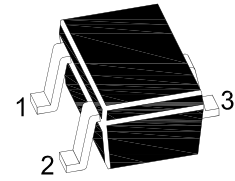
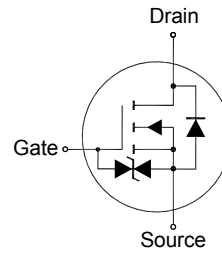


MMFTN1012KE-AH

N-Channel Enhancement Mode MOSFET

Features

- Low gate threshold voltage
- Low input capacitance
- Fast switching speed
- ESD protected up to 2 KV
- AEC-Q101 is Available
- Halogen and Antimony Free(HAF), RoHS compliant

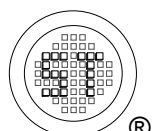


1.Gate 2.Source 3.Drain
SOT-523 Plastic Package

Absolute Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 6	V
Drain Current ¹⁾ $T_a = 25^\circ\text{C}$ $T_a = 85^\circ\text{C}$	I_D	0.63 0.45	A
Peak Drain Current	I_{DM}	6	A
Power Dissipation ¹⁾	P_D	0.15	W
Maximum Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	833	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

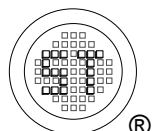
¹⁾ Device mounted on FR-4 substrate PC board, 2oz copper, with minimum recommended pad layout.



MMFTN1012KE-AH

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

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $I_D = 250\ \mu\text{A}$	$V_{(BR)DSS}$	20	-	-	V
Drain-Source Leakage Current at $V_{DS} = 20\ \text{V}$	I_{DSS}	-	-	100	nA
Gate-Source Leakage Current at $V_{GS} = \pm 4.5\ \text{V}$	I_{GSS}	-	-	± 1	μA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	$V_{GS(th)}$	0.5	-	1	V
Drain-Source On-State Resistance at $V_{GS} = 4.5\ \text{V}$, $I_D = 600\ \text{mA}$ at $V_{GS} = 2.5\ \text{V}$, $I_D = 500\ \text{mA}$ at $V_{GS} = 1.8\ \text{V}$, $I_D = 350\ \text{mA}$	$R_{DS(on)}$	- - -	- - -	0.4 0.5 0.7	Ω
Forward Transconductance at $V_{DS} = 10\ \text{V}$, $I_D = 400\ \text{mA}$	g_{fs}	-	1.4	-	S
DYNAMIC PARAMETERS					
Input Capacitance at $V_{DS} = 16\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{iss}	-	60.67	-	pF
Output Capacitance at $V_{DS} = 16\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{oss}	-	9.68	-	pF
Reverse Transfer Capacitance at $V_{DS} = 16\ \text{V}$, $V_{GS} = 0\ \text{V}$, $f = 1\ \text{MHz}$	C_{rss}	-	5.37	-	pF
Turn-On Delay Time at $V_{DD} = 10\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 200\ \text{mA}$, $R_G = 10\ \Omega$, $R_L = 47\ \Omega$	$t_{d(on)}$	-	5.1	-	ns
Turn-On Rise Time at $V_{DD} = 10\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 200\ \text{mA}$, $R_G = 10\ \Omega$, $R_L = 47\ \Omega$	t_r	-	7.4	-	ns
Turn-Off Delay Time at $V_{DD} = 10\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 200\ \text{mA}$, $R_G = 10\ \Omega$, $R_L = 47\ \Omega$	$t_{d(off)}$	-	26.7	-	ns
Turn-Off Fall Time at $V_{DD} = 10\ \text{V}$, $V_{GS} = 4.5\ \text{V}$, $I_D = 200\ \text{mA}$, $R_G = 10\ \Omega$, $R_L = 47\ \Omega$	t_f	-	12.3	-	ns
Body-Diode PARAMETERS					
Drain-Source Diode Forward Voltage at $I_S = 150\ \text{mA}$	V_{SD}	-	-	1.2	V



Ratings and Electrical Characteristics Curves

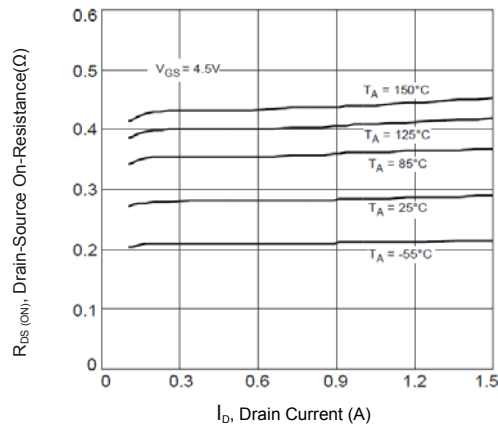


Fig 1. Typical Drain-Source On-Resistance vs. Drain Current and Temperature

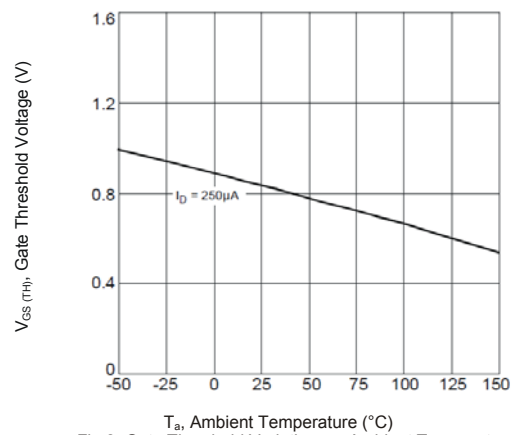


Fig 2. Gate Threshold Variation vs. Ambient Temperature

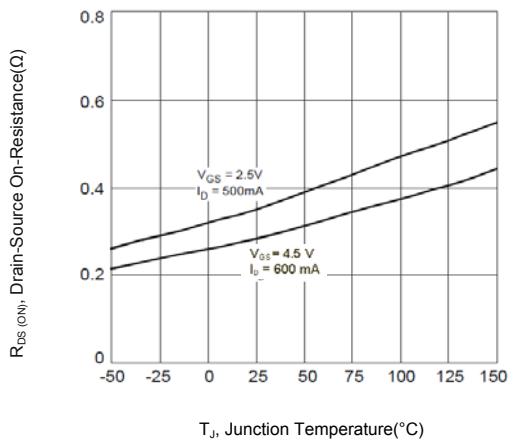


Fig 3. On-Resistance Variation with Temperature

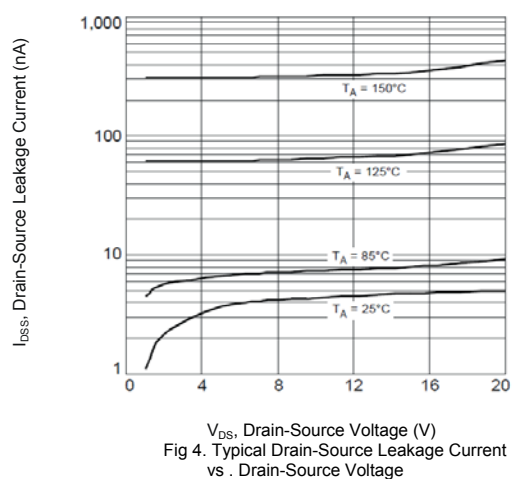


Fig 4. Typical Drain-Source Leakage Current vs. Drain-Source Voltage

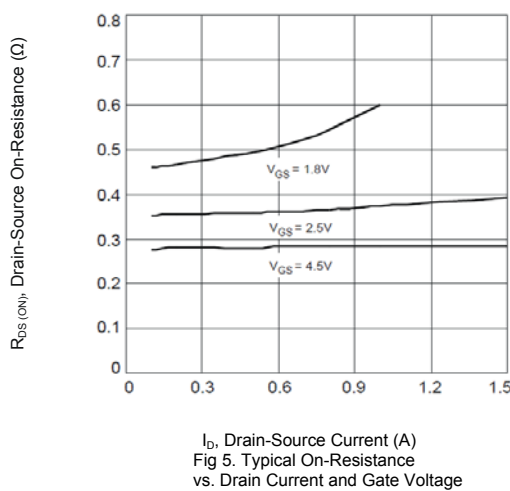


Fig 5. Typical On-Resistance vs. Drain Current and Gate Voltage

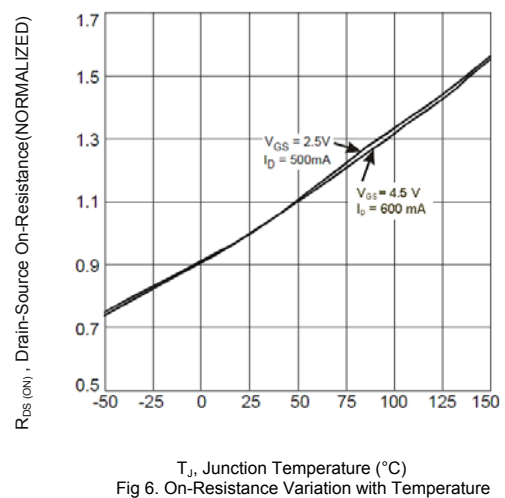
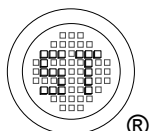
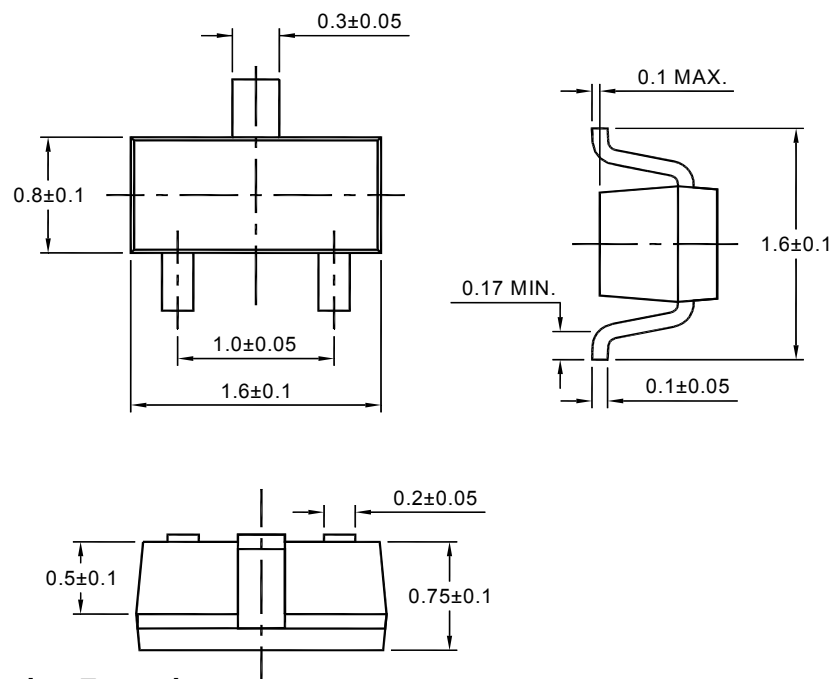


Fig 6. On-Resistance Variation with Temperature

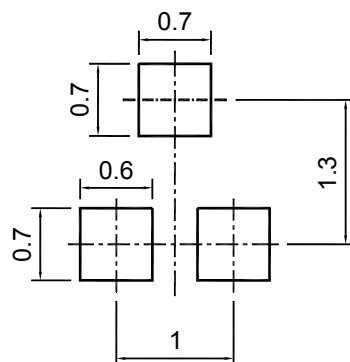


Package Outline (Dimensions in mm)

SOT-523



Recommended Soldering Footprint



Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-523	8	4 ± 0.1	0.157 ± 0.004	178	7	4,000

Marking information

- " • " = HAF (Halogen and Antimony Free)
 - " MF " = Part No.
 - " YM " = Date Code Marking
 - " Y " = Year
 - " M " = Month
- Font type: Arial

