JMTL2305B

Description

JMT P-channel MOSFET

Features

- V_{DS}=-12V, I_D=-4.1A
- $R_{DS(ON)}$ <45 mΩ @ V_{GS} = -4.5V
  $R_{DS(ON)}$ <60mΩ @ V_{GS} = -2.5V
- High Power and Current Handing Capability
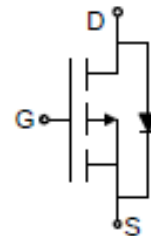- Lead Free Product is Acquired
- Surface Mount Package

Application

- PWM Applications
- Load Switch for Portable Devices
- Power Management

Package

SOT-23

Absolute Maximum Ratings (T$_C$=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		-12	V
V_{GSS}	Gate-Source Voltage		±8	V
I_D	Continuous Drain Current	T$_C$ = 25℃	-4.1	A
		T$_C$ = 100℃	-2.6	
I_{DM}	Pulsed Drain Current note1		-16	A
P_D	Power Dissipation	T$_C$ = 25℃	1.7	W
$R_{θJA}$	Thermal Resistance, Junction to Ambient		74	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

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Electrical Characteristics (T$_C$=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
V$_{(BR)DSS}$	Drain-Source Breakdown Voltage	V$_{GS}$=0V, I$_D$= -250µA	-12	-	-	V
I$_{DSS}$	Zero Gate Voltage Drain Current	V$_{DS}$ = -8V, V$_{GS}$ = 0V,	-	-	-1	µA
I$_{GSS}$	Gate to Body Leakage Current	V$_{DS}$ =0V, V$_{GS}$ = ±8V	-	-	±100	nA
On Characteristics						
V$_{GS(th)}$	Gate Threshold Voltage	V$_{DS}$= V$_{GS}$, I$_D$= -250µA	-0.5	-	-0.9	V
R$_{DS(on)}$ note2	Static Drain-Source on-Resistance	V$_{GS}$ =-4.5V, I$_D$ =-4.1A	-	30	45	mΩ
		V$_{GS}$ =-2.5V, I$_D$ =-3A	-	40	60	
g$_{FS}$	Forward Transconductance	V$_{DS}$ =-5V, I$_D$ = -4.1A	6	-	-	S
Dynamic Characteristics						
C$_{iss}$	Input Capacitance	V$_{DS}$ = -4V, V$_{GS}$ = 0V, f = 1.0MHz	-	740	-	pF
C$_{oss}$	Output Capacitance		-	290	-	pF
C$_{rss}$	Reverse Transfer Capacitance		-	190	-	pF
Q$_g$	Total Gate Charge	V$_{DS}$ = -4V, I$_D$ = -4.1A, V$_{GS}$ = -2.5V	-	4.5	9	nC
Q$_{gs}$	Gate-Source Charge		-	1.2	-	nC
Q$_{gd}$	Gate-Drain("Miller") Charge		-	1.6	-	nC
Switching Characteristics						
t$_{d(on)}$	Turn-on Delay Time	V$_{DD}$ = -4V, I$_D$ = -3.3A, R$_G$=1.0Ω, V$_{GEN}$=-4.5V, R$_L$=1.2Ω	-	13	20	ns
t$_r$	Turn-on Rise Time		-	35	53	ns
t$_{d(off)}$	Turn-off Delay Time		-	32	48	ns
t$_f$	Turn-off Fall Time		-	10	20	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I$_S$	Maximum Continuous Drain to Source Diode Forward Current		-	-	-4.1	A
I$_{SM}$	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-16	A
V$_{SD}$	Drain to Source Diode Forward Voltage	V$_{GS}$ = 0V, I$_S$ = -4.1A	-	-	-1.2	V
t$_{rr}$	Reverse Recovery Time	V$_{GS}$ =0V, I$_S$=-4.1A, di/dt=100A/µs	-	20	-	ns
Q$_{rr}$	Reverse Recovery Charge		-	9	-	nC

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300µs, Duty Cycle≤2%

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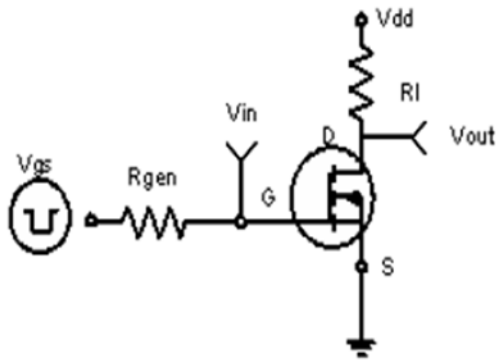
Version :C

Typical Performance Characteristics
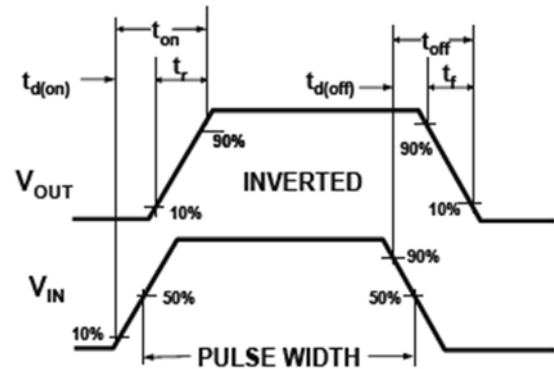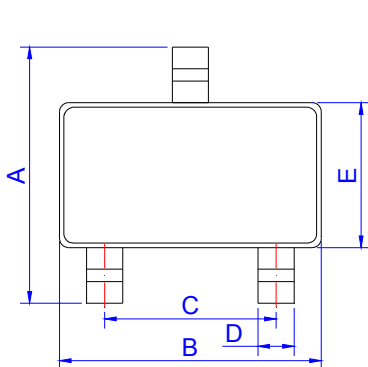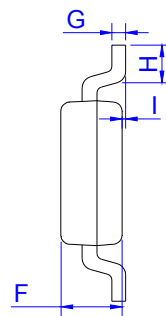

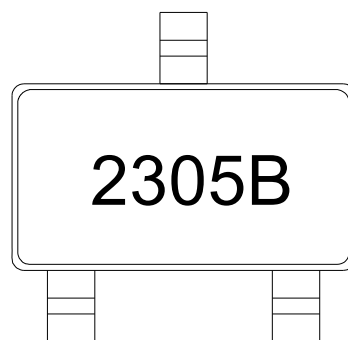**Figure1:Switching Test Circuit**

**Figure2:Switching Waveforms**

Package Mechanical Data

SOT-23

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.30	2.40	2.50	0.091	0.095	0.098
B	2.80	2.90	3.00	0.110	0.114	0.118
C	1.90 REF			0.075 REF		
D	0.35	0.40	0.45	0.014	0.016	0.018
E	1.20	1.30	1.40	0.047	0.051	0.055
F	0.90	1.00	1.10	0.035	0.039	0.043
G		0.10	0.15		0.004	0.006
H	0.20			0.008		
I	0		0.10	0		0.004

Marking

2305B: Device Code

Package Information-SOT-23
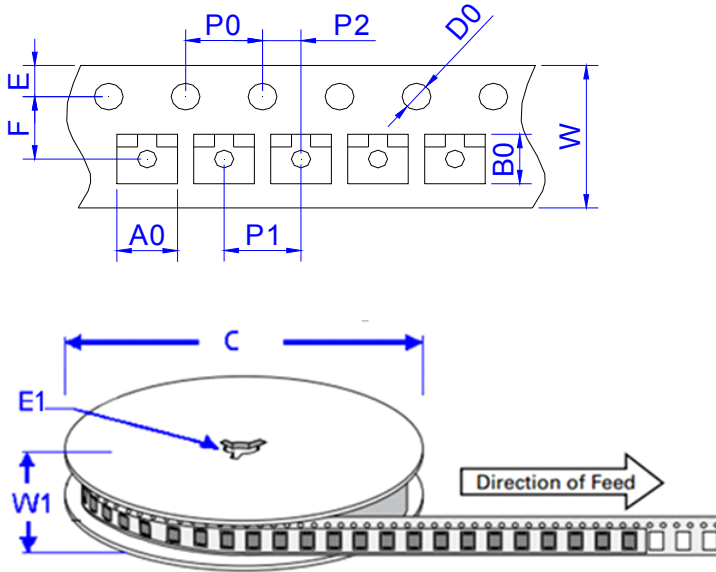
Ref.	Dimensions	
	Millimeters	Inches
A0	3.15 ± 0.3	0.124 ± 0.012
B0	2.77 ± 0.3	0.109 ± 0.012
C	178	7.0
D0	1.50±0.1	0.059 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3±0.3	0.524± 0.012
F	3.5 ± 0.2	0.138 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	8.00 ± 0.2	0.315 ± 0.008
W1	11.5±1.0	0.453 ± 0.039

Ordering Information-SOT-23

OUTLINE	PACKAGE TYPE	QUANTITY REEL	DESCIPTION
TAPING	SOT-23	3,000pcs	7 inch reel pack

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