

N-Channel 100 V (D-S) MOSFET

PRODUCT SUMMARY					
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A)			
100	0.115 at V _{GS} = 10 V	15			
	0.120 at V_{GS} = 6 V	15			

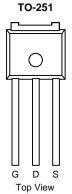
FEATURES

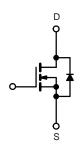
- DT-Trench Power MOSFET
- 175 °C Junction Temperature
- 100 % R_g Tested

APPLICATIONS

• Primary Side Switch







N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T _C = 25 °C, unless otherwise noted)						
Parameter		Symbol	Limit	Unit		
Drain-Source Voltage		V _{DS}	100			
Gate-Source Voltage	V _{GS}	± 20	- V			
Continuous Drain Current (T _J = 175 °C) ^b	T _C = 25 °C	1	15			
	T _C = 125 °C		8.7			
Pulsed Drain Current	I _{DM}	45	А			
Continuous Source Current (Diode Conduction)	۱ _S	15				
Avalanche Current	I _{AR}	15	1			
Repetitive Avalanche Energy (Duty Cycle \leq 1 %)	L = 0.1 mH	E _{AR}	11.3	mJ		
Maximum Power Dissipation	T _C = 25 °C	P _D	61 ^b	w		
	T _A = 25 °C		2.7 ^a	v		
Operating Junction and Storage Temperature Range	•	T _J , T _{stg}	- 55 to 175	°C		

THERMAL RESISTANCE RATINGS						
Parameter		Symbol	Typical	Maximum	Unit	
hunstien te Ambienta	t ≤ 10 s	R _{thJA}	16	20	°C/W	
Junction-to-Ambient ^a	Steady State		45	55		
Junction-to-Case		R _{thJC}	2	2.4		

Notes:

a. Surface mounted on 1" x 1" FR4 board.

b. See SOA curve for voltage derating.

SPECIFICATIONS (T _J = 25 °C, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Min.	Typ. ^a	Max.	Unit	
Static	•	·					
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 V, I_D = 250 \mu A$	100			V	
Gate Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_D = 250 \ \mu A$	1.0		3.0		
Gate-Body Leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA	
		V _{DS} = 100 V, V _{GS} = 0 V			1		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V, T _J = 125 °C			50	μA	
		V_{DS} = 100 V, V_{GS} = 0 V, T_{J} = 175 °C			250		
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	15			А	
		V _{GS} = 10 V, I _D = 15 A		0.110		Ω	
- ·	Р	V _{GS} = 10 V, I _D = 15 A, T _J = 125 °C		0.170			
Drain-Source On-State Resistance ^b	R _{DS(on)}	V _{GS} = 10 V, I _D = 15 A, T _J = 175 °C		0.230			
		V _{GS} = 6 V, I _D = 10 A		0.115			
Forward Transconductance ^b	9 _{fs}	V _{DS} = 15 V, I _D = 15 A		25		S	
Dynamic ^a	•	·					
Input Capacitance	C _{iss}			892		pF	
Output Capacitance	C _{oss}	V_{GS} = 0 V, V_{DS} = 25 V, f = 1 MHz		110			
Reverse Transfer Capacitance	C _{rss}			70			
Total Gate Charge ^c	Qg			20	25		
Gate-Source Charge ^c	Q _{gs}	$V_{DS} = 75 \text{ V}, V_{GS} = 10 \text{ V}, I_{D} = 15 \text{ A}$		5.5		nC	
Gate-Drain Charge ^c	Q _{gd}			7			
Gate Resistance	R _g		1		3.2	Ω	
Turn-On Delay Time ^c	t _{d(on)}			8	12		
Rise Time ^c	t _r	V_{DD} = 75 V, R_L = 5 Ω		35	55	ns	
Turn-Off Delay Time ^c	t _{d(off)}	$I_D \cong$ 15 A, V_{GEN} = 10 V, R_G = 2.5 Ω		17	25		
Fall Time ^c	t _f]		30	45		
Source-Drain Diode Ratings and Cha	racteristic (T	_C = 25 °C)		·			
Pulsed Current	I _{SM}				45	А	
Diode Forward Voltage ^b	V _{SD}	I _F = 15 A, V _{GS} = 0 V		0.9	1.5	V	
Source-Drain Reverse Recovery Time	t _{rr}	I _F = 15 A, dl/dt = 100 A/μs		55	85	ns	

Notes:

a. Guaranteed by design, not subject to production testing.

b. Pulse test; pulse width \leq 300 µs, duty cycle \leq 2 %.

c. Independent of operating temperature.

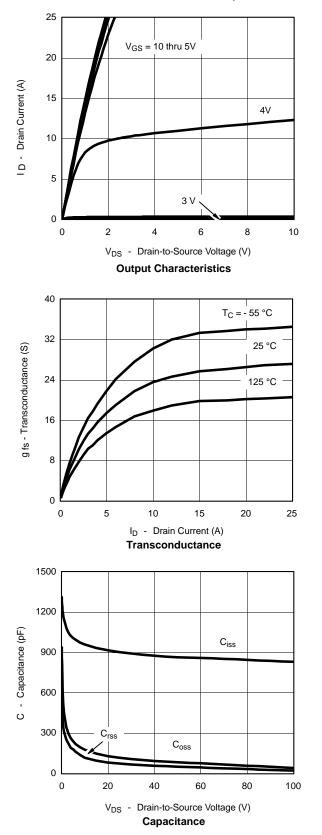
Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

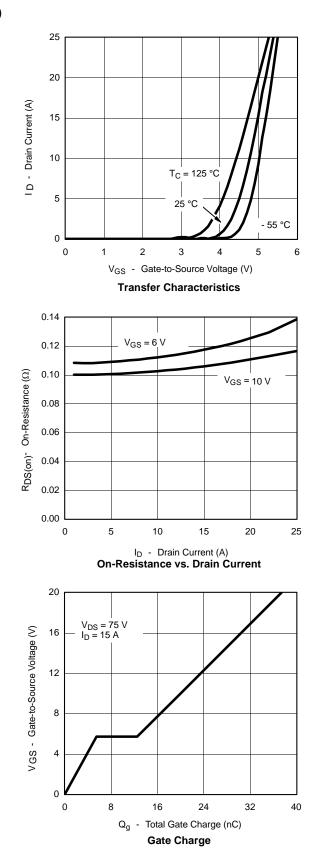
emi

NTD12N10-1G

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TYPICAL CHARACTERISTICS (25 °C unless noted)

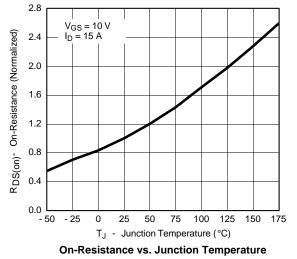




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TYPICAL CHARACTERISTICS (25 °C unless noted)



THERMAL RATINGS

2

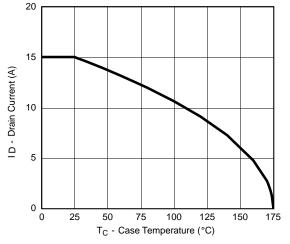
1

0.1

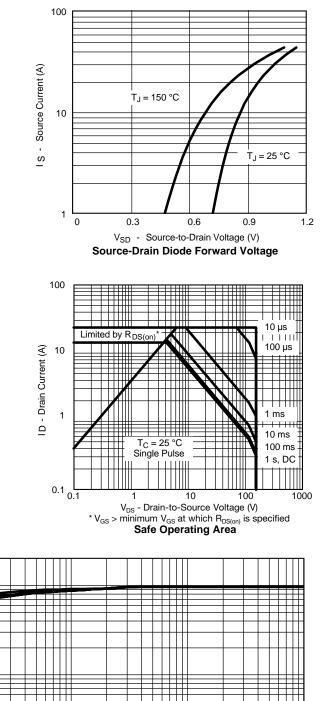
Normalized Effective Transient Thermal Impedance Duty Cycle = 0.5

0.02

0.2 0.1



Maximum Avalanche Drain Current vs. Case Temperature

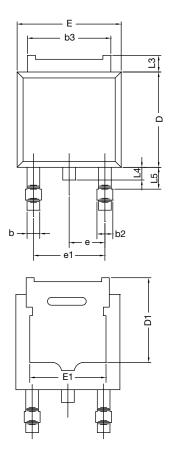


0.01 0.01 0.02 0.05 1 1 Single Pulse 10⁻⁴ 10⁻³ 10⁻² Single Pulse 10⁻² 10⁻¹ 1 Square Wave Pulse Duration (sec) Normalized Thermal Transient Impedance, Junction-to-Case

10



TO-252AA CASE OUTLINE





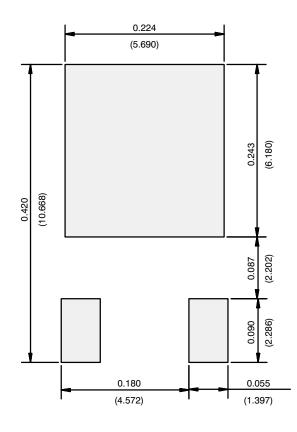
	MILLIN	IETERS	INC	HES	
DIM.	MIN.	MAX.	MIN.	MAX.	
А	2.18	2.38	0.086	0.094	
A1	-	0.127	-	0.005	
b	0.64	0.88	0.025	0.035	
b2	0.76	1.14	0.030	0.045	
b3	4.95	5.46	0.195	0.215	
С	0.46	0.61	0.018	0.024	
C2	0.46	0.89	0.018	0.035	
D	5.97	6.22	0.235	0.245	
D1	5.21	-	0.205	-	
E	6.35	6.73	0.250	0.265	
E1	4.32	-	0.170	-	
Н	9.40	10.41	0.370	0.410	
е	2.28	BSC	0.090	BSC	
e1	4.56	BSC	0.180	BSC	
L	1.40	1.78	0.055	0.070	
L3	0.89	1.27	0.035	0.050	
L4	-	1.02	-	0.040	
L5	1.14	1.52	0.045	0.060	
ECN: X12-0247-Rev. M, 24-Dec-12 DWG: 5347					

Note

• Dimension L3 is for reference only.



RECOMMENDED MINIMUM PADS FOR DPAK (TO-252)



Recommended Minimum Pads Dimensions in Inches/(mm)



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