

1. Description

The BLM80P10 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.

KEY CHARACTERISTICS

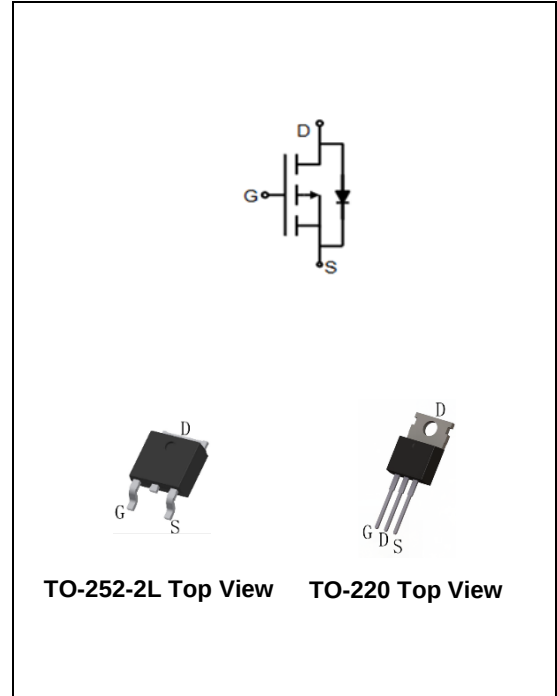
Parameter	Value	Unit
V_{DS}	-100	V
I_D	-20	A
$R_{DS(ON)}@10V.TYP$	80	m Ω

FEATURES

- High power and current handling capability
- Lead free product is acquired
- Surface mount package

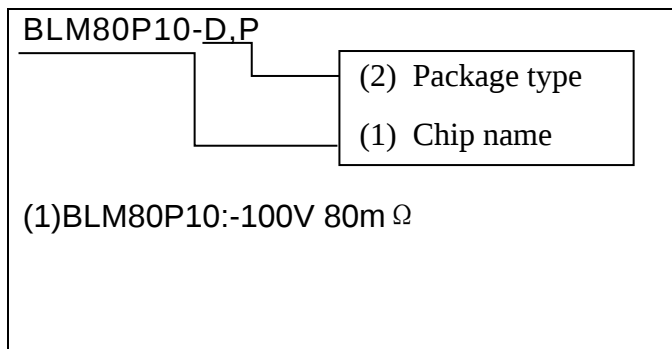
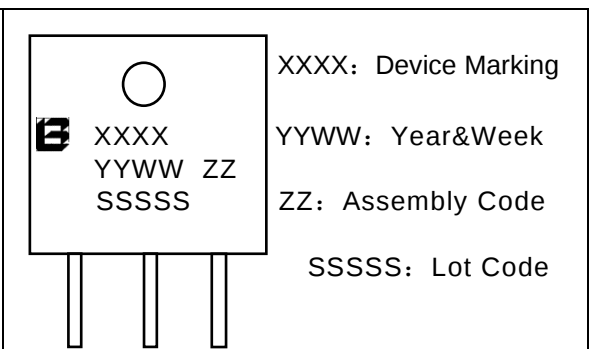
APPLICATIONS

- Power switching application
- Hard switched and High frequency circuits
- Uninterruptible power supply



ORDERING INFORMATION

Device Marking	Ordering Codes	Package	Product Code	Packing
M80P10	BLM80P10-D	TO-252	BLM80P10	Reel
M80P10	BLM80P10-P	TO-220	BLM80P10	Tube

BLM80P10-D,P  (1)BLM80P10:-100V 80m Ω	 XXXX: Device Marking YYWW: Year&Week ZZ: Assembly Code SSSS: Lot Code
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2. ABSOLUTE RATINGS

at $T_C = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-100	V
I_D	Continuous Drain Current	-20	A
I_{DM}	Pulsed Drain Current(Note1)	-80	A
P_D	Power Dissipation	59.5	W
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	42.25	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ\text{C}$

3. Thermal characteristics

Symbol	Parameter	RATINGS	Units
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	2.1	$^\circ\text{C}/\text{W}$

4. Electrical Characteristics

at $T_C = 25^\circ\text{C}$, unless otherwise specified

OFF Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$	-100	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS} = -100\text{V}, V_{GS} = 0\text{V}$	--	--	-1	μA
I_{GSS}	Gate to Source Forward Leakage	$V_{GS} = \pm 20\text{V}$	--	--	100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$ (Note3)	Drain-to-Source On-Resistance	$V_{GS}=-4.5\text{V}, I_D=-10\text{A},$	--	80	96	m Ω
		$V_{GS}=-10\text{V}, I_D=-10\text{A},$	--	90	120	
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}(\text{Note2})$	-1	-1.7	-2.4	V

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = -50V f = 1.0MHz	--	1442	--	pF
C _{oss}	Output Capacitance		--	67	--	
C _{rss}	Reverse Transfer Capacitance		--	81	--	

Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	V _{DD} = -50V I _D = -20A R _L = 1Ω R _{GEN} = 10Ω V _{GS} = -10V	--	20	--	ns
t _r	Rise Time		--	11	--	
t _{d(OFF)}	Turn-Off Delay Time		--	100	--	
t _f	Fall Time		--	38	--	
Q _g	Total Gate Charge	I _D = -16A V _{DD} = -50V V _{GS} = -10V	--	55	--	nC
Q _{gs}	Gate to Source Charge		--	10	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	9.4	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
I _S	Continuous Source Current (Body Diode)	TC=25 °C	--	--	-10	A
V _{SD}	Diode Forward Voltage	I _S = -20A, V _{GS} = 0V(Note2)	--	--	-1.2	V

Note1: Pulse width limited by maximum junction temperature

Note2: Eas condition: T_j = 25°C, V_{DD} = -50V, V_{GS} = -10V, L = 0.5mH, R_g = 25Ω, I_{as} = 13A

Note3: Pulse width t_p ≤ 300μs, δ ≤ 2%

5. Characteristics Curves

Figure 1 Output Characteristics

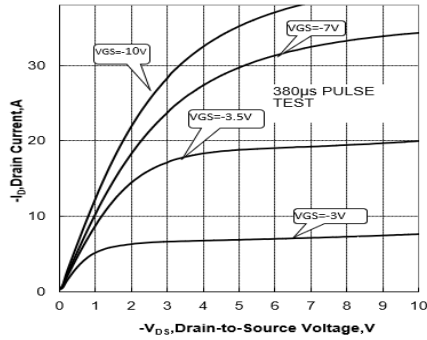


Figure 2 Transfer Characteristics

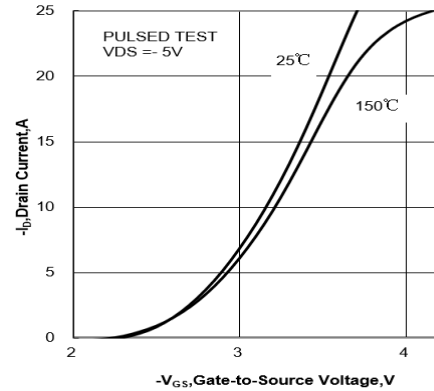


Figure 3 On-Resistance vs. I_D

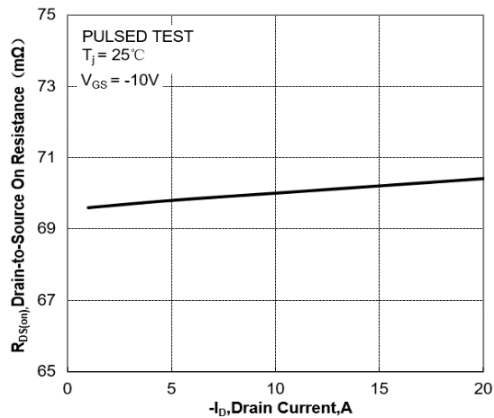


Figure 4 On-Resistance vs. Junction Temperature

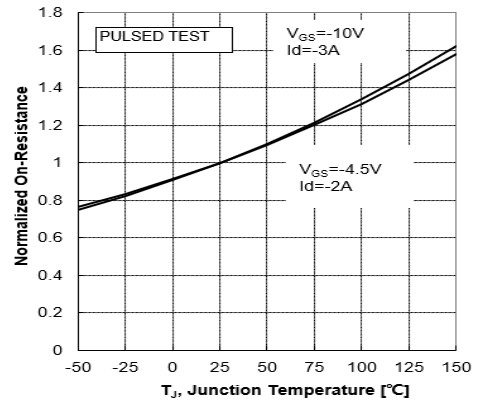


Figure 5 BV vs Junction Temperature

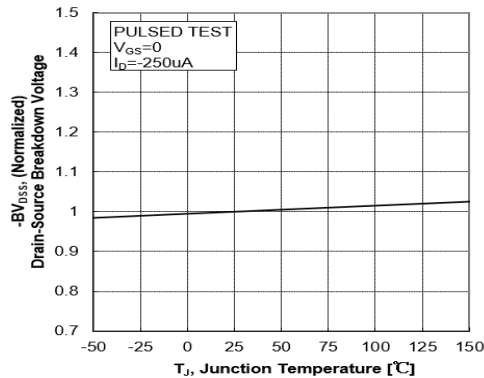


Figure 6 Vth vs Junction Temperature

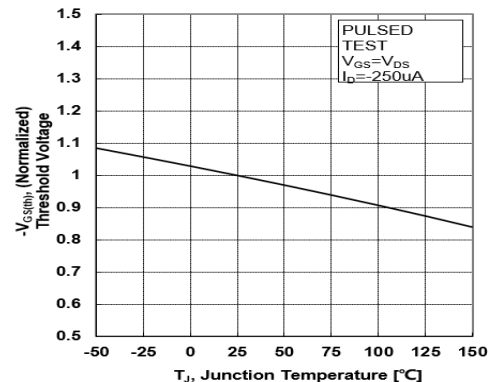


Figure 7 Gate-Charge Characteristics

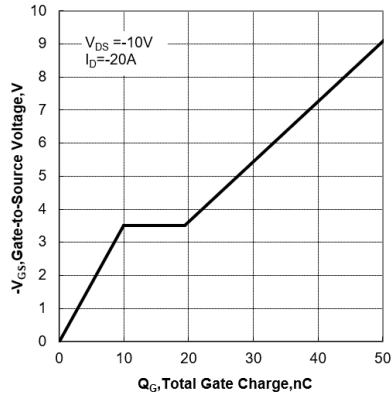


Figure 8 Capacitance Characteristics

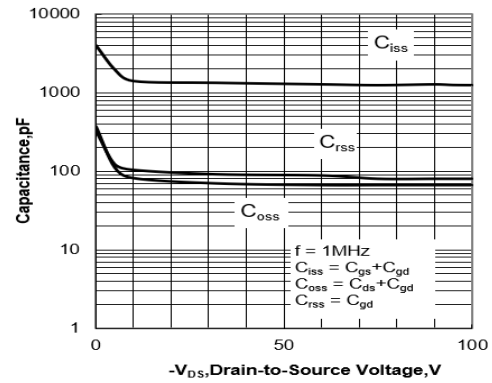


Figure 9 Maximum Forward Biased Safe Operation Area

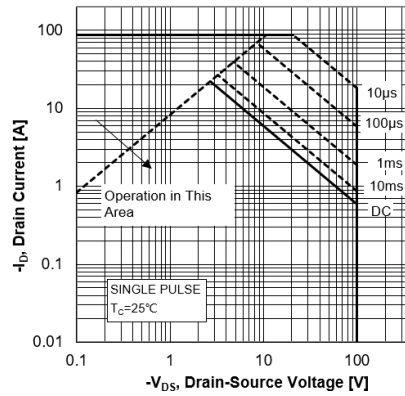
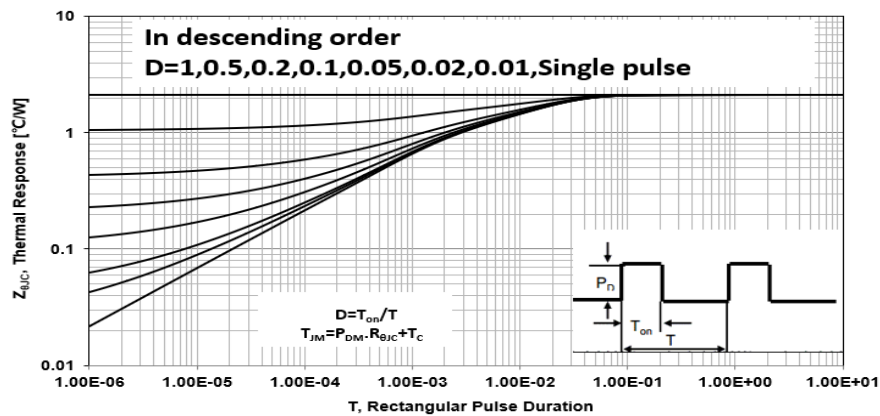
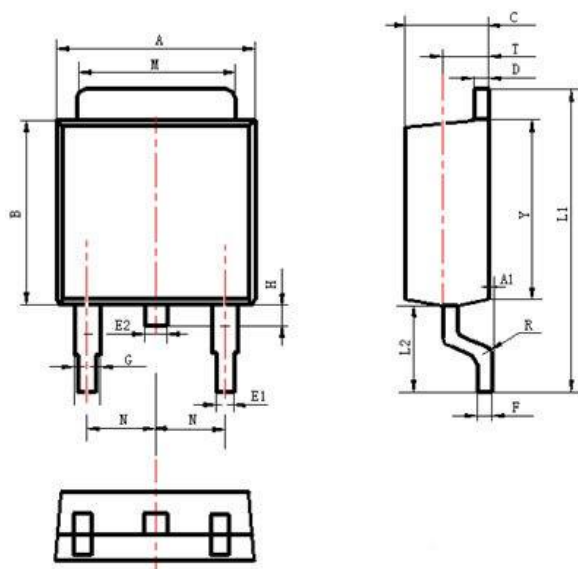


Figure 10 Normalized Maximum Transient Thermal Impedance

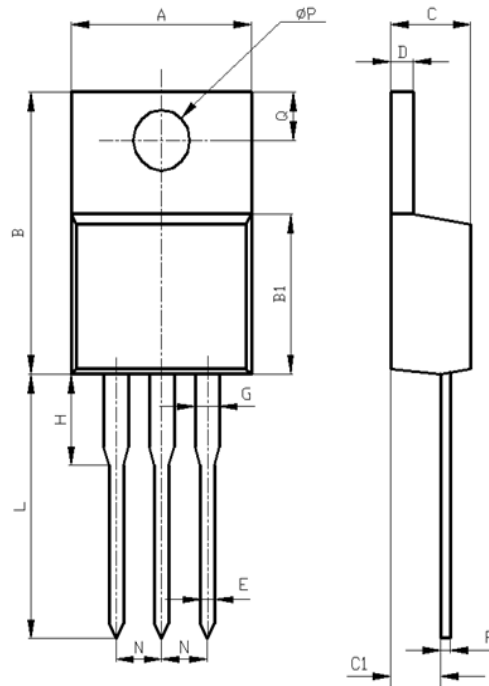


Package Description



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

TO-252-2L Package



Items	Values(mm)	
	MIN	MAX
A	9.60	10.6
B	15.0	16.0
B1	8.90	9.50
C	4.30	4.80
C1	2.30	3.10
D	1.20	1.40
E	0.70	0.90
F	0.30	0.60
G	1.17	1.37
H	2.70	3.80
L	12.6	14.8
N	2.34	2.74
Q	2.40	3.00
Ø P	3.50	3.90

TO-220 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.

CONTACT:**上海贝岭股份有限公司 (总部)**

地址: 上海市宜山路 810 号

邮编: 200233

电话: 021-24261000

产品业务咨询及技术支持

电话: 021-24261326

传真 2: 021-64852222

邮箱 2: marketing@belling.com.cn

上海贝岭深圳分公司 (华南区)

地址: 深圳市福田区中心区民田路新华保险大厦 1510 室

邮编: 518031

电话: 0755-33336776 0755-33336770

传真: 0755-33336788

上海贝岭北京办事处 (华北区)

地址: 北京市西城区新华里 16 号院锦官苑小区 10 号楼 1 单元 1505 室

邮编: 100044

电话: 010-64179374

传真: 010-8835 9236