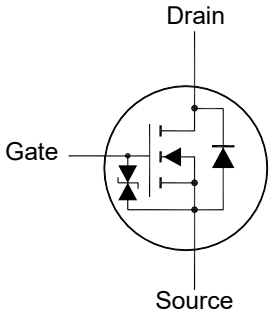
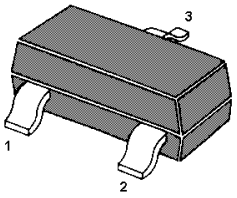
MMFTN0360K

N-Channel Enhancement Mode MOSFET





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

Features

• With ESD protection

Absolute Maximum Ratings (T_a = 25℃)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current [1)]	I_D	± 3	A
Peak Drain Current, Pulsed [2)]	I_{DM}	± 12	A
Power Dissipation [3)]	P_{tot}	1	W
Power Dissipation [4)]	P_{tot}	0.54	W
Thermal Resistance from Junction to Ambient [3)] (t ≤ 10 s)	$R_{\theta JA}$	125	℃/W
Thermal Resistance from Junction to Ambient [4)]	$R_{\theta JA}$	231	℃/W
Junction Temperature	T_j	150	℃
Storage Temperature Range	T_{stg}	- 55 to + 150	℃

[1)] Limited only by maximum temperature allowed.
[2)] P_w ≤ 10 µs, Duty cycle ≤ 1%.
[3)] Mounted on a ceramic board (30 x 30 x 0.8 mm).
[4)] Mounted on a FR4 (12 x 20 x 0.8 mm).

Dated: 02/06/2020 CL Rev: 02

Characteristics at T_a = 25℃

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at I_D = 1 mA	BV_{DSS}	60	-	-	V
Drain-Source Leakage Current at V_{DS} = 60 V	I_{DSS}	-	-	1	μA
Gate Leakage Current at V_{GS} = ± 20 V	I_{GSS}	-	-	± 10	μA
Gate-Source Threshold Voltage at V_{DS} = 10 V, I_D = 1 mA	$V_{GS(th)}$	1	-	2.5	V
Drain-Source On-State Resistance at V_{GS} = 4 V, I_D = 3 A at V_{GS} = 4.5 V, I_D = 3 A at V_{GS} = 10 V, I_D = 3 A	$R_{DS(on)}$	- - -	- - -	105 100 85	mΩ
DYNAMIC PARAMETERS					
Forward Transconductance at V_{DS} = 5 V, I_D = 2 A	g_{FS}	-	5.4	-	S
Input Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{iss}	-	508	-	pF
Output Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{oss}	-	29	-	pF
Reverse Transfer Capacitance at V_{GS} = 0 V, V_{DS} = 15 V, f = 1 MHz	C_{rss}	-	16.4	-	pF
Total Gate Charge at V_{DS} = 50 V, I_D = 2 A, V_{GS} = 10 V	Q_g	-	9.1	-	nC
Gate Source Charge at V_{DS} = 50 V, I_D = 2 A, V_{GS} = 10 V	Q_{gs}	-	2	-	nC
Gate Drain Charge at V_{DS} = 50 V, I_D = 2 A, V_{GS} = 10 V	Q_{gd}	-	1.4	-	nC
Turn-On Delay Time at V_{DD} = 50 V, I_D = 2 A, V_{GS} = 10 V, R_G = 3.3 Ω	$t_{d(on)}$	-	2	-	ns
Turn-On Rise Time at V_{DD} = 50 V, I_D = 2 A, V_{GS} = 10 V, R_G = 3.3 Ω	t_r	-	21.6	-	ns
Turn-Off Delay Time at V_{DD} = 50 V, I_D = 2 A, V_{GS} = 10 V, R_G = 3.3 Ω	$t_{d(off)}$	-	11.2	-	ns
Turn-Off Fall Time at V_{DD} = 50 V, I_D = 2 A, V_{GS} = 10 V, R_G = 3.3 Ω	t_f	-	18.8	-	ns
Body-Diode PARAMETERS					
Diode Forward Voltage at I_S = 1 A, V_{GS} = 0 V	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time at I_F = 2 A, di/dt = 100 A/μs	t_{rr}	-	17.5	-	ns
Body Diode Reverse Recovery Charge at I_F = 2 A, di/dt = 100 A/μs	Q_{rr}	-	14	-	nC

Electrical Characteristics Curves

Fig. 1 Output Characteristic

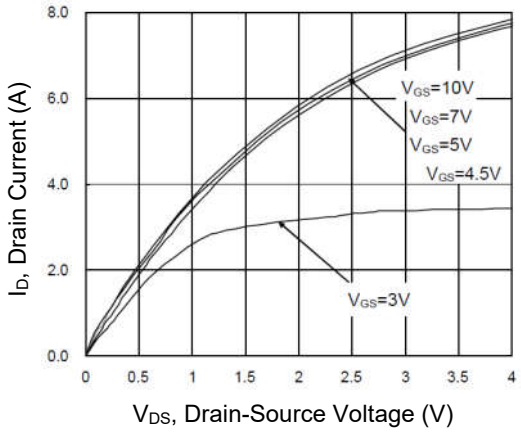


Fig. 2 on-Resistance vs. V_{GS}

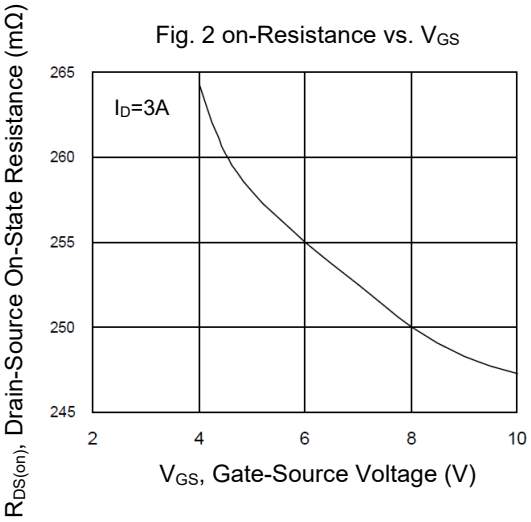


Fig. 3 Diode Forward

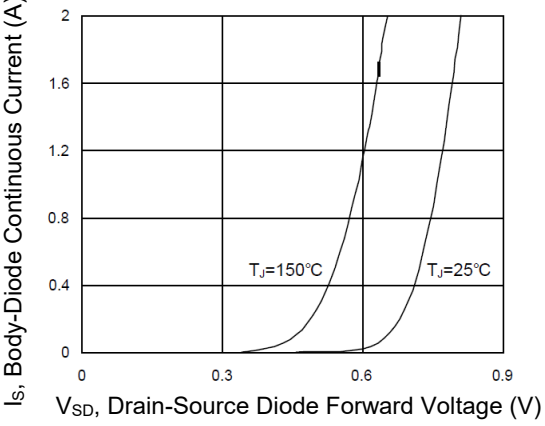
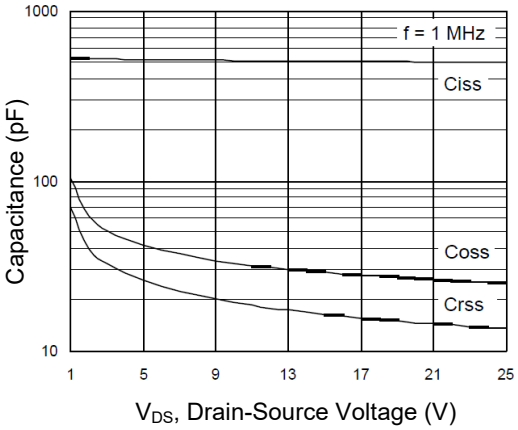


Fig. 4 Capacitance



Electrical Characteristics Curves

Fig. 5 Gate Charge

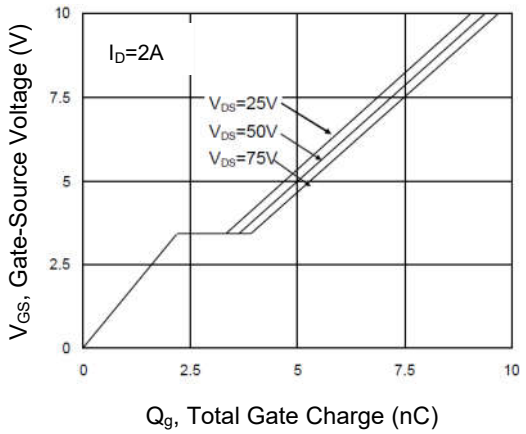


Fig. 6 $V_{GS(th)}$ vs. Junction Temperature

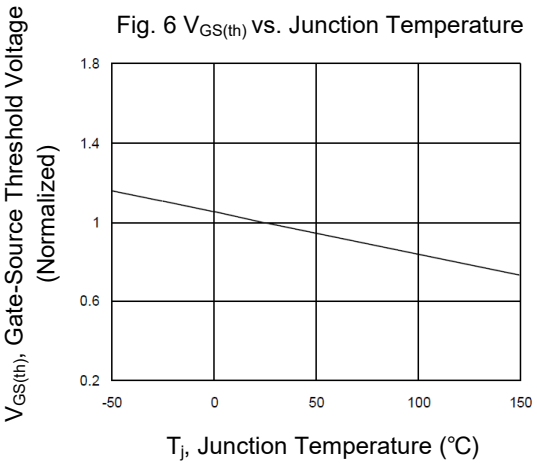
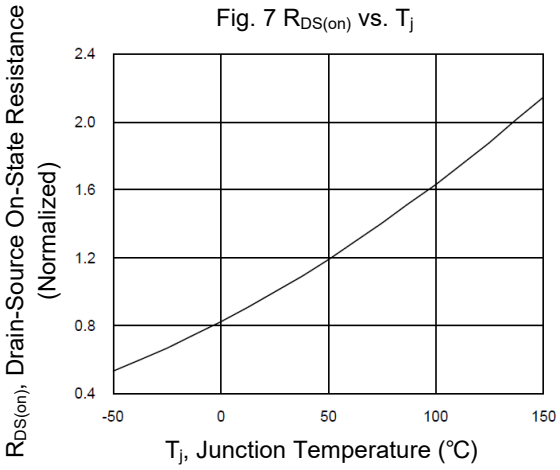
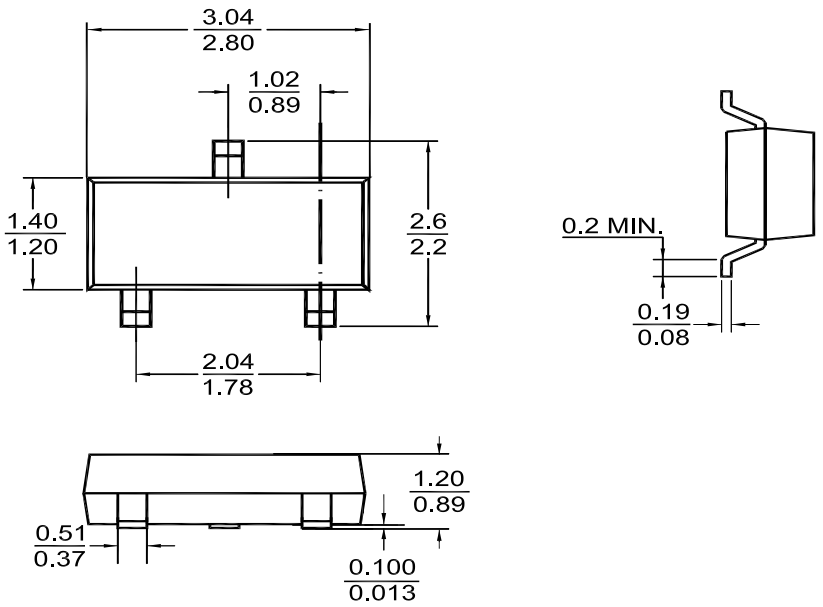


Fig. 7 $R_{DS(on)}$ vs. T_j

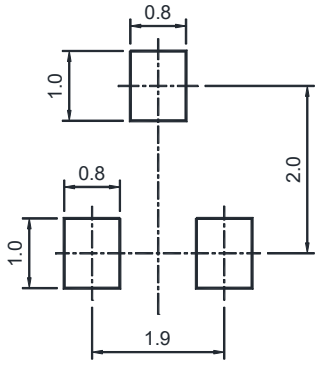


PACKAGE OUTLINE

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

Marking information

" WA " = Part No.
"YM" = Date Code Marking
"Y" = Year
"M" = Month
Font type: Arial