HM80N70

80V_{DS}／±25V_{GS}／66A(I_D) N-Channel Enha ncement Mode MOSFET

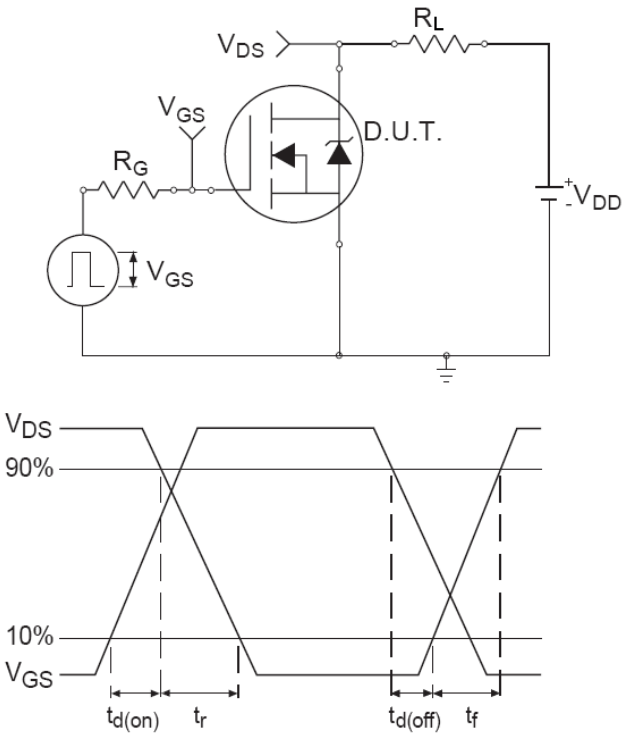
Features

- V_{DSS}=80V／V_{GSS}=±25V／I_D=66A
  $R_{DS(ON)}$=12mΩ(Max.)@V_{GS}=10V
- Reliable and Rugged
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance

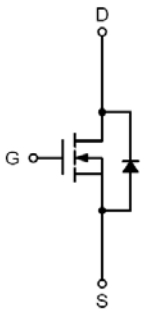
Applications

- Synchronous Rectification
- Power Management in Inverter System

Switching Time Test Circuit and Waveforms



Pin Description



Marking and pin Assignment

TO-220-3L top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
HM80N70	HM80N70	TO-220-3L	-	-	-

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		80	V
V_{GSS}	Gate –Source Voltage		±25	V
I_D	Continuous Drain Current	T_C=100°C	46	A
		T_C=25°C	66	A
I_{DP}	300us Pulsed Drain Current Tested		240	A
I_S	Diode Continuous Forward Current		66	A
T_J	Operating Junction Temperature		175	°C
T_{STG}	Storage Temperature Range		-55 ~ 175	°C

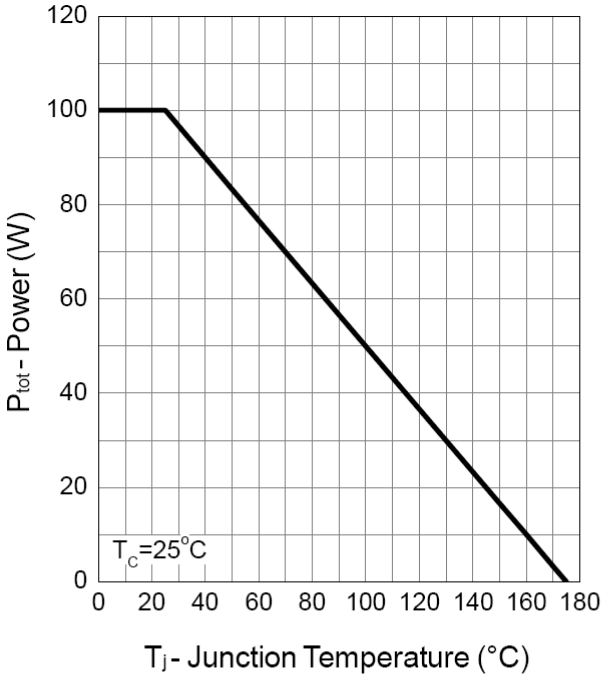
Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250uA	80			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=64V,V_{GS}=0V			1	uA
		T_J=85°C			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250uA	2	3	4	V
I_{GSS}	Gate Leakage Current	V_{GS}=±25V, V_{DS}=0V			±100	nA
$R_{DS(on)}$[1]	Drain-Source On-Resistance	V_{GS}=10V, I_D=30A		10	12	mΩ
Diode Characteristics						
V_{SD}[1]	Diode Forward Voltage	I_{SD}=20A,V_{GS}=0V		0.8	1.3	V
t_{rr}	Reverse Recovery Time	I_{SD}=30A,		44		Ns
Q_{rr}	Reverse Recovery Charge	dI_{SD}/dt=100A/us		60		nC
Dynamic Characteristics[2]						
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, Frequency=1MHz		1.5		Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=40V Frequency=1MHz		2900		pF
C_{oss}	Output Capacitance			290		
C_{rss}	Reverse Transfer Capacitance			175		
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=40V, R_L=30Ω I_D=30A, V_{GEN}=10V R_G=6Ω		14	25	ns
t_r	Turn-On Rise Time			11	20	
$t_{d(off)}$	Turn-Off Delay Time			51	92	
t_f	Turn-Off Fall Time			22	40	
Gate Charge Characteristics[2]						
Q_g	Total Gate Charge	V_{DS}=40V, V_{GS}=10V I_D=30A		55	77	nC
Q_{gs}	Gate-Source Charge			12		
Q_{gd}	Gate-Drain Charge			16		

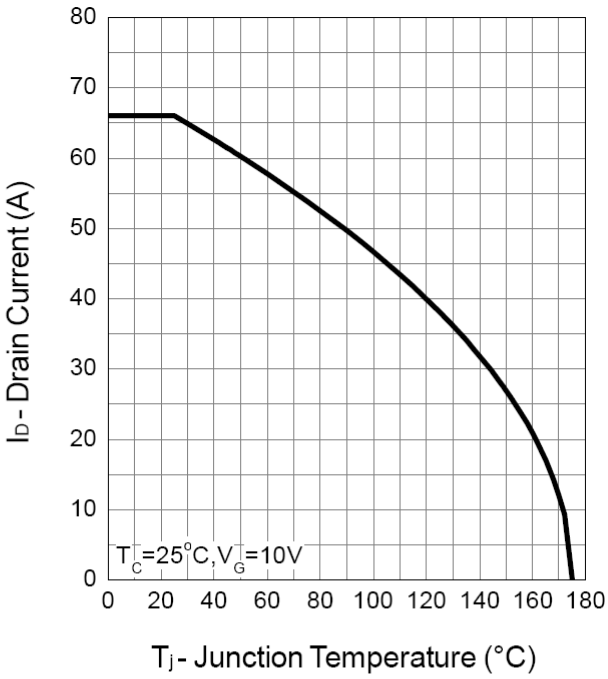
Note: 1: Pulse test ; pulse width ≦ 300ns, duty cycle ≦ 2%.
2: Guaranteed by design, not subject to production testing.

Typical Characteristics

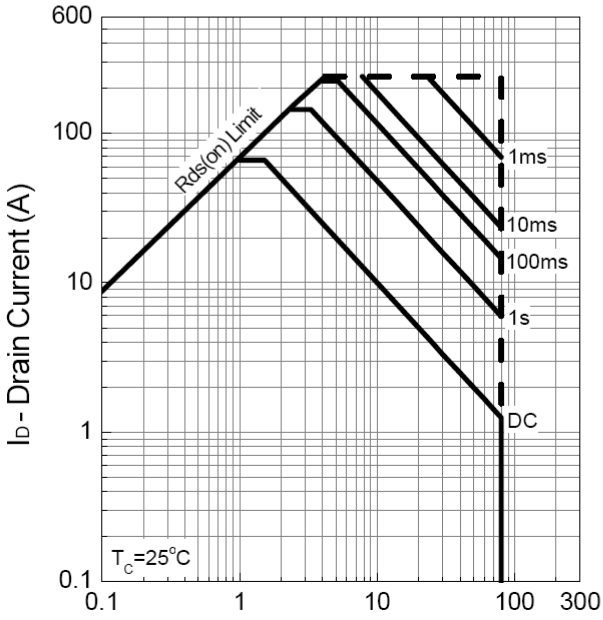
Power Dissipation



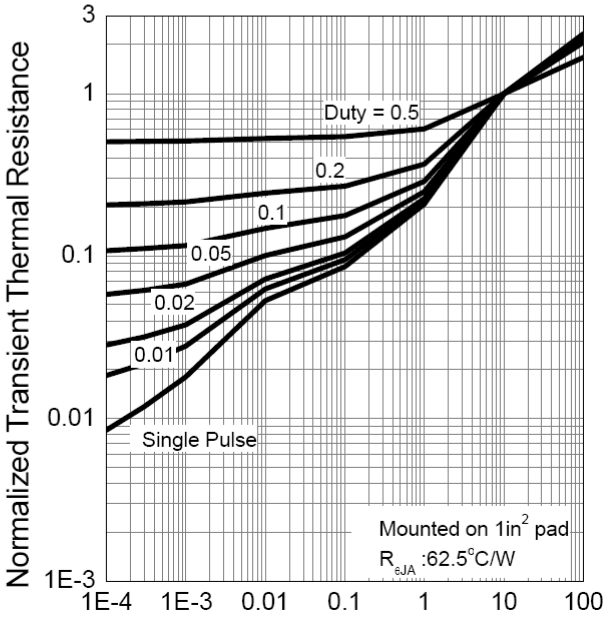
Drain Current



Safe Operation Area

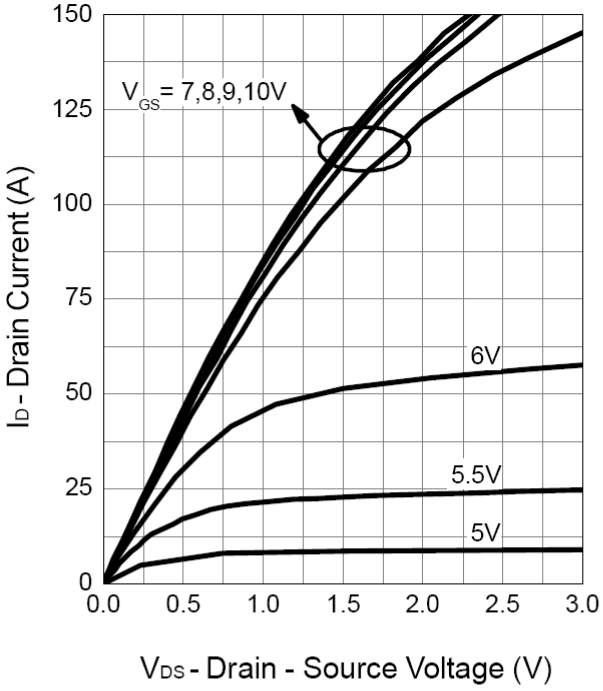


Thermal Transient Impedance

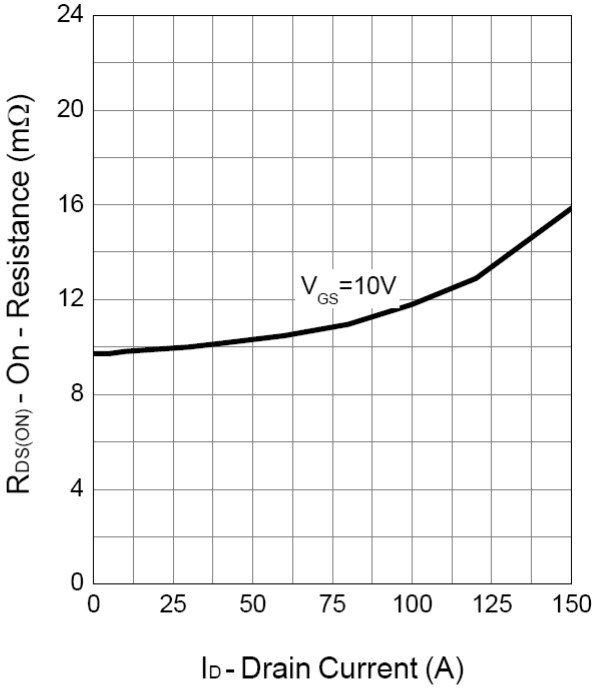


Typical Characteristics (Cont.)

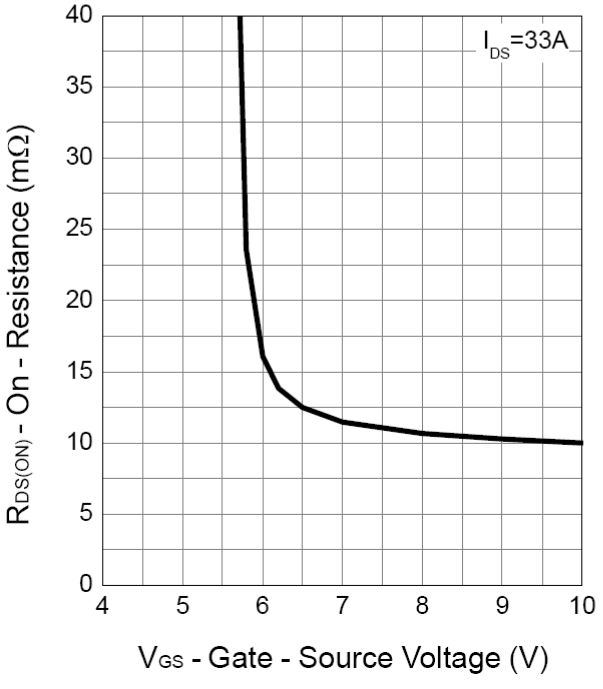
Output Characteristics



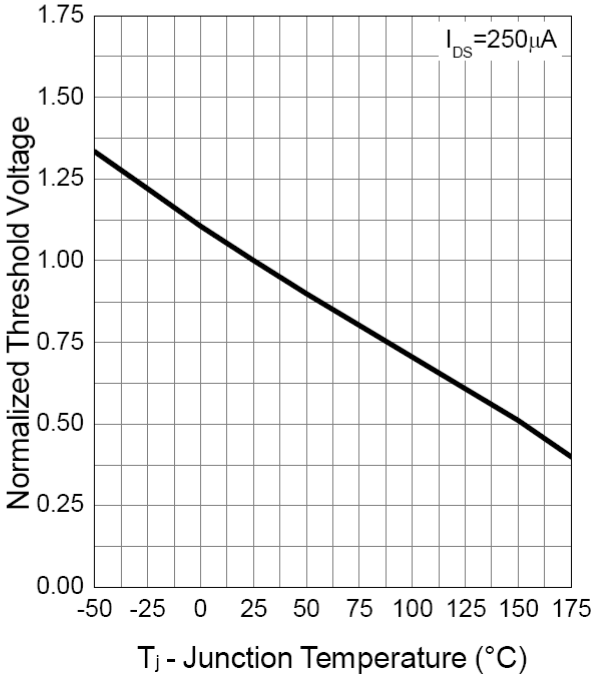
Drain-Source On Resistance



Gate-Source On Resistance

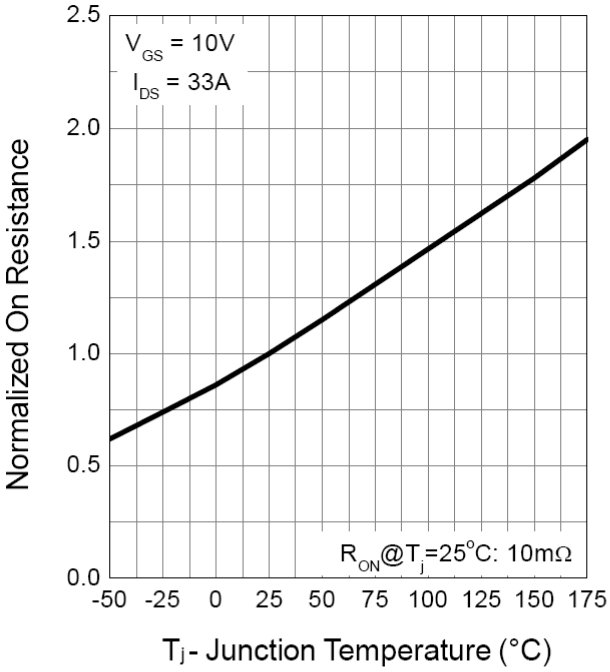


Gate Threshold Voltage

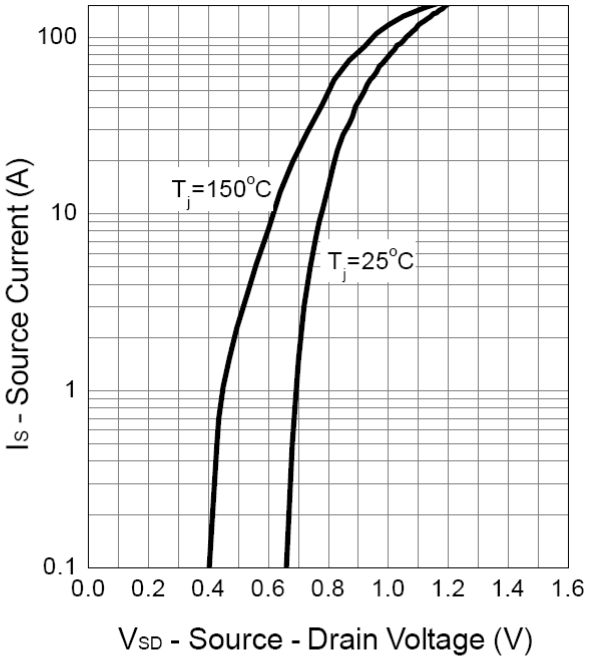


Typical Characteristics (Cont.)

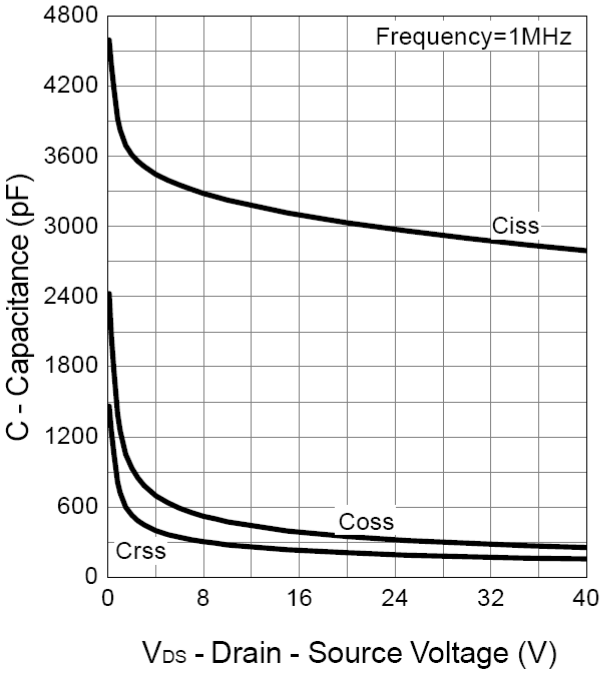
Drain-Source On Resistance



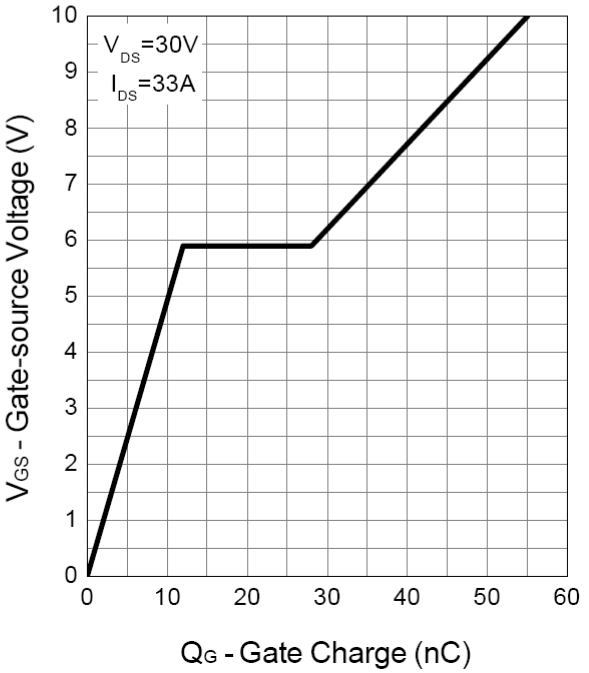
Source-Drain Diode Forward



Capacitance



Gate Charge



TO-220-3L PACKAGE OUTLINE DIMENSIONS

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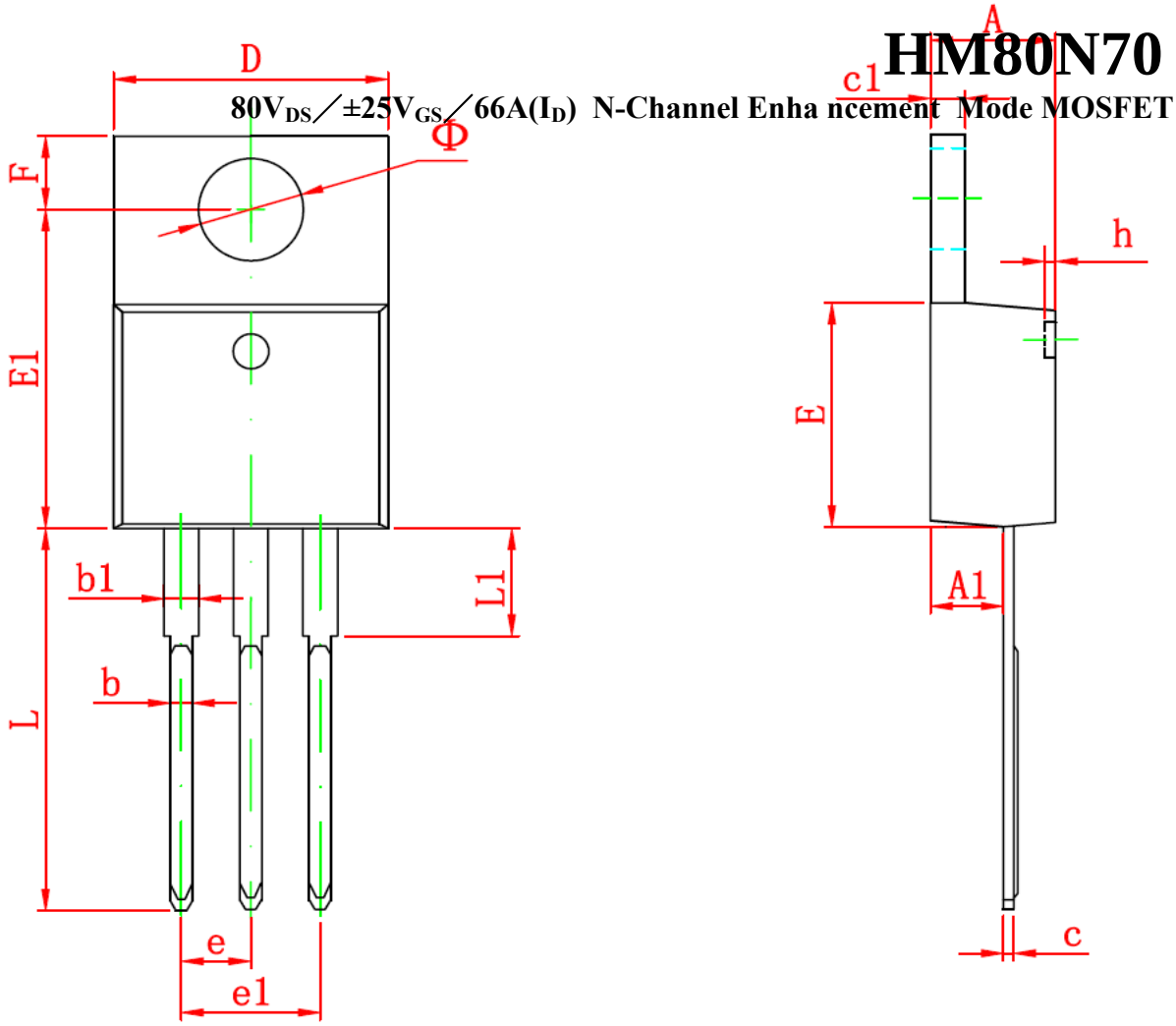

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	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

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