Description

JMT Dual N-channel Enhancement Mode Power MOSFET

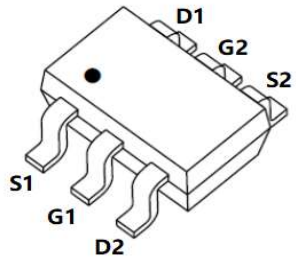
Features

- 20V, 0.75A
  $R_{DS(ON)}$< 380mΩ @ V_{GS}=4.5V
  $R_{DS(ON)}$< 450mΩ @ V_{GS}=2.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- ESD Protected: 2KV

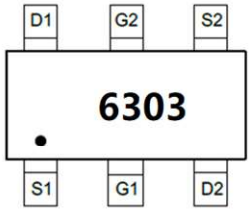
Application

- Load Switch
- PWM Application
- Power management

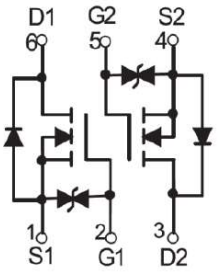
RoHS



SOT-363 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	OUTLINE	Device Package	Reel Size	Reel (PCS)	Per Carton (PCS)
02K	JMTL2002KDTW	TAPING	SOT-363	-	-	-

Absolute Maximum Ratings (T_A=25℃ unless otherwise specified)

Symbol	Parameter		Max.	Units
V_{DSS}	Drain-Source Voltage		20	V
V_{GSS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current	T_A= 25℃	0.75	A
		T_A= 100℃	0.5	A
I_{DM}	Pulsed Drain Current note1		3	A
P_D	Power Dissipation	T_A= 25℃	0.2	W
$R_{\theta JA}$	Thermal Resistance, Junction to Case		625	℃/W
T_J, T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Electrical Characteristics (T_J=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	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V,	-	-	1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS}=0V, V_{GS}= ±10V	-	-	±10	uA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	0.3	0.65	1	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS}=4.5V, I_D=0.5A	-	250	380	mΩ
		V_{GS}=2.5V, I_D=0.3A	-	350	450	
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1.0MHz	-	79	-	pF
C_{oss}	Output Capacitance		-	13	-	pF
C_{rss}	Reverse Transfer Capacitance		-	9	-	pF
Q_g	Total Gate Charge	V_{DS}=10V, I_D=0.3A, V_{GS}=4.5V	-	5	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.2	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10V, I_D=0.5A, R_{GEN}=3Ω, V_{GS}=4.5V	-	6.7	-	ns
t_r	Turn-on Rise Time		-	4.8	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	17.3	-	ns
t_f	Turn-off Fall Time		-	7.4	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	0.75	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	3	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS}=0V, I_S=0.75A	-	-	1.2	V

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%

Typical Performance Characteristics

Figure1: Output Characteristics

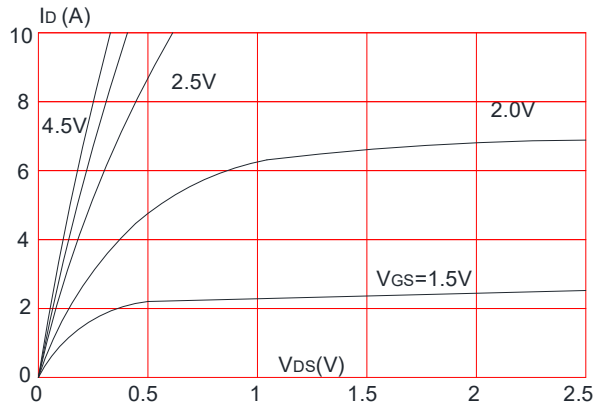


Figure 2: Typical Transfer Characteristics

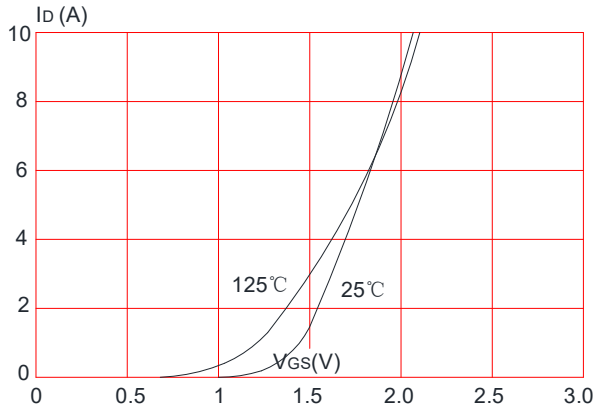


Figure 3: On-resistance vs. Drain Current

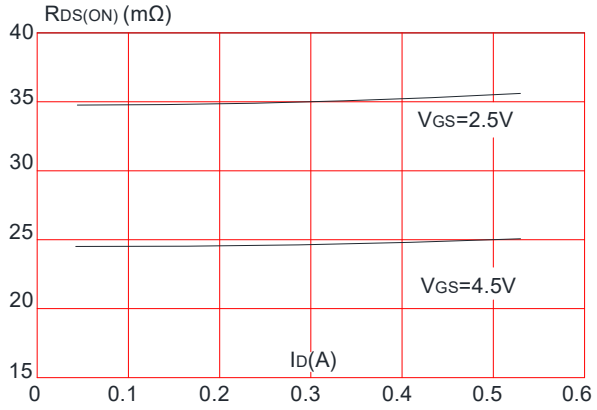


Figure 4: Body Diode Characteristics

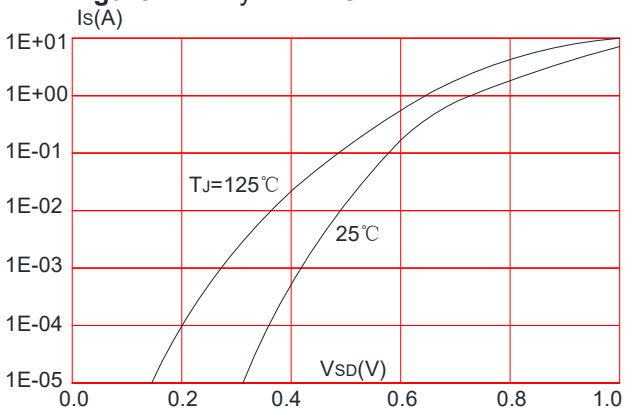


Figure 5: Gate Charge Characteristics

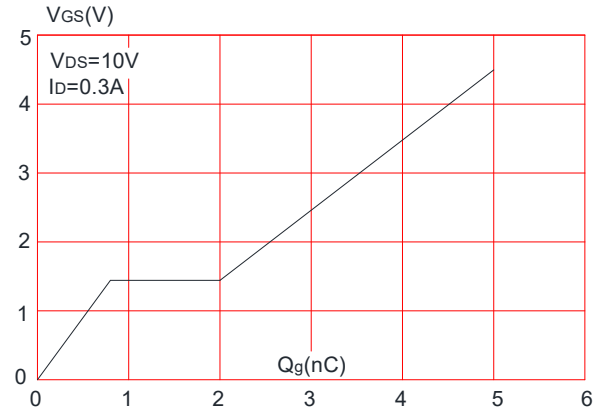


Figure 6: Capacitance Characteristics

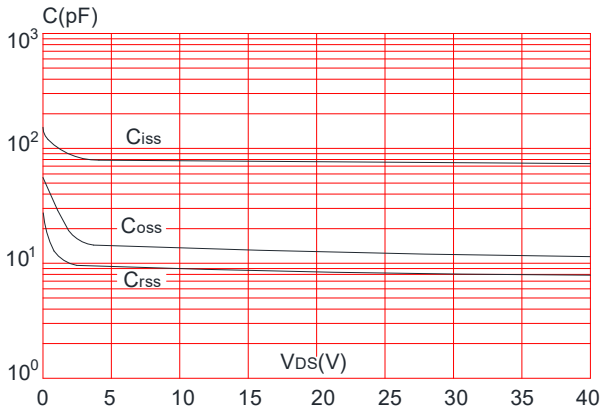


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

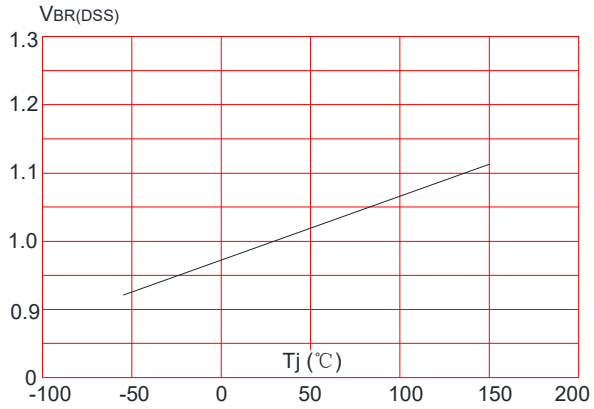


Figure 8: Normalized on Resistance vs. Junction Temperature

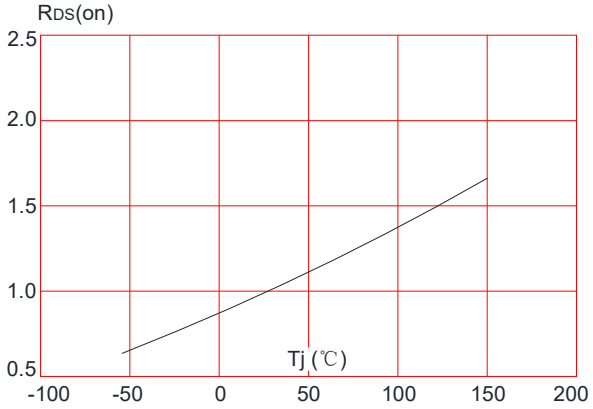


Figure 9: Maximum Safe Operating Area

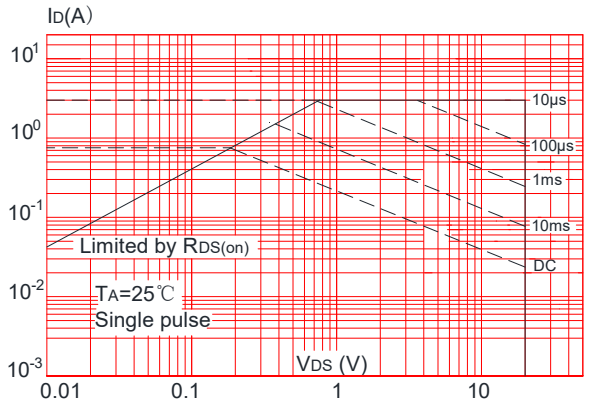


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

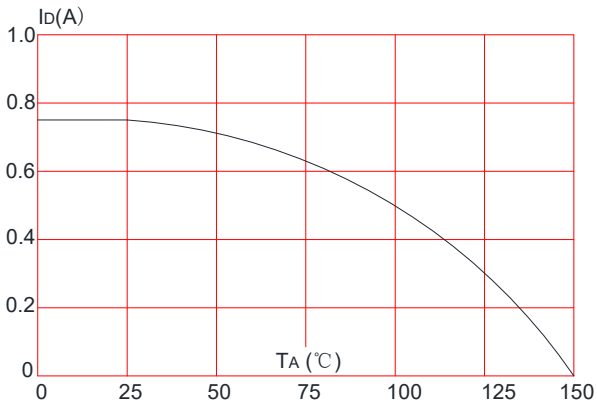
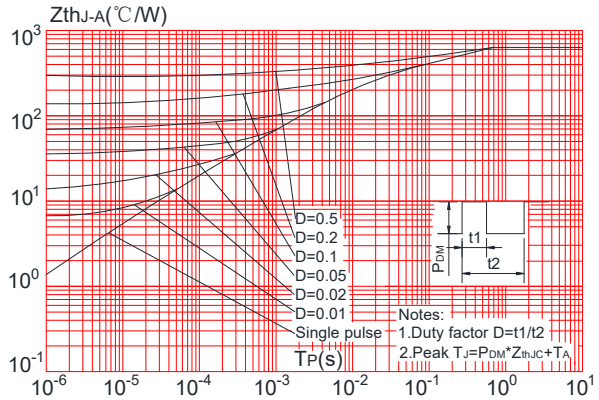


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

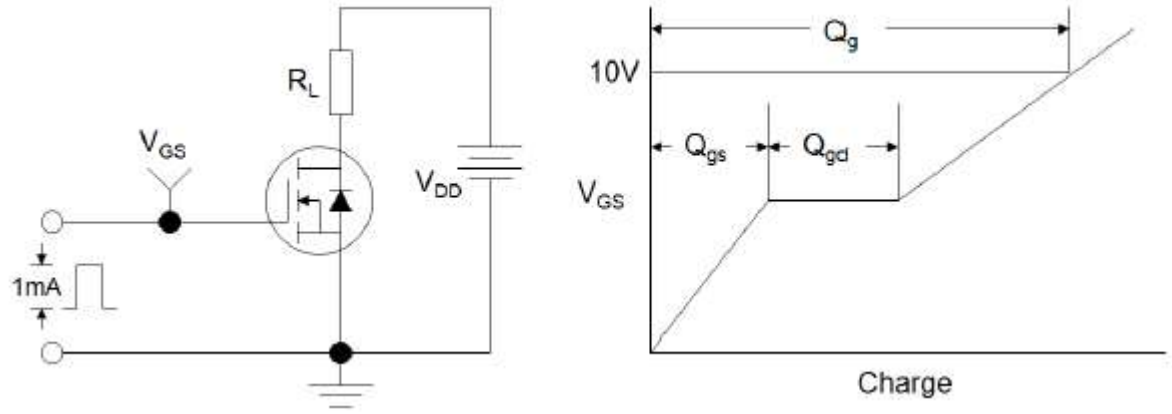


Figure1:Gate Charge Test Circuit & Waveform

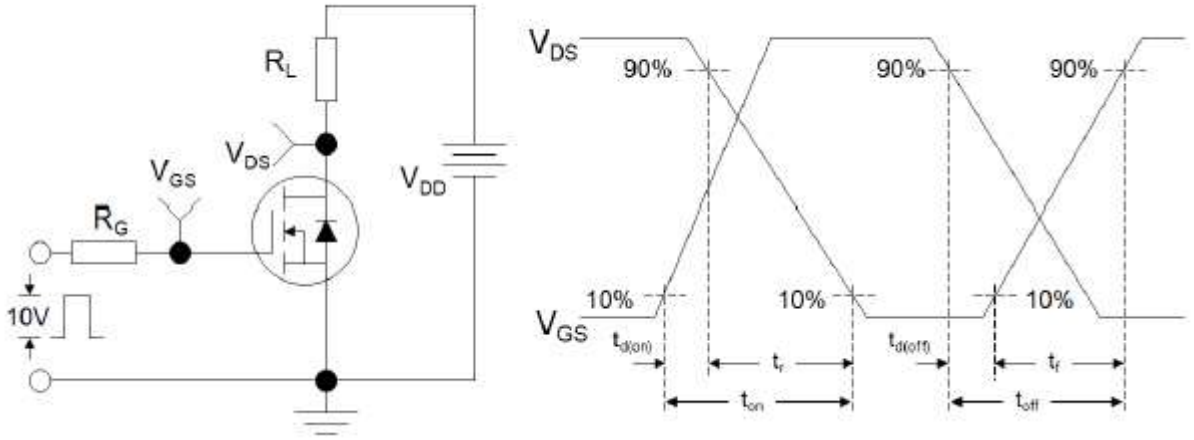


Figure 2: Resistive Switching Test Circuit & Waveforms

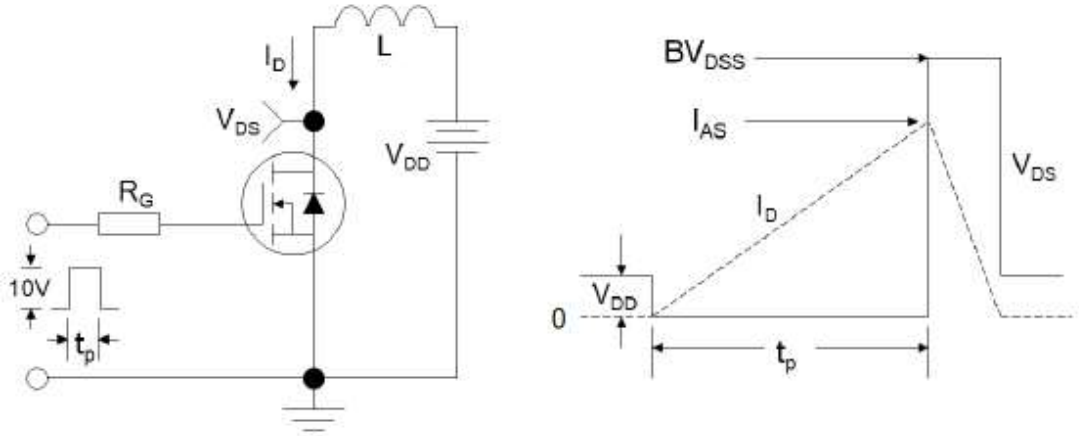
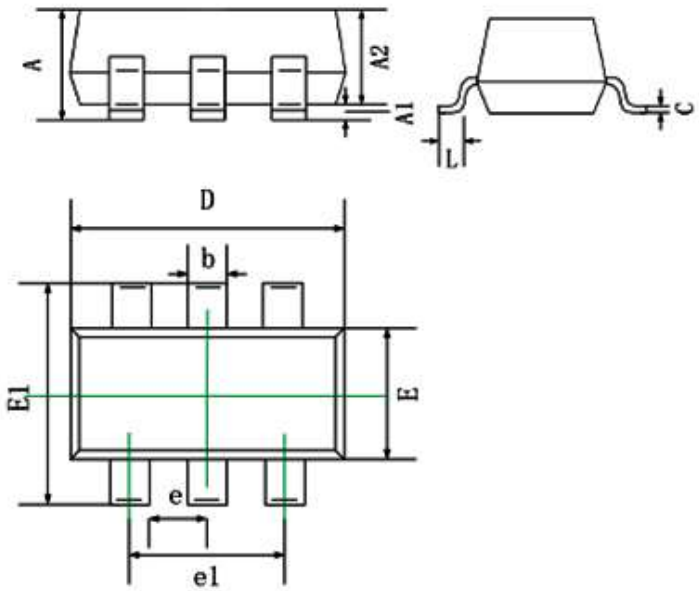


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

Package Mechanical Data-SOT-363



Symbol	Millimeters	
	Min.	Max.
A	0.90	1.10
A1	0.00	0.10
A2	0.90	1.00
b	0.15	0.35
c	0.10	0.15
D	2.00	2.20
E	1.15	1.35
E1	2.15	2.40
e	0.65Typ.	
e1	1.20	1.40
L	0.26	0.46