

NTTFS115P10M5

Product Preview

MOSFET - Power, Single P-Channel

-100 V, 115 mΩ, TBD A

Features

- Small Footprint (3.3 x 3.3 mm) for Compact Design
- These Devices are Pb-Free and are RoHS Compliant

MAXIMUM RATINGS (T_J = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-to-Source Breakdown Voltage	V _{(BR)DSS}	-100	V
Gate-to-Source Voltage	V _{GS}	±20	V
Continuous Drain Current R _{θJC} (Note 2)	Steady State	T _C = 25°C	I _D TBD A
Power Dissipation R _{θJC} (Note 2)		T _C = 25°C	P _D TBD W
Continuous Drain Current R _{θJA} (Notes 1, 2)	Steady State	T _A = 25°C	I _D TBD A
Power Dissipation R _{θJA} (Notes 1, 2)		T _A = 25°C	P _D TBD W
Pulsed Drain Current	T _A = 25°C, t _p = 10 μs	I _{DM}	TBD A
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to +150	°C
Source Current (Body Diode)	I _S	TBD	A
Single Pulse Drain-to-Source Avalanche Energy (I _{AV} = TBD A, L = TBD)	E _{AS}	TBD	mJ
Lead Temperature Soldering Reflow for Soldering Purposes (1/8" from case for 10 s)	T _L	300	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL RESISTANCE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Junction-to-Case - Steady State (Note 2)	R _{θJC}	TBD	°C/W
Junction-to-Ambient - Steady State (Note 2)	R _{θJA}	TBD	

1. Surface-mounted on FR4 board using a 1 in² pad size, 1 oz Cu pad.
2. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.

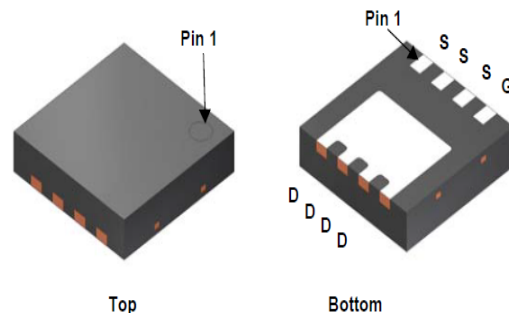
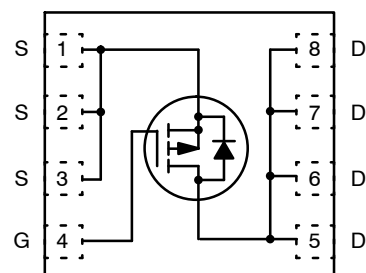
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V _{(BR)DSS}	R _{DS(on)} MAX	I _D MAX
-100 V	115 mΩ @ -10 V	8 A
	254 mΩ @ -6 V	6 A



PQFN33
CASE TBD

ORDERING INFORMATION

Device	Package	Shipping [†]
NTTFS115P10M5	PQFN33 (Pb-Free)	3000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	-100			V
Drain-to-Source Breakdown Voltage Temperature Coefficient	$V_{(BR)DSS}/T_J$	$I_D = 250\ \mu\text{A}$, ref to 25°C		TBD		mV/ $^\circ\text{C}$
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS} = 0\text{ V}, V_{DS} = -50\text{ V}$	$T_J = 25^\circ\text{C}$		1	μA
			$T_J = 125^\circ\text{C}$		100	
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA

ON CHARACTERISTICS (Note 3)

Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 44\ \mu\text{A}$		-3.0		V
Negative Threshold Temperature Coefficient	$V_{GS(TH)}/T_J$	$I_D = 250\ \mu\text{A}$, ref to 25°C		TBD		mV/ $^\circ\text{C}$
Drain-to-Source On Resistance	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = 8\text{ A}$	92	115		$\text{m}\Omega$
		$V_{GS} = -6\text{ V}, I_D = 6\text{ A}$	127	254		
Forward Transconductance	g_{FS}	$V_{DS} = \text{TBD V}, I_D = \text{TBD A}$		TBD		S
Gate-Resistance	R_G	$T_A = 25^\circ\text{C}$		TBD		Ω

CHARGES & CAPACITANCES

Input Capacitance	C_{ISS}	$V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = -50\text{ V}$		639		pF
Output Capacitance	C_{OSS}			86		
Reverse Transfer Capacitance	C_{RSS}			5.0		
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -6\text{ V}, V_{DS} = -50\text{ V}, I_D = 8\text{ A}$		TBD		nC
Total Gate Charge	$Q_{G(TOT)}$	$V_{GS} = -10\text{ V}, V_{DS} = -50\text{ V}, I_D = 8\text{ A}$		8.0		
Gate-to-Source Charge	Q_{GS}			2.3		
Gate-to-Drain Charge	Q_{GD}			1.9		
Plateau Voltage	V_{GP}			TBD		

SWITCHING CHARACTERISTICS (Note 3)

Turn-On Delay Time	$t_{d(ON)}$	$V_{GS} = -10\text{ V}, V_{DS} = -50\text{ V}, I_D = \text{TBD A}, R_G = \text{TBD } \Omega$		TBD		ns
Rise Time	t_r			TBD		
Turn-Off Delay Time	$t_{d(OFF)}$			TBD		
Fall Time	t_f			TBD		

DRAIN-SOURCE DIODE CHARACTERISTICS

Forward Diode Voltage	V_{SD}	$V_{GS} = 0\text{ V}, I_S = 8\text{ A}$	$T_J = 25^\circ\text{C}$	0.84		V
			$T_J = 125^\circ\text{C}$	TBD		
Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{ V}, dI_S/dt = 300\text{ A}/\mu\text{s}, I_S = \text{TBD A}$		TBD		ns
Reverse Recovery Charge	Q_{RR}			TBD		nC
Reverse Recovery Time	t_{RR}	$V_{GS} = 0\text{ V}, dI_S/dt = 1000\text{ A}/\mu\text{s}, I_S = \text{TBD A}$		TBD		ns
Reverse Recovery Charge	Q_{RR}			TBD		nC

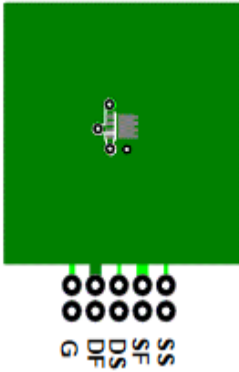
Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

3. Switching characteristics are independent of operating junction temperatures.

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NOTES:

- $R_{\theta JA}$ is determined with the device mounted on a 1 in² pad 2 oz copper pad on a 1.5 x 1.5 in. board of FR-4 material. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.



a. 53°C/W when mounted on a 1 in² pad of 2 oz copper.



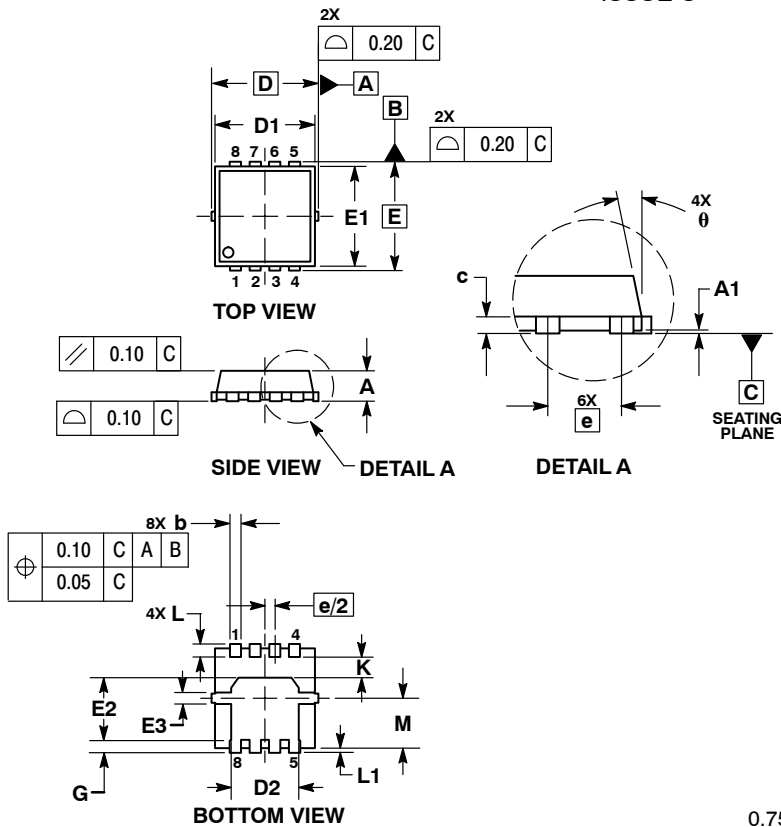
b. 125°C/W when mounted on a minimum pad of 2 oz copper.

- Pulse Test: Pulse Width < TBD. Duty cycle < TBD.
- E_{AS} of TBD is based on started $T_J = 25^\circ\text{C}$, $L = \text{TBD}$, $I_{AS} = \text{TBD}$, $V_{DD} = \text{TBD}$, $V_{GS} = \text{TBD}$. 100% test at $L = \text{TBD}$, $I_{AS} = \text{TBD}$.
- As an N-ch device, the negative V_{GS} rating is for low duty cycle pulse occurrence only. No continuous rating is implied.

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PACKAGE DIMENSIONS

PQFN33 3.3x3.3, 0.65P
CASE TBD
ISSUE O

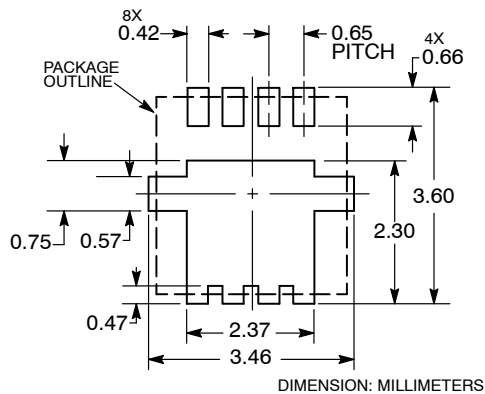


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION D1 AND E1 DO NOT INCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.70	0.75	0.80	0.028	0.030	0.031
A1	0.00	---	0.05	0.000	---	0.002
b	0.23	0.30	0.40	0.009	0.012	0.016
c	0.15	0.20	0.25	0.006	0.008	0.010
D	3.30 BSC			0.130 BSC		
D1	2.95	3.05	3.15	0.116	0.120	0.124
D2	1.98	2.11	2.24	0.078	0.083	0.088
E	3.30 BSC			0.130 BSC		
E1	2.95	3.05	3.15	0.116	0.120	0.124
E2	1.47	1.60	1.73	0.058	0.063	0.068
E3	0.23	0.30	0.40	0.009	0.012	0.016
e	0.65 BSC			0.026 BSC		
G	0.30	0.41	0.51	0.012	0.016	0.020
K	0.65	0.80	0.95	0.026	0.032	0.037
L	0.30	0.43	0.56	0.012	0.017	0.022
L1	0.06	0.13	0.20	0.002	0.005	0.008
M	1.40	1.50	1.60	0.055	0.059	0.063
θ	0 °	---	12 °	0 °	---	12 °

SOLDERING FOOTPRINT*



DIMENSION: MILLIMETERS

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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