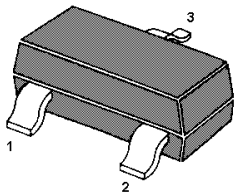
MMFTP3401-HAF

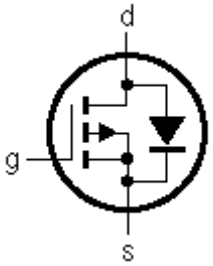
P-Channel Enhancement Mode MOSFET



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

Features

• Halogen and Antimony Free(HAF), RoHS compliant



Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DS}$	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Drain Current T_A = 25℃ T_A = 70℃	$-I_D$	4 3.2	A
Peak Drain Current [1]	$-I_{DM}$	27	A
Power Dissipation [2] T_A = 25℃ T_A = 70℃	P_D	1.4 0.9	W
Junction and Storage Temperature Rang	T_J,T_{stg}	- 55 to + 150	℃

[1] Repetitive rating,pulse width limited by junction temperature $T_{J(MAX)}$ = 150℃.Ratings are based on low frequency and duty cycles to keep initial T_j = 25℃

[2] The power dissipation P_D is based on $T_{J(MAX)}$ = 150℃.using≤ 10 s Junction to ambient thermal resistance.

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Maximum Thermal Resistance from Juntion to Ambient at t ≤10s [1] at steady-state[1] [2]	$R_{\theta JA}$	90 125	℃/W

[1] The value of $R_{\theta JA}$ is measured with the device mounted on 1in^{2}FR-4 board with 2 oz. Copper, in a still air environment with T_A =25℃.The value in any given application depends on the user's specific board design.

[2] The $R_{\theta JA}$ is the sum of the thermal impedence from junction to lead $R_{\theta JL}$ and lead to ambient.

Characteristics at T_j = 25℃ unless otherwise specified

Parameter	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage at $-I_D$ = 250 μA	$-BV_{DSS}$	30	-	-	V
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $-I_D$ = 250 uA	$-V_{GSth}$	0.5	-	1.3	V
Drain-Source Leakage Current at $-V_{DS}$ = 30 V at $-V_{DS}$ = 30 V, T_j = 55℃	$-I_{DSS}$	- -	- -	1 5	μA
Gate Leakage Current at V_{GS} = ± 12 V	I_{GSS}	-	-	± 100	nA
On state drain current at $-V_{GS}$ = 10 V,V_{DS} = 5 V	$-I_{D(ON)}$	27	-	-	A
Drain-Source On-State Resistance at $-V_{GS}$ = 10 V, $-I_D$ = 4 A at $-V_{GS}$ = 4.5 V, $-I_D$ = 3.7 A at $-V_{GS}$ = 2.5 V, $-I_D$ = 2 A	$R_{DS(on)}$	- - -	- - -	50 60 85	mΩ
Forward Transconductance at $-V_{DS}$ = 5 V, $-I_D$ = 4 A	$\lvert g_{FS} \rvert$	-	17	-	S
Diode Forward Voltage at I_S = 1 A, V_{GS}= 0 V	$-V_{SD}$	0.7	-	1	V
Maximun Body-Diode Continuous Current	$-I_S$	-	-	2	A
Pulsed Body-Diode Current [1)]	$-I_{SM}$	-	-	27	A
Input Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 15 V f = 1 MHz	C_{iss}	-	645	-	pF
Output Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 15 V f = 1 MHz	C_{oss}	-	80	-	pF
Reverse Transfer Capacitance at V_{GS} = 0 V, $-V_{DS}$ = 15 V f = 1 MHz	C_{rss}	-	55	-	pF
Turn-On Delay Time at $-V_{GS}$ = 10 V, $-V_{DS}$ = 15 V, R_L= 3.75 Ω,R_G= 3 Ω	t_{on}	-	6.5	-	ns
Turn-On Rise Time at $-V_{GS}$ = 10 V, $-V_{DS}$ = 15 V, R_L= 3.75 Ω,R_G= 3 Ω	t_r	-	3.5	-	ns
Turn-Off Delay Time at $-V_{GS}$ = 10 V, $-V_{DS}$ = 15 V, R_L= 3.75 Ω,R_G= 3 Ω	t_{off}	-	41	-	ns
Turn-Off Fall Time at $-V_{GS}$ = 10 V, $-V_{DS}$ = 15 V, R_L= 3.75 Ω,R_G= 3 Ω	t_{off}	-	9	-	ns

[1)] The power dissipation P_D is based on $T_{J(MAX)}$ = 150℃.using≤ 10 s Junction to ambient thermal resistance.

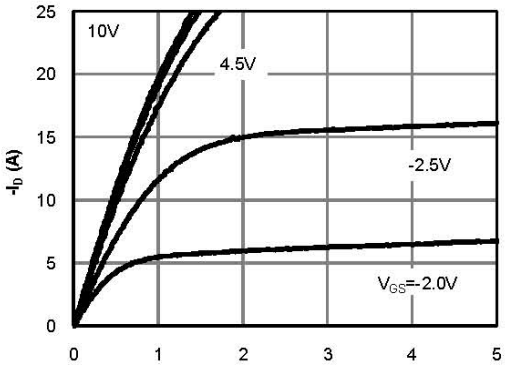


Fig 1: On-Region Characteristics

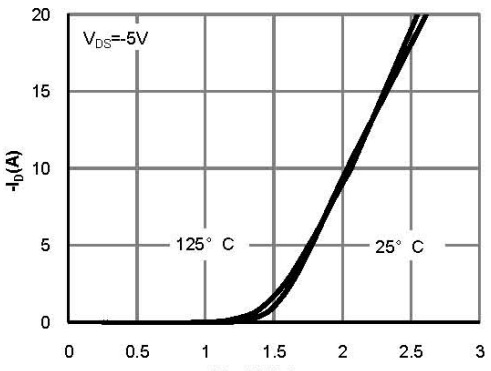


Figure 2: Transfer Characteristics

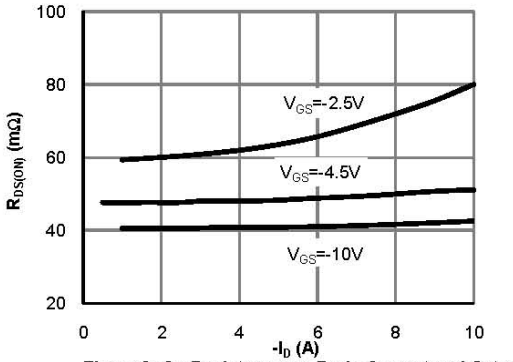


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

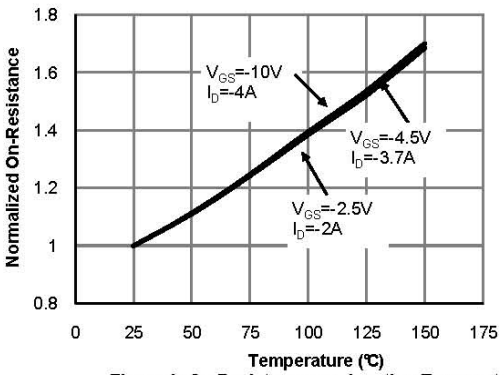


Figure 4: On-Resistance vs. Junction Temperature

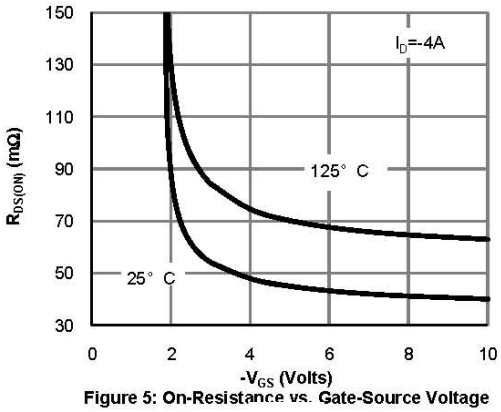


Figure 5: On-Resistance vs. Gate-Source Voltage

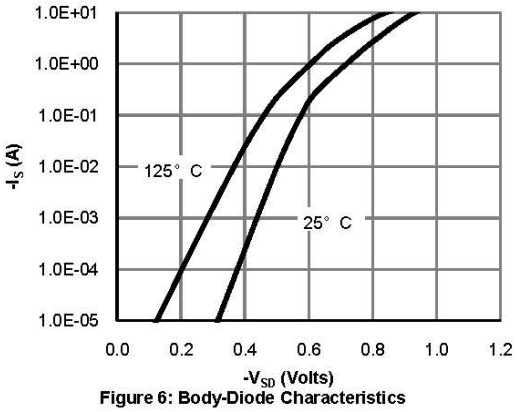


Figure 6: Body-Diode Characteristics