

## Features

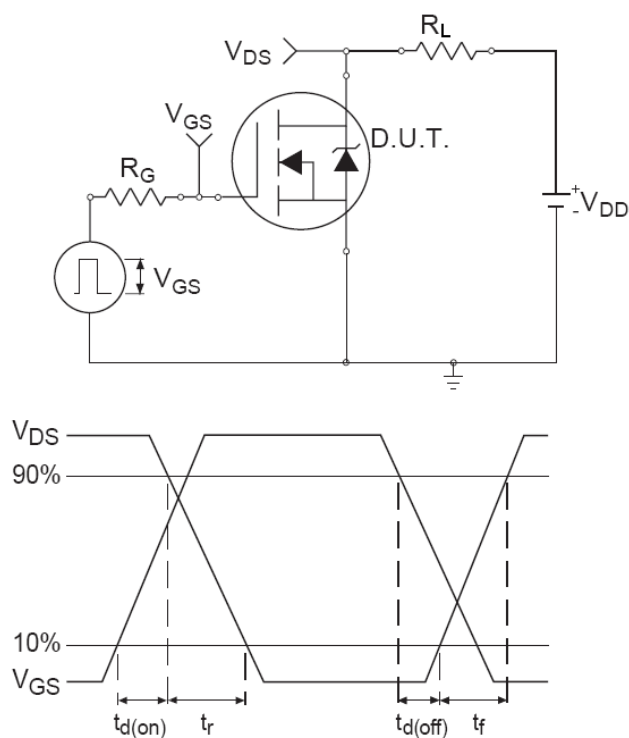
- V<sub>DSS</sub>=700V/V<sub>GSS</sub>=±30V/I<sub>D</sub>=9A  
R<sub>DS(ON)</sub>=5mΩ(max.)@V<sub>GS</sub>=10V
- Low Dense Cell Design
- Reliable and Rugged
- Advanced trench process technology

..

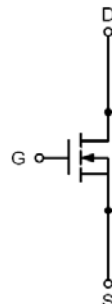
## Applications

- Synchronous Rectification
- Power Management in Inverter System

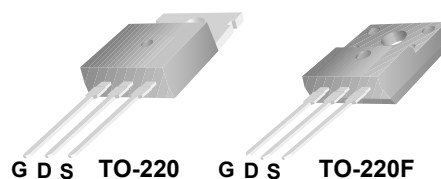
## Switching Time Test Circuit and Waveforms



## Pin Description



## Pin Description



## Package Marking and Ordering Information

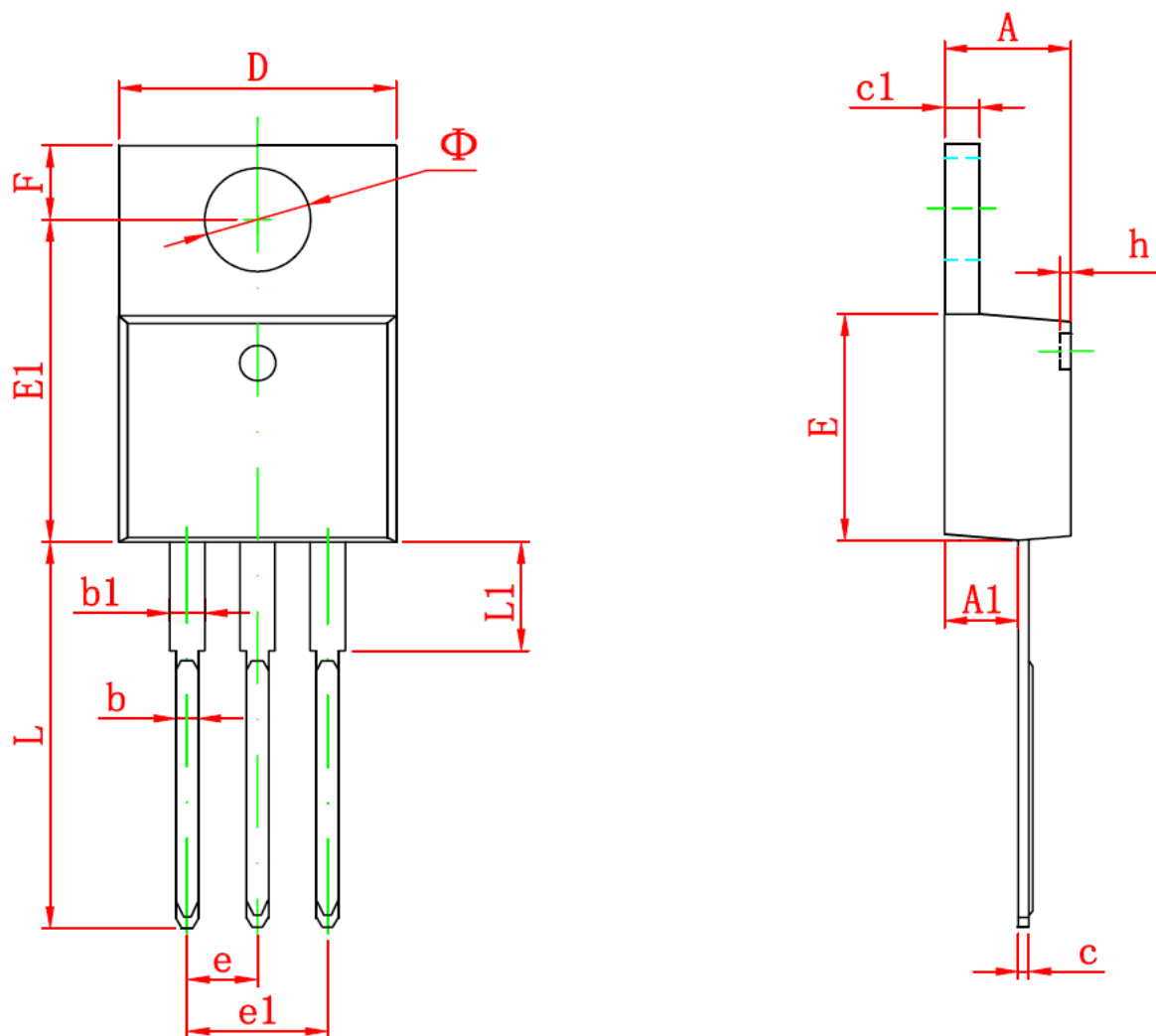
Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
HM9N70	HM9N70	TO-220/F	-	-	-

Key Electrical Characteristics (TO-220 package)

Parameter	Description	Min	Typ	Max	Test condition
BV <sub>DSS</sub> , V	Drain-to-Source Breakdown Voltage	700	-	-	V <sub>GS</sub> =0 V, I <sub>D</sub> =250 μA
I <sub>D</sub> , A	Continuous Drain Current	-	-	9*	T <sub>j</sub> = 25 °C
R <sub>DS(on)</sub> , Ohm	Static Drain-to-Source On Resistance	-	1,1	1,2	V <sub>GS</sub> =10 V, I <sub>D</sub> =4,5 A
V <sub>GS(th)</sub> , V	Gate Threshold Voltage	2,0	-	4,0	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250 μA
I <sub>DSS</sub> , μA	Drain-to-Source Leakage Current	-	-	10	V <sub>DS</sub> = 700 V, V <sub>GS</sub> = 0 V
I <sub>GSS</sub> , nA	Gate-to-Source Leakage Current	-	-	±100	V <sub>GS</sub> = ± 30 V, V <sub>DS</sub> = 0 V
T <sub>j</sub> , T <sub>STG</sub> , °C	Operating Junction and Storage Temperature Range	- 55 ~ +150			

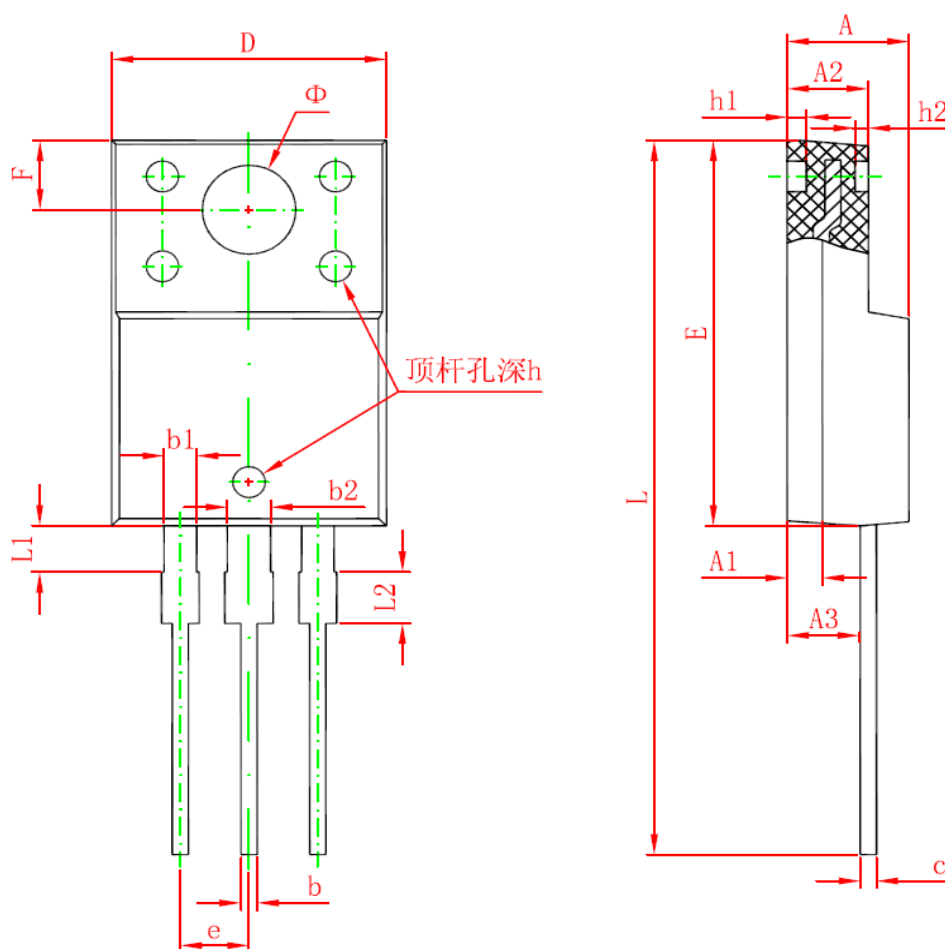
\* Drain current limited by junction temperature

TO-220-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.300	4.700	0.169	0.185
A1	1.300 REF.		0.051 REF.	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP.		0.100 TYP.	
F	2.700 REF.		0.106 REF.	
$\Phi$	3.500 REF.		0.138 REF.	
h	0.000	0.300	0.000	0.012
h1	0.800 REF.		0.031 REF.	
h2	0.500 REF.		0.020 REF.	
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	1.900	2.100	0.075	0.083

**ATTENTION:**

- Any and all H&M SEMI products described or contained herein do not have specifications that can handle applications that require extremely high levels of reliability, such as life-support systems, aircraft's control systems, or other applications whose failure can be reasonably expected to result in serious physical and/or material damage. Consult with your H&M SEMI representative nearest you before using any H&M SEMI products described or contained herein in such applications.
- H&M SEMI assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all H&M SEMI products described or contained herein.
- Specifications of any and all H&M SEMI products described or contained herein stipulate the performance, characteristics, and functions of the described products in the independent state, and are not guarantees of the performance, characteristics, and functions of the described products as mounted in the customer's products or equipment. To verify symptoms and states that cannot be evaluated in an independent device, the customer should always evaluate and test devices mounted in the customer's products or equipment.
- H&M Semiconductor CO.,LTD. strives to supply high-quality high-reliability products. However, any and all semiconductor products fail with some probability. It is possible that these probabilistic failures could give rise to accidents or events that could endanger human lives, that could give rise to smoke or fire, or that could cause damage to other property. When designing equipment, adopt safety measures so that these kinds of accidents or events cannot occur. Such measures include but are not limited to protective circuits and error prevention circuits for safe design, redundant design, and structural design.
- In the event that any or all H&M SEMI products(including technical data, services) described or contained herein are controlled under any of applicable local export control laws and regulations, such products must not be exported without obtaining the export license from the authorities concerned in accordance with the above law.
- No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or any information storage or retrieval system, or otherwise, without the prior written permission of H&M Semiconductor CO.,LTD.
- Information (including circuit diagrams and circuit parameters) herein is for example only ; it is not guaranteed for volume production. H&M SEMI believes information herein is accurate and reliable, but no guarantees are made or implied regarding its use or any infringements of intellectual property rights or other rights of third parties.
- Any and all information described or contained herein are subject to change without notice due to product/technology improvement, etc. When designing equipment, refer to the "Delivery Specification" for the H&M SEMI product that you intend to use.
- This catalog provides information as of Sep.2010. Specifications and information herein are subject to change without notice.