

1. Description

The BLM9435 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

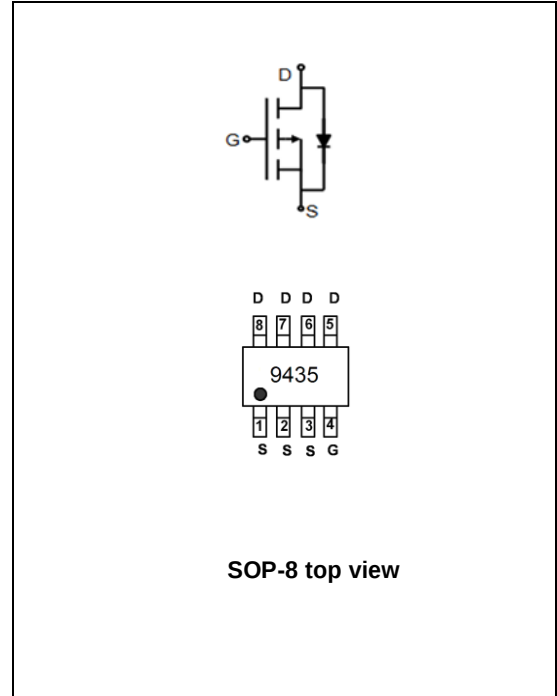
Parameter	Value	Unit
V_{DS}	-30	V
I_D	-5.1	A
$R_{DS(ON)}@-10V.TYP$	48	$m\Omega$
$R_{DS(ON)}@-4.5V.TYP$	70	$m\Omega$

FEATURES

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

APPLICATIONS

- PWM applications
- Load switch
- Power management



ORDERING INFORMATION

Device Marking	Ordering Codes	Package	Product Code	Packing
9435	BLM9435	SOP-8	BLM9435	Reel

BLM9435			
		(1) Product name	
		XXXX	XXXX: Device Marking
		SSSSS	SSSSS: Lot Code

2. ABSOLUTE RATINGS

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

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-30	V
I_D	Continuous Drain Current	-5.1	A
I_{DM}	Pulsed Drain Current(Note1)	-20.4	A
P_D	Power Dissipation	2.5	W
V_{GS}	Gate-to-Source Voltage	± 20	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	16	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	50	$^\circ\text{C}/\text{W}$

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	$V_{GS}=0\text{V}$, $I_D=250\mu\text{A}$	-30	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS} = -30\text{V}$, $V_{GS} = 0\text{V}$	--	--	-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	$V_{GS}=-10\text{V}$, $I_D=-5.1\text{A}$,	--	48	65	m Ω
		$V_{GS}=-4.5\text{V}$, $I_D=-4.2\text{A}$,	--	70	95	
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS} = V_{GS}$, $I_D = -250\mu\text{A}$ (Note2)	-1	-1.6	-2.4	V

Dynamic Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = -15V f = 1.0MHz	--	652	--	pF
C _{oss}	Output Capacitance		--	75	--	
C _{rss}	Reverse Transfer Capacitance		--	65	--	

Switching Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	V _{DD} = -15V I _D = -1A R _L = 1Ω R _{GEN} = 6Ω V _{GS} = -10V	--	15	--	ns
t _r	Rise Time		--	13	--	
t _{d(OFF)}	Turn-Off Delay Time		--	58	--	
t _f	Fall Time		--	21	--	
Q _g	Total Gate Charge	I _D = -5.1A V _{DD} = -15V V _{GS} = -10V	--	14	--	nC
Q _{gs}	Gate to Source Charge		--	3.2	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	1.8	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V _{SD}	Diode Forward Voltage	I _S = -1.7A, 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} = 8A

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

5. Characteristics Curves

Figure 1 Output Characteristics

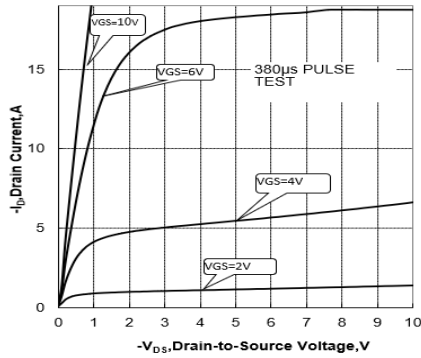


Figure 2 Transfer Characteristics

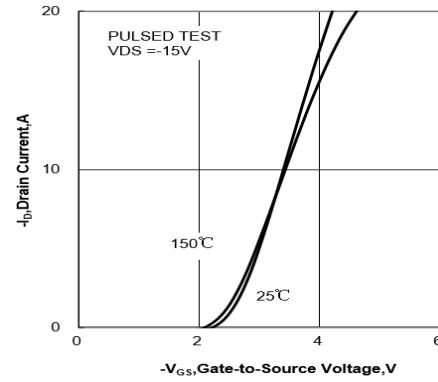


Figure 3 On-Resistance vs. I_D

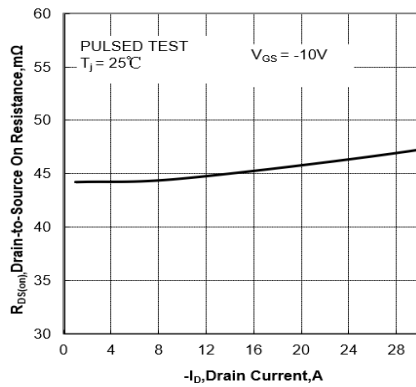


Figure 4 On-Resistance vs. Junction Temperature

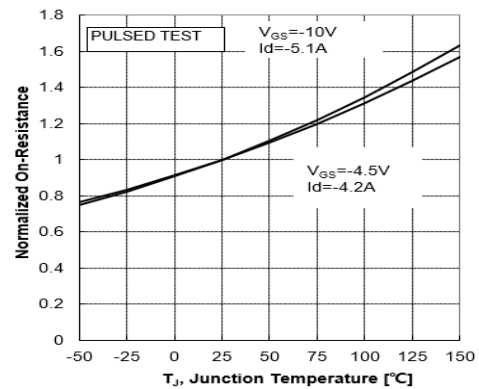


Figure 5 BV vs Junction Temperature

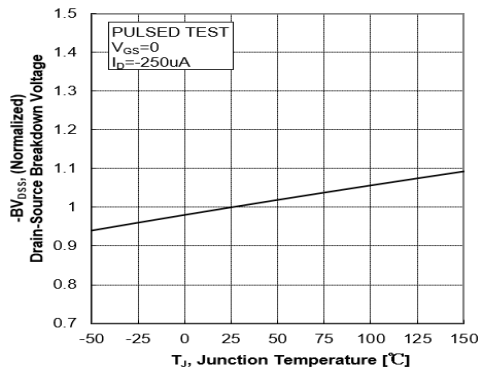


Figure 6 Vth vs Junction Temperature

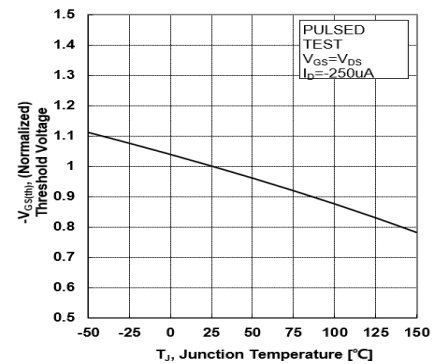


Figure 7 Gate-Charge Characteristics

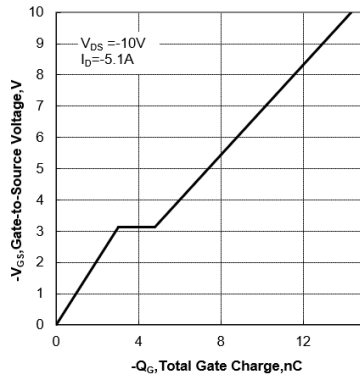


Figure 8 Capacitance Characteristics

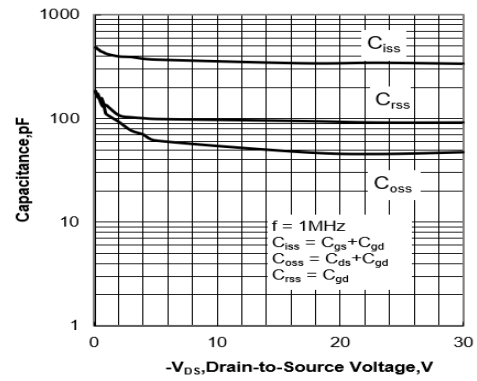


Figure 9 Maximum Forward Biased Safe Operation Area

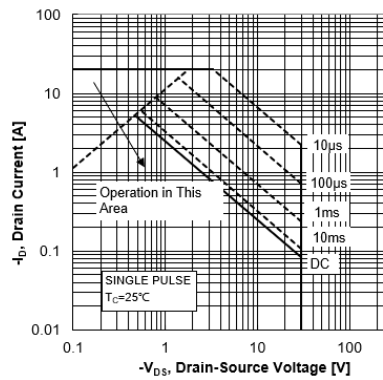
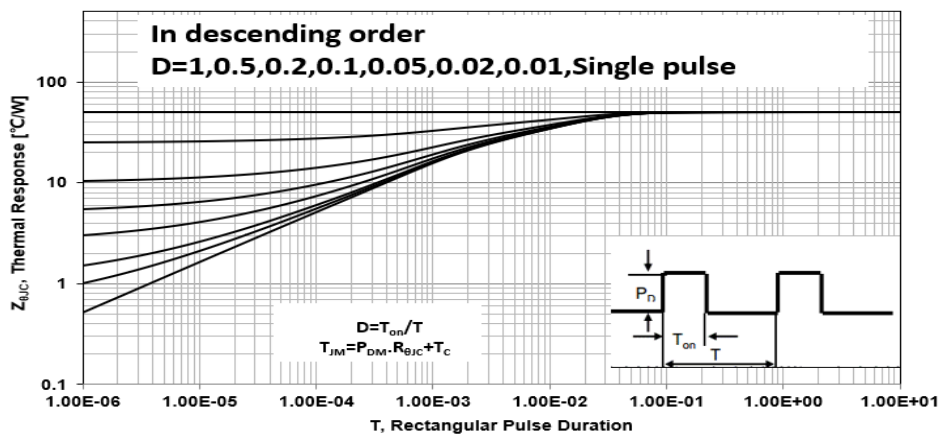
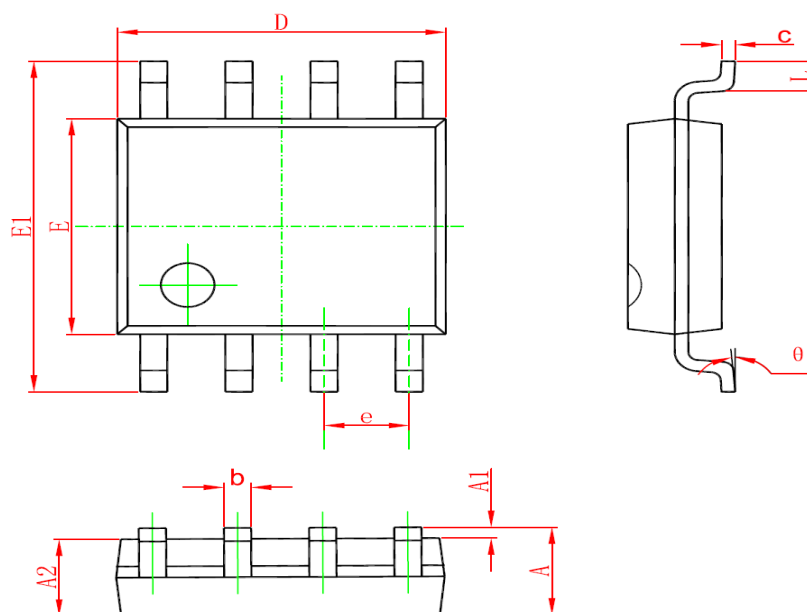


Figure 10 Normalized Maximum Transient Thermal Impedance



Package Description

SOP-8 PACKAGE IN FORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

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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