
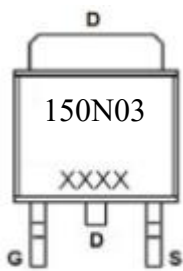

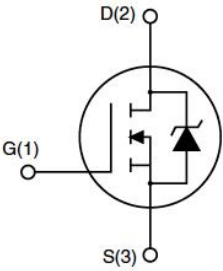




Features	<i>Bvdss</i>	<i>Rdson</i>	<i>ID</i>
	30V	1.5mΩ	150A
<ul style="list-style-type: none"> ➤ Super Low Gate Charge ➤ Green Device Available ➤ Excellent Cdv/dt effect decline ➤ Advanced high cell density Trench technology ➤ 100% EAS Guaranteed 	Application		
	<ul style="list-style-type: none"> ➤ PWM applications ➤ Load Switch ➤ Power management 		
Package			
			
Marking and pin assignment	TO252-3L top view	Schematic diagram	

Package Marking and Ordering Information

Device Marking	Device	Device Package	Quantity
150N03	150N03	TO252-3L	2500

Absolute Maximum Ratings (T_C=25°C 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	I _D	T _C =25°C	150
		T _C =100°C	80
Pulsed Drain Current ²	I _{DM}	450	A
Avalanche Current	I _{AS}	60	A
Single Pulsed Avalanche Energy ³	EAS	580	mJ
Power Dissipation ⁴	P _D	87	W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 ~ 150	°C

Thermal Resistance Ratings

Parameter	Symbol	Value	Max.	Unit
Thermal Resistance Junction-Ambient ¹	R _{θJA}		62	°C/W
Thermal Resistance Junction-Case ¹	R _{θJC}	-	2.1	°C/W



Ordering Information

Ordering Number	Package	Pin Assignment			Packing
Halogen Free		G	D	S	
HL150N03	TO-252	1	2	3	Tape Reel

Electrical Characteristics ($T_J=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit	
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=250\mu\text{A}, V_{GS}=0\text{V}$	30	-	-	V	
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30\text{V}, V_{GS}=0\text{V}$	-	-	1	μA	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20\text{V}, V_{DS}=0\text{V}$	-	-	± 100	nA	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu\text{A}$	1.2	-	2.4	V	
Static Drain-Source On-Resistance ²	$R_{DS(on)}$	$V_{GS}=10\text{V}, I_D=30\text{A}$	-	1.5	2.9	m Ω	
		$V_{GS}=4.5\text{V}, I_D=30\text{A}$	-	2.2	4.8		
Input Capacitance	C_{iss}	$V_{DS}=15\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	-	6272	-	pF	
Output Capacitance	C_{oss}		-	1022	-		
Reverse Transfer Capacitance	C_{rss}		-	718	-		
Forward Transconductance	g_{fs}	$V_{DS}=5\text{V}, I_D=30\text{A}$	-	73	-	S	
Gate Resistance	R_g	$V_{DS}=0\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$	-	4.2	-	Ω	
Total Gate Charge	Q_g	$V_{GS}=10\text{V}, V_{DS}=24\text{V}, I_G=5\text{mA}$	-	143	-	nC	
Gate-Source Charge	Q_{gs}		-	17	-		
Gate-Drain Charge	Q_{gd}		-	43	-		
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10\text{V}, V_{DS}=15\text{V},$ $I_D=30\text{A}, R_G=4.7\Omega$	-	20	-	ns	
Turn-On Rise Time	t_r		-	58	-		
Turn-Off Delay Time	$t_{r(off)}$		-	158	-		
Turn-Off Fall Time	t_f		-	77	-		
Maximum Continuous Drain to Source Diode Forward Current ¹			I_S	-	-	110	A
Maximum Pulsed Drain to Source Diode Forward Current			I_{SM}	-	-	440	A
Diode Forward Voltage	$V_{GS}=0\text{V}, I_S=45\text{A}$		V_{SD}	-	-	1.4	V
Reverse Recovery Time ¹	$I_S=30\text{A}, di/dt=100\text{A}/\mu\text{s}$		t_{rr}	-	26	-	ns
Reverse Recovery Charge ¹			Q_{rr}	-	10	-	nC

Notes:

1. Repetitive rating : pulse width limited by junction temperature.
2. $L=0.5\text{mH}, I_{AS}=48\text{A}, V_{DD}=30\text{V}, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
3. $I_{SD} \leq 30\text{A}, di/dt=100\text{A}/\mu\text{s}, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$.
4. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.



Typical Performance Characteristics

Fig. 1. On-state characteristics

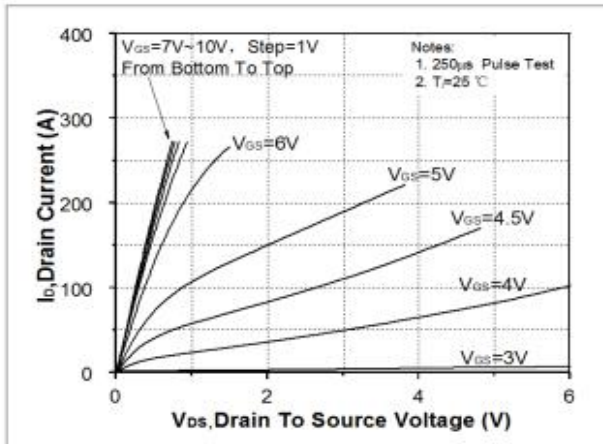


Fig. 2. Transfer Characteristics

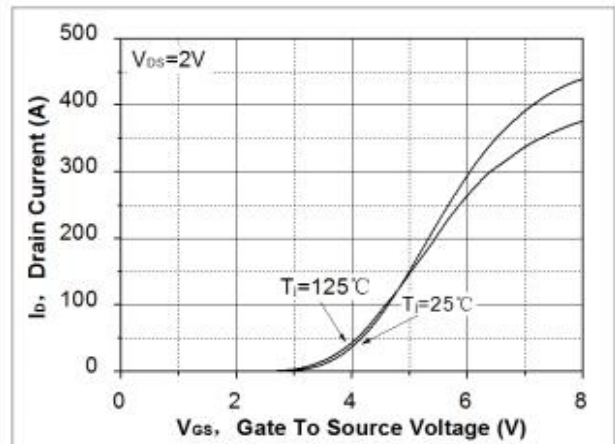


Fig. 3. On-resistance variation vs. drain current and gate voltage

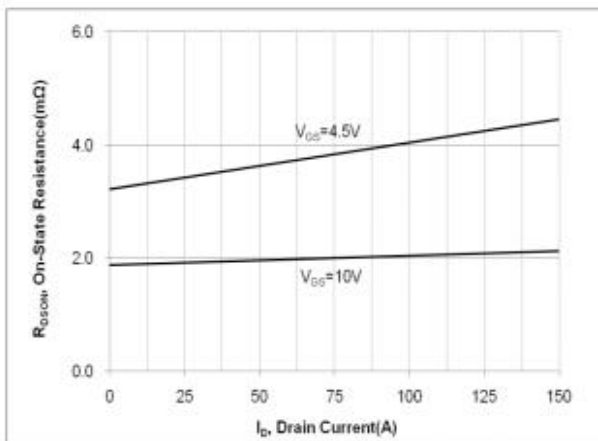


Fig. 4. On-state current vs. diode forward voltage

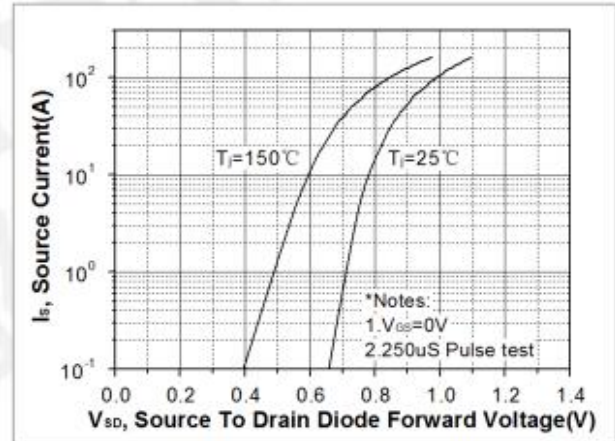


Fig 5. Breakdown voltage variation vs. junction temperature

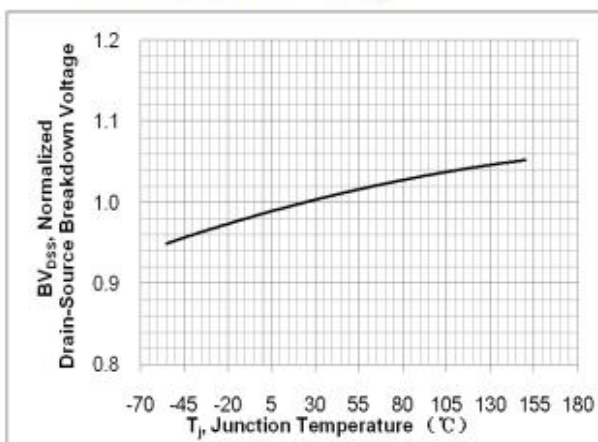


Fig. 6. On-resistance variation vs. junction temperature

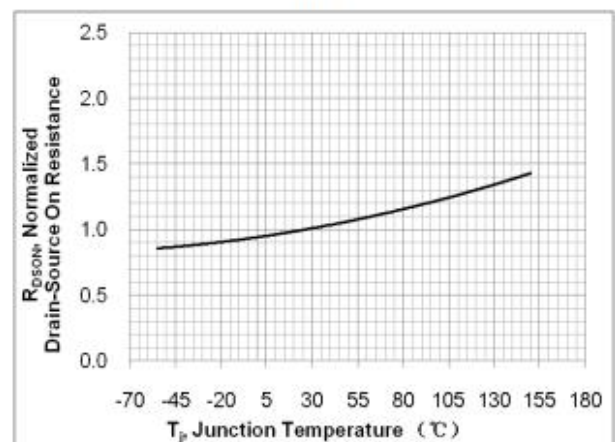




Fig. 7. Gate charge characteristics

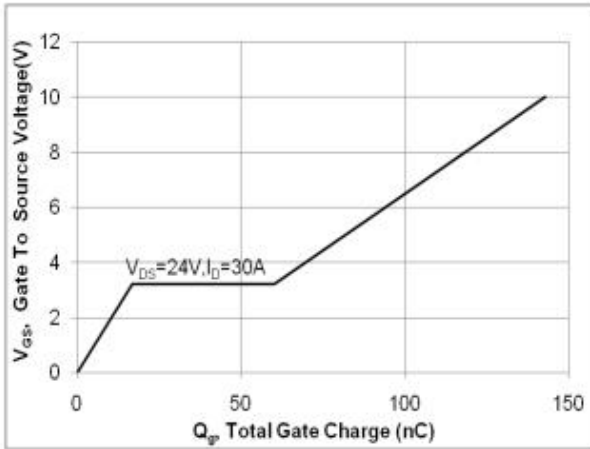


Fig. 8. Capacitance Characteristics

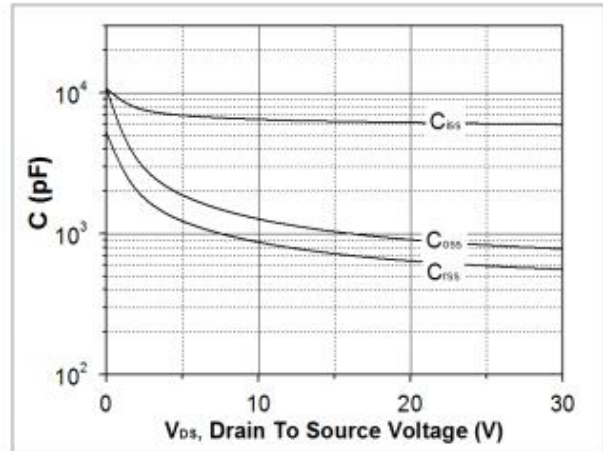


Fig. 9. Maximum safe operating area

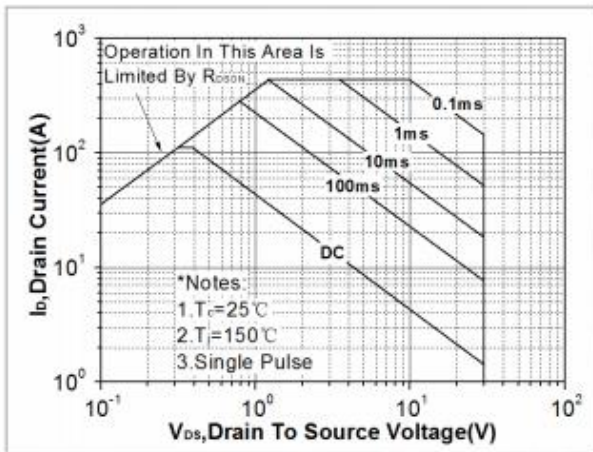


Fig. 10. Maximum drain current vs. case temperature

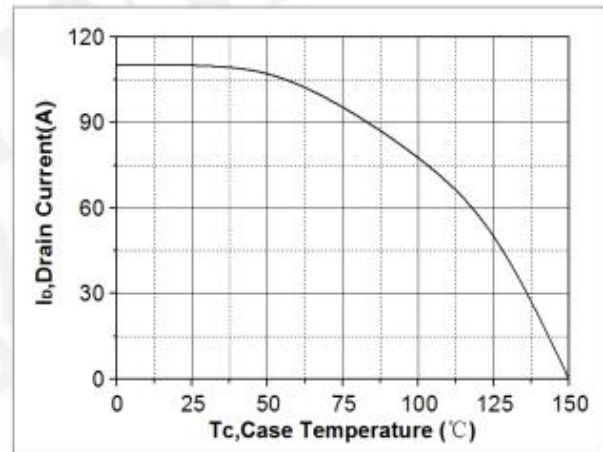
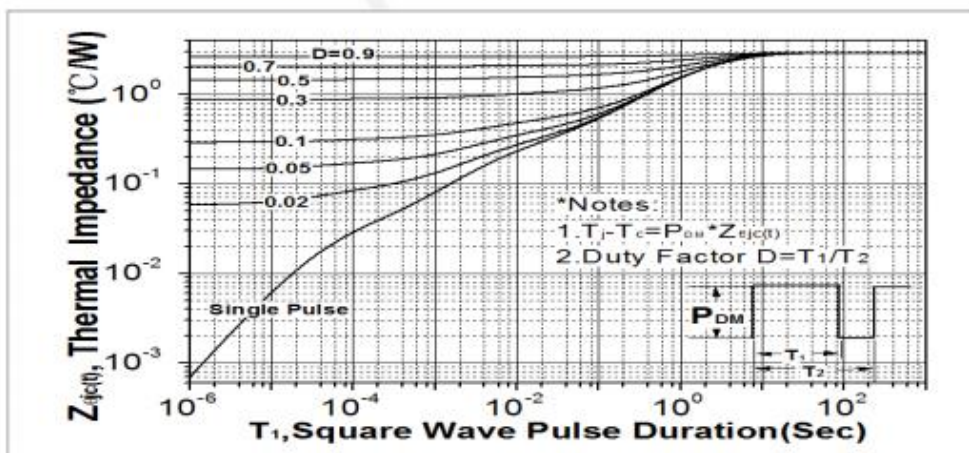
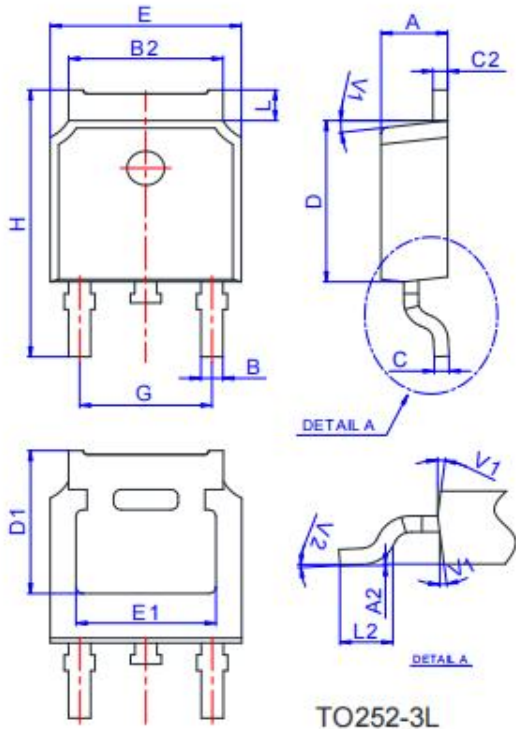


Fig. 11. Transient thermal response curve

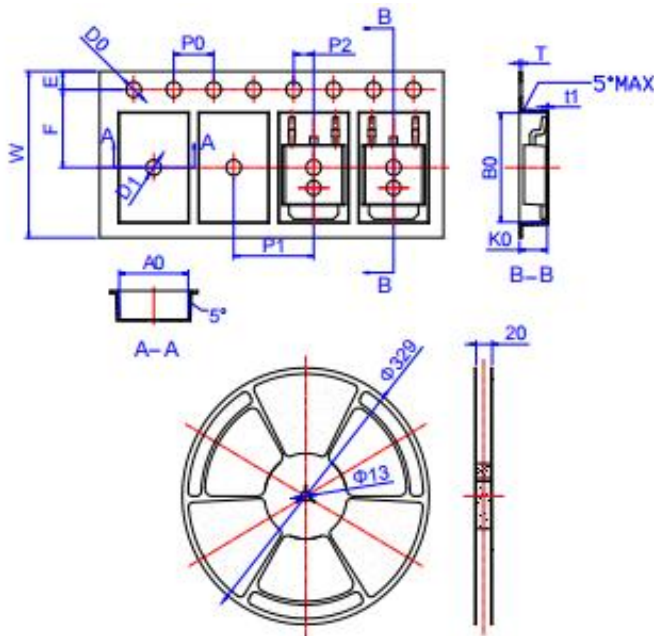




Package Mechanical Data TO252-3L



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°



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



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