

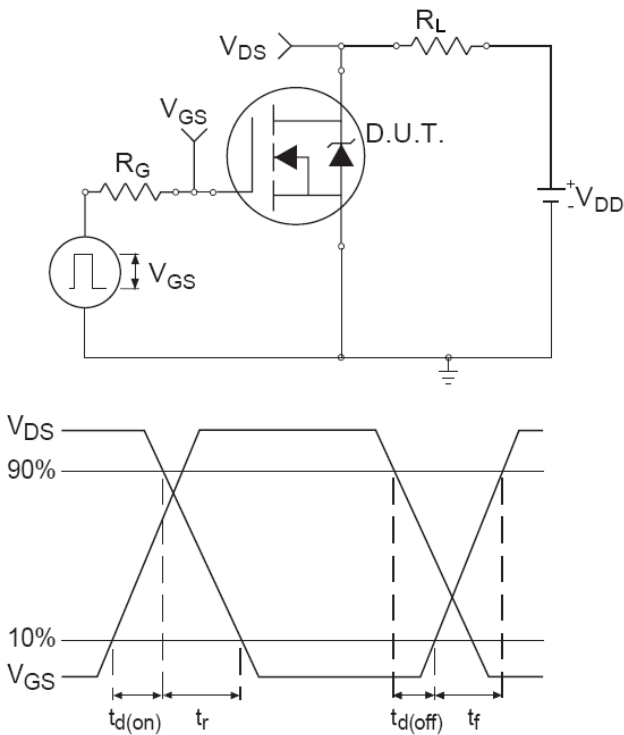
Features

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

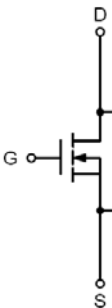
Applications

- 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	111 -	-	-

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 (T_A=25°C unless otherwise noted)

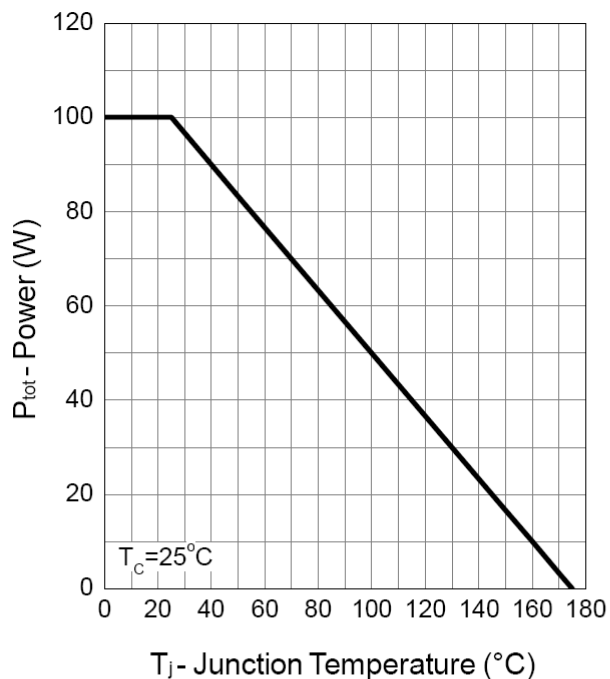
Symbol	Parameter	Test Conditions	Min.	Typ	Max.	Unit
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	80			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =64V, V _{GS} =0V			1	uA
		T _J =85°C			30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , 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%.

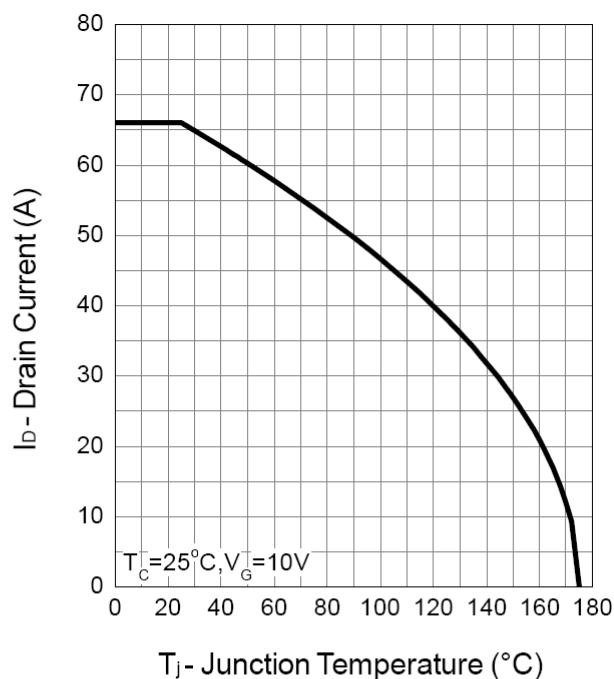
2: Guaranteed by design, not subject to production testing.

Typical Characteristics

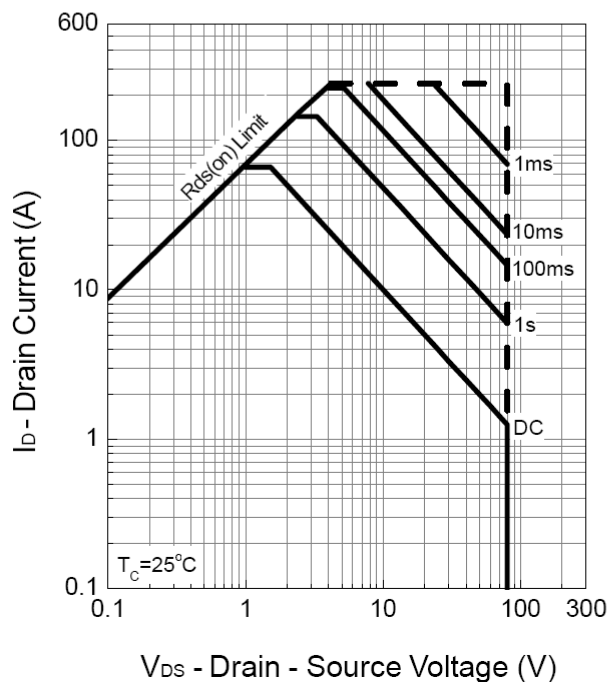
Power Dissipation



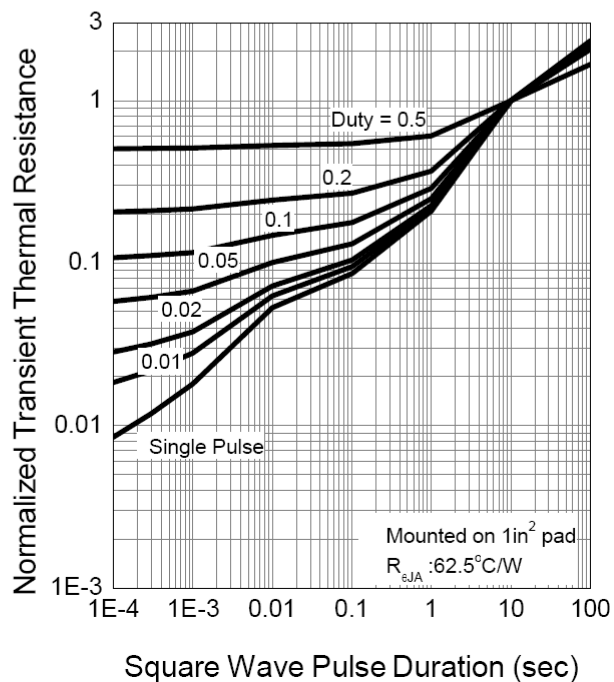
Drain Current



Safe Operation Area

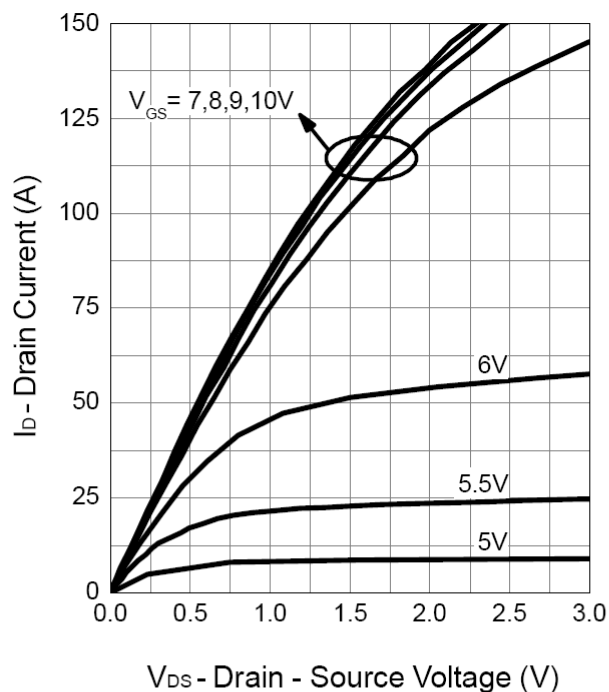


Thermal Transient Impedance

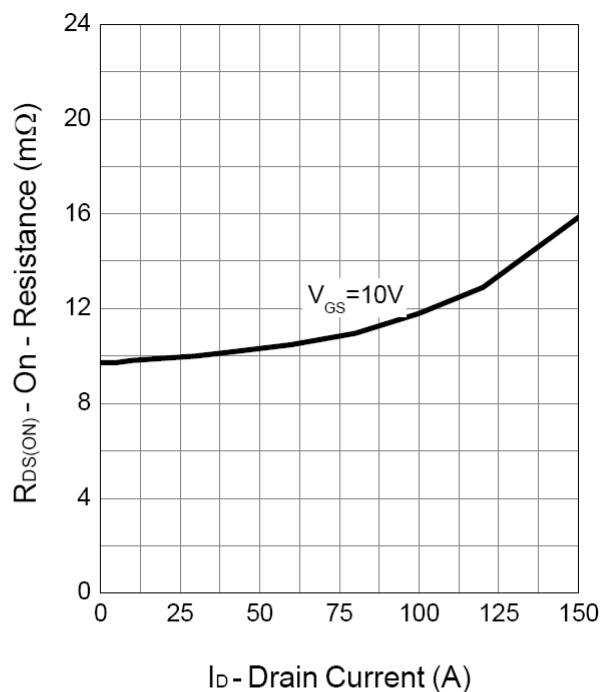


Typical Characteristics (Cont.)

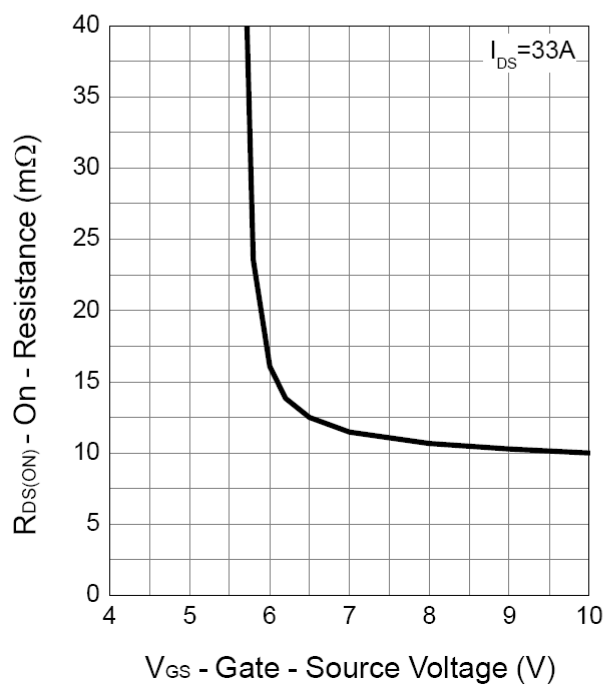
Output Characteristics



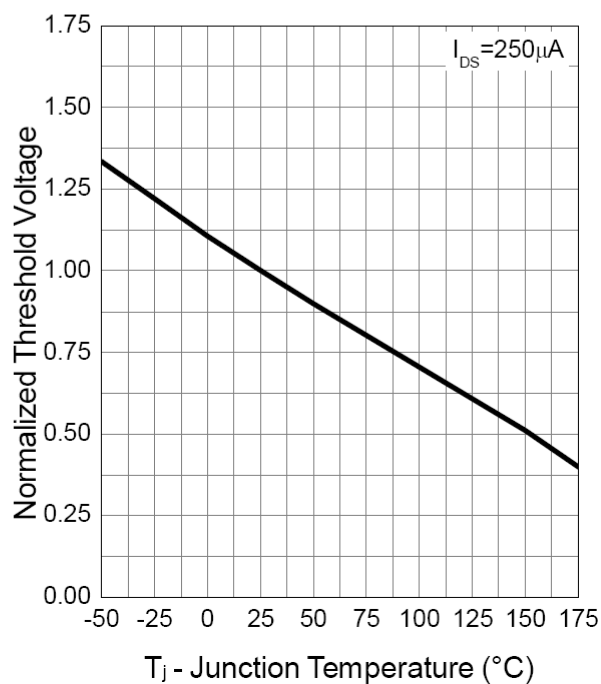
Drain-Source On Resistance



Gate-Source On Resistance

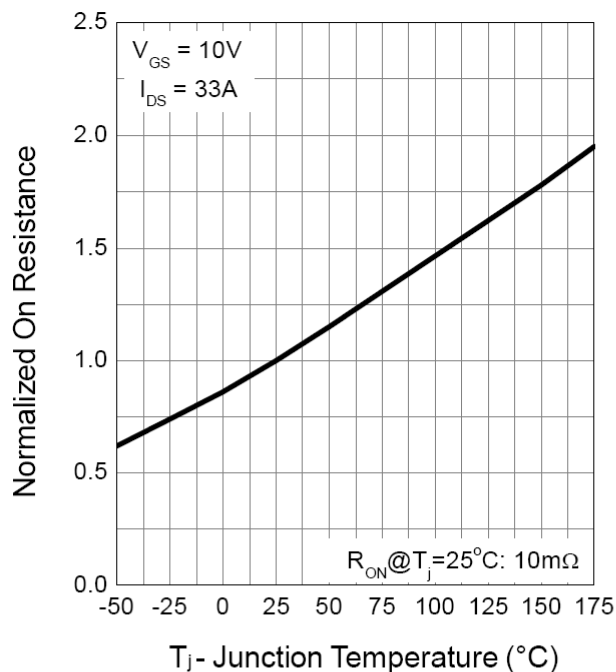


Gate Threshold Voltage

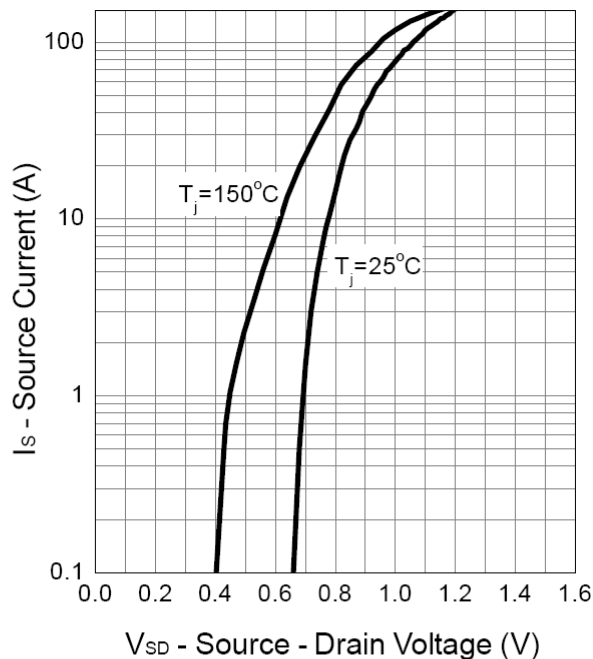


Typical Characteristics (Cont.)

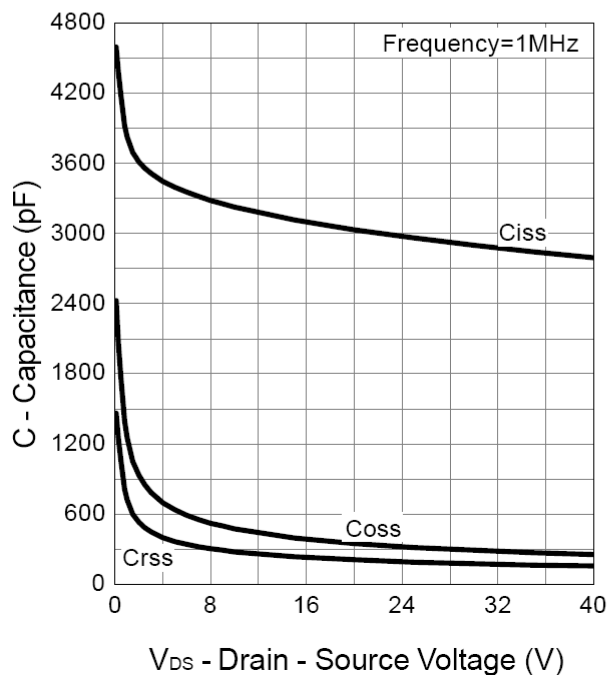
Drain-Source On Resistance



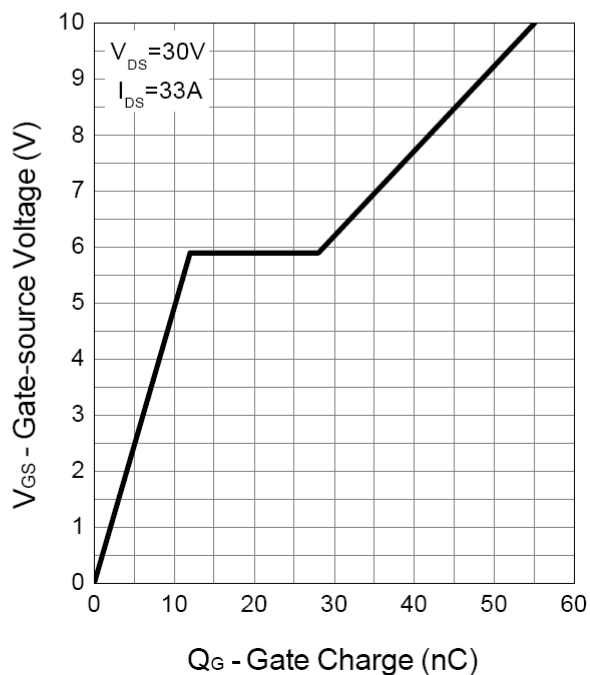
Source-Drain Diode Forward



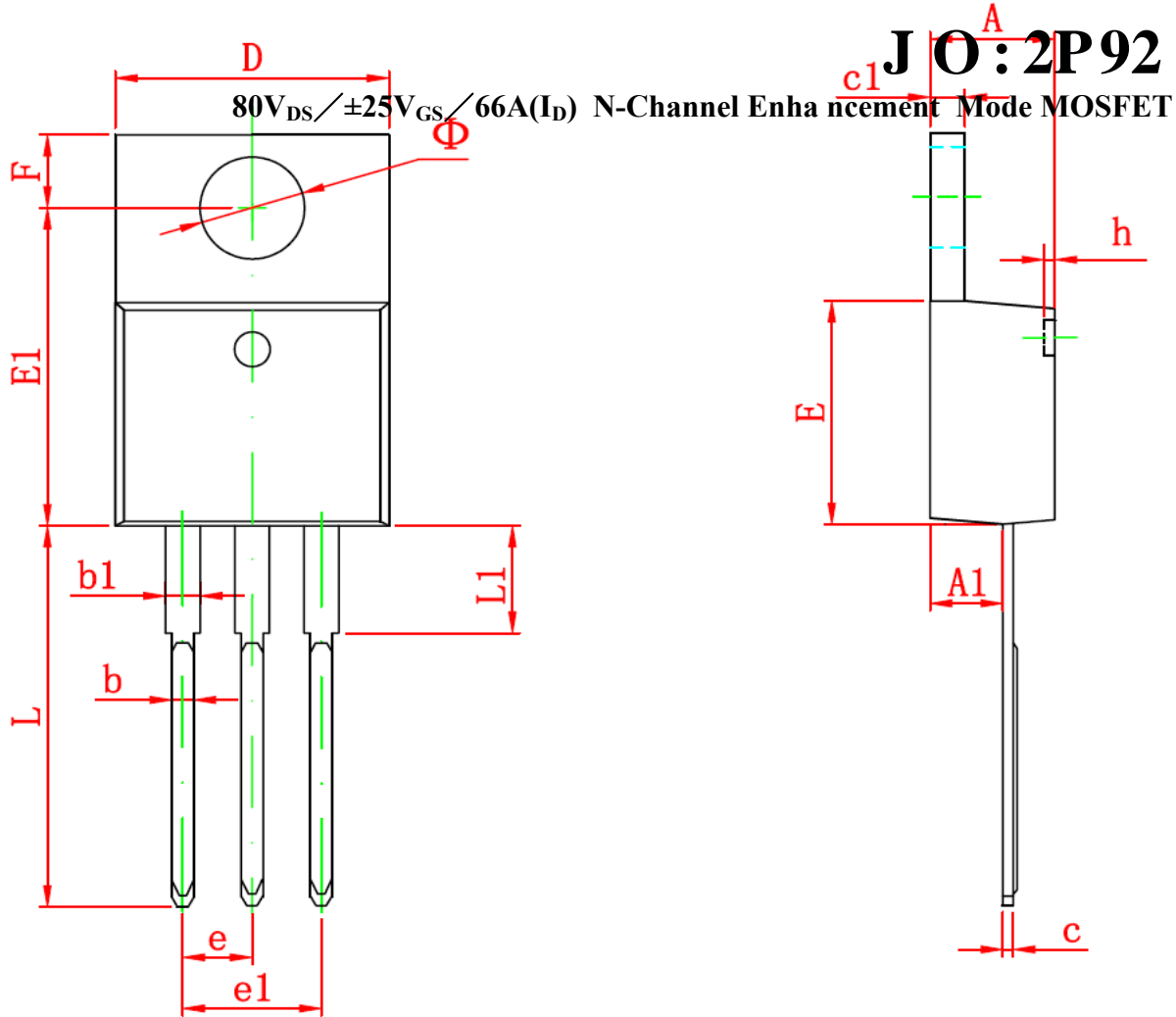
Capacitance



Gate Charge



TO-220-3L PACKAGE OUTLINE DIMENSIONS



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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