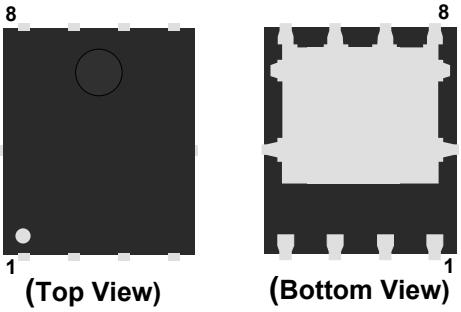
TN150N40DN

N-Channel Enhancement Mode Power MOSFET

Product Summary

- V_{DS}= 40V,I_D= 150A
- $R_{DS(on)}$< 4.2mΩ @V_{GS}= 10V

PDFN5x6-8L



Features

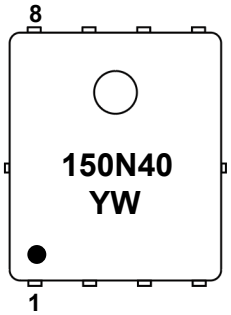
- Advanced Trench Technology
- 100% Avalanche Tested
- RoHS Compliant
- Halogen and Antimony Free
- Moisture Sensitivity Level 3

Pin	Description
1,2,3	Source
4	Gate
5,6,7,8	Drain

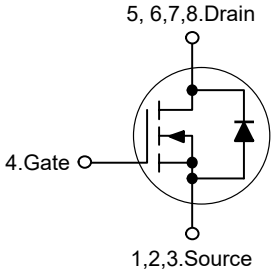
Application

- Consumer electronic power supply
- Synchronous-rectification
- Isolated DC

Marking Code



Schematic Diagram



Absolute Maximum Ratings

Ratings at 25℃ case temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous Note1	I_D	150	A
Drain Current-Pulsed Note3	I_{DM}	600	A
Maximum Power Dissipation Note2	P_D	96	W
Single Pulse Avalanche Energy Note3	E_{AS}	400	mJ
Junction Temperature	T_J	150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Thermal Characteristics

Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.3	°C/W

Electrical Characteristics

(T_J=25℃ unless otherwise specified)

Parameter	Symbol	Test Condition		Min	Typ	Max	Unit
Off characteristics							
Drain-source breakdown voltage	$V_{(BR)\ DSS}$	V_{GS} = 0V, I_D =1mA		40	-	-	V
Zero gate voltage drain current	I_{DSS}	V_{DS} =32V, V_{GS} =0V	T_J =25℃	-	-	1.0	μA
			T_J =125℃	-	-	100	
Gate-body leakage current	I_{GSS}	V_{DS} =0V, V_{GS} =±20V		-	-	±100	nA
On characteristics ④							
Gate-threshold voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =250μA		1.0	1.8	2.5	V
Static drain-source on-sate resistance	$R_{DS(on)}$	V_{GS} =10V, I_D =30A		-	1.6	2.0	mΩ
		V_{GS} =4.5V, I_D =30A		-	2.4	3.6	mΩ
Dynamic characteristics							
Input capacitance	C_{iss}	V_{DS} =20V,V_{GS} =0V, f =100kHz		-	3060	-	pF
Output capacitance	C_{oss}			-	900	-	
Reverse transfer capacitance	C_{rss}			-	52	-	
Gate resistance	R_g	f =1MHz		-	5	-	Ω
Switching characteristics							
Total gate charge	Q_g	V_{GS}=4.5V, V_{DS}=20V, I_D=75A		-	19.3	-	nC
Total gate charge	Q_g	V_{GS}=10V, V_{DS}=20V, I_D=75A		-	42.8	-	
Gate-source charge	Q_{gs}			-	9.3	-	
Gate-drain charge	Q_{gd}			-	7.4	-	
Turn-on delay time	$t_{d(on)}$	V_{DS}=20V, VGS=10V, R_L=0.27Ω , Rg=1.6Ω		-	10	-	ns
Turn-on rise time	t_r			-	2.4	-	
Turn-off delay time	$t_{d(off)}$			-	45	-	
Turn-off fall time	t_f			-	22.5	-	
Drain-Source Diode Characteristics							
Drain-source diode forward voltage	V_{SD} ④	V_{GS} =0V, I_S=30A		-	-	1.3	V
Continuous drain-source diode forward current	I_S ①			-	-	150	A
Pulsed drain-source diode forward current	I_{SM} ①②			-	-	600	A
Reverse recovery time	trr	di_S/dt = 100A/μs, I_S = 30A, V_{DD} = 30V		-	65	-	ns
Reverse recovery charge	Qrr			-	90	-	nC

Notes:

1.T_C=25°℃.

2.Limited only by maximum temperature allowed.

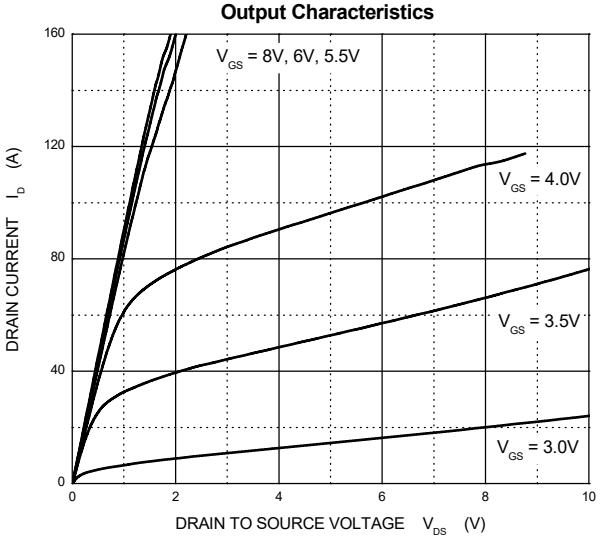
3.V_{DD}=20V,V_{GS}=10V, L=0.5mH, Rg=25Ω Starting T_J= 25°℃.

4.Pulse Test : Pulse Width≤380μs, duty cycle ≤2%.

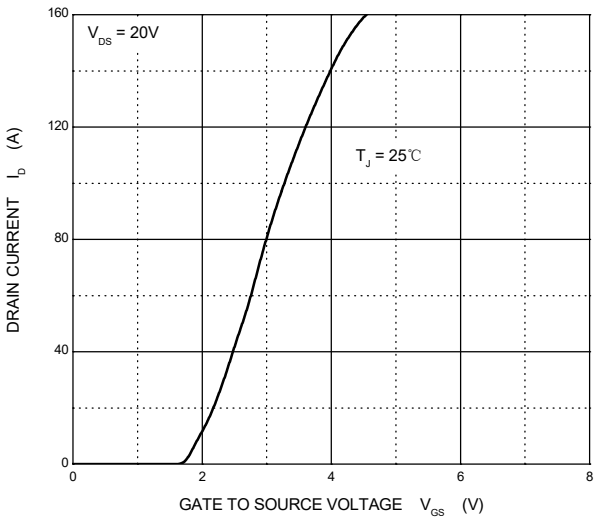
5.Device mounted on 1 in^2 FR-4 board with 2oz. single-sided Copper, in a still air environment with T_A=25 ℃.

Typical Characteristic Curves

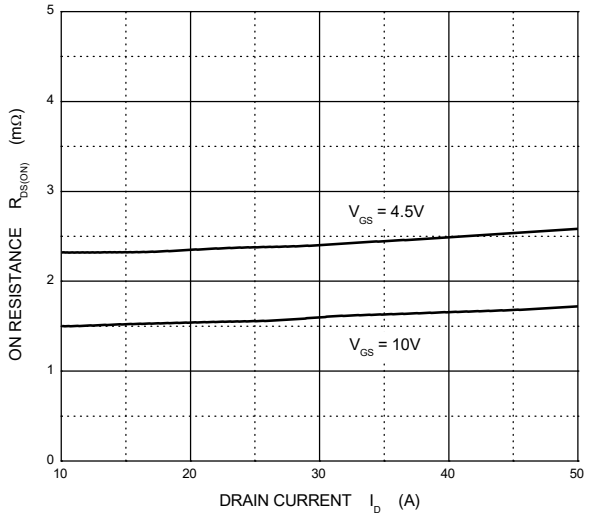
Output Characteristics



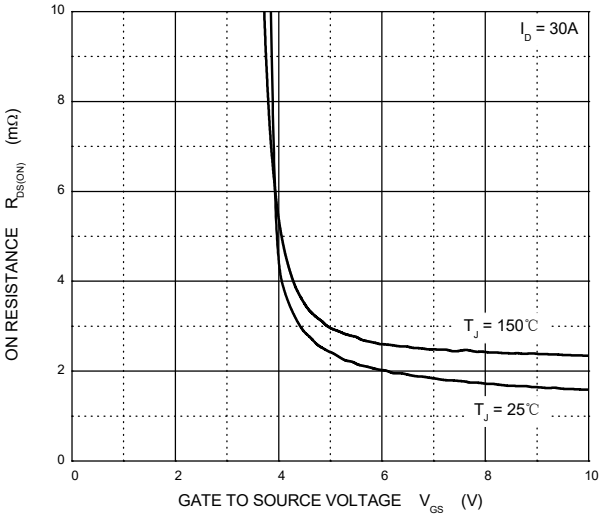
Transfer Characteristics



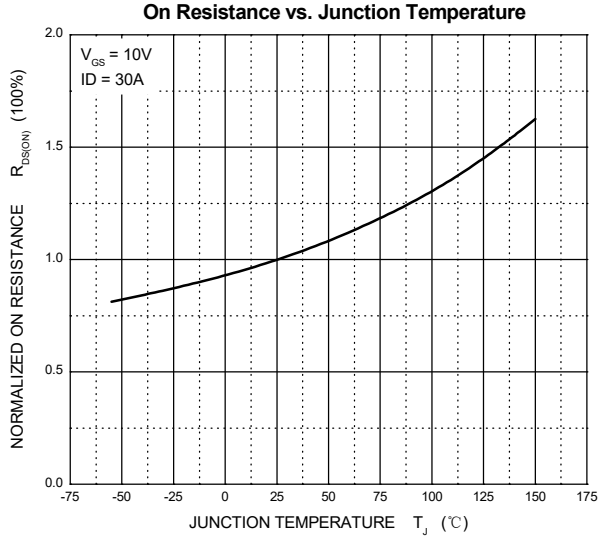
On Resistance vs. Drain Current



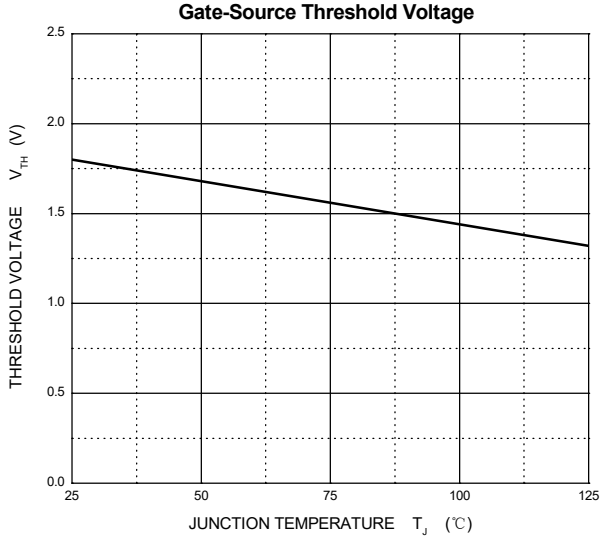
On Resistance vs. Gate-Source Bias



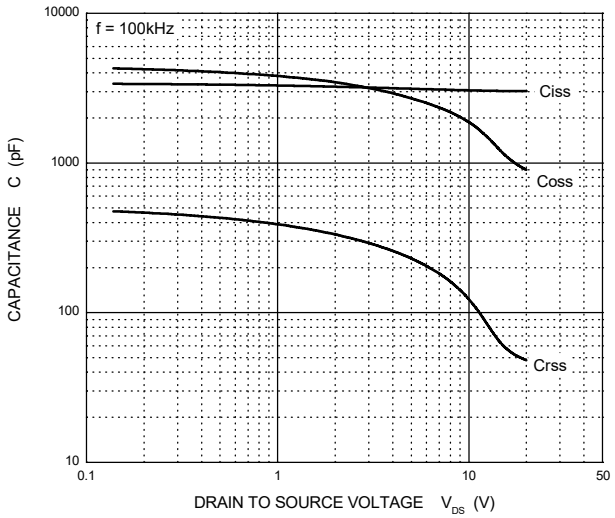
On Resistance vs. Junction Temperature



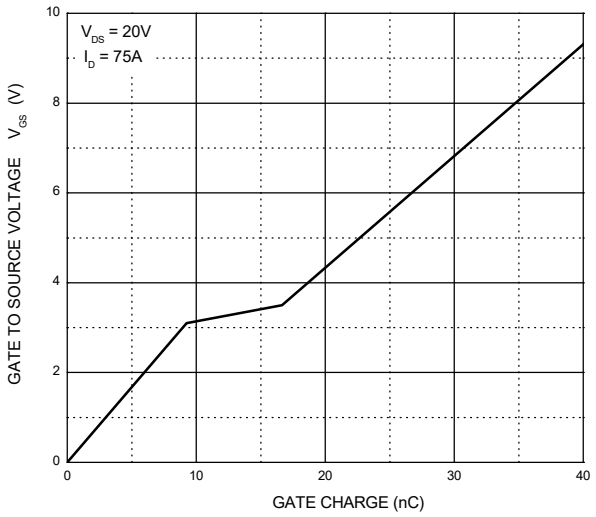
Gate-Source Threshold Voltage



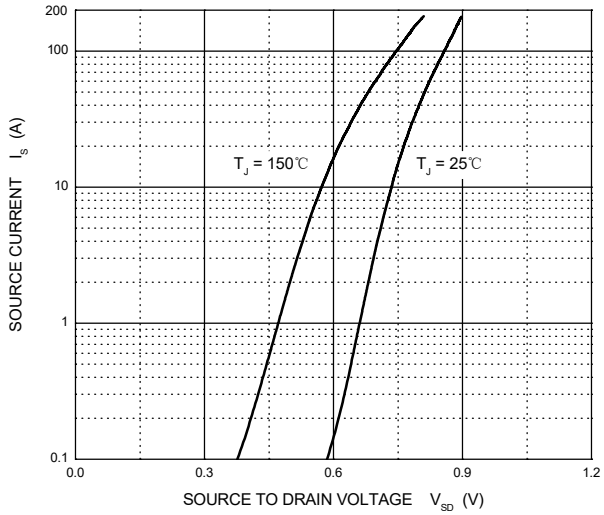
Typical Capacitances



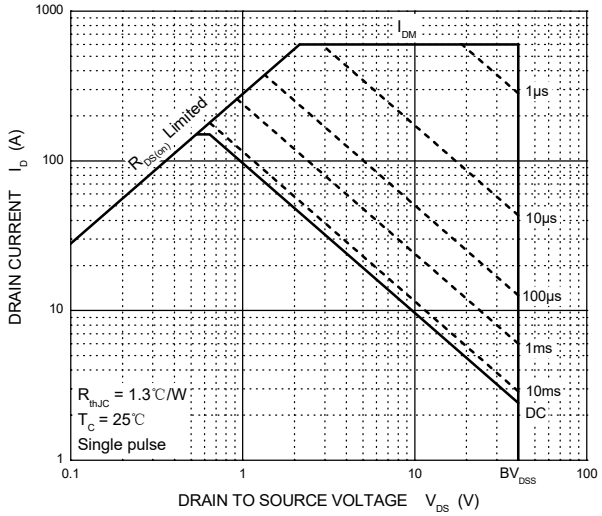
Gate Charge



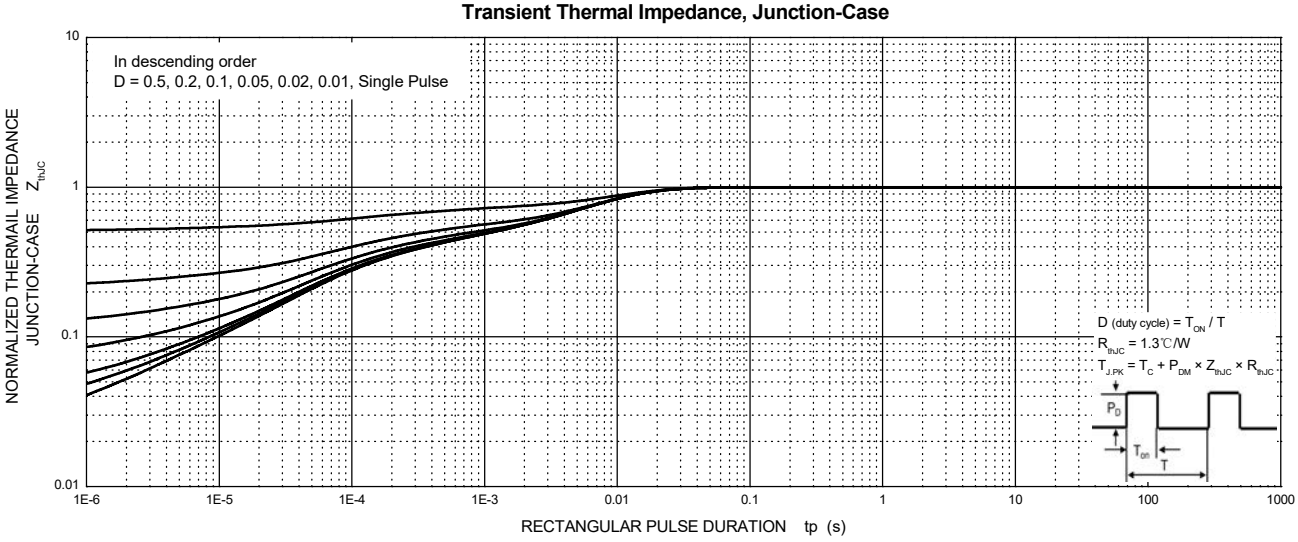
Source-Drain Diode Forward Characteristics



Maximum Safe Operating Area

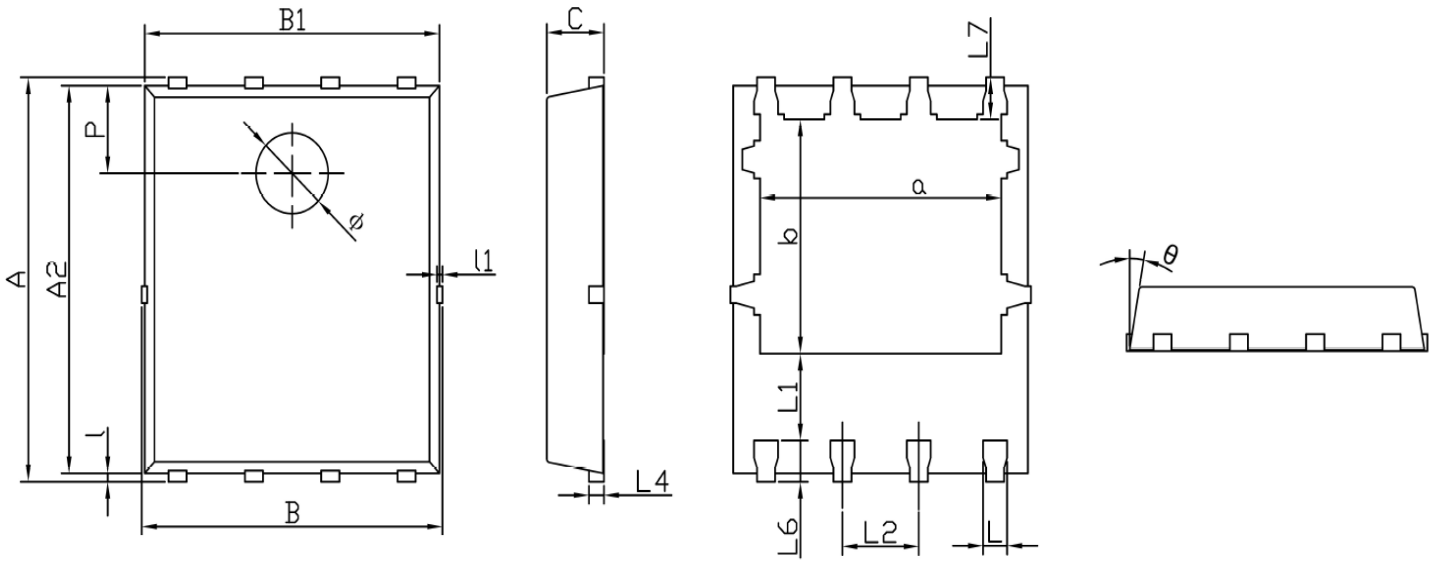


Transient Thermal Impedance, Junction-Case



Package Outline

PDFN5x6-8L Dimensions in mm



Symbol	Dimensions		Symbol	Dimensions	
	Min.	Max.		Min.	Max.
A	5.90	6.10	L1	1.10	-
a	3.91	4.11	l1	-	0.10
A2	5.70	5.80	L2	1.17	1.37
B	4.90	5.10	L4	0.21	0.34
b	3.375	3.575	L6	0.51	0.71
B1	4.80	5.00	L7	0.51	0.71
C	0.90	1.00	P	1.15	1.45
L	0.30	0.50	θ	8°	12°
l	0.06	0.20	Φ	1.10	1.30

Contact Information

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For additional information, please contact your local Sales Representative.

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