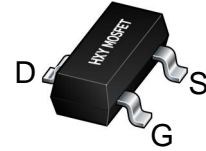




## Description

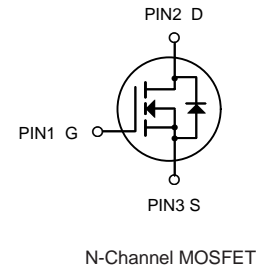
The MMBF2201NT1 uses advanced trench technology to provide excellent  $R_{DS(ON)}$ , low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.



SOT-323

## General Features

$V_{DS} = 20V$   $I_D = 2A$   
 $R_{DS(ON)} < 55m\Omega @ V_{GS}=4.5V$   
 $R_{DS(ON)} < 85m\Omega @ V_{GS}=2.5V$



## Application

Battery protection  
 Load switch  
 Uninterruptible power supply

## Package Marking and Ordering Information

Product ID	Pack	Brand	Qty(PCS)
MMBF2201NT1	SOT-323	HXY MOSFET	3000

## Absolute Maximum Ratings ( $T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
$V_{DS}$	Drain-Source Voltage	20	V
$V_{GS}$	Gate-Source Voltage	$\pm 12$	V
$I_D$	Drain Current-Continuous	2	A
$P_D$	Maximum Power Dissipation	0.3	W
$T_J, T_{STG}$	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient <sup>(Note 2)</sup>	125	$^\circ C/W$



**Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)**

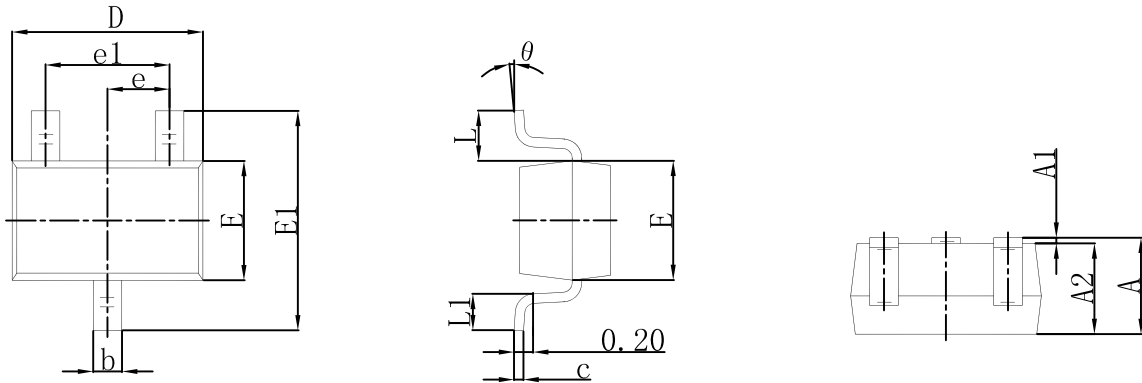
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit	
<b>STATIC CHARACTERISTIC</b>							
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =250μA	20			V	
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =18V, V <sub>GS</sub> = 0V			1	μA	
Gate-body leakage current	I <sub>GSS</sub>	V <sub>GS</sub> =±12V, V <sub>DS</sub> = 0V			±100	nA	
Gate threshold voltage (note2)	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	0.4	0.7	1.0	V	
Drain-source on-resistance (note2)	R <sub>DS(on)</sub>	V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.0A			55	mΩ	
		V <sub>GS</sub> =2.5V, I <sub>D</sub> =0.3A			85	mΩ	
Maximum Continuous Drain to Source Diode Forward Current	I <sub>S</sub>	--			1.0	A	
Diode forward voltage	V <sub>SD</sub>	I <sub>S</sub> =1.0A, V <sub>GS</sub> =0V			1.2	V	
<b>DYNAMIC CHARACTERISTICS (note3)</b>							
Input capacitance	C <sub>iss</sub>	V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f =1MHz		300		pF	
Output capacitance	C <sub>oss</sub>				120		pF
Reverse transfer capacitance	C <sub>rss</sub>				80		pF
<b>SWITCHING CHARACTERISTICS (note3)</b>							
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =4.5V, V <sub>DS</sub> =10V, R <sub>L</sub> =5.1Ω, R <sub>G</sub> =5.1Ω			15	nS	
Turn-on rise time	t <sub>r</sub>				85	nS	
Turn-off delay time	t <sub>d(off)</sub>				65	nS	
Turn-off fall time	t <sub>f</sub>				27	nS	

Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse Width=300μs, Duty Cycle=2%.
3. These parameters have no way to verify.



### SOT-323 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
K	0°	8°	0°	8°



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