



Description

The NTD12N10T4G uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge.

It can be used in a wide variety of applications.

General Features

$V_{DS} = 100V, I_D = 10A$

$R_{DS(ON)} < 160m\Omega @ V_{GS}=10V$

$R_{DS(ON)} < 170m\Omega @ V_{GS}=4.5V$

High density cell design for ultra low R_{dson}

Fully characterized avalanche voltage and current

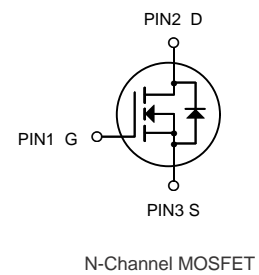
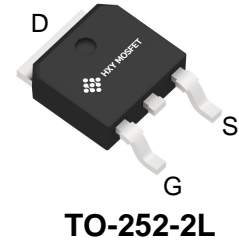
Excellent package for good heat dissipation

Application

Power switching application

Hard switched and high frequency circuits

Uninterruptible power supply



Ordering Information

Product ID	Pack	Brand	Qty(PCS)
NTD12N10T4G	TO-252-2L	HXYMOSFET	2500

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	10	A
Drain Current-Pulsed	I_{DM}	20	A
Maximum Power Dissipation	P_D	40	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 175	$^\circ C$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	3.75	$^\circ C/W$



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

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	100	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =100V, V _{GS} =0V	-	-	1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1.0		2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =3A	-	140	160	mΩ
		V _{GS} =4.5V, I _D =3A	-	160	170	
Forward Transconductance	g _{FS}	V _{DS} =5V, I _D =3A	-	5	-	S
Input Capacitance	C _{iss}	V _{DS} =50V, V _{GS} =0V, F=1.0MHz	-	650	-	PF
Output Capacitance	C _{oss}		-	25	-	PF
Reverse Transfer Capacitance	C _{rss}		-	20	-	PF
Turn-on Delay Time	t _{d(on)}	V _{DD} =50V, R _L =19Ω V _{GS} =10V, R _G =3Ω	-	6	-	nS
Turn-on Rise Time	t _r		-	4	-	nS
Turn-Off Delay Time	t _{d(off)}		-	20	-	nS
Turn-Off Fall Time	t _f		-	4	-	nS
Total Gate Charge	Q _g	V _{DS} =50V, I _D =3A, V _{GS} =10V	-	20.6	-	nC
Gate-Source Charge	Q _{gs}		-	2.1	-	nC
Gate-Drain Charge	Q _{gd}		-	3.3	-	nC
Diode Forward Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =3A	-	-	1.2	V
Diode Forward Current ^(Note 2)	I _S		-	-	7	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production



Typical Electrical and Thermal Characteristics (Curves)

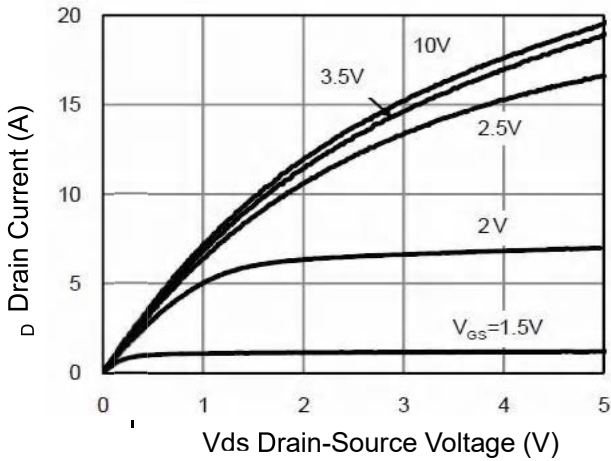


Figure 1 Output Characteristics

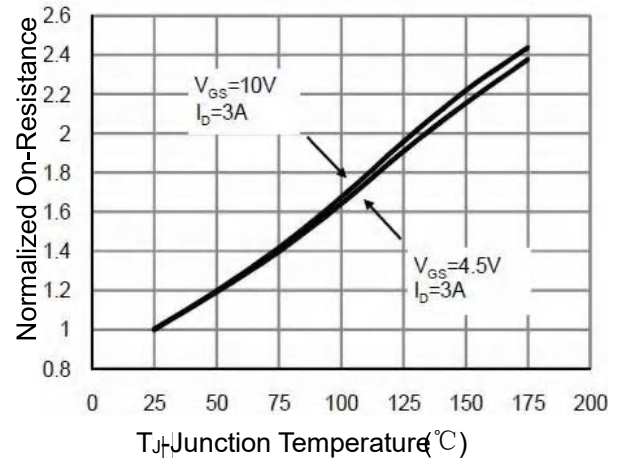


Figure 4 Rdson-Junction Temperature

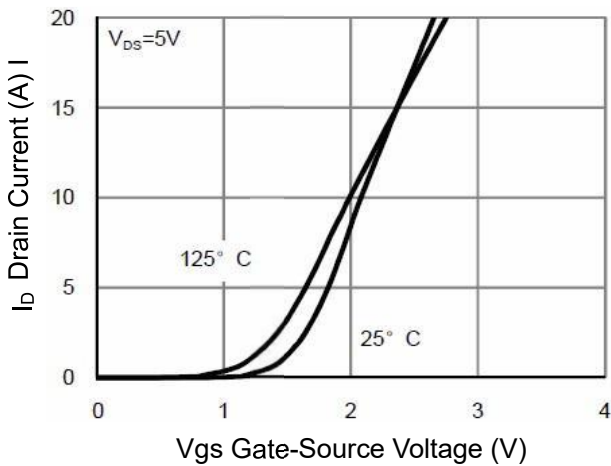


Figure 2 Transfer Characteristics

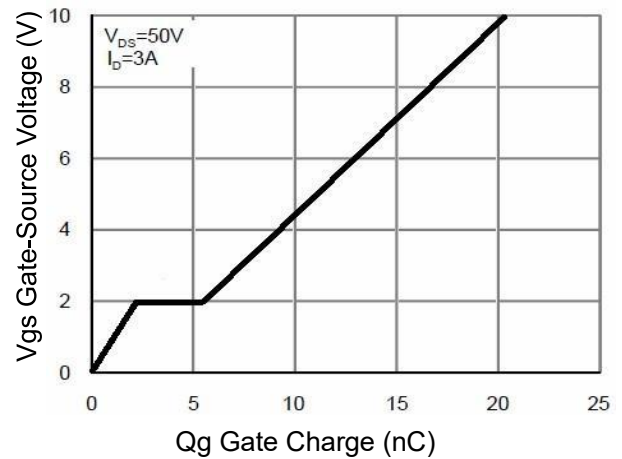


Figure 5 Gate Charge

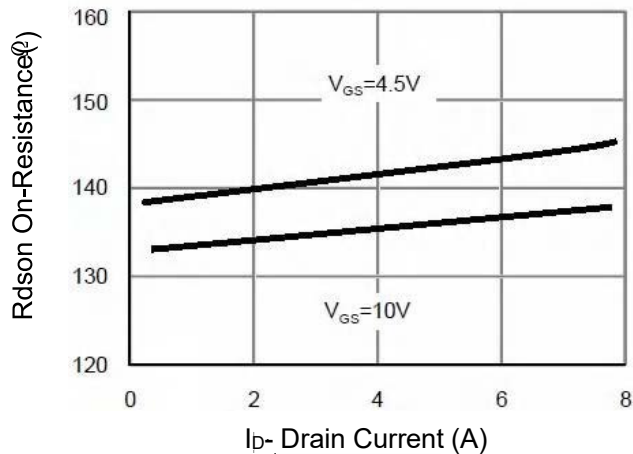


Figure 3 Rdson-Drain Current

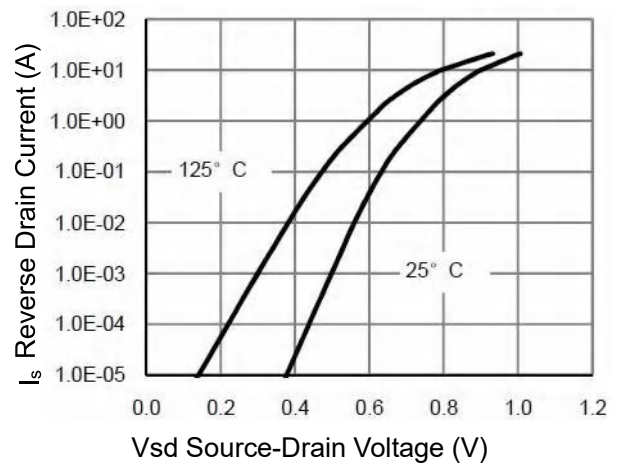


Figure 6 Source-Drain Diode Forward

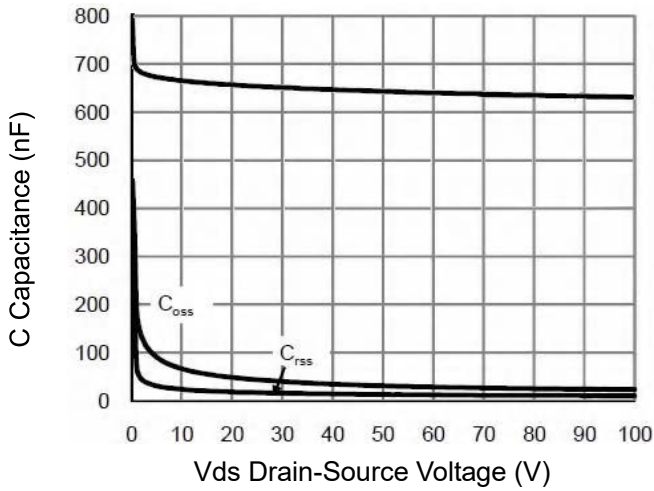


Figure 7 Capacitance vs Vds

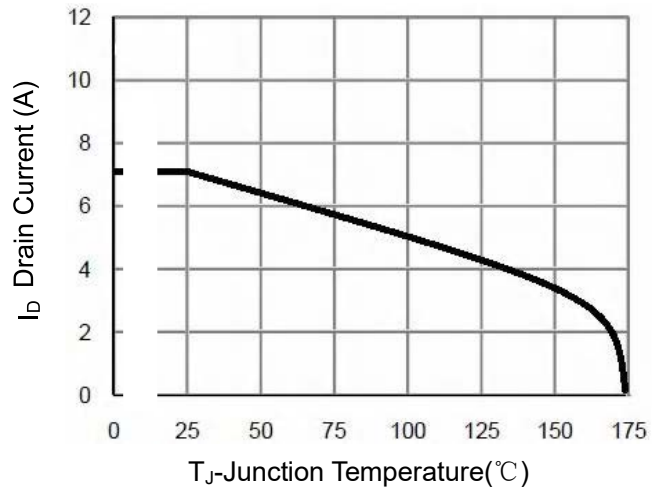


Figure 9 BV_{DSS} vs Junction Temperature

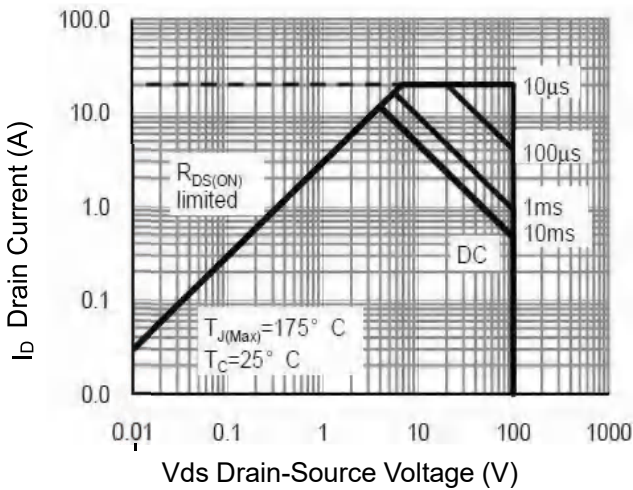


Figure 8 Safe Operation Area

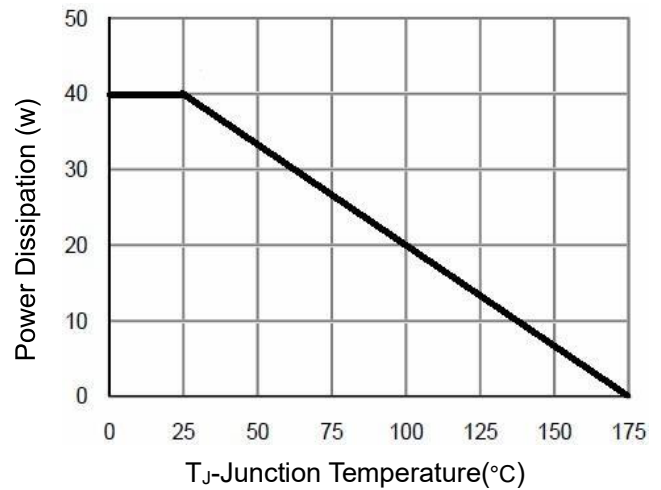


Figure 10 Power De-rating

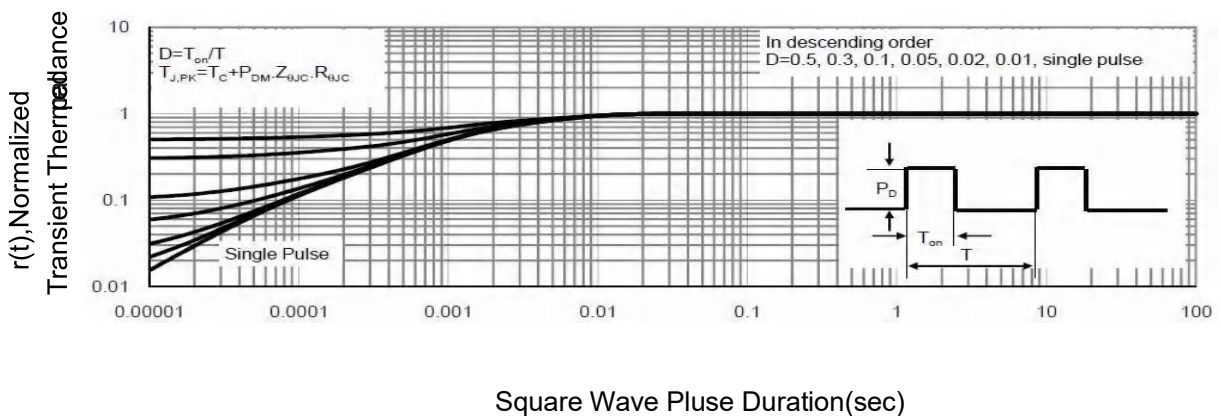


Figure 11 Normalized Maximum Transient Thermal Impedance



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