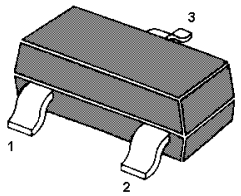
MMFTN20

N-Channel Enhancement Vertical D-MOS Transistor

Features

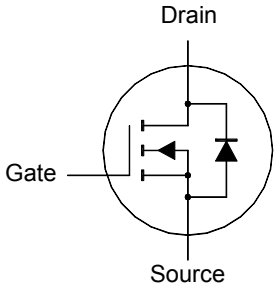
- High-speed switching
- No secondary breakdown



1. Gate 2. Source 3. Drain
TO-236 Plastic Package

Applications

- Thin and thick film circuits
- General purpose fast switching applications



Absolute Maximum Ratings (T_a = 25 °C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	50	V
Gate-Source Voltage (open drain)	V_{GSO}	± 20	V
Drain Current	I_D	173	mA
Peak Drain Current (tp ≤ 10 µs)	I_{DM}	700	mA
Total Power Dissipation [1)]	P_{tot}	830	mW
Total Power Dissipation [2)]	P_{tot}	300	mW
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	- 65 to + 150	°C

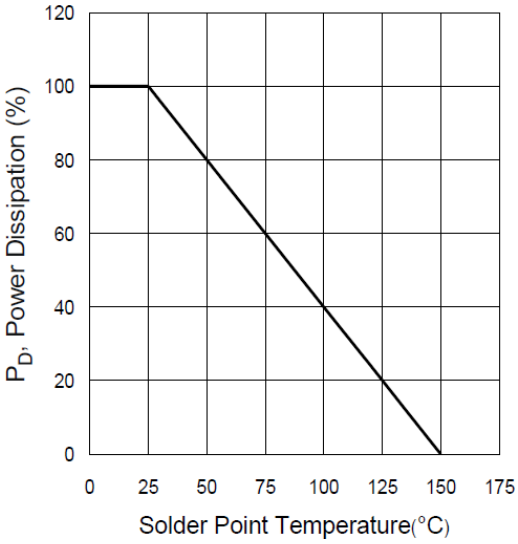
Thermal Characteristics

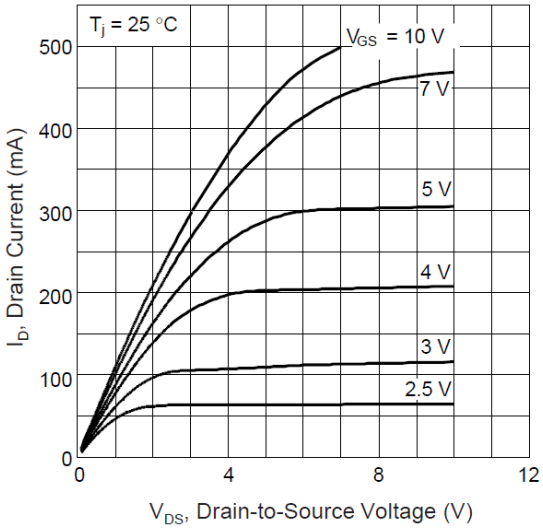
Parameter	Symbol	Value	Unit
Thermal Resistance from Juntion to Solder Point [1)]	$R_{\theta JSP}$	150	°C/W
Thermal Resistance from Juntion to Ambient [2)]	$R_{\theta JA}$	416	°C/W

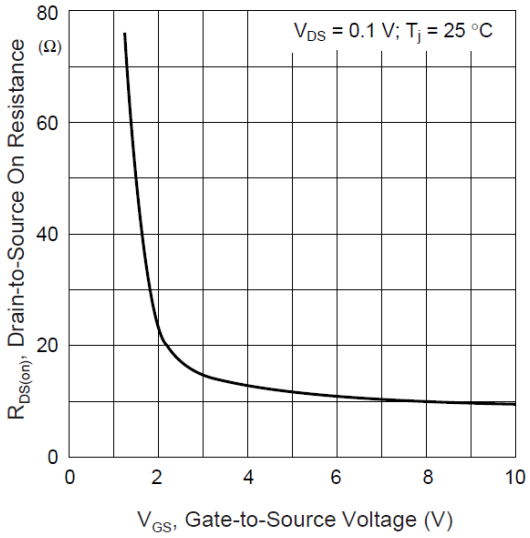
[1)] Device mounted on a metal clad substrate.
[2)] Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain 1 cm^2.

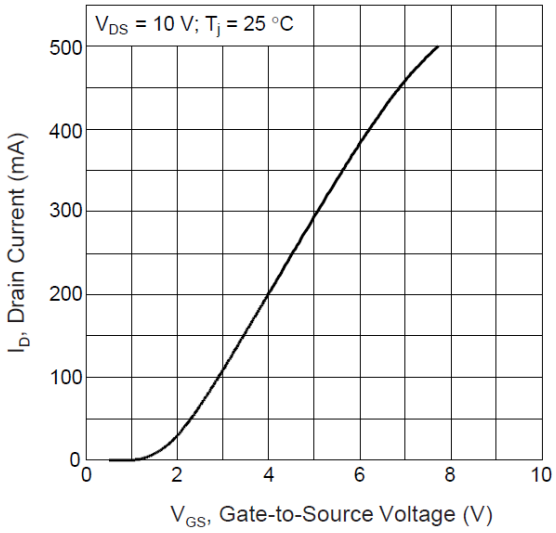
Characteristics at T_a = 25 °C unless otherwise specified

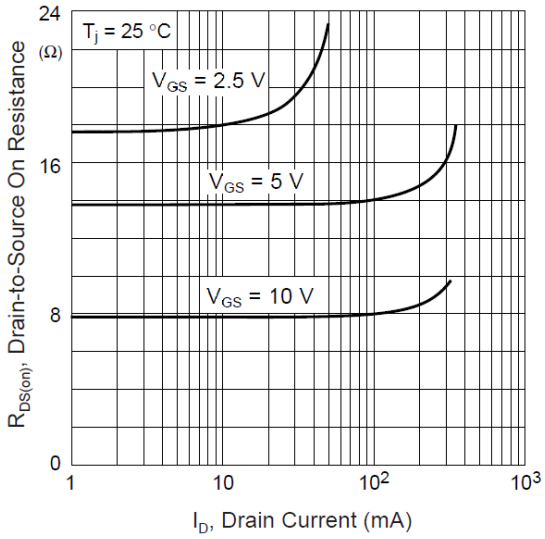
Parameter	Symbol	Min.	Max.	Unit
Drain-Source Breakdown Voltage at I_D = 10 µA	$V_{(BR)DSS}$	50	-	V
Drain-Source Leakage Current at V_{DS} = 40 V	I_{DSS}	-	1	µA
Gate-Source Leakage Current at V_{GS} = ± 20 V	I_{GSS}	-	± 100	nA
Gate-Source Threshold Voltage at V_{DS} = V_{GS}, I_D = 1 mA	$V_{GS(th)}$	0.4	1.8	V
Drain-Source On-State Resistance at V_{GS} = 10 V, I_D = 100 mA at V_{GS} = 5 V, I_D = 100 mA at V_{GS} = 2.5 V, I_D = 10 mA	$R_{DS(on)}$	- - -	15 20 30	Ω
Forward Transfer Admittance at V_{DS} = 10 V, I_D = 100 mA	$\|y_{fs}\|$	40	-	mS
Input Capacitance at V_{DS} = 10 V, f = 1 MHz	C_{iss}	-	25	pF
Output Capacitance at V_{DS} = 10 V, f = 1 MHz	C_{oss}	-	15	pF
Reverse Transfer Capacitance at V_{DS} = 10 V, f = 1 MHz	C_{rss}	-	8	pF
Turn-On Time at V_{GS} = 0 to 10 V, V_{DD} = 20 V, I_D = 100 mA	$t_{(on)}$	-	5	ns
Turn-Off Time at V_{GS} = 10 to 0 V, V_{DD} = 20 V, I_D = 100 mA	$t_{(off)}$	-	10	ns


120
100
80
60
40
20
0
P_D, Power Dissipation (%)
0
25
50
75
100
125
150
175
Solder Point Temperature(°C)


T_j = 25 °C
V_{GS} = 10 V
7 V
5 V
4 V
3 V
2.5 V
500
400
300
200
100
0
I_D, Drain Current (mA)
0
4
8
12
V_{DS}, Drain-to-Source Voltage (V)


V_{DS} = 0.1 V; T_j = 25 °C
80
(Ω)
60
40
20
0
$R_{DS(on)}$, Drain-to-Source On Resistance
0
2
4
6
8
10
V_{GS}, Gate-to-Source Voltage (V)

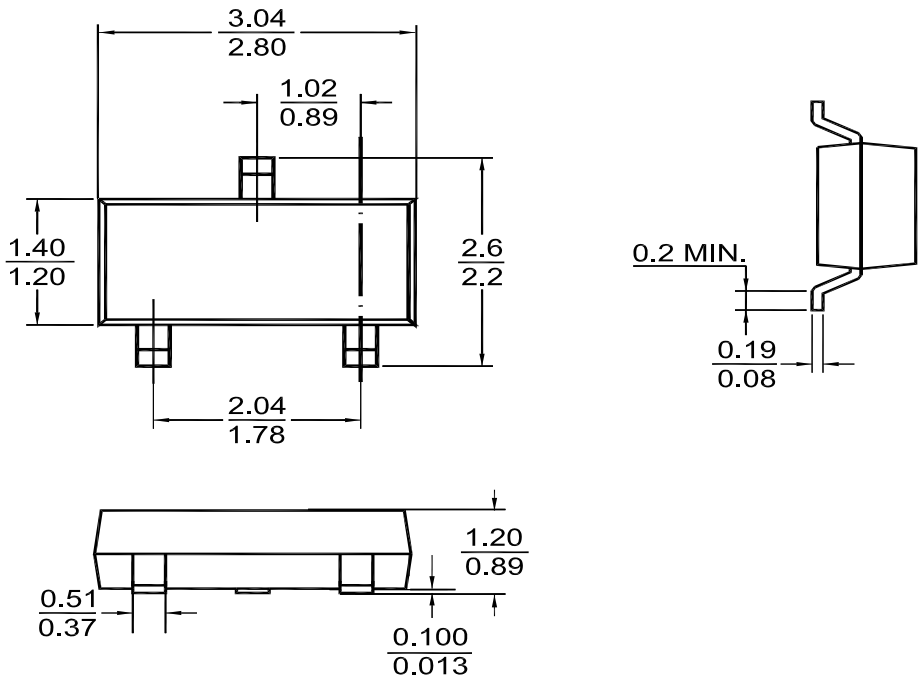

V_{DS} = 10 V; T_j = 25 °C
500
400
300
200
100
0
I_D, Drain Current (mA)
0
2
4
6
8
10
V_{GS}, Gate-to-Source Voltage (V)


T_j = 25 °C
V_{GS} = 2.5 V
V_{GS} = 5 V
V_{GS} = 10 V
24
(Ω)
16
8
0
$R_{DS(on)}$, Drain-to-Source On Resistance
1
10
10^2
10^3
I_D, Drain Current (mA)

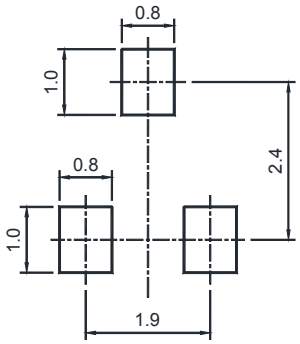
MMFTN20

PACKAGE OUTLINE

Plastic surface mounted package (Dimensions in mm) **TO-236**



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
TO-236	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000