Gate-Drain Charge	Q_{gd}		-	2.1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=5A$	-	-	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. EAS condition : $T_j=25^\circ C, L=0.5mH, V_{DD}=20V, V_G=10V, R_g=25\Omega$.
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production.

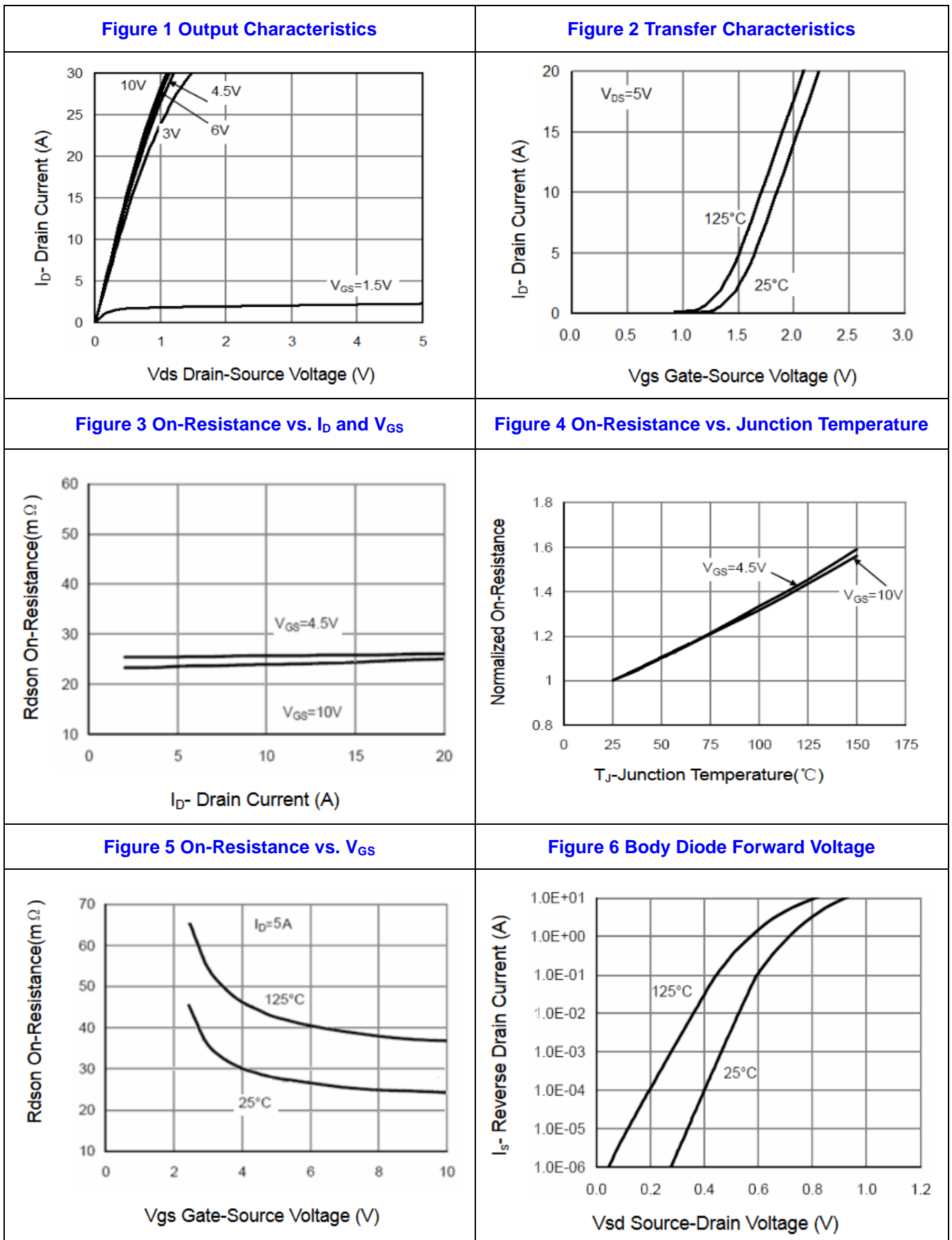
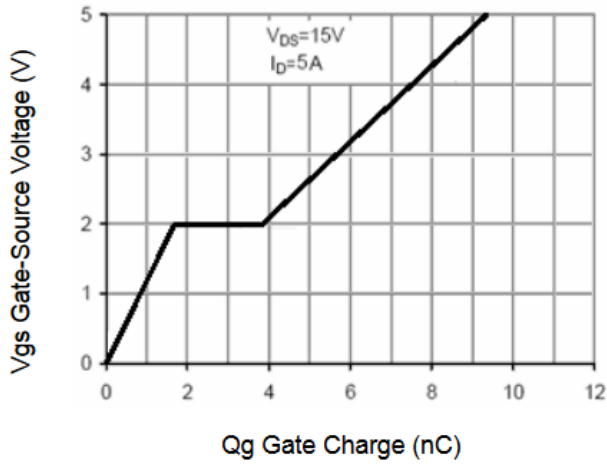
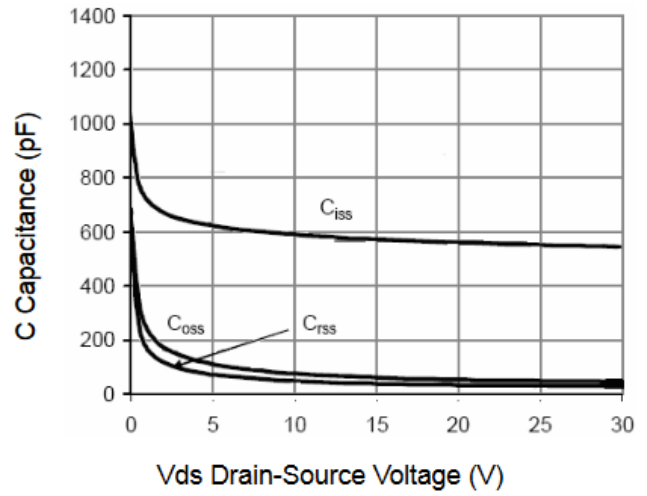
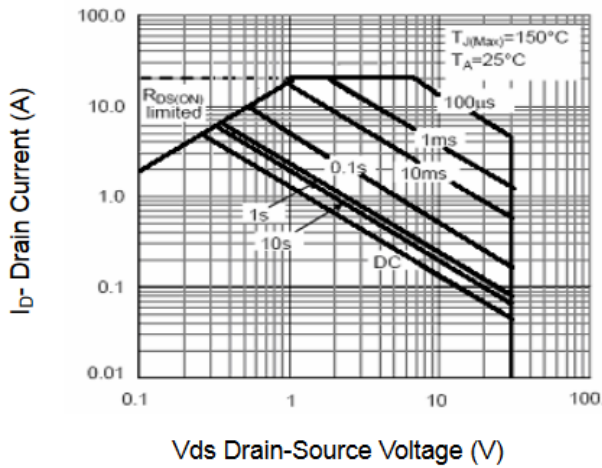
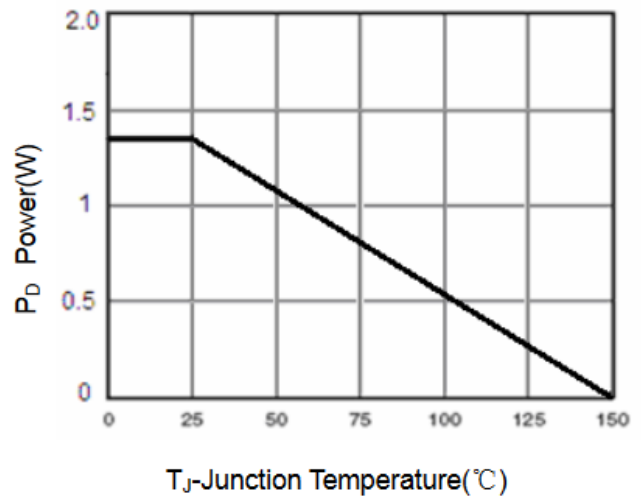
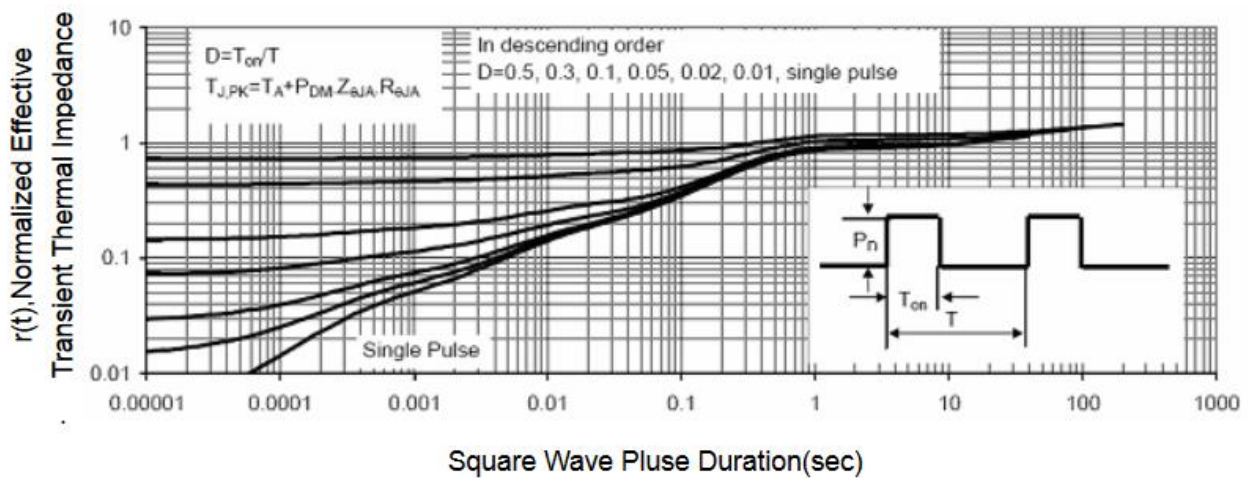
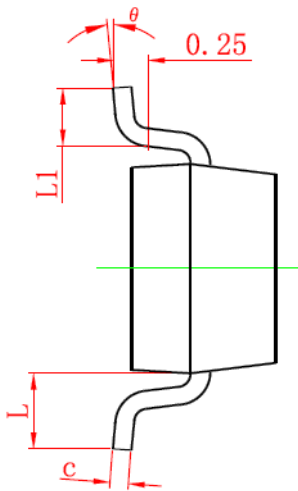
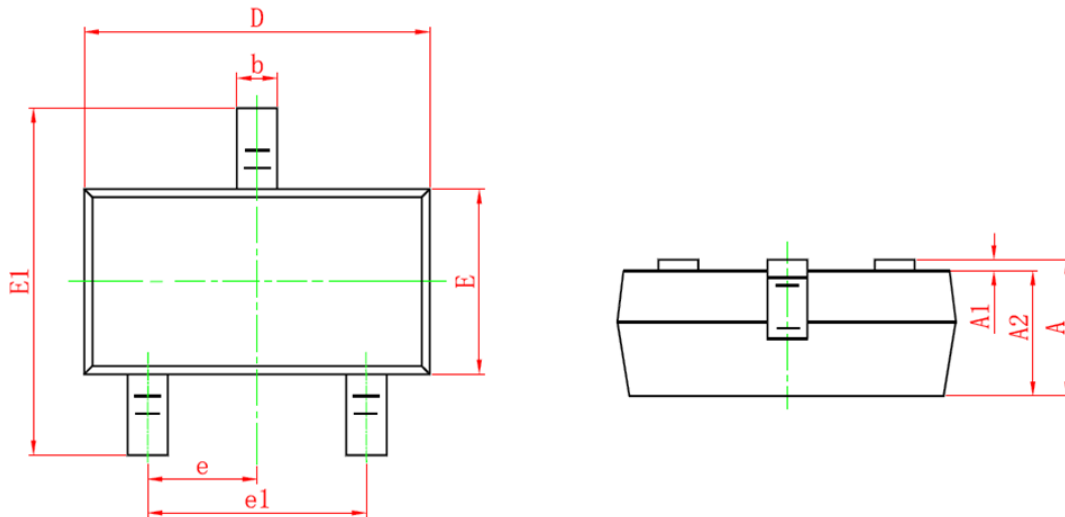
Characteristics Curves


Figure 7 Gate-Charge Characteristics

Figure 8 Capacitance Characteristics

Figure 9 Maximum Forward Biased Safe Operation Area

Figure 10 Power Dissipation

Figure 11 Normalized Maximum Transient Thermal Impedance


Package Description



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

SOT-23 package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shanghai Belling reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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