Features

- 100% EAS Guaranteed
- Super Low Gate Charge
- Green Device Available
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

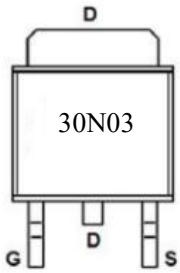
Bvdss	Rdson	ID
30V	9.5mΩ	30A

Application

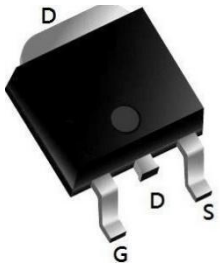
- PWM applications
- Load Switch
- Power management

RoHS

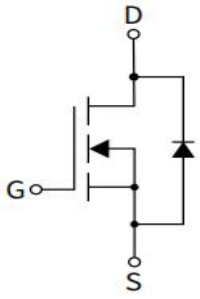
Package



Marking and pin assignment



TO252-3L top view



Schematic diagram

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
30N03	30N03	TO252-3L	2500

Absolute Maximum Ratings (T_C=25℃unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current,V_{GS}@10V[1]	T_C = 25℃	I_D	30	A
	T_C = 100℃		16	A
Pulsed Drain Current[2]		I_{DM}	88	A
Single Pulsed Avalanche Energy[3]		EAS	18	mJ
Avalanche Current		I_{AS}	23.8	A
Total Power Dissipation[4]	T_C = 25℃	P_D	11.5	W
Storage Temperature Range		T_{STG}	-55 ~ 175	℃
Operating Junction Temperature Range		T_J	-55 ~ 175	℃

Thermal Resistance Ratings

Parameter	Symbol	Value	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	--	℃/W
Thermal Resistance Junction to Case[1]	$R_{\theta JC}$	9.26	℃/W

Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL30N03	TO252-3L	1	2	3	Tape Reel

Electrical Characteristics (T_J=25℃,unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V,I_D=250μA	30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,V_{GS}=0V	-	-	1	μA
Gate to Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS},I_D=250μA	1	1.5	2.5	V
Drain-Source On-Resistance[3]	$R_{DS(on)}$	V_{GS}=10V,I_D=10A	-	9.5	13	mΩ
		V_{GS}=4.5V,I_D=5A	-	16	22.5	
Total Gate Charge	Q_g	V_{DS}=15V,V_{GS}=10V, I_D=10A	-	15	-	nC
Gate-Source Charge	Q_{gs}		-	4.7	-	
Gate-Drain(“Miller”) Charge	Q_{gd}		-	3.6	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DS}=30V, R_G=3Ω,I_D=20A	-	5	-	ns
Rise Time	t_r		-	8	-	
Turn-Off Delay Time	$t_{d(off)}$		-	21	-	
Fall Time	t_f		-	7	-	
Input Capacitance	C_{iss}	V_{DS}=15V, V_{GS}=0V,f=1MHz	-	551	-	pF
Output Capacitance	C_{oss}		-	108	-	
Reverse Transfer Capacitance	C_{rss}		-	93	-	
Maximum Continuous Drain to Source Diode Forward Current	I_S	-	-	-	30	A
Maximum Pulsed Drain to Source Diode Forward Current	I_{SM}	-	-	-	80	A

Drain to Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=20A	-	-	1.2	V
Body Diode Reverse Recovery Time	t_{rr}	I_F=20A,dI/dt=100A/μs	-	7	-	ns
Body Diode Reverse Recovery Charge	Q_{rr}		-	5.9	-	nC

Note :

1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
2. EAS condition : T_J=25℃,V_{DD}=15V,V_G=10V,L=0.5mH,R_G=25Ω,I_{AS}=8A.
3. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure1: Output Characteristics

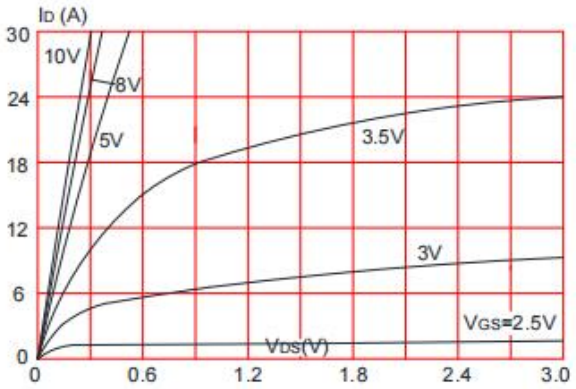


Figure 2: Typical Transfer Characteristics

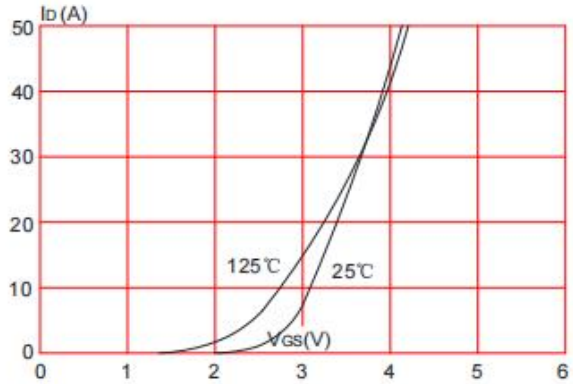


Figure 3: On-resistance vs. Drain Current

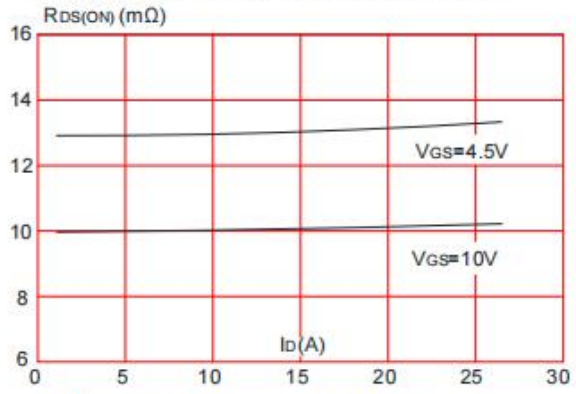


Figure 4: Body Diode Characteristics

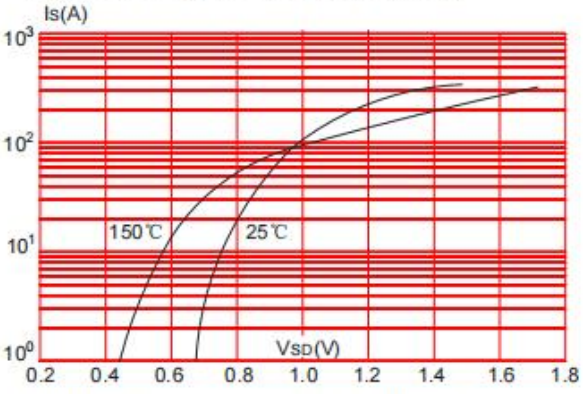


Figure 5: Gate Charge Characteristics

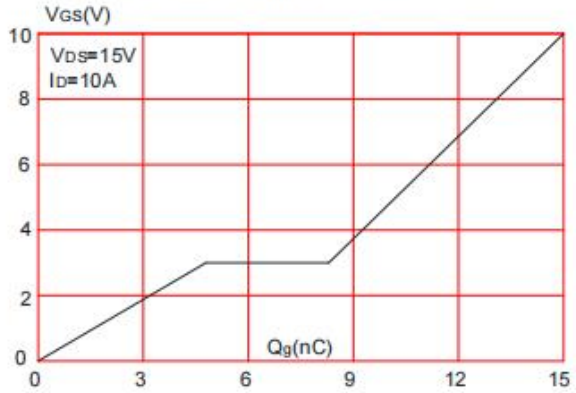


Figure 6: Capacitance Characteristics

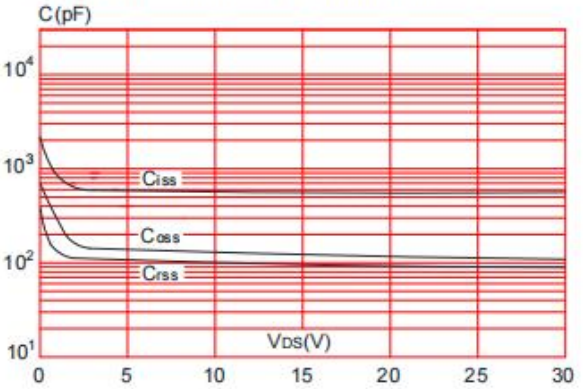


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

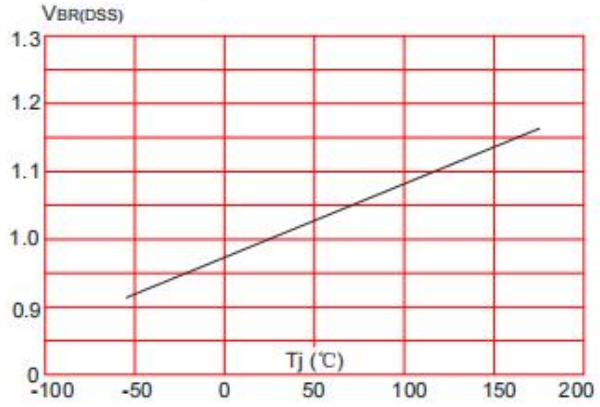


Figure 8: Normalized on Resistance vs. Junction Temperature

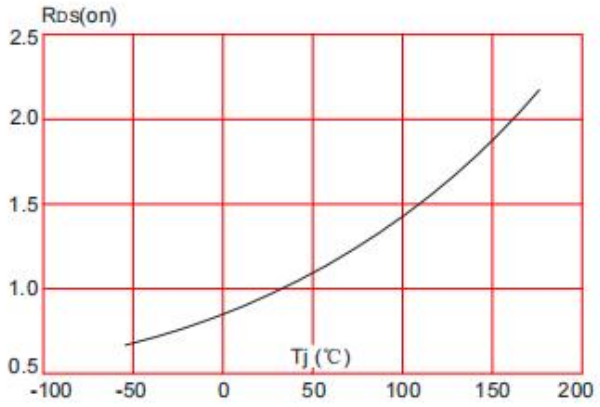


Figure 9: Maximum Safe Operating Area

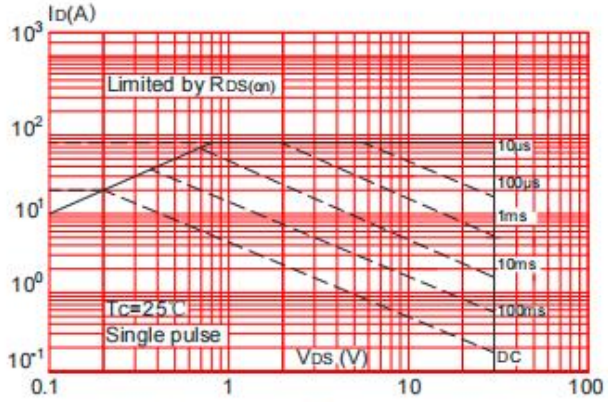
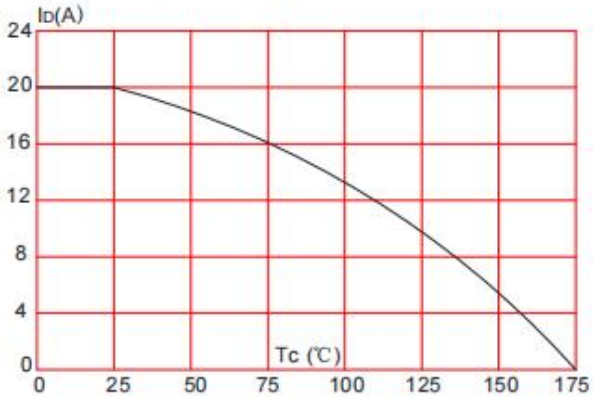
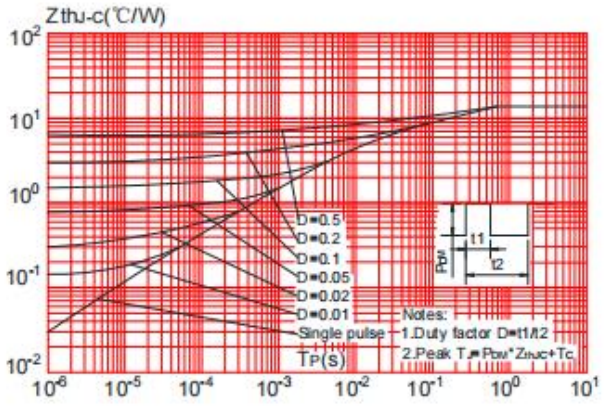


Figure 10: Maximum Continuous Drain Current vs. Case Temperature



Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit

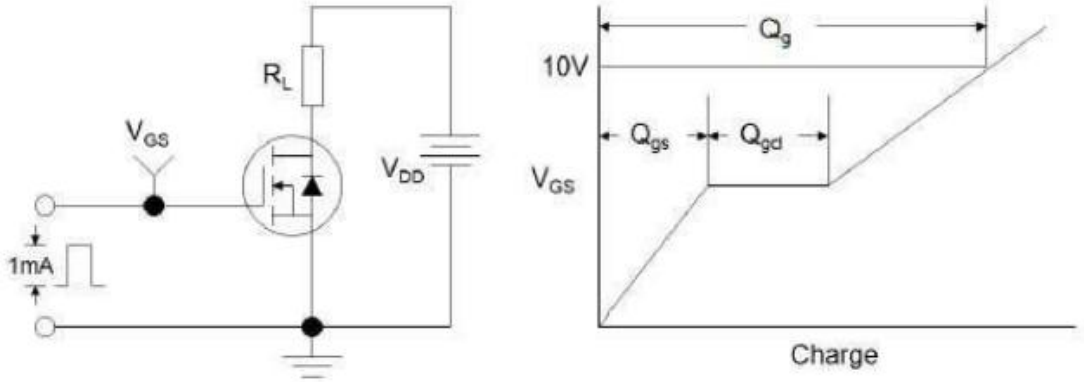


Figure1:Gate Charge Test Circuit & Waveform

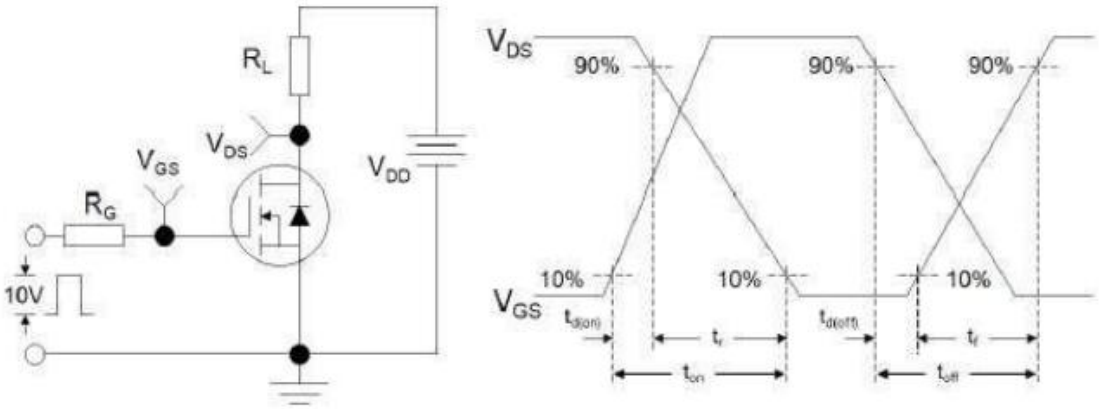


Figure 2: Resistive Switching Test Circuit & Waveforms

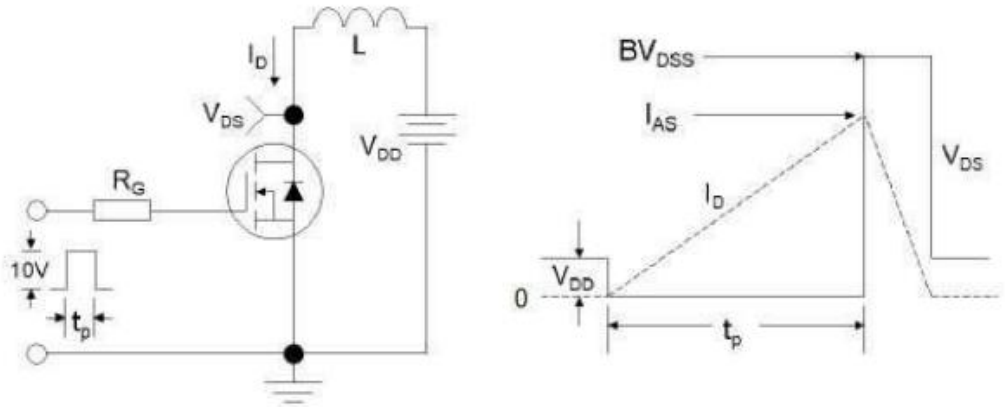
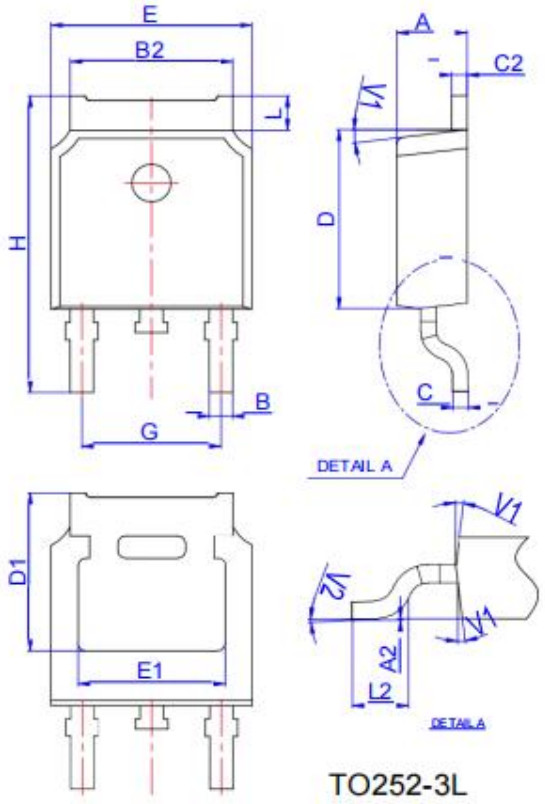


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

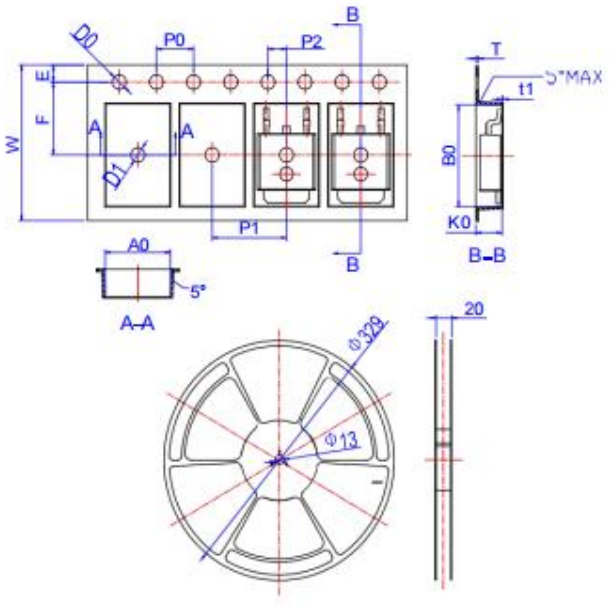
Package Mechanical Data TO252-3L



TO252-3L

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Reel Spectification-TO252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
W	15.90	16.00	16.10	0.626	0.630	0.634
E	1.65	1.75	1.85	0.065	0.069	0.073
F	7.40	7.50	7.60	0.291	0.295	0.299
D0	1.40	1.50	1.60	0.055	0.059	0.063
D1	1.40	1.50	1.60	0.055	0.059	0.063
P0	3.90	4.00	4.10	0.154	0.157	0.161
P1	7.90	8.00	8.10	0.311	0.315	0.319
P2	1.90	2.00	2.10	0.075	0.079	0.083
A0	6.85	6.90	7.00	0.270	0.271	0.276
B0	10.45	10.50	10.60	0.411	0.413	0.417
K0	2.68	2.78	2.88	0.105	0.109	0.113
T	0.24		0.27	0.009		0.011
t1	0.10			0.004		
10P0	39.80	40.00	40.20	1.567	1.575	1.583

Important Notice and Disclaimer

HL Microelectronics reserves the right to make changes to this document and its products and specifications at any time without notice.
Customers should obtain and confirm the latest product information and specifications before final design, purchase or use.

HL Microelectronics makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, not does HL Microelectronics assume any liability for application assistance or customer product design.

HL Microelectronics does not warrant or accept any liability with products which are purchased or used for any unintended or unauthorized application.

No license is granted by implication or otherwise under any intellectual property rights of HL Microelectronics.

HL Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of HL Microelectronics.