

# MMFTN20

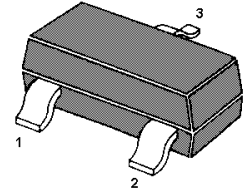
## N-Channel Enhancement Vertical D-MOS Transistor

### Features

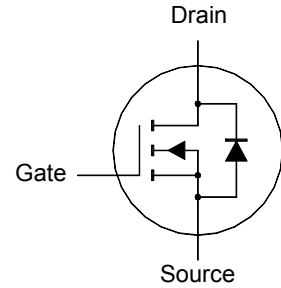
- High-speed switching
- No secondary breakdown

### Applications

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



1. Gate 2. Source 3. Drain  
SOT-23 Plastic Package



### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

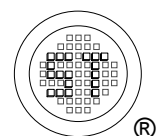
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	50	V
Gate-Source Voltage (open drain)	$V_{GSO}$	$\pm 20$	V
Drain Current	$I_D$	173	mA
Peak Drain Current ( $t_p \leq 10\text{ }\mu\text{s}$ )	$I_{DM}$	700	mA
Total Power Dissipation <sup>1)</sup>	$P_{tot}$	830	mW
Total Power Dissipation <sup>2)</sup>	$P_{tot}$	300	mW
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	- 65 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance from Junction to Solder Point <sup>1)</sup>	$R_{\theta JSP}$	150	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient <sup>2)</sup>	$R_{\theta JA}$	416	$^\circ\text{C/W}$

<sup>1)</sup> Device mounted on a metal clad substrate.

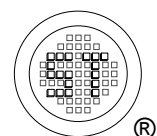
<sup>2)</sup> Device mounted on an FR4 PCB, single-sided copper, tin-plated, mounting pad for drain  $1\text{ cm}^2$ .



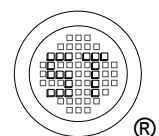
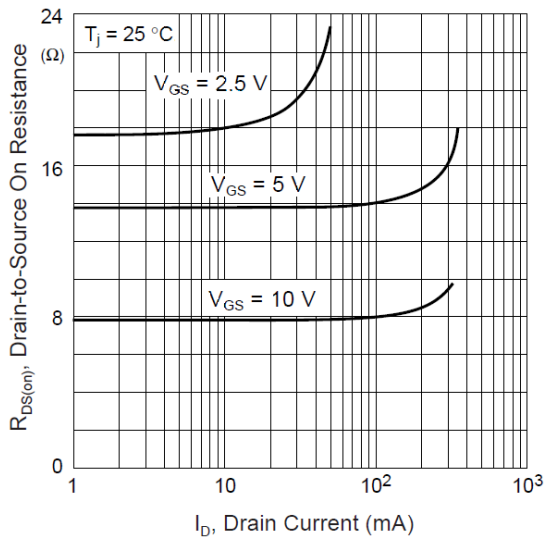
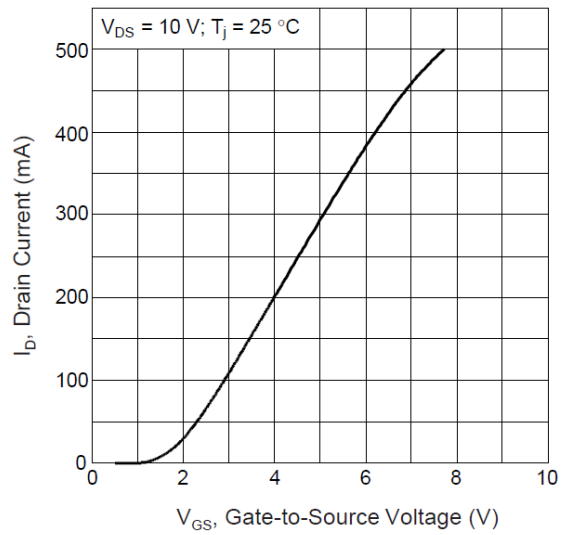
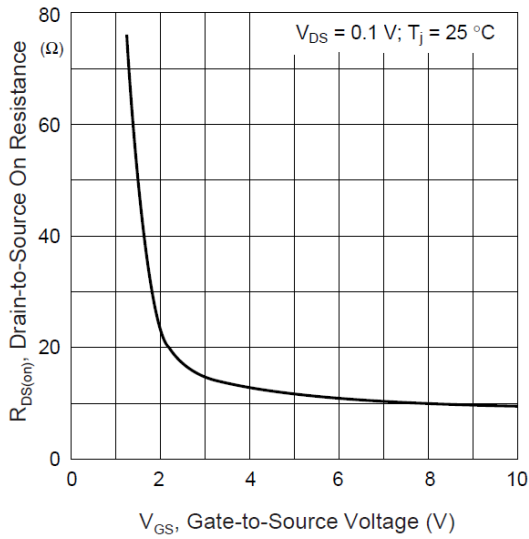
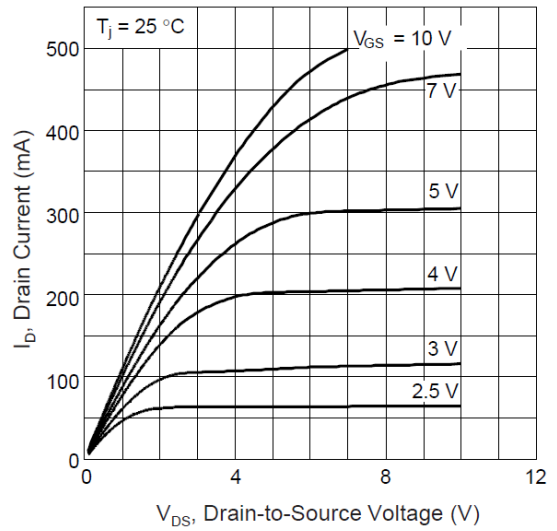
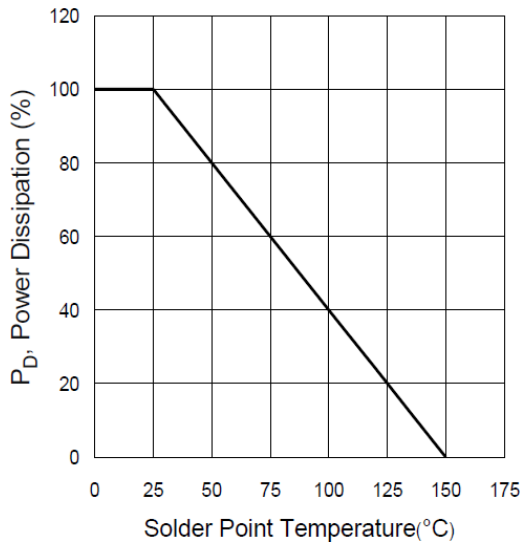
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## Characteristics at $T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified

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



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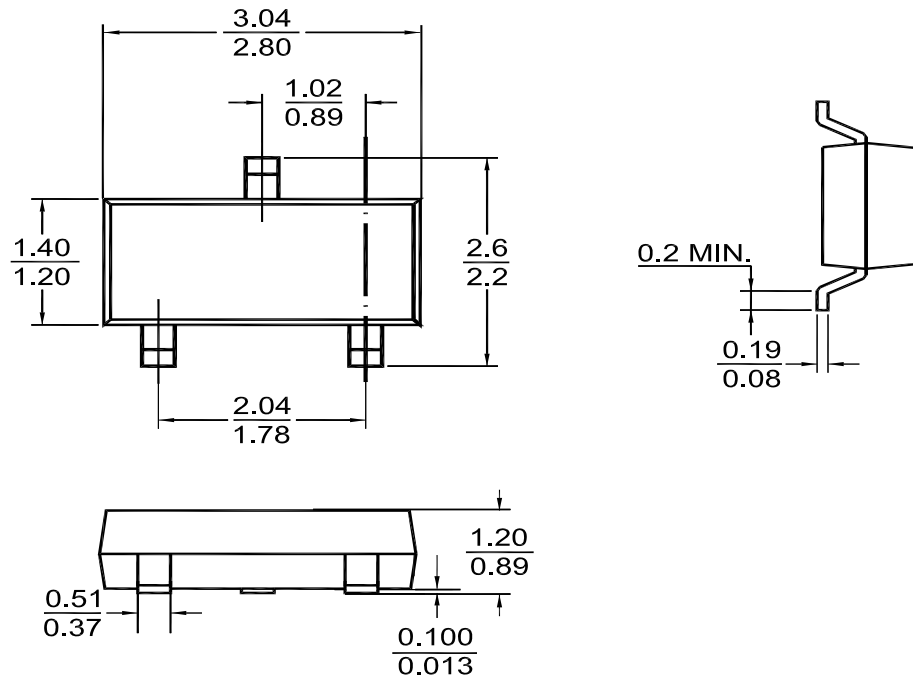


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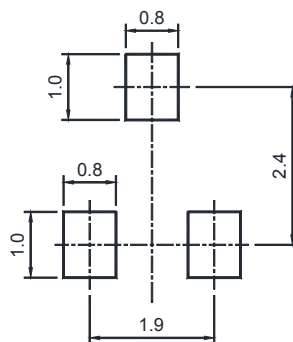
## PACKAGE OUTLINE

Plastic surface mounted package (Dimensions in mm)

SOT-23



## Recommended Soldering Footprint



## Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-23	8	4 ± 0.1	0.157 ± 0.004	178	7	3,000

