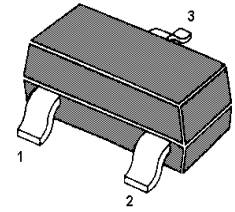
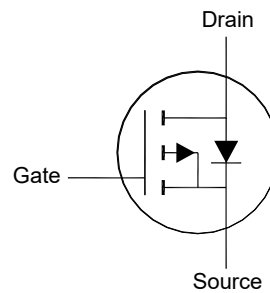


MMFTP2305

P-Channel Enhancement Mode MOSFET



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

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

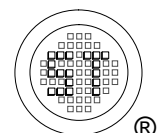
Parameter	Symbol	Value	Unit
Drain-Source Voltage	$-V_{DSS}$	8	V
Gate-Source Voltage	V_{GS}	± 8	V
Drain Current - Continuous	$-I_D$	3.5	A
Peak Drain Current, Pulse ¹⁾	$-I_{DM}$	12	A
Power Dissipation ²⁾	P_D	1.1	W
Operating Junction and Storage Temperature	T_j, T_{stg}	- 55 to + 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction to Ambient ²⁾	$R_{\theta JA}$	110	$^\circ\text{C/W}$

¹⁾ Pulse width limited by Max junction temperature.

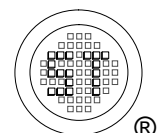
²⁾ Device Surface Mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate, in a still air.



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

Parameter	Symbol	Min.	Typ.	Max.	Unit
STATIC PARAMETERS					
Drain-Source Breakdown Voltage at $-I_D = 250 \mu\text{A}$	$-V_{(BR)DSS}$	8	-	-	V
Drain-Source Leakage Current at $-V_{DS} = 6.4 \text{ V}$	$-I_{DSS}$	-	-	1	μA
Gate Leakage Current at $V_{GS} = \pm 8 \text{ V}$	I_{GSS}	-	-	± 100	nA
Gate-Source Threshold Voltage at $V_{DS} = V_{GS}$, $-I_D = 250 \mu\text{A}$	$-V_{GS(th)}$	0.45	-	0.8	V
Drain-Source On-State Resistance at $-V_{GS} = 1.8 \text{ V}$, $-I_D = 2 \text{ A}$ at $-V_{GS} = 2.5 \text{ V}$, $-I_D = 3 \text{ A}$ at $-V_{GS} = 4.5 \text{ V}$, $-I_D = 3.5 \text{ A}$	$R_{DS(on)}$	-	-	118 81 68	m Ω
DYNAMIC PARAMETERS					
Gate Resistance at $-V_{DS} = 0$, $V_{GS} = 0$, $f = 1 \text{ MHz}$	R_g	-	3.6	-	Ω
Forward Transconductance at $-V_{DS} = 5 \text{ V}$, $-I_D = 4 \text{ A}$	g_{FS}	-	10.5	-	S
Input Capacitance at $-V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{iss}	-	761	-	pF
Output Capacitance at $-V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{oss}	-	73	-	pF
Reverse Transfer Capacitance at $-V_{DS} = 20 \text{ V}$, $V_{GS} = 0 \text{ V}$, $f = 1 \text{ MHz}$	C_{rss}	-	43	-	pF
Total Gate Charge at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 4.5 \text{ V}$, $-I_D = 1 \text{ A}$	Q_g	-	8.9	-	nC
Gate-Source Charge at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 4.5 \text{ V}$, $-I_D = 1 \text{ A}$	Q_{gs}	-	1.9	-	nC
Gate-Drain Charge at $-V_{DS} = 10 \text{ V}$, $-V_{GS} = 4.5 \text{ V}$, $-I_D = 1 \text{ A}$	Q_{gd}	-	2.7	-	nC
Turn-On Delay Time at $-V_{DD} = 10 \text{ V}$, $-V_{GEN} = 5 \text{ V}$, $-I_D = 1 \text{ A}$, $R_G = 4.7 \Omega$	$t_{d(on)}$	-	8.8	-	ns
Turn-On Rise Time at $-V_{DD} = 10 \text{ V}$, $-V_{GEN} = 5 \text{ V}$, $-I_D = 1 \text{ A}$, $R_G = 4.7 \Omega$	t_r	-	9.3	-	ns
Turn-Off Delay Time at $-V_{DD} = 10 \text{ V}$, $-V_{GEN} = 5 \text{ V}$, $-I_D = 1 \text{ A}$, $R_G = 4.7 \Omega$	$t_{d(off)}$	-	34	-	ns
Turn-Off Fall Time at $-V_{DD} = 10 \text{ V}$, $-V_{GEN} = 5 \text{ V}$, $-I_D = 1 \text{ A}$, $R_G = 4.7 \Omega$	t_f	-	18.5	-	ns
Body-Diode PARAMETERS					
Body Diode Voltage at $-I_S = 1 \text{ A}$, $V_{GS} = 0 \text{ V}$	V_{SD}	-	-	1.2	V
Body Diode Reverse Recovery Time at $-I_F = 1 \text{ A}$, $di/dt = 100 \text{ A} / \mu\text{s}$	t_{rr}	-	8	-	ns
Body Diode Reverse Recovery Charge at $-I_F = 1 \text{ A}$, $di/dt = 100 \text{ A} / \mu\text{s}$	Q_{rr}	-	2.4	-	nC



Electrical Characteristics Curves

Fig. 1 Typical Output Characteristic

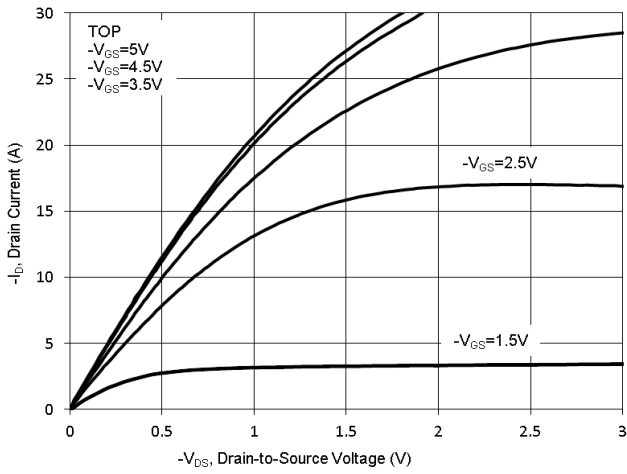


Fig. 2 Typical Transfer Characteristic

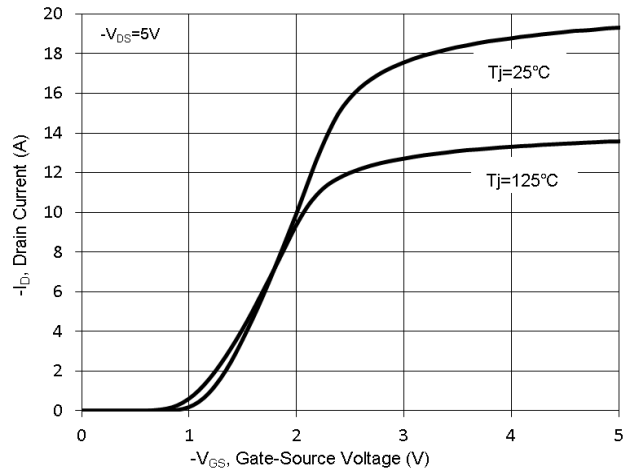


Fig. 3 on-Resistance vs. Gate Voltage

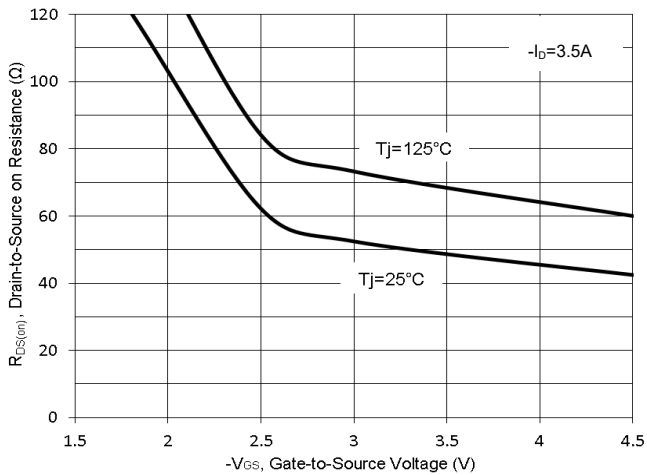


Fig. 4 on-Resistance vs. TJ

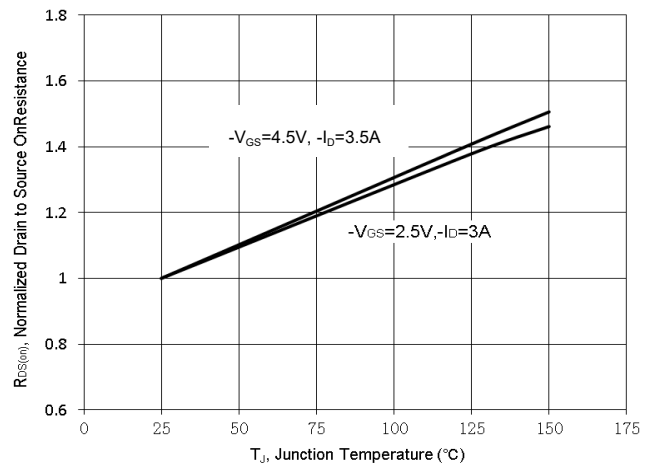


Fig. 5 Drain Source vs. on-Resistance

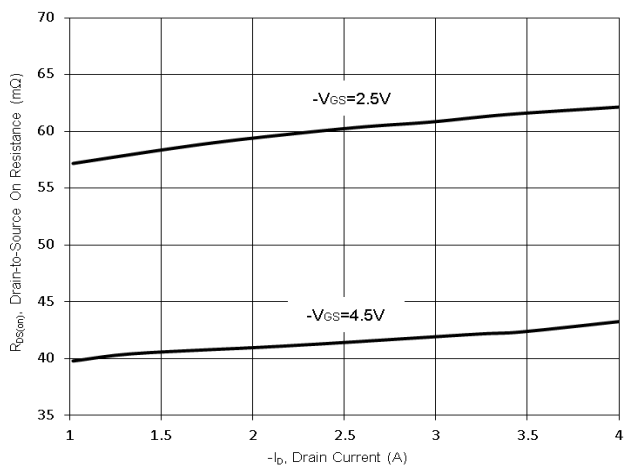
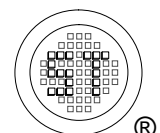
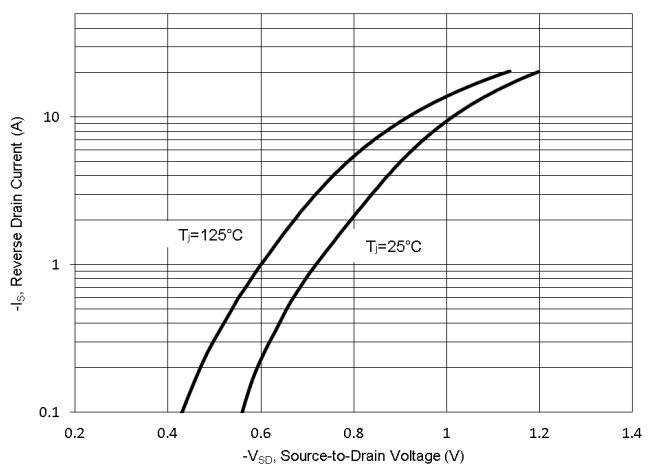


Fig. 6 Typical Forward Characteristic



Electrical Characteristics Curves

Fig. 7 Gate Threshold Variation vs. T_j

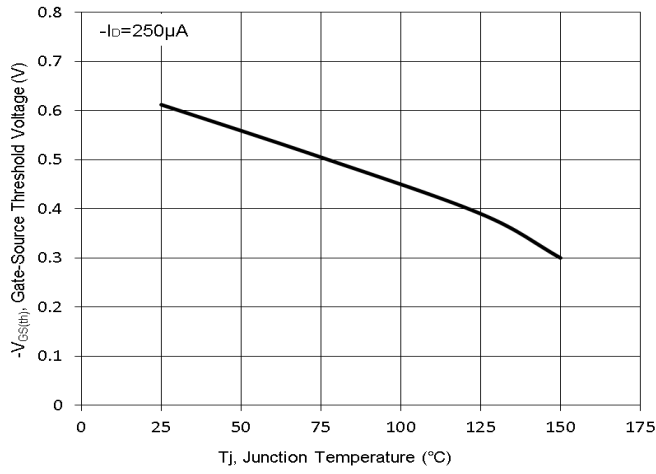


Fig. 8 Typical Junction Capacitance

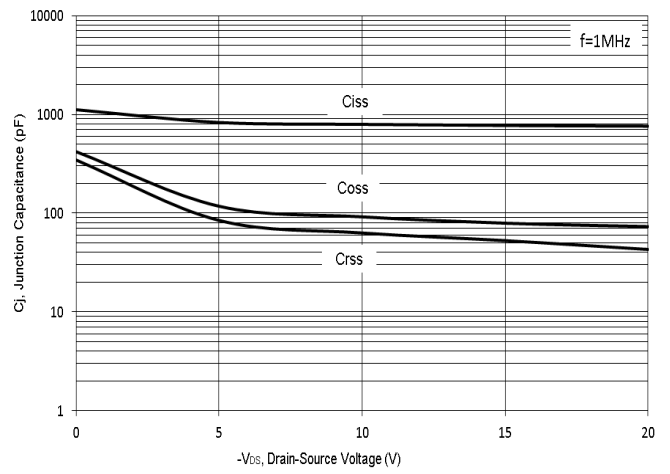
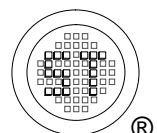
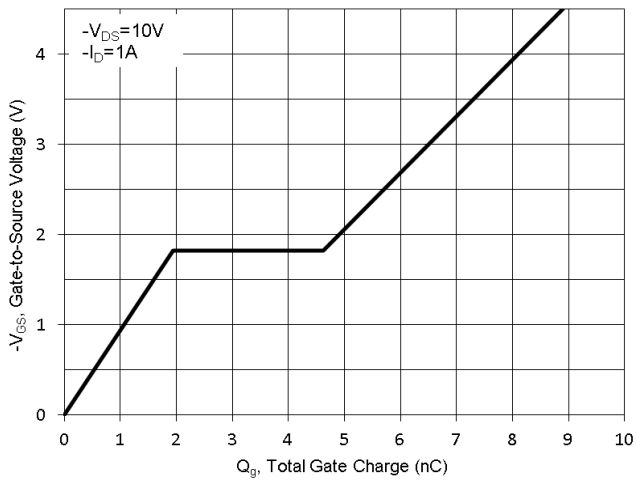


Fig. 9 Gate Charge



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Test Circuits

Fig.1-1 Switching times test circuit

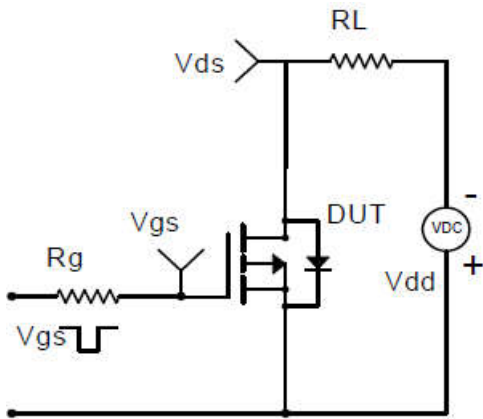


Fig.1-2 Switching Waveform

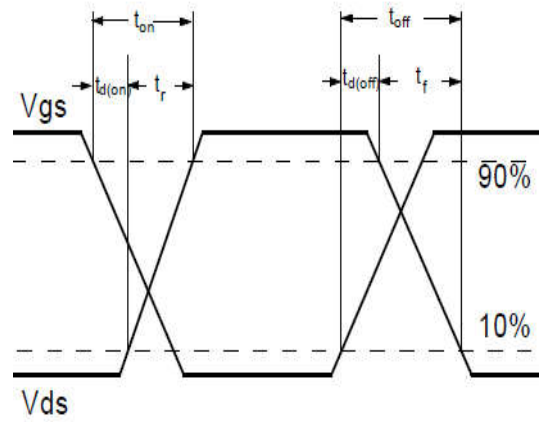


Fig.2-1 Gate charge test circuit

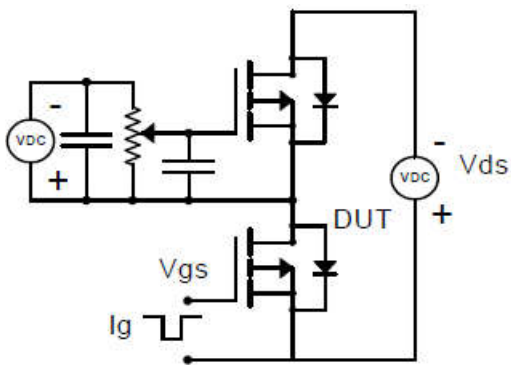
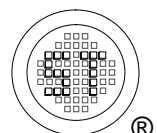
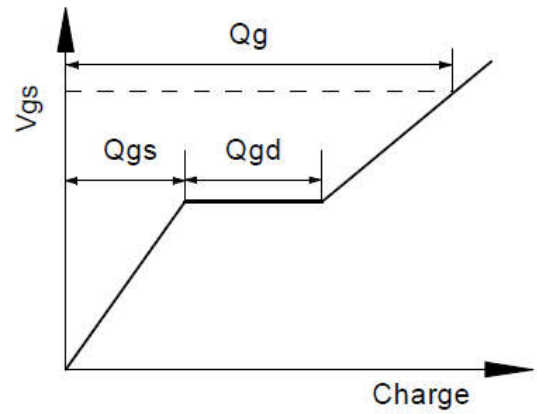


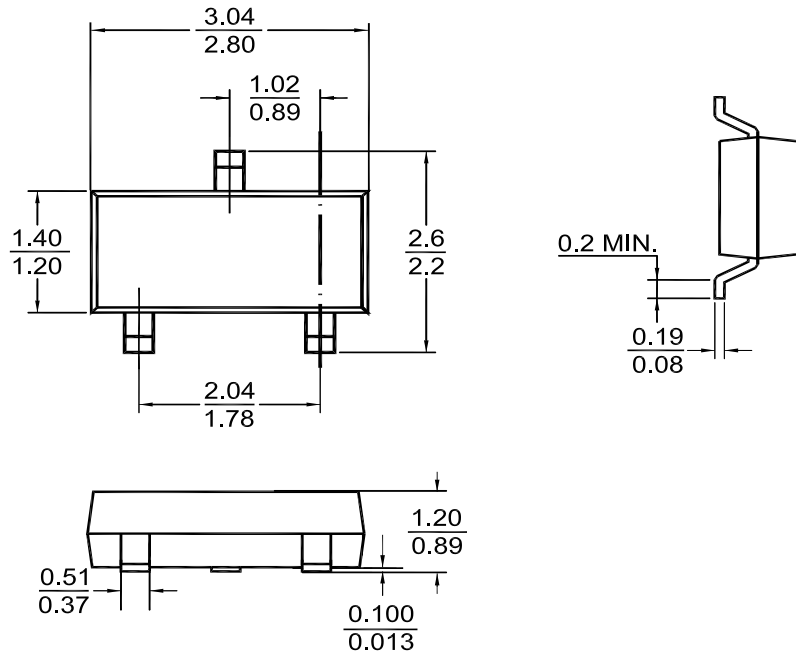
Fig.2-2 Gate charge waveform



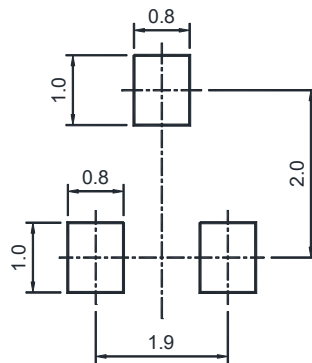
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Package Outline (Dimensions in mm)

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

Marking information

- " P5 " = Part No.
- " YM " = Date Code Marking
- " Y " = Year
- " M " = Month
- Font type: Arial

