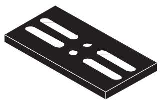
12V, 21A, 5.5mΩ, Dual N-Channel Power MOSFET

Features

- 2.5V drive
- Internal protection diode
- Common-drain type



Applications

- Lithium-ion battery charging and discharging switch

Specifications

Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Value	Unit
Source to Source Voltage	V_{SSS}		12	V
Gate to Source Voltage	V_{GSS}		±8	V
Source Current (DC)	I_S		21	A
Source Current (Pulse)	I_{SP}	PW≤100µs, duty cycle≤1%	100	A
Total Dissipation	P_T	When mounted on ceramic substrate (5000mm^2×0.8mm)	2.5	W
Junction Temperature	T_j		150	°C
Storage Temperature	Tstg		- 55 to +150	°C

Note: Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Junction to Ambient When mounted on ceramic substrate (5000mm2 X 0.8mm)	$R_{\theta JA}$	60	°C /W

Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Value			Uni
			min	typ	max	
Source to Source Breakdown	$V_{(BR)SSS}$	I_S=1mA, V_{GS}=0V Test Circuit 1	12			V
Zero-Gate Voltage Source	I_{SSS}	V_{SS}=10V, Test Circuit 1			1	µA
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±8V, Test Circuit 2			±5	µA
Gate Threshold Voltage	$V_{GS(th)}$	V_{SS}=6V, I_S=1mA Test Circuit 3	0.5		1.3	V
Forward Transconductance	g_{FS}	V_{SS}=6V, I_S=3A Test Circuit 4		19		S

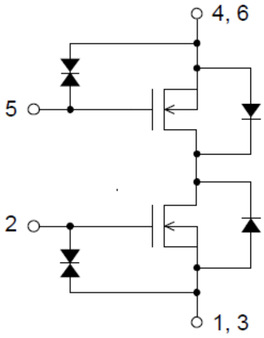
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Static Source to Source On-State Resistance	R_{SS}(on)1	I_S=5A, V_{GS}=4.5V Test Circuit 5		4.8	5.5	mΩ
	R_{SS}(on)2	I_S=5A, V_{GS}=4.0V Test Circuit 5			6.5	mΩ
	R_{SS}(on)3	I_S=5A, V_{GS}=3.8V Test Circuit 5			7.5	mΩ
	R_{SS}(on)4	I_S=5A, V_{GS}=3.1V Test Circuit 5			7.8	mΩ
	R_{SS}(on)5	I_S=5A, V_{GS}=2.5V Test Circuit 5		5.8	11	mΩ
Total Gate Charge	Qg	V_{SS}=6V, V_{GS}=4.5V, I_S=21A Test Circuit 7		50		nC
Forward Source to Source Voltage	$V_{F(S-S)}$	I_S=3A, V_{GS}=0V Test Circuit 8		0.75	1.2	V

Note: Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

Ordering & Package Information

Device	Package	Shipping
BLM8811	CSP	5,000 pcs. / reel

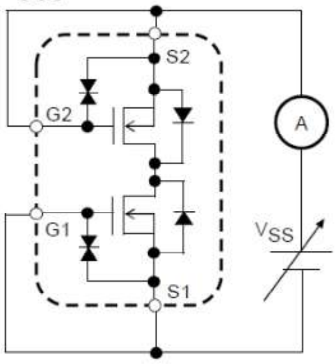
Electrical Connection



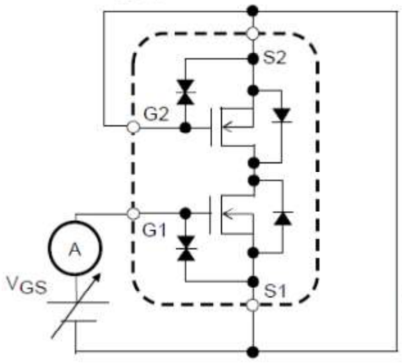
Electrical Connection

Test circuits are example of measuring FET1 side

Test Circuit 1
I_{SSS}

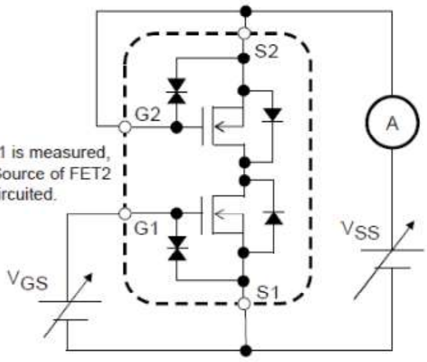


Test Circuit 2
I_{GSS}



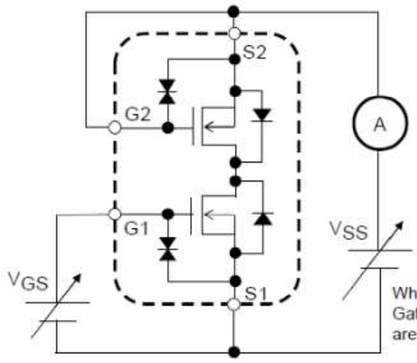
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 3
$V_{GS}(th)$



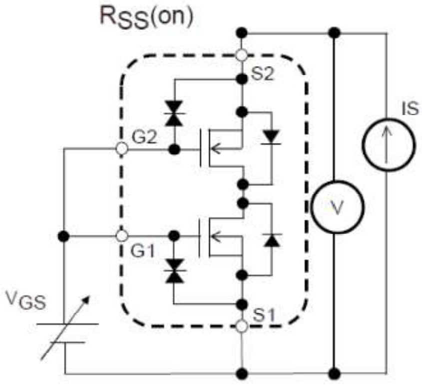
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 4
g_{FS}

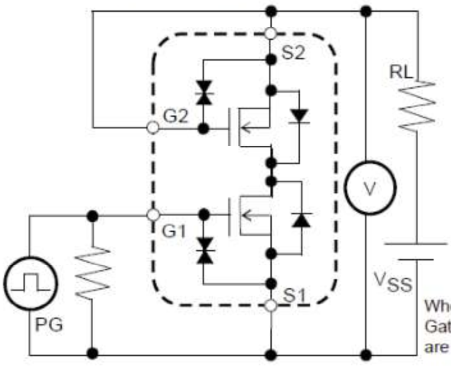


When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 5
$R_{SS}(on)$



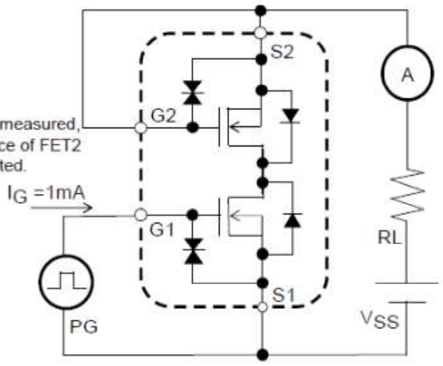
Test Circuit 6
$t_d(on)$, t_r, $t_d(off)$, t_f



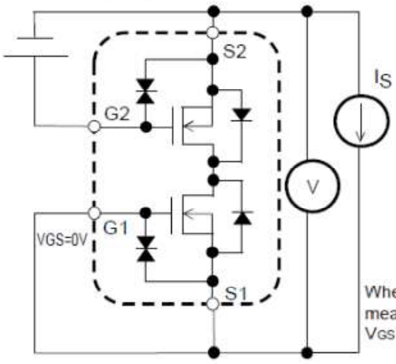
When FET1 is measured, Gate and Source of FET2 are short-circuited.

Test Circuit 7
Qg

When FET1 is measured, Gate and Source of FET2 are short-circuited.



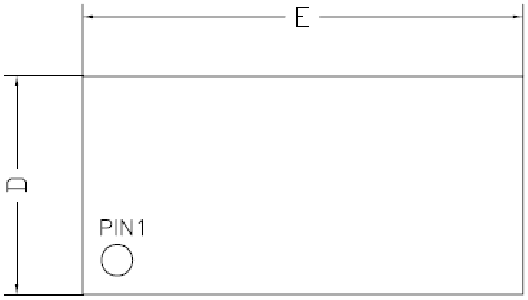
Test Circuit 8
$V_{F(S-S)}$



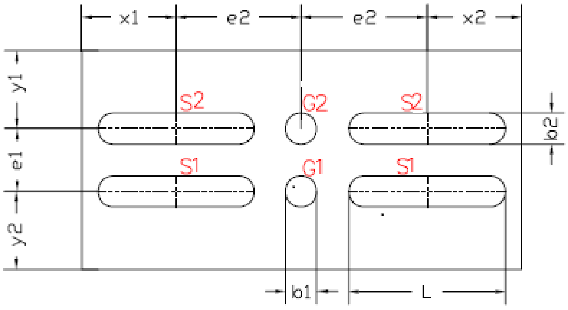
When FET1 is measured,+4.5V is added to VGS of FET2.

Package Dimensions

unit : mm



TOP VIEW
(MARK SIDE)



BOTTOM VIEW
(BUMP SIDE)

SIDE VIEW

COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	0.180	0.200	0.220
A1	0.020 REF		
A2	0.160	0.180	0.200
D	1.720	1.740	1.760
E	3.490	3.510	3.530
b1	0.220	0.250	0.280
b2	0.220	0.250	0.280
e1	0.500BSC		
e2	1.000BSC		
L	1.220	1.250	1.280
x1	0.755 REF		
x2	0.755 REF		
y1	0.620 REF		
y2	0.620 REF		